

# TSplus Modular Conveyors for Flexible Manufacturing

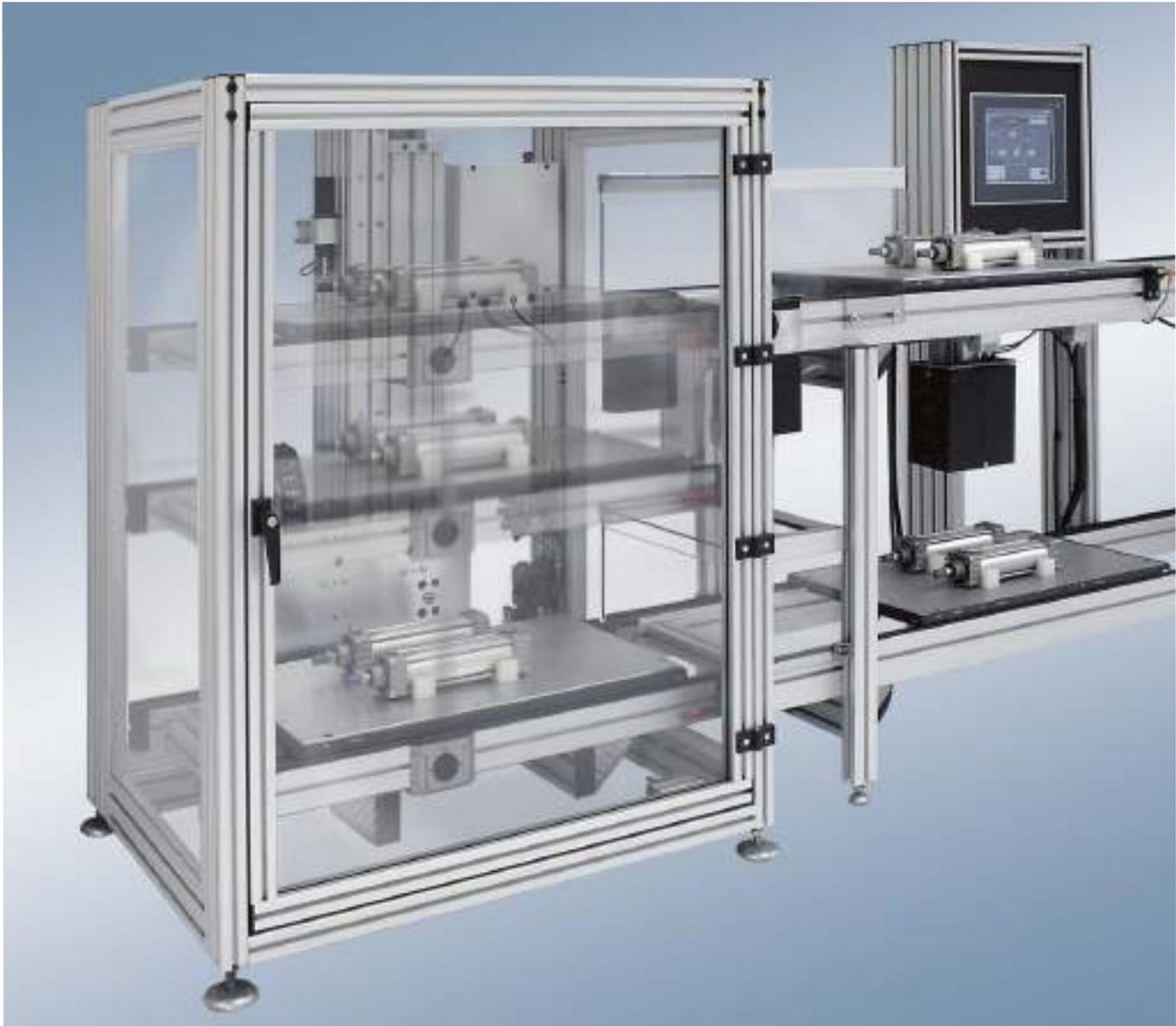
Version 5.0



Introduction

## TSplus Modular Conveyors

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### Shown Above

The image above shows a TSplus Vertical Transfer Unit used in an over/under application, which can help save valuable floor space. The Vertical Transfer Unit is designed to transfer workpiece pallets between upper and lower conveyor sections and one is typically located at each end of the line. This configuration creates a complete loop for workpiece pallet travel through the system using a minimum of floor space. Over/under lines, along with many other configurations, can be designed from standard TSplus modules and components found in this catalog.

Introduction

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## Updates

We constantly make additions and improvements to our products. For the latest TSplus catalog updates, please visit our website at:

[www.boschrexroth-us.com](http://www.boschrexroth-us.com)

## Liability

In no event can the manufacturer accept warranty claims or liability claims for damages resulting from improper use or misuse of the equipment or as a result of changes made to the equipment other than those authorized by the manufacturer. The manufacturer will accept no claim in which non-original spare parts have been used.

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## Introduction

# TSplus – The choice for today’s fast-changing assembly environment

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The TSplus assembly conveyor is part of the larger family of TS (Transfer Systems) from Rexroth which include TS1, TS4plus and TS5. Like all TS products, the TSplus is a workpiece pallet-based, non-synchronous, conveyor designed to improve manufacturing productivity and product quality while allowing for maximum assembly flexibility. With your choice of three different conveying media and 26 different pallet sizes, combined with an extensive range of positioning and transfer modules, TSplus is the world’s leading assembly conveyor.

## TSplus flexibility: easy to specify and use

All components of the TSplus system are pre-engineered and modular. That means you can mix belt, flat-top chain or roller chain and accessory modules as needs require. The system can be easily expanded, reconfigured or relocated as your needs change. You can phase in your investment as time and budget permit. Start with a simple conveyor for basic assembly and grow into a fully automated, progressive assembly system. As production requirements change, TSplus gives you the flexibility to add manual or automatic workstations.

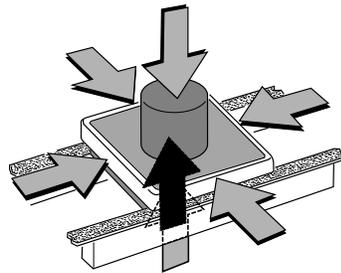
Modularity also simplifies system design and assembly. As a result, you can be more responsive to changing market demands. Installation and maintenance are also simple—further reducing up-front as well as ongoing costs.

## The workpiece pallet—heart of the TSplus system

TSplus conveyors transport parts on workpiece pallets. The workpiece pallets (26 sizes, from 160 x 160 mm to 1040 x 1040 mm) ride on the surface of the conveying medium. This transport method has many advantages for product assembly applications, including:

**Positioning.** Pallets can be positioned at workstations to  $\pm 0.05$  mm when used with a Rexroth Lift-Position Unit, permitting precision assembly operations.

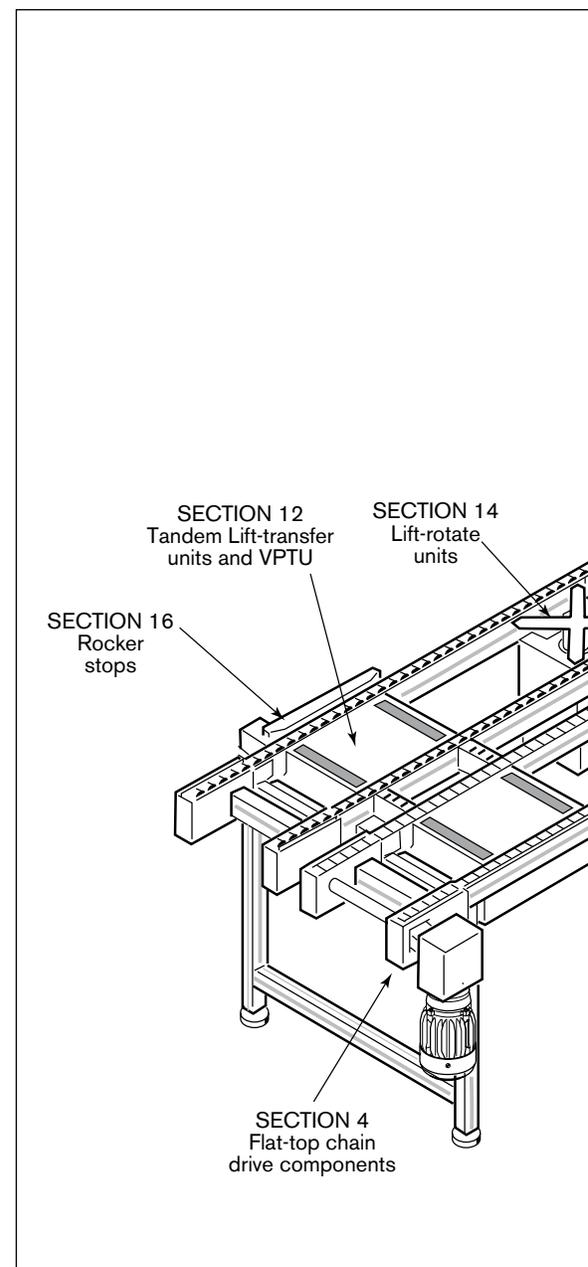
**Mounting.** Pallets can be tooled with fixtures to secure parts for manual or automated operations. Identification and data carrying devices (used to coordinate assembly sequences, identify model types, etc.) are also commonly mounted to pallets.



*The workpiece pallet can be accessed from all sides—allowing maximum flexibility in automated or manual workstation placement around the conveyor.*

**Stopping.** Pallets can be stopped on the leading or trailing edge—regardless of pallet orientation on the conveyor. Pallets can also be accumulated in queue and released one at a time.

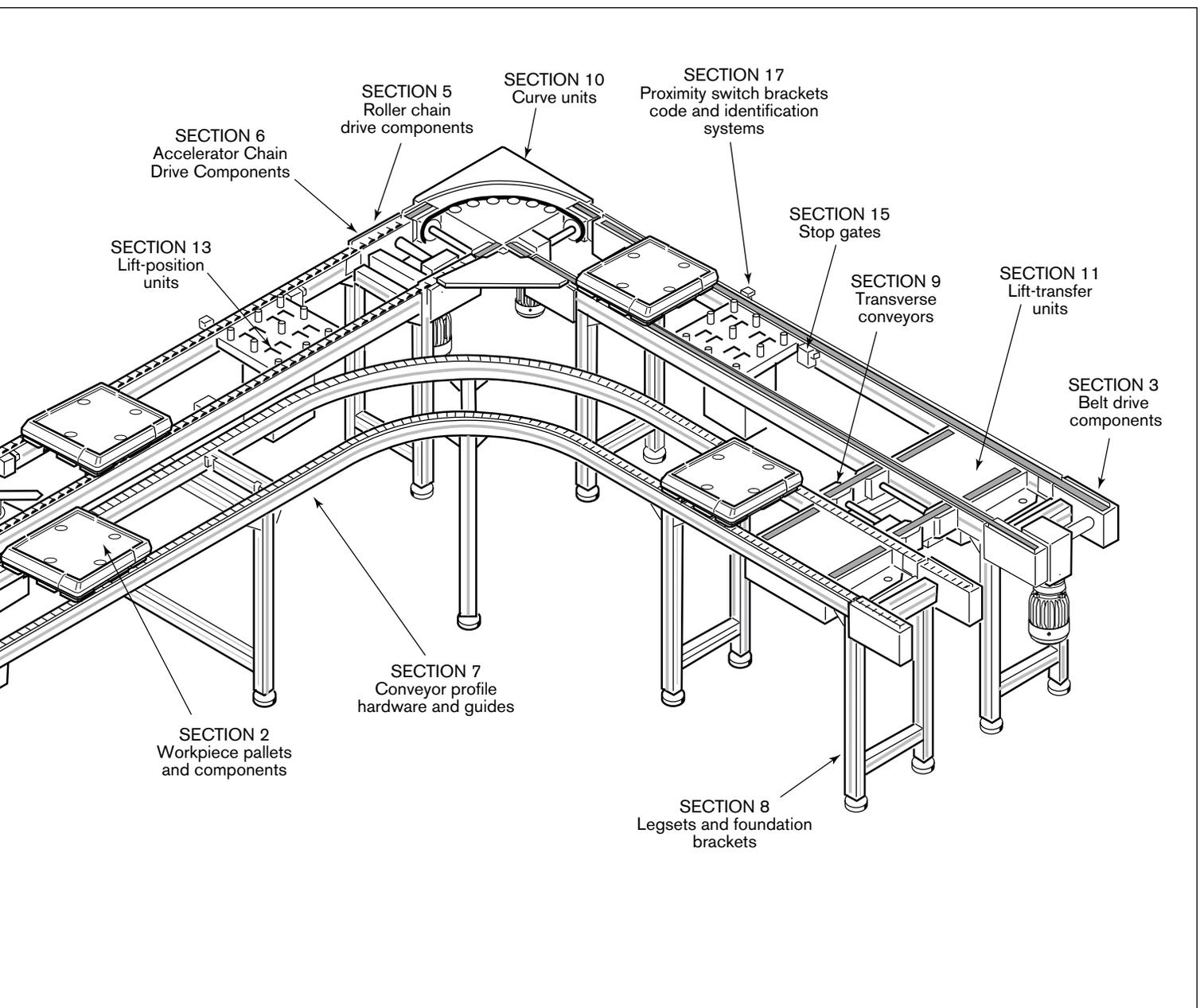
**Sensing.** Exciter plates on the pallet bottom and sides work with conveyor-mounted proximity switches to sense pallet presence. Pallet orientation and routing can be controlled using ID/10 identification systems.



## Introduction

**Your choice of three conveying media**

The workpiece pallets are transported by one of three conveying media: belt, flat-top chain or roller chain. The medium you choose is dictated by the configuration of your system and by application requirements. Loading capacities vary depending on the medium chosen. Belt drive conveyors can handle payloads up to 250 kg. Flat-top chain can transport up to 500 kg and roller chain drives have the largest payload carrying capacity at 1800 kg.



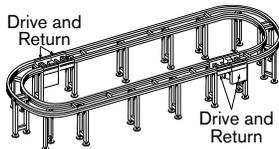
Introduction

# Numerous configuration possibilities

## Choose the TSplus configuration that best suits your application or facility

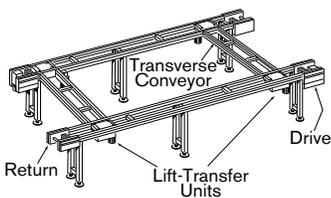
With TSplus, you have the freedom to select the configuration best suited to your layout and production requirements. Construct and combine three conveying media into: Oval, rectangular, parallel, over/under and serpentine lines. Space constraints and process complexity often dictate which configuration(s) will work best.

### Oval



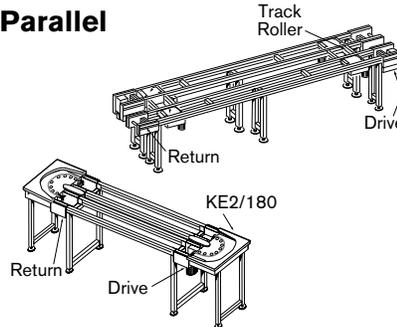
A variation of the carousel is the oval. It is configured using side flexing flat-top chain, multiple in-line drives, returns and curved and straight conveyor sections.

### Rectangular



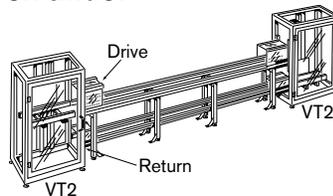
A rectangular configuration consists of two straight parallel conveyor lines and uses in-line drives, returns and lift-transfer units. The two parallel lines are connected at the ends by transverse conveyors. Rectangular configurations are commonly used in larger systems, where many different operations must be performed during the assembly process.

### Parallel



A parallel configuration uses track rollers or KE2/curve units to connect the conveyor sections.

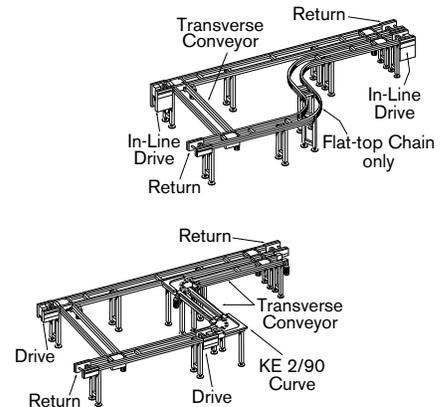
### Over/under



An over/under line consists of two conveyor sections mounted one above the other. The upper conveyor section is the transport path for the workpiece pallet through the assembly or test process. The lower conveyor section acts as the workpiece pallet return. The ends of the upper and lower conveyor sections are connected by vertical pallet transfer units (VT2).

The over/under configuration provides a complete loop for the workpiece pallet transfer with a significant savings in floor space. It is used in applications where space is at a premium, making other configurations impractical.

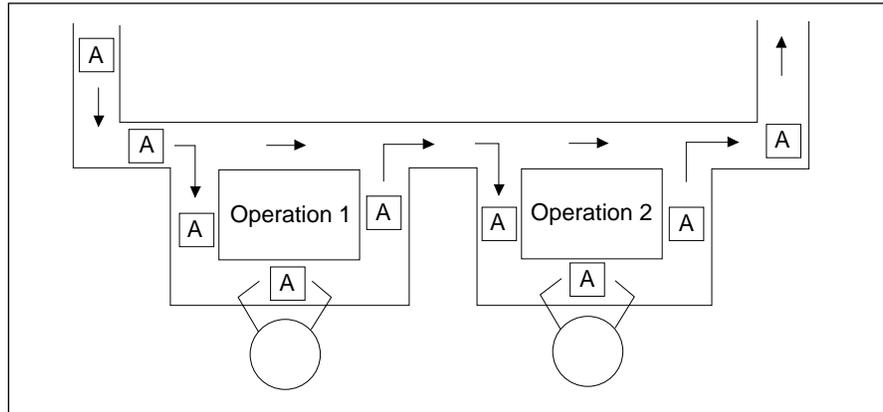
### Serpentine



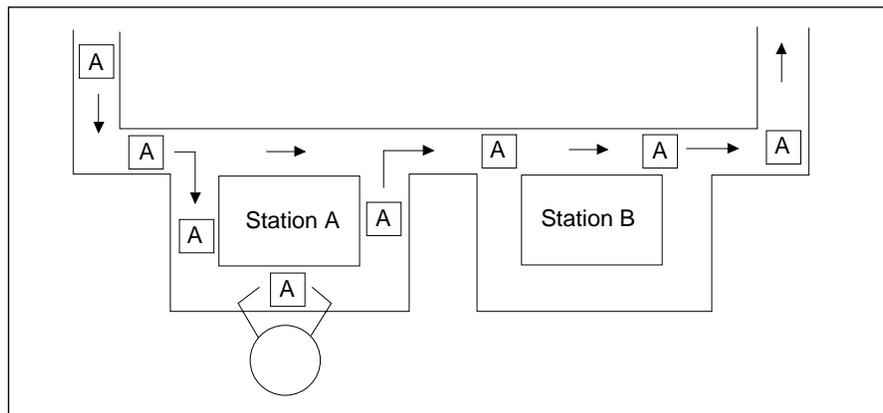
A serpentine conveyor line uses multiple in-line drives and returns, straight conveyor sections, 90° conveyor sections, or 90° curves all connected together by transverse conveyors. Serpentine lines provide the flexibility needed when space or production requirements dictate the need for an unusual layout.

These are just some of the possibilities with TSplus pre-engineered conveyors. No matter what the assembly requirement, Rexroth modular components make manufacturing truly flexible.

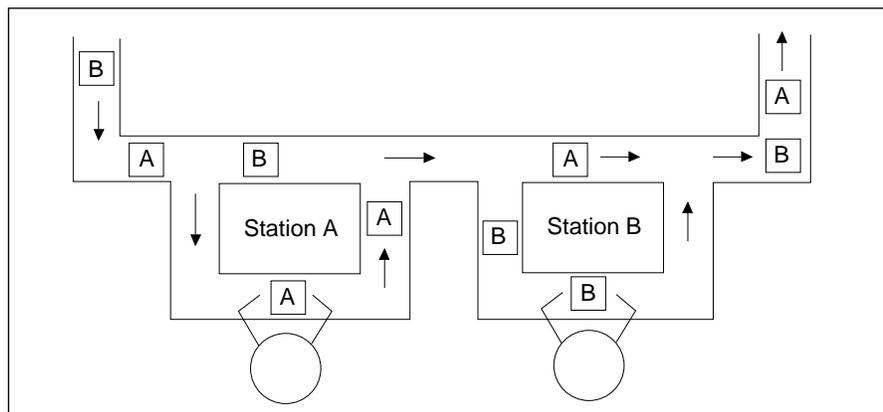
## Introduction



*"Cycle-independent stations" can be used to balance assembly operations with differing cycle times.*



*Fluctuations in production quantity can be easily accommodated by bypassing assembly workstations.*



*Different products can also be processed simultaneously.*

## Further tailor your system to match specific assembly requirements

With TSplus assembly conveyors, workpiece pallets can be selectively routed to off-line manual or automated stations. These "cycle-independent stations" allow you to accommodate fluctuating production quantities and balance cycle times between workstations. This, in turn, permits manual and automated workstations to be combined on the same line.

Cycle-independent stations are constructed using standardized modules and therefore are easily added to the main conveyor.

## Applications for TSplus

The TSplus system can be used in precision assembly and testing applications with a total pallet payload up to 70 kg (154 lbs). This makes it excellent for use in the automotive, appliance and electronics industries.

Typical types of products that can be assembled using TSplus include:

- Automotive components
- Printers
- Personal computers
- Automotive subassemblies
- Home appliances
- Power tools
- Medical devices

## Introduction

## Complete support: before, during and after installation

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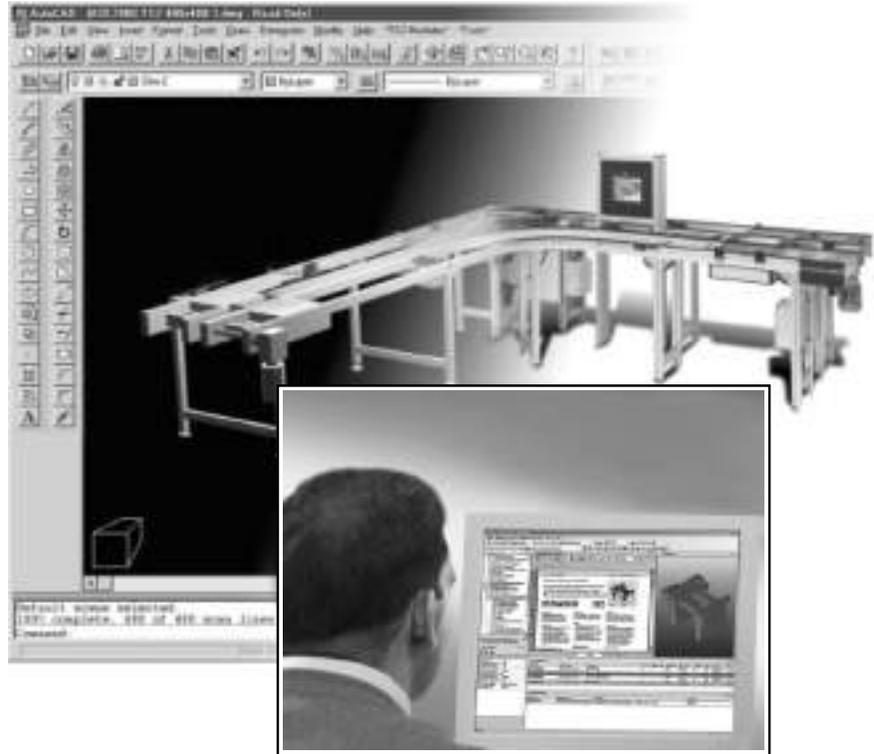
Every assembly project has its challenges. But you don't have to meet them alone. Bosch Rexroth offers the most comprehensive program of customer support available anywhere, from do-it-yourself projects to turnkey installations. Now that you've taken the first step by requesting this catalog, we'll help you with all the rest—from the initial quote and installation, to servicing your line years from now.

### Application engineering from experts, or via CAD

Whatever your application, our application engineers have probably worked on it. They'll carefully review your requirements — cycle time, payload, floor space, process flow — and devise the best conveyor layout to meet them.

Our **MTpro** software is a stand-alone platform independent application and can be run directly from the DVD without any installation. MTpro simplifies application planning by using 3D solid model and electronic catalog technology to put all required product information within easy reach. The electronic product catalog contains components and systems for VarioFlow modular chain conveyors, the TS-family of assembly conveyors, aluminum structural framing, and Manual Production Systems. Together with easy-to-use search and filter functions, MTpro accelerates optimum component configuration.

The integrated product configurator supports users during the selection of technical parameters and directly displays the chosen configuration as a 3-D model. Users can then transfer 3-D models and 2-D drawings into their own design systems via direct interfaces to all common CAD programs. In addition, MTpro also enables retroactive modifications to components and parts list information in selected CAD systems.



Our Online **CAD Library** offers 2D CAD and 3D solid models for conveyor and aluminum framing systems -

[www.boschrexroth-us.com/brlrcad](http://www.boschrexroth-us.com/brlrcad).

The models can be downloaded in virtually any solid model or CAD format in 3D or 2D to provide unprecedented design accuracy and efficiency. System integrators and in-house manufacturing personnel can save hours in expensive design time. After configuring and previewing the part in 2D or 3D, users simply click on "Download" to specify the format and software version, then download the file. The solid models from Rexroth can be configured and downloaded into more than 30 different CAD formats, such as IGS, STP, SAT, PRT, SLDPRT, DWG and DXF.

Whether you design it yourself or work with one of our application engineers,

we'll respond quickly with a detailed quotation and answer any questions you may have. And we'll work with you directly, or through your local Bosch Rexroth systems integrator, to schedule delivery and installation when you need it.

### Systems integrators make Bosch expertise their business

For large projects, Bosch Rexroth integrators provide total support on a local basis, putting years of expertise with Rexroth products to work for you. They offer complete project management of automated assembly systems, including engineering, manufacturing, installation, and debugging. We work closely with our network of integrator partners, providing them with the latest in product information, as well as software and service training.

## Introduction

**After-sale service assures your continued success**

The Bosch Rexroth commitment continues long after your system is up and running. Our highly qualified, experienced staff of service experts is always available for maintenance questions, spare parts orders, field service, and more. We're also happy to provide training in the installation or maintenance of any Rexroth products, either in your facility or at our factory.

**Documentation that answers (and anticipates) your questions**

Of course, you don't want to call Rexroth every time you have a question. Fortunately, our approach to documentation ensures that you won't have to. Product catalogs (like this one) make planning and ordering easy, with detailed specifications and dimensions, 3-D illustrations and part numbers.

When your system arrives, everything you need to know for set-up and operation comes with it. And if you'd like to know which spare parts to keep on hand, we'll

send you an exploded-view spare parts catalog or a customized spare parts list just for your system.

**More available on-line**

In a hurry? The latest news, products, application ideas and more are all just a click away, on the Bosch Rexroth Corporation website. You'll find your local authorized integrator there too, at: [www.boschrexroth-us.com](http://www.boschrexroth-us.com). Visit, and see why it pays to specify Rexroth.

**Application Photos**

Introduction

# Getting started using this catalog

1

This catalog describes every module needed to construct a TSplus assembly conveyor. The modules are organized in the order that you would most likely specify your system. Figure 1 lists some common Rexroth acronyms used in this catalog and their definitions.

### What your order should include

In order for us to process your order as quickly and accurately as possible, please make sure you specify:

- 10-digit part number
- Name of the module
- Quantity
- Other ordering parameters as needed

For example, to order 10 assembled WT2/S workpiece pallets (pages 2-2) measuring 400 mm square, with bushings, and a 4.8 mm steel plate, your purchase order would include:

Module name: **Workpiece Pallet**  
 Quantity: **10**  
 Part number: **0842 090 080**  
 Additional info: **(None required.)**

base part number combined with your defined ordering options provides us with the information we need to build and service your module to the exact specifications on your order.

If you need application assistance, have any questions about ordering, or want to identify the integrator nearest you, call us, toll-free:

**1-800-322-6724**  
**In Canada**  
**1-905-335-5511**

Modules such as drive units, transverse conveyors and positioning modules require you to specify the base 10-digit part number as listed, and then select from a list of options when ordering. These options include such things as voltage/frequency, conveyor speed, motor location, and conveyor width. The

## Rexroth Terms and Definitions

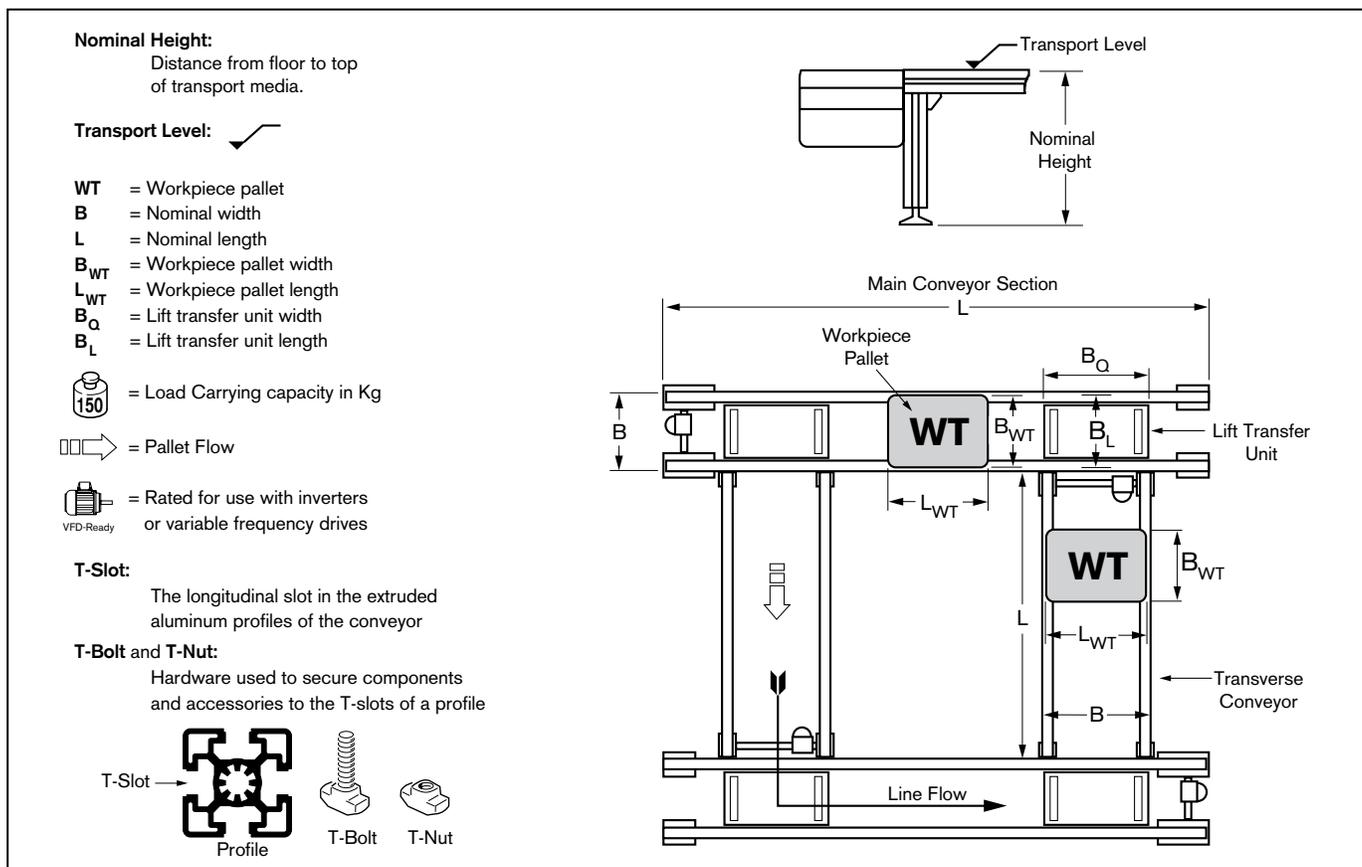


Figure 1

Workpiece Pallets and Components

## Section 2 – Workpiece Pallets and Components

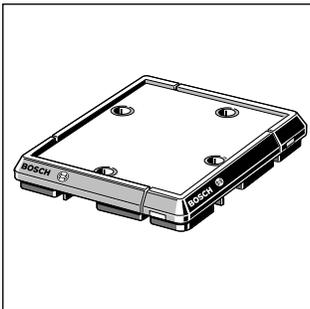
The workpiece pallet acts as a carrier for workpieces through the conveyor system. With fixturing, it serves to hold the workpiece for processing at a workstation. Positioning bushings allow the pallet to be located in a station with an accuracy of ±0.05 mm when used with a lift-position unit. Mechanical or RF identification

and data storage modules can also be mounted to the support plate.

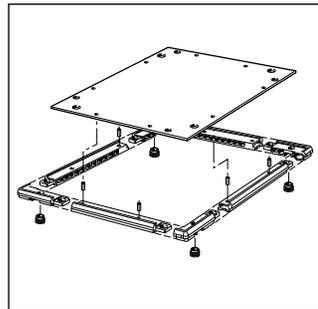
Workpiece pallets can be ordered fully assembled with steel, aluminum or heavy duty aluminum support plates. Workpiece pallet components can also be purchased unassembled for on-site assembly. Ordering unassembled pallet kits or pallet

components make it possible to perform the required machining to the support plate prior to pallet assembly.

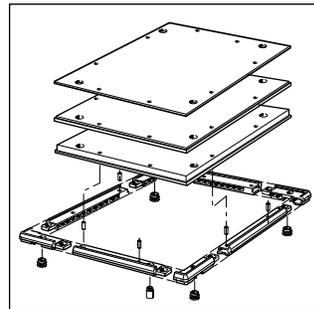
The maximum load carrying capacity of the size range of pallets when equipped with various support plates is shown below. See page 18-1 for limitations based on deflection.



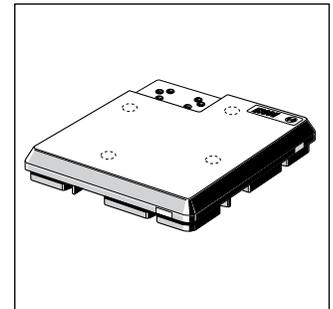
**WT2**  
Assembled Workpiece Pallets 2-2 to 2-3



**WT2**  
Unassembled Workpiece Pallet Kits 2-4 to 2-5



**WT2**  
Workpiece Pallet Components 2-6 to 2-15



**WT2/E**  
Economy Workpiece Pallets 2-16

### Workpiece Pallet Load Carrying Capacity Chart

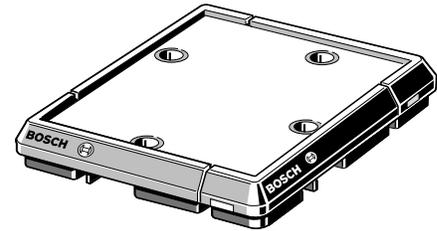
Pallet Size		Component Weight (Kg)				B <sub>WT</sub>	L <sub>WT</sub>
B <sub>WT</sub> (mm)	L <sub>WT</sub> (mm)	Frame (Kg)	4.8ST Plate (Kg)	6.35AL Plate (Kg)	12.7AL Plate (Kg)	Max Load* (Kg)	Max Load* (Kg)
160	160	0.32	0.9	0.4	0.8	16	16
160	240	0.39	1.3	0.6	1.3	16	24
160	320	0.45	1.8	0.8	1.7	16	32
160	400	0.52	2.3	1.1	2.1	16	40
160	480	0.64	2.7	1.3	2.5	16	48
240	240	0.45	2.0	0.9	1.9	24	24
240	320	0.51	2.7	1.3	2.5	24	32
240	400	0.59	3.4	1.6	3.2	24	40
240	480	0.70	4.1	1.9	3.8	24	48
320	320	0.58	3.7	1.7	3.4	32	32
320	400	0.65	4.6	2.1	4.3	32	40
320	480	0.76	5.5	2.6	5.1	32	48
320	640	0.89	7.4	3.4	6.9	32	64
400	400	0.72	5.8	2.7	5.4	40	40
400	480	0.83	6.9	3.2	6.5	40	48
400	640	0.96	9.3	4.3	8.6	40	64
400	800	1.14	11.6	5.4	10.8	40	70
480	480	0.95	8.3	3.9	7.8	48	48
480	640	1.07	11.1	5.2	10.4	48	64
480	800	1.25	13.9	6.5	13.0	48	70
640	640	1.20	14.9	6.9	13.9	64	64
640	800	1.38	18.6		17.4	64	70
640	1040	1.57			22.6	64	70
800	800	1.55	23.3		21.7	70	70
800	1040	1.75			28.3	70	70
1040	1040	1.94			36.9	70	70

\* Including, pallet, fixture, and part for aluminum plate 12.7mm

## Workpiece Pallets and Components

## Assembled Workpiece Pallet

Model WT2/S, WT2/A, WT2/A-H



location of the workpiece pallet for automated assembly operations when used with positioning modules.

Pallets larger than 400 x 480 mm also include four reinforcing bolts for added support where pallets contact the stop gates.

Fully assembled workpiece pallets are available in 26 standard sizes ranging from 160 x 160 mm to 1040 x 1040 mm.

The workpiece pallets consist of frame modules and a support plate. The frame modules are made from electrically conductive polyamide and have built in exciter plates to indicate relative positioning when used in conjunction with

proximity switches. Pallets over 400 mm use frame extensions and spring pins to connect the frames to the support plate. The support plate is available in steel (4.85 mm thick) or aluminum (6.35 or 12.7 mm thick).

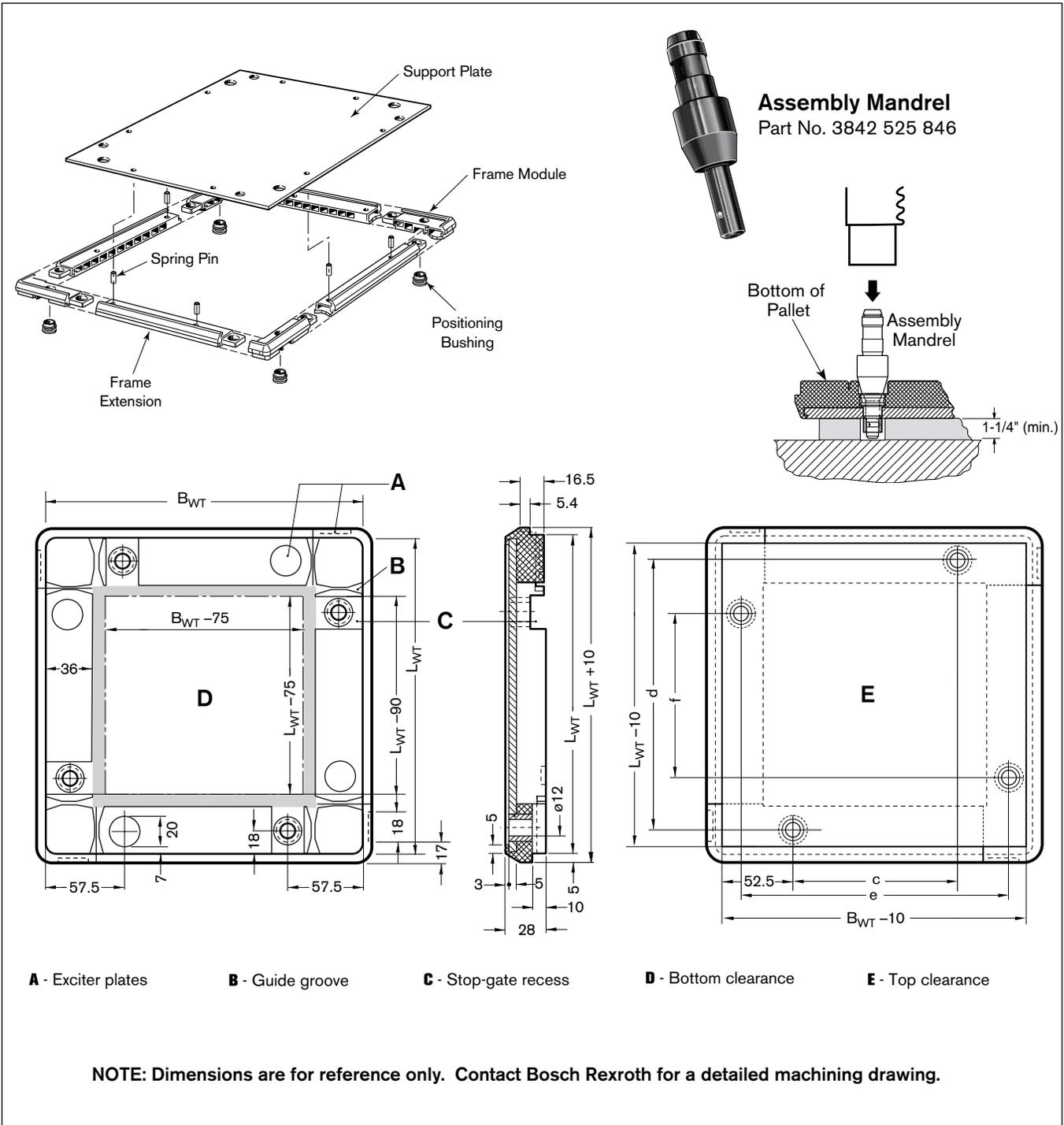
Assembled workpiece pallets also have four pressed-in hardened steel positioning bushings which provide precise

### Ordering information for Assembled Workpiece Pallets

Pallet Size		Dimensions				Part Number		
B <sub>WT</sub> (mm)	L <sub>WT</sub> (mm)	c (mm)	d (mm)	e (mm)	f (mm)	WT2/S 4.85 Steel	WT2/A 6.35 Aluminum	WT2/A-H 12.7 Aluminum
160	160	45	124	124	45	0842 090 030	8981 004 987	8981 019 930
160	240	45	204	124	125	0842 090 032	8981 004 988	8981 019 931
160	320	45	284	124	205	0842 090 034	8981 004 989	8981 019 932
160	400	45	364	124	285	0842 090 036	8981 004 990	8981 019 933
160	480	45	444	124	365	0842 090 037	8981 004 991	8981 019 934
240	240	125	204	204	125	0842 090 039	8981 004 992	8981 019 935
240	320	125	284	204	205	0842 090 041	8981 004 993	8981 019 936
240	400	125	364	204	285	0842 090 043	8981 004 994	8981 019 937
240	480	125	444	204	365	0842 090 044	8981 004 995	8981 019 938
320	320	205	284	284	205	0842 090 048	8981 004 996	8981 019 940
320	400	205	364	284	285	0842 090 050	8981 004 997	8981 019 941
320	480	205	444	284	365	0842 090 051	8981 004 998	8981 019 942
320	640	205	604	284	525	3842 894 777	8981 019 987	8981 019 944
400	400	285	364	364	285	0842 090 080	8981 004 999	8981 019 945
400	480	285	444	364	365	0842 090 081	8981 005 000	8981 019 946
400	640	285	604	364	525	0842 090 083	8981 005 002	8981 019 948
400	800	285	764	364	685	0842 090 085	8981 005 004	8981 019 950
480	480	365	444	444	365	0842 090 086	8981 005 005	8981 019 951
480	640	365	604	444	525	0842 090 088	8981 005 007	8981 019 953
480	800	365	764	444	685	0842 090 090	8981 005 009	8981 019 955
640	640	525	604	604	525	3842 523 405	8981 019 990	8981 019 963
640	800	525	764	604	685	8981 019 757	n/a	8981 019 965
640	1040	525	1004	604	925	n/a	n/a	8981 019 968
800	800	685	764	764	685	8981 019 763	n/a	8981 019 974
800	1040	685	1004	764	925	n/a	n/a	8981 019 977
1040	1040	925	1004	1004	925	n/a	n/a	8981 019 983

Workpiece Pallets and Components

Dimensional Information for WT2/S, WT2/A, WT2/A-H



MODEL	PLATE THICKNESS	DISTANCE FROM CONVEYING MEDIA TO TOP OF PALLET PLATE
WT2/S	4.85 STEEL	24.85mm
WT2/A	6.35 ALUMINUM	26.35mm
WT2/A-H	12.7 ALUMINUM	32.7mm

Workpiece Pallets and Components

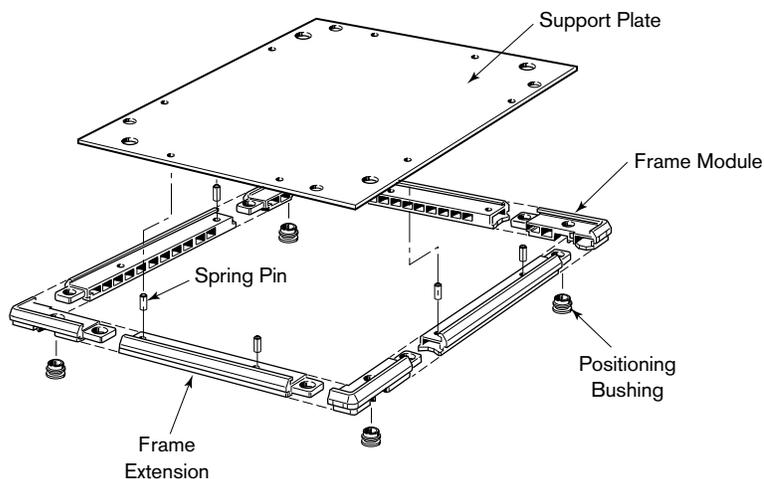
# Unassembled Workpiece Pallet Kits

Model WT2/S-UPA, WT2/A-UPA, WT2/AH-UPA,  
WT2/S-UPE, WT2/A-UPE, WT2/AH-UPE

Unassembled pallet kits are available in every standard catalog size, ranging from 160mm x160mm to 1040mm x1040mm. They are available with either polyamide (PA) frames or with UHMW PE frames, which are required for use with roller chain conveyors.

Features and benefits of the unassembled kits include:

- Eliminates the need to disassemble an assembled pallet to machine the pallet plate.
- Positioning bushings can be pressed in after the support plate has been machined.
- One part number orders a complete unassembled pallet kit, eliminates the need to order individual components.



- Packaged on a per order basis rather than per piece basis, which allows for simpler assembly of multiple pallets.

Order Unassembled Pallet Kits using the following part numbers.

## Ordering information for Unassembled Workpiece Pallet Kits

Pallet Size		Pallet Plate	Part Number	
Bwt (mm)	Lwt (mm)		Unassembled Kit - with polyamide wear strips	Unassembled Kit - with UHMW PE wear strips
160	160	4.85 Steel	8981 022 200	8981 022 270
160	160	6.35 Aluminum	8981 022 201	8981 022 271
160	160	12.7 Aluminum	8981 022 202	8981 022 272
160	240	4.85 Steel	8981 022 203	8981 022 273
160	240	6.35 Aluminum	8981 022 204	8981 022 274
160	240	12.7 Aluminum	8981 022 205	8981 022 275
160	320	4.85 Steel	8981 022 206	8981 022 276
160	320	6.35 Aluminum	8981 022 207	8981 022 277
160	320	12.7 Aluminum	8981 022 208	8981 022 278
160	400	4.85 Steel	8981 022 209	8981 022 279
160	400	6.35 Aluminum	8981 022 210	8981 022 280
160	400	12.7 Aluminum	8981 022 211	8981 022 281
160	480	4.85 Steel	8981 022 212	8981 022 282
160	480	6.35 Aluminum	8981 022 213	8981 022 283
160	480	12.7 Aluminum	8981 022 214	8981 022 284
240	240	4.85 Steel	8981 022 215	8981 022 285
240	240	6.35 Aluminum	8981 022 216	8981 022 286
240	240	12.7 Aluminum	8981 022 217	8981 022 287
240	320	4.85 Steel	8981 022 218	8981 022 288
240	320	6.35 Aluminum	8981 022 219	8981 022 289
240	320	12.7 Aluminum	8981 022 220	8981 022 290

Pallet Size		Pallet Plate	Part Number	
Bwt (mm)	Lwt (mm)		Unassembled Kit - with polyamide wear strips	Unassembled Kit - with UHMW PE wear strips
240	400	4.85 Steel	8981 022 221	8981 022 291
240	400	6.35 Aluminum	8981 022 222	8981 022 292
240	400	12.7 Aluminum	8981 022 223	8981 022 293
240	480	4.85 Steel	8981 022 224	8981 022 294
240	480	6.35 Aluminum	8981 022 225	8981 022 295
240	480	12.7 Aluminum	8981 022 226	8981 022 296
320	320	4.85 Steel	8981 022 227	8981 022 297
320	320	6.35 Aluminum	8981 022 228	8981 022 298
320	320	12.7 Aluminum	8981 022 229	8981 022 299
320	400	4.85 Steel	8981 022 230	8981 022 300
320	400	6.35 Aluminum	8981 022 231	8981 022 301
320	400	12.7 Aluminum	8981 022 232	8981 022 302
320	480	4.85 Steel	8981 022 233	8981 022 303
320	480	6.35 Aluminum	8981 022 234	8981 022 304
320	480	12.7 Aluminum	8981 022 235	8981 022 305
320	640	4.85 Steel	8981 022 236	8981 022 306
320	640	6.35 Aluminum	8981 022 237	8981 022 307
320	640	12.7 Aluminum	8981 022 238	8981 022 308
400	400	4.85 Steel	8981 022 239	8981 022 309
400	400	6.35 Aluminum	8981 022 240	8981 022 310
400	400	12.7 Aluminum	8981 022 241	8981 022 311
400	480	4.85 Steel	8981 022 242	8981 022 312
400	480	6.35 Aluminum	8981 022 243	8981 022 313
400	480	12.7 Aluminum	8981 022 244	8981 022 314
400	640	4.85 Steel	8981 022 245	8981 022 315
400	640	6.35 Aluminum	8981 022 246	8981 022 316
400	640	12.7 Aluminum	8981 022 247	8981 022 317
400	800	4.85 Steel	8981 022 248	8981 022 318
400	800	6.35 Aluminum	8981 022 249	8981 022 319
400	800	12.7 Aluminum	8981 022 250	8981 022 320
480	480	4.85 Steel	8981 022 251	8981 022 321
480	480	6.35 Aluminum	8981 022 252	8981 022 322
480	480	12.7 Aluminum	8981 022 253	8981 022 323
480	640	4.85 Steel	8981 022 254	8981 022 324
480	640	6.35 Aluminum	8981 022 255	8981 022 325
480	640	12.7 Aluminum	8981 022 256	8981 022 326
480	800	4.85 Steel	8981 022 257	8981 022 327
480	800	6.35 Aluminum	8981 022 258	8981 022 328
480	800	12.7 Aluminum	8981 022 259	8981 022 329
640	640	4.85 Steel	8981 022 260	8981 022 330
640	640	6.35 Aluminum	8981 022 261	8981 022 331
640	640	12.7 Aluminum	8981 022 262	8981 022 332
640	800	4.85 Steel	8981 022 263	8981 022 333
640	800	12.7 Aluminum	8981 022 264	8981 022 334
640	1040	12.7 Aluminum	8981 022 265	8981 022 335
800	800	4.85 Steel	8981 022 266	8981 022 336
800	800	12.7 Aluminum	8981 022 267	8981 022 337
800	1040	12.7 Aluminum	8981 022 268	8981 022 338
1040	1040	12.7 Aluminum	8981 022 269	8981 022 339

Workpiece Pallets and Components

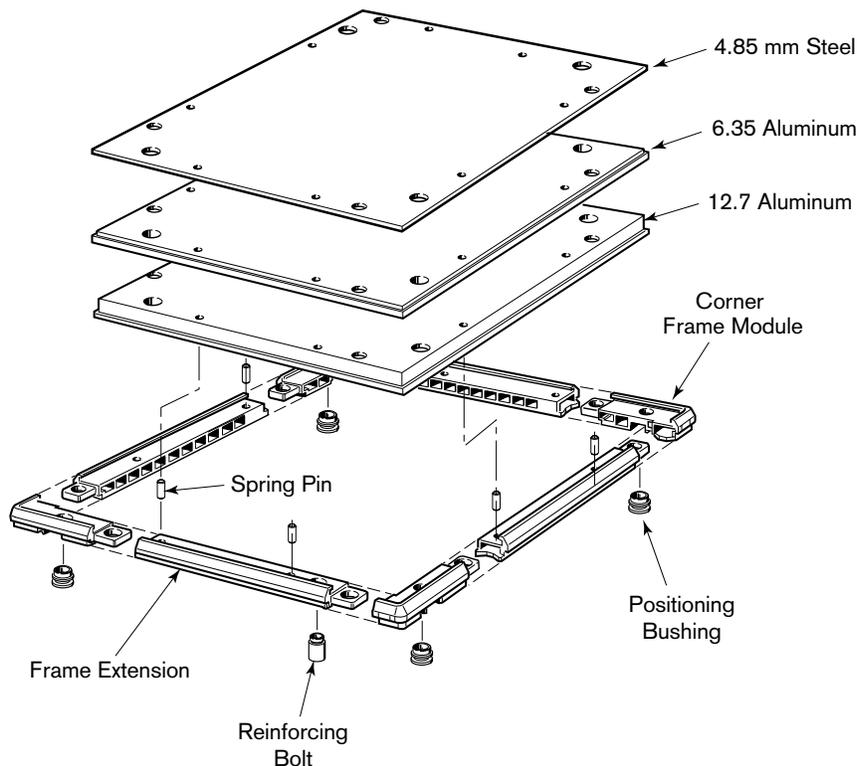
# Polyamide Workpiece Pallet Components

## Model WT2

2

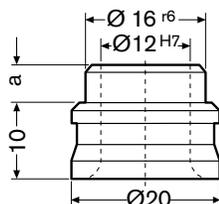
Electrically conductive polyamide frame modules are used for belt and flat-top chain applications. Roller chain conveyors require the use of frame modules with UHMW wear strips on page 2-6. Frame modules come in four different side lengths: 160, 240, 320, and 400 mm. When used in combination with the frame extension modules, 26 standard sizes of workpiece pallets can be configured. Pallets 400 x 480 mm and larger, use the extension modules in conjunction with reinforcing bolts and spring pins as shown in the exploded pallet view.

Purchasing workpiece pallet components separately make it possible to perform any required machining to the pallet plate prior to pallet assembly.



### Ordering Information Positioning Bushing

The frame modules and pallet plates are fixed in place with positioning bushings. These hardened steel bushings have a positioning accuracy of  $\pm 0.05$  mm when used with a lift-position unit. Four bushings are required for each pallet

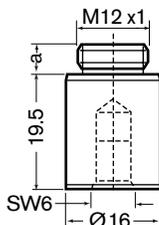


a (mm)*	Part Number
4.85	3842 174 341
6.35	3842 527 192
12.7	3842 524 615

\* must correspond to WT plate thickness

### Ordering Information Reinforcing Bolt

Workpiece pallets 400 x 480 mm and larger require the use of frame extension modules in conjunction with the reinforcing bolts. Four reinforcing bolts are required for each pallet assembly. They must be secured with a thread locking compound (Loctite 242 or equivalent) and tightened to specific torque values.



Torque Values	a (mm)*	Part Number
17 Nm	4.85	3842 525 803
22 Nm	6.35	3842 527 193
22 Nm	12.7	3842 525 805

\* must correspond to WT plate thickness

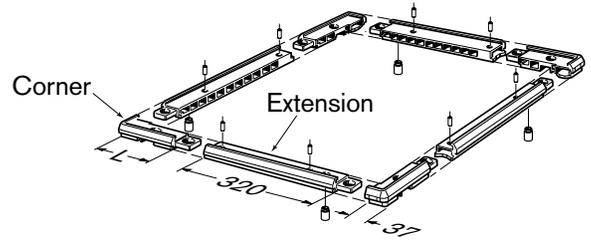
### Ordering Information Spring Pin

The frame extension modules, when used, are attached to the support plate by steel spring pins. Three different pins are used based on the thickness of the pallet plate. See ordering information chart on page 2-5 for quantities required on specific pallet sizes



Plate Thickness	Part Number
4.85 steel	2917 761 175
6.35 aluminum	2917 761 176
12.7 aluminum	2917 761 180

Workpiece Pallets and Components



Ordering Information Polyamide Frame Modules

B <sub>WT</sub> (mm)	L <sub>WT</sub> (mm)	Qty	Corner Part Number	L+37 (mm)	Qty	Extension Part Number	Spring Pin Qty*	Reinforcing Bolt Qty*
160	160	4	<b>3842 174 301</b>	160				
160	240	2	<b>3842 174 301</b>	160				
		2	<b>3842 174 302</b>	240				
160	320	2	<b>3842 174 301</b>	160				
		2	<b>3842 174 303</b>	320				
160	400	2	<b>3842 174 301</b>	160				
		2	<b>3842 174 304</b>	400				
160	480	4	<b>3842 174 301</b>	160	2	<b>3842 513 458</b>	4	
240	240	4	<b>3842 174 302</b>	240				
240	320	2	<b>3842 174 302</b>	240				
		2	<b>3842 174 303</b>	320				
240	400	2	<b>3842 174 302</b>	240				
		2	<b>3842 174 304</b>	400				
240	480	2	<b>3842 174 302</b>	240	2	<b>3842 513 458</b>	4	
		2	<b>3842 174 301</b>	160				
320	320	4	<b>3842 174 303</b>	320				
320	400	2	<b>3842 174 303</b>	320				
		2	<b>3842 174 304</b>	400				
320	480	2	<b>3842 174 303</b>	320	2	<b>3842 513 458</b>	4	
		2	<b>3842 174 301</b>	160				
320	640	4	<b>3842 174 303</b>	320	2	<b>3842 513 458</b>	4	
400	400	4	<b>3842 174 304</b>	400				
400	480	2	<b>3842 525 998</b>	400	2	<b>3842 525 999</b>	4	4
		2	<b>3842 174 301</b>	160				
400	640	2	<b>3842 525 998</b>	400	2	<b>3842 525 999</b>	4	4
		2	<b>3842 174 303</b>	320				
400	800	2	<b>3842 525 998</b>	400	4	<b>3842 525 999</b>	8	4
		2	<b>3842 174 301</b>	160				
480	480	4	<b>3842 174 301</b>	160	4	<b>3842 525 999</b>	8	4
480	640	2	<b>3842 174 301</b>	160	4	<b>3842 525 999</b>	8	4
		2	<b>3842 174 303</b>	320				
480	800	4	<b>3842 174 301</b>	160	6	<b>3842 525 999</b>	12	4
640	640	4	<b>3842 174 303</b>	320	4	<b>3842 525 999</b>	8	4
640	800	2	<b>3842 174 303</b>	320	4	<b>3842 525 999</b>	8	4
		2	<b>3842 174 301</b>	160				
640	1040	2	<b>3842 174 303</b>	320	6	<b>3842 525 999</b>	12	4
		2	<b>3842 525 998</b>	400				
800	800	4	<b>3842 174 301</b>	160	8	<b>3842525 999</b>	16	4
800	1040	2	<b>3842 174 301</b>	160	8	<b>3842 525 999</b>	16	4
		2	<b>3842 525 998</b>	400				
1040	1040	4	<b>3842 525 998</b>	400	8	<b>3842 525 999</b>	16	4

\* See page 2-6 for spring pin and reinforcing bolt part numbers.

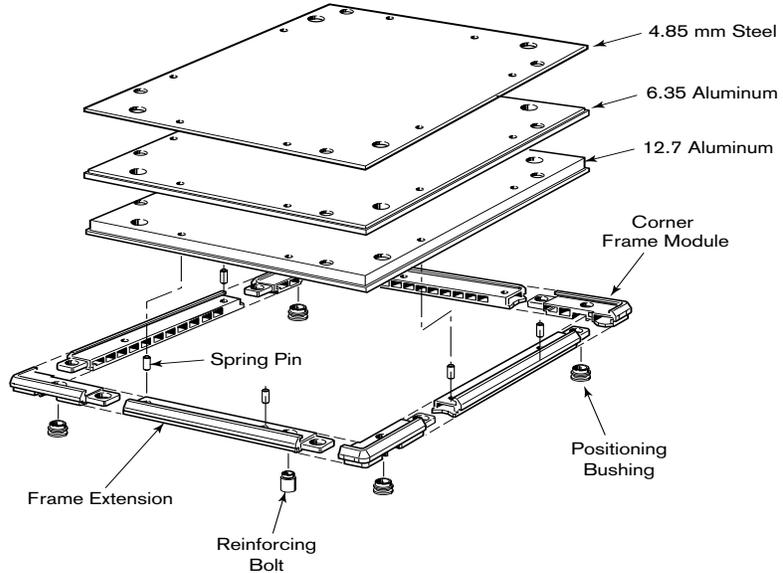
Workpiece Pallets and Components

# UHMW PE Workpiece Pallet Components

## Model WT2

2

Frame modules with UHMW PE wear strips have a very low coefficient of friction and have excellent wear characteristics. They can be used with all belt and flat-top chain conveyors, and are required with roller chain conveyors. UHMW PE Frame modules come in four different lengths: 160, 240, 320, and 400 mm. When used in combination with the UHMW PE frame extension modules, 26 standard sizes of workpiece pallets can be configured. Pallets 400 x 480 mm and larger, use the extension modules in conjunction with reinforcing bolts and spring pins as shown in the exploded pallet view.

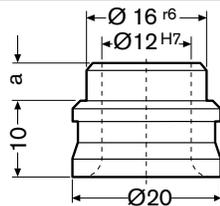


Purchasing workpiece pallet components separately make it possible to perform any required machining to the pallet plate prior to pallet assembly.

**NOTE:** Due to its length, the 160 mm UHMW-PE corner (Part Number 3842 526 760) does not have a bottom exciter plate. For all sizes when  $B_{WT} = 160$  mm as shown on page 2-9, pallet sensing from the side exciter plate is required.

### Ordering Information Positioning Bushing

The frame modules and pallet plates are fixed in place with positioning bushings. These hardened steel bushings have a positioning accuracy of  $\pm 0.05$  mm when used with a lift-position unit. Four bushings are required for each pallet

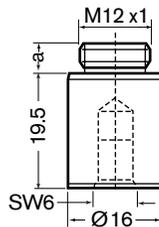


a (mm)*	Part Number
4.85	3842 174 341
6.35	3842 527 192
12.7	3842 524 615

\* must correspond to WT plate thickness

### Ordering Information Reinforcing Bolt

Workpiece pallets 400 x 480 mm and larger require the use of frame extension modules in conjunction with the reinforcing bolts. Four reinforcing bolts are required for each pallet assembly. They must be secured with a thread locking compound (Loctite 242 or equivalent) and tightened to specific torque values.



Torque Values	a (mm)*	Part Number
17 Nm	4.85	3842 525 803
22 Nm	6.35	3842 527 193
22 Nm	12.7	3842 525 805

\* must correspond to WT plate thickness

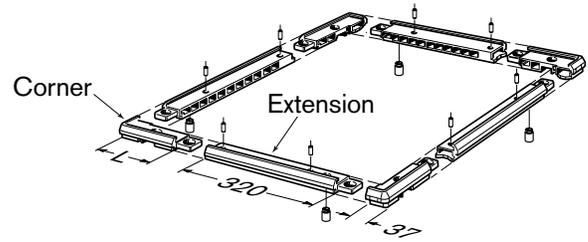
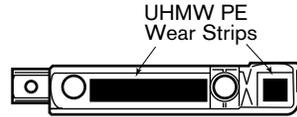
### Ordering Information Spring Pin

The frame extension modules, when used, are attached to the support plate by steel spring pins. Three different pins are used based on the thickness of the pallet plate. See ordering information chart on page 2-5 for quantities required on specific pallet sizes.



Plate Thickness	Part Number
4.85 steel	2917 761 175
6.35 aluminum	2917 761 176
12.7 aluminum	2917 761 180

Workpiece Pallets and Components



Ordering Information UHMW PE Frame Modules

B <sub>WT</sub> (mm)	L <sub>WT</sub> (mm)	Qty	Corner Part Number	L+37 (mm)	Qty	Extension Part Number	Spring Pin Qty*	Reinforcing Bolt Qty*
160 <sup>†</sup>	160	4	<b>3842 526 760</b>	160				
160 <sup>†</sup>	240	2	<b>3842 526 760</b>	160				
		2	<b>3842 526 761</b>	240				
160 <sup>†</sup>	320	2	<b>3842 526 760</b>	160				
		2	<b>3842 526 762</b>	320				
160 <sup>†</sup>	400	2	<b>3842 526 760</b>	160				
		2	<b>3842 526 763</b>	400				
160 <sup>†</sup>	480	4	<b>3842 526 760</b>	160	2	<b>3842 526 764</b>	2	
240	240	4	<b>3842 526 761</b>	240				
240	320	2	<b>3842 526 761</b>	240				
		2	<b>3842 526 762</b>	320				
240	400	2	<b>3842 526 761</b>	240				
		2	<b>3842 526 763</b>	400				
240	480	2	<b>3842 526 761</b>	240	2	<b>3842 526 764</b>	2	
		2	<b>3842 526 760</b>	160				
320	320	4	<b>3842 526 762</b>	320				
320	400	2	<b>3842 526 762</b>	320				
		2	<b>3842 526 763</b>	400				
320	480	2	<b>3842 526 762</b>	320	2	<b>3842 526 764</b>	2	
		2	<b>3842 526 760</b>	160				
320	640	4	<b>3842 526 762</b>	320	2	<b>3842 526 764</b>	2	
400	400	4	<b>3842 526 763</b>	400				
400	480	2	<b>3842 528 292</b>	400	2	<b>3842 528 293</b>	2	4
		2	<b>3842 526 760</b>	160				
400	640	2	<b>3842 528 292</b>	400	2	<b>3842 528 293</b>	2	4
		2	<b>3842 526 762</b>	320				
400	800	2	<b>3842 528 292</b>	400	2	<b>3842 528 293</b>	8	4
		2	<b>3842 526 760</b>	160	2	<b>3842 526 764</b>		
480	480	4	<b>3842 526 760</b>	160	4	<b>3842 528 293</b>	4	4
480	640	2	<b>3842 526 760</b>	160	4	<b>3842 528 293</b>	4	4
		2	<b>3842 526 762</b>	320				
480	800	4	<b>3842 526 760</b>	160	6	<b>3842 528 293</b>	6	4
640	640	4	<b>3842 526 762</b>	320	4	<b>3842 528 293</b>	4	4
640	800	2	<b>3842 526 762</b>	320	2	<b>3842 528 293</b>	4	4
		2	<b>3842 526 760</b>	160	2	<b>3842 526 764</b>		
640	1040	2	<b>3842 526 762</b>	320	4	<b>3842 528 293</b>	6	4
		2	<b>3842 528 292</b>	400	2	<b>3842 526 764</b>		
800	800	4	<b>3842 526 760</b>	160	4	<b>3842 528 293</b>	8	4
					4	<b>3842 526 764</b>		
800	1040	2	<b>3842 526 760</b>	160	4	<b>3842 528 293</b>	8	4
		2	<b>3842 528 292</b>	400	4	<b>3842 526 764</b>		
1040	1040	4	<b>3842 528 292</b>	400	4	<b>3842 528 293</b>	8	4
					4	<b>3842 526 764</b>		

\* See page 2-8 for spring pin and reinforcing bolt part numbers.

† See NOTE on page 2-8 for exciter plate information.

Workpiece Pallets and Components

# Steel Pallet Plates (4.85 mm)

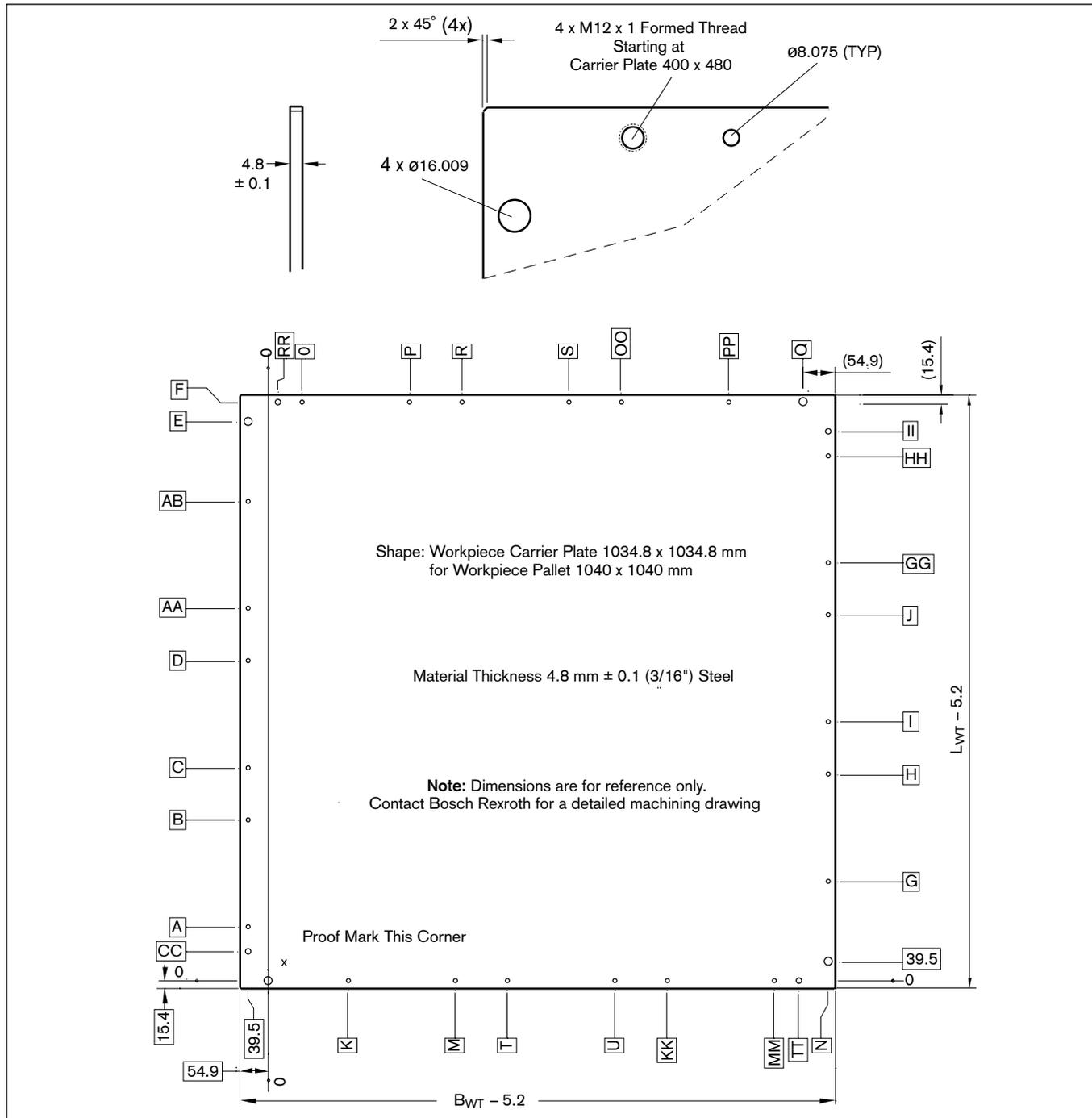
Model WT2/S

2

Steel pallet plates are 4.8 mm thick and have a black oxide finish to help prevent rust. See page 2-1 for workpiece pallet weight and payload carrying capacity.

**NOTE:** Use caution when machining steel pallet plates that have a black oxide finish and avoid inhaling grinding and machining dust.

## Dimensional data for WT2/S (4.85 mm)



Workpiece Pallets and Components

**Ordering Information for Steel Pallet Plates WT2/S (4.85 mm)**

2

B <sub>WT</sub>	L <sub>WT</sub>	Part Number	Flatness	CC	A	B	C	D	E	F	G	H	I
160	160	8981 022 445	0.3						84.5	124			
160	240	8981 022 446	0.3						164.5	204			
160	320	8981 022 447	0.3						244.5	284			
160	400	8981 022 448	0.3						324.5	364			
160	480	8981 022 449	0.3		108.5	323.5			404.5	444	120.5	335.5	
240	240	8981 022 450	0.3						164.5	204			
240	320	8981 022 451	0.5						244.5	284			
240	400	8981 022 452	0.5						324.5	364			
240	480	8981 022 453	0.5		108.5	323.5			404.5	444	120.5	335.5	
320	320	8981 022 454	0.5						244.5	284			
320	400	8981 022 455	0.6						324.5	364			
320	480	8981 022 456	0.6		108.5	323.5			404.5	444	120.5	335.5	
320	640	8981 022 458	0.8		108.5	323.5			484.5	524	280.5	495.5	
400	400	8981 022 461	0.6						324.5	364			
400	480	8981 022 462	0.6	59.5	108.5	323.5			404.5	444	120.5	335.5	
400	640	8981 022 464	0.8	59.5	108.5	323.5			564.5	604	280.5	495.5	
400	800	8981 022 466	1	59.5	108.5	323.5	428.5	643.5	724.5	764	120.5	335.5	440.5
480	480	8981 022 467	0.8	59.5	108.5	323.5			404.5	444	120.5	335.5	
480	640	8981 022 469	1	59.5	108.5	323.5			564.5	604	280.5	495.5	
480	800	8981 022 471	1	59.5	108.5	323.5	428.5	643.5	724.5	764	120.5	335.5	440.5
640	640	8981 022 476	1	59.5	108.5	323.5			564.5	604	280.5	495.5	
640	800	8981 022 478	1	59.5	108.5	323.5	428.5	643.5	724.5	764	120.5	335.5	440.5
800	800	8981 022 481	1	59.5	108.5	323.5	428.5	643.5	724.5	764	120.5	335.5	440.5

B <sub>WT</sub>	L <sub>WT</sub>	J	II	K	M	T	U	TT	N	RR	O	P	R	S	Q
160	160								84.5						45
160	240								84.5						45
160	320								84.5						45
160	400								84.5						45
160	480								84.5						45
240	240								164.5						125
240	320								164.5						125
240	400								164.5						125
240	480								164.5						125
320	320								244.5						205
320	400								244.5						205
320	480								244.5						205
320	640								244.5						205
400	400								324.5						285
400	480		384.5					265	324.5	20					285
400	640		544.5					265	324.5	20					285
400	800	655.5	704.5					265	324.5	20					285
480	480		384.5	81	296			345	404.5	20	69	284			365
480	640		544.5	81	296			345	404.5	20	69	284			365
480	800	655.5	704.5	81	296			345	404.5	20	69	284			365
640	640		544.5	241	456			505	564.5	20	69	284			525
640	800	655.5	704.5	241	456			505	564.5	20	69	284			525
800	800	655.5	704.5	81	296	401	616	665	724.5	20	69	284	389	604	685

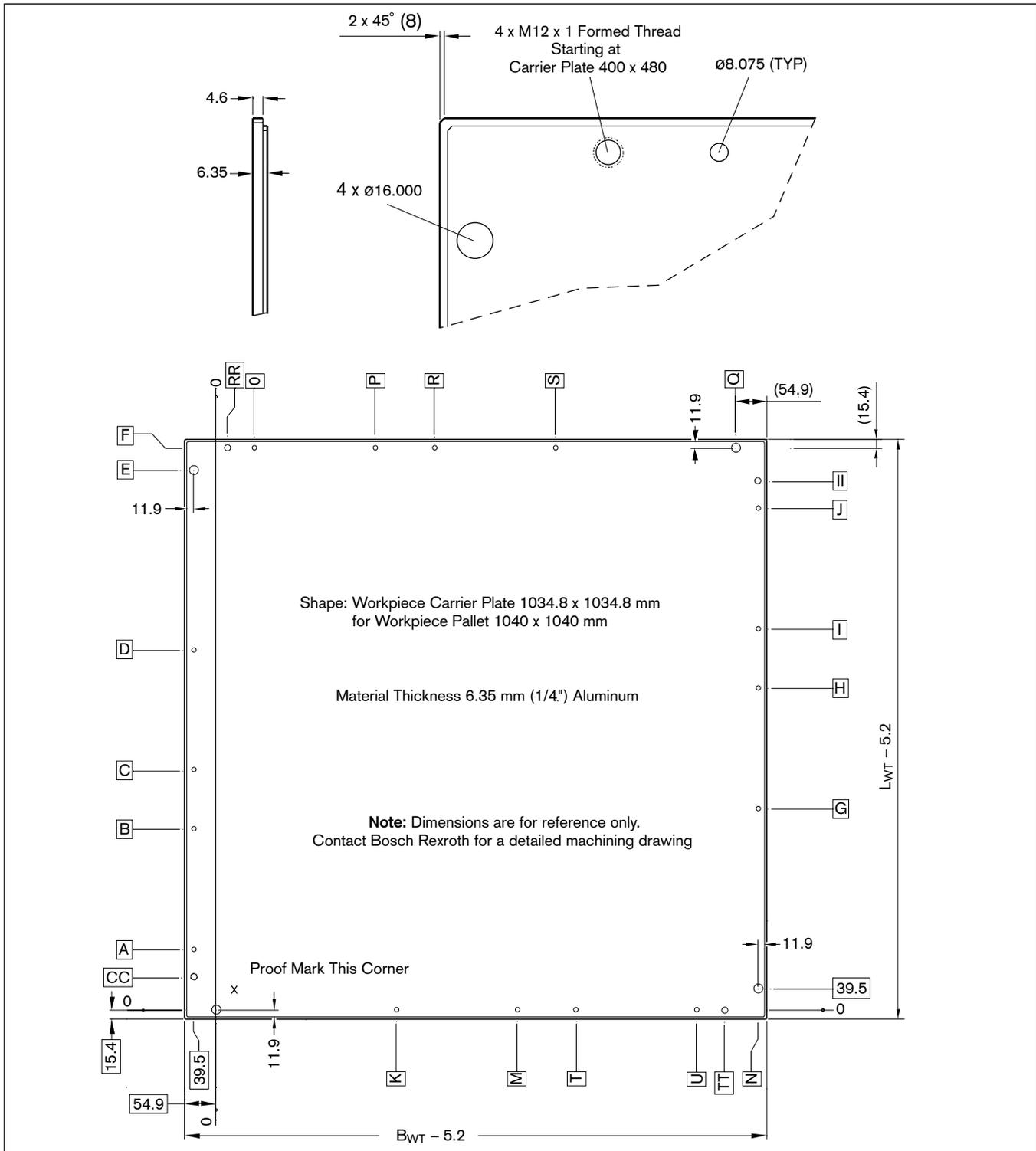
Workpiece Pallets and Components

# Aluminum Pallet Plates (6.35 mm)

## Model WT2/A

Aluminum pallet plates are 6.35 mm thick and are not anodized. See chart on page 2-1 for workpiece pallet weight and payload carrying capacity.

### 2 Dimensional data for WT2/A (6.35 mm)



Workpiece Pallets and Components

**Ordering Information for Aluminum Pallet Plates WT2/A (6.35 mm)**

B <sub>WT</sub>	L <sub>WT</sub>	Part Number	Flatness	CC	A	B	C	D	E	F	G	H	I
160	160	8981 004 964	0.3						84.5	124			
160	240	8981 004 965	0.3						164.5	204			
160	320	8981 004 966	0.3						244.5	284			
160	400	8981 004 967	0.3						324.5	364			
160	480	8981 004 968	0.3		108.5	323.5			404.5	444	120.5	335.5	
240	240	8981 004 969	0.3						164.5	204			
240	320	8981 004 970	0.5						244.5	284			
240	400	8981 004 971	0.5						324.5	364			
240	480	8981 004 972	0.5		108.5	323.5			404.5	444	120.5	335.5	
320	320	8981 004 973	0.5						244.5	284			
320	400	8981 004 974	0.6						324.5	364			
320	480	8981 004 975	0.6		108.5	323.5			404.5	444	120.5	335.5	
320	640	8981 019 792	0.8		108.5	323.5			564.5	604	280.5	495.5	
400	400	8981 004 976	0.6						324.5	364			
400	480	8981 004 977	0.6	59.5	108.5	323.5			404.5	444	120.5	335.5	
400	640	8981 004 979	0.8	59.5	108.5	323.5			564.5	604	280.5	495.5	
400	800	8981 004 981	1	59.5	108.5	323.5	428.5	643.5	724.5	764	120.5	335.5	440.5
480	480	8981 004 982	0.8	59.5	108.5	323.5			404.5	444	120.5	335.5	
480	640	8981 004 984	1	59.5	108.5	323.5			564.5	604	280.5	495.5	
480	800	8981 004 986	1	59.5	108.5	323.5	428.5	643.5	724.5	764	120.5	335.5	440.5
640	640	8981 019 799	1	59.5	108.5	323.5			564.5	604	280.5	495.5	

B <sub>WT</sub>	L <sub>WT</sub>	J	II	K	M	TT	N	RR	O	P	Q
160	160						84.5				45
160	240						84.5				45
160	320						84.5				45
160	400						84.5				45
160	480						84.5				45
240	240						164.5				125
240	320						164.5				125
240	400						164.5				125
240	480						164.5				125
320	320						244.5				205
320	400						244.5				205
320	480						244.5				205
320	640						244.5				205
400	400						324.5				285
400	480		384.5			265	324.5	20			285
400	640		544.5			265	324.5	20			285
400	800	655.5	704.5			265	324.5	20			285
480	480		384.5	81	296	345	404.5	20	69	284	365
480	640		544.5	81	296	345	404.5	20	69	284	365
480	800	655.5	704.5	81	296	345	404.5	20	69	284	365
640	640		544.5	241	456	505	564.5	20	69	284	525



**Ordering Information for Aluminum Pallet Plates WT2/A-H (12.7 mm)**

B <sub>WT</sub>	L <sub>WT</sub>	Part Number	Flatness	CC	A	B	C	D	E	F	G	H	I
160	160	8981 019 870	0.3						84.5	124			
160	240	8981 019 871	0.3						164.5	204			
160	320	8981 019 872	0.3						244.5	284			
160	400	8981 019 873	0.3						324.5	364			
160	480	8981 019 874	0.3		108.5	323.5			404.5	444	120.5	335.5	
240	240	8981 019 875	0.3						164.5	204			
240	320	8981 019 876	0.5						244.5	284			
240	400	8981 019 877	0.5						324.5	364			
240	480	8981 019 878	0.5		108.5	323.5			404.5	444	120.5	335.5	
320	320	8981 019 880	0.5						244.5	284			
320	400	8981 019 881	0.6						324.5	364			
320	480	8981 019 882	0.6		108.5	323.5			404.5	444	120.5	335.5	
320	640	8981 019 884	0.8		108.5	323.5			564.5	604	280.5	495.5	
400	400	8981 019 887	0.6						324.5	364			
400	480	8981 019 888	0.6	59.5	108.5	323.5			404.5	444	120.5	335.5	
400	640	8981 019 890	0.8	59.5	108.5	323.5			564.5	604	280.5	495.5	
400	800	8981 019 892	1	59.5	108.5	323.5	428.5	643.5	724.5	764	120.5	335.5	440.5
480	480	8981 019 893	0.8	59.5	108.5	323.5			404.5	444	120.5	335.5	
480	640	8981 019 895	1	59.5	108.5	323.5			564.5	604	280.5	495.5	
480	800	8981 019 897	1	59.5	108.5	323.5	428.5	643.5	724.5	764	120.5	335.5	440.5
640	640	8981 019 905	1	59.5	108.5	323.5			564.5	604	280.5	495.5	
640	800	8981 019 907	1	59.5	108.5	323.5	428.5	643.5	724.5	764	120.5	335.5	440.5
640	1040	8981 019 910	1.2	59.5	108.5	323.5	428.5	643.5	964.5	1004	360.5	575.5	680.5
800	800	8981 019 916	1	59.5	108.5	323.5	428.5	643.5	724.5	764	120.5	335.5	440.5
800	1040	8981 019 919	1.2	59.5	108.5	323.5	428.5	643.5	964.5	1004	360.5	575.5	680.5
1040	1040	8981 019 925	1.2	59.5	108.5	323.5	428.5	643.5	964.5	1004	360.5	575.5	680.5

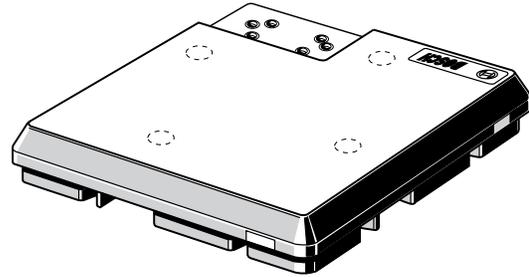
B <sub>WT</sub>	L <sub>WT</sub>	J	II	K	M	T	U	TT	N	RR	O	P	R	S	Q
160	160								84.5						45
160	240								84.5						45
160	320								84.5						45
160	400								84.5						45
160	480								84.5						45
240	240								164.5						125
240	320								164.5						125
240	400								164.5						125
240	480								164.5						125
320	320								244.5						205
320	400								244.5						205
320	480								244.5						205
320	640								244.5						205
400	400								324.5						285
400	480		384.5					265	324.5	20					285
400	640		544.5					265	324.5	20					285
400	800	655.5	704.5					265	324.5	20					285
480	480		384.5	81	296			345	404.5	20	69	284			365
480	640		544.5	81	296			345	404.5	20	69	284			365
480	800	655.5	704.5	81	296			345	404.5	20	69	284			365
640	640		544.5	241	456			505	564.5	20	69	284			525
640	800	655.5	704.5	241	456			505	564.5	20	69	284			525
640	1040	895.5	944.5	241	456			505	564.5	20	69	284			525
800	800	655.5	704.5	81	296	401	616	665	724.5	20	69	284	389	604	685
800	1040	895.5	944.5	81	296	401	616	665	724.5	20	69	284	389	604	685
1040	1040	895.5	944.5	321	536	641	856	905	964.5	20	69	284	389	604	925

Workpiece Pallets and Components

# Workpiece Pallet-Economy

## Model WT2/E

This economical workpiece pallet is made entirely of plastic and can be used on any application where minimal downward force is applied. This workpiece pallet has a recessed area to mount two ID 10 code setters. The Pallet has a positioning accuracy of  $\pm 0.3$  mm and is only available in one size, 240 x 240 mm. It is made entirely of polyamide PA 6 and is **not electrically conductive**.

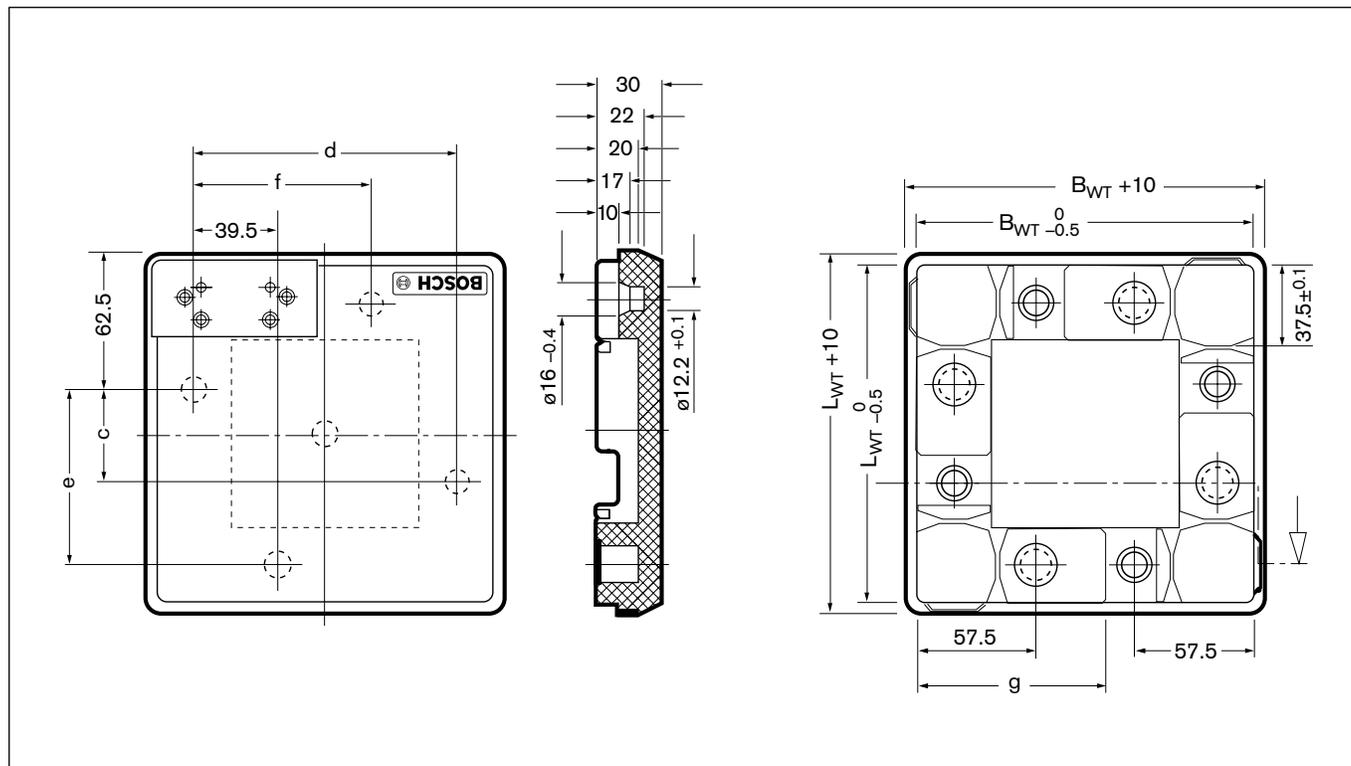


2

### Ordering Information for Economy Workpiece Pallets WT2/E

Bwt	Lwt	Flatness	c	d	e	f	g	WT (kg)	Load (kg)	Part Number
240	240	1	125	204	164.5	164.5	170	1.6	6.0	3842 352 171

### Dimensional data for WT2/E



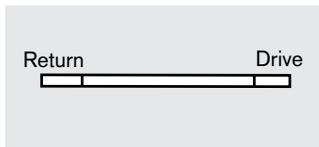
Belt Drive Components

## Section 3 – Belt Drive Components

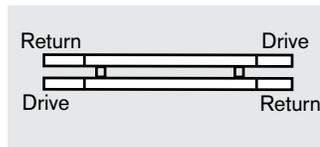
The *TSplus* belt drive powers the transport belt along the conveyor sections while the return units route the belt back through the return channel of the belt profile. Drives and returns can also be linked together end-to-end to create

extended conveyor lines of almost any length. Drive units are available in both standard and heavy duty models and have various electrical options and motor mounting positions.

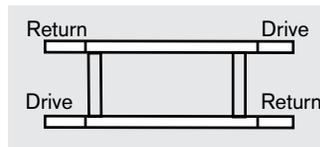
**Belt Drive components in this section can be configured into any of the basic line layouts below.**



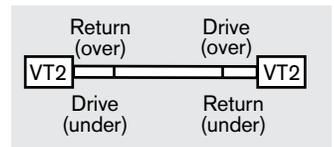
In-Line



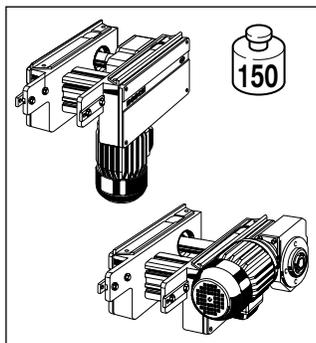
Parallel



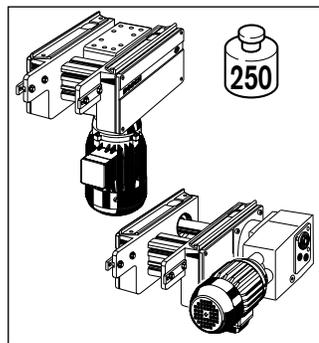
Rectangular



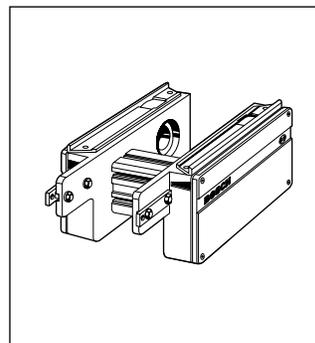
Over/Under



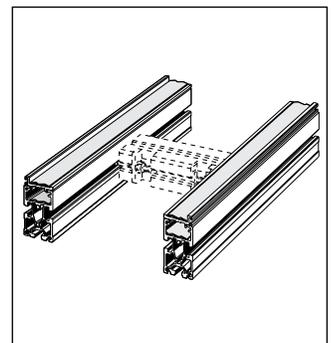
**AS2B/M, AS2B/S**  
Standard Belt Drives  
3-2 to 3-3



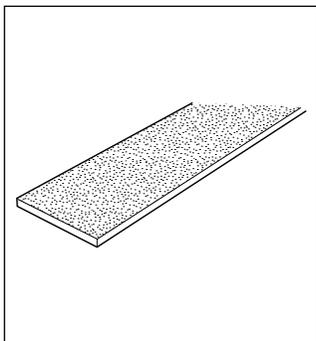
**AS2B/M-H, AS2B/S-H**  
Heavy Duty Belt Drives  
3-4 to 3-5



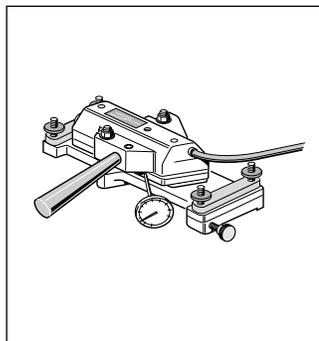
**UM2/B**  
Return Units  
3-6



**ST2/B, ST2/B100**  
Belt Conveyor Sections  
3-7



**GT2/B**  
Transport Belt  
3-8

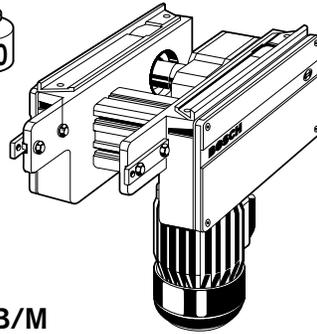


Belt Welding Equipment  
3-9

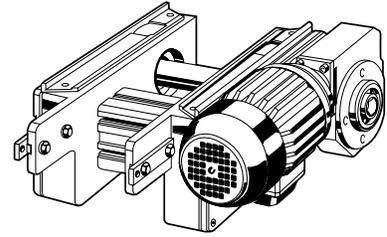
Belt Drive Components

# Belt Drive Module

Model AS2B/M, AS2B/S



AS2B/M



AS2B/S

The AS2B/M and AS2B/S drive modules power the conveyor belts. The AS2B/S has an outboard mounted gearbox, while the AS2B/M has the gearbox mid-mounted, between the rails, making it better for situations where space prohibits a side-mounted motor.

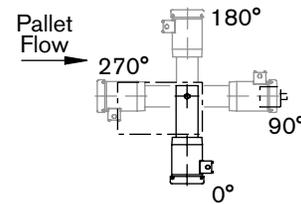
Both models are available for line widths of 160 to 1040 mm. Nominal speeds of 9, 12, 15 and 18 m/min for a number of standard voltages are available (see table 3-1 for motor and gearbox options).

The maximum total load per drive is 150 kg with a maximum conveyor length between drive and return of 50 meters. For increased capacity, Bosch also offers heavy duty drive modules (page 3-4).

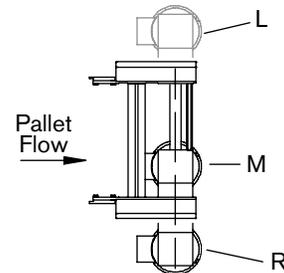
The AS2B/M and AS2B/S drive modules include all hardware required to mount it to a belt conveyor section, as well as fasteners to connect drives and returns end to end

For non-standard width, speed or voltages please contact our applications engineering department.

### Outboard Mounted Motor Orientation



### Motor Position



## Ordering Information for Belt Drive Unit AS2B/M, AS2B/S

AS2B/M Mid-Mounted Motor 3842 999 083		Specify center or side mounted part number, then select from the options below.	AS2B/S Outboard Mounted Motor 3842 999 190	
Your selection:	Your options are:		Your options are:	Your selection:
___ mm	160, 240, 320, 400, 480, 640, 800, 1040	Drive Unit Width*	160, 240, 320, 400, 480, 640, 800, 1040	___ mm
___ M/min	9, 12, 15 <sup>†</sup> , 18	Nominal Speed	9, 12, 15 <sup>†</sup> , 18	___ M/min
___ VAC ___ Hz	See Table 3-1	Motor Voltage/Frequency**	See Table 3-1	___ VAC ___ Hz
N/A	M	Motor Location	L, R	___
N/A	0°	Motor Orientation	0°, 90°, 180°, 270°	___

\* Drive unit width must match workpiece pallet length (L<sub>wp</sub>) or width (B<sub>wp</sub>), depending on orientation.

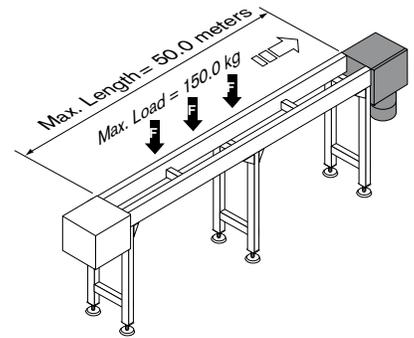
\*\* To omit motor, enter 0 VAC, 0 Hz.

† Only at 50 Hz; see table 3-1

Belt Drive Components

**Technical data for AS2B/M and AS2B/S drives**

Nominal conveyor speed	=	See table 3-1
Permissible loading weight	=	150 kg
Maximum conveyor unit length	=	50 m (150 ft.)
Motor RPM at 50 Hz	=	1400
Motor RPM at 60 Hz	=	1700
Motor, electrical specification	=	See table 3 - 1



**Electrical data for AS2B/M and AS2B/S drives**

Nom. M/min	Actual Speed		HP	Full Load Amps @					
	50 Hz	60 Hz		208/60	240/60	380/50	415/50	480/60	575/60
9	8.4	10.2	0.5	1.9	1.8	0.95	0.95	0.82	0.69
12	11.0	13.4	0.5	1.9	1.8	0.95	0.95	0.82	0.69
15	15.5	N/A	0.5	N/A	N/A	0.95	0.95	N/A	N/A
18	18.2	18.9	0.5	1.9	1.8	0.95	0.95	0.82	0.69

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 3-1

**Dimensional data for AS2B/M and AS2B/S drives**

**AS2B/M**

**AS2B/S**

**Note:** Right side, 270° motor orientation option is shown.

Belt Drive Components

# Heavy Duty Belt Drive Module



Model AS2B/M-H, AS2B/S-H

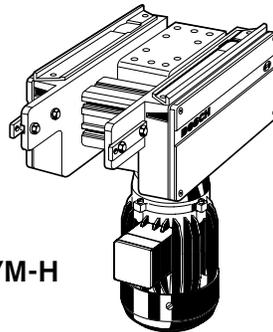
The heavy duty belt drive is similar to the standard drive, but offers an increased load capacity of 250 kg per drive. This means that fewer drives and returns are needed, reducing investment and operating costs.

The heavy duty belt drive is available in two configurations. The AS2B/M-H is available in line widths from 320 to 1040 mm, while the AS2B/S-H is available in line widths of 160 to 1040 mm. Nominal speeds of 9, 12, 15, and 18 m/min for a number of standard voltages are available (see table 3-2 for motor and gearbox options).

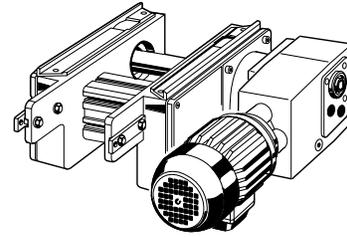
Ordering parameters allow you to specify the motor voltage, frequency, conveyor speed, and motor mounting angle (outboard mounted drives only).

Outboard mounted drive units are delivered with the motor in a customer-specified position

**AS2B/M-H**



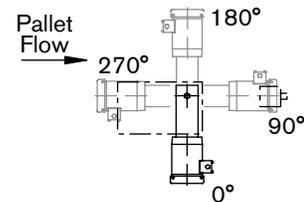
**AS2B/S-H**



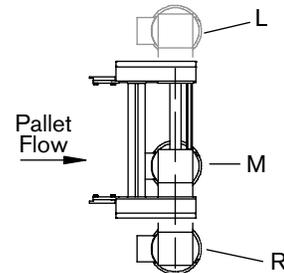
tion but can be rotated as shown. Drives ordered without motors are equipped with an IEC or NEMA motor mounting flange based on the frequency selection of 50 hz or 60 Hz respectively. Both units include hardware required to mount it to a belt conveyor section, as well as fasteners to connect drive and returns end to end.

For non-standard width, speed or voltages please contact our applications engineering department.

### Outboard Mounted Motor Orientation



### Motor Position



## Ordering Information for Heavy Duty Belt Drive Unit AS2B/M-H, AS2B/S-H

AS2B/M-H Mid-Mounted Motor 3842 999 720		Specify center or side mounted part number, then select from the options below.	AS2B/S-H Outboard Mounted Motor 3842 999 721	
Your selection:	Your options are:		Your options are:	Your selection:
___ mm	320, 400, 480, 640, 800, 1040	Drive Unit Width*	160, 240, 320, 400, 480, 640, 800, 1040	___ mm
___ M/min	9, 12, 15, 18	Nominal Speed	9, 12, 15, 18	___ M/min
___ VAC ___ Hz	See Table 3-2	Motor Voltage/Frequency**	See Table 3-2	___ VAC ___ Hz
N/A	M	Motor Location	L, R	___
N/A	0°	Motor Orientation	0°, 90°, 180°, 270°	___

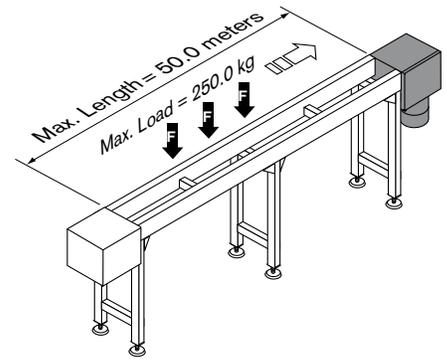
\* Drive unit width must match workpiece pallet length (L<sub>wt</sub>) or width (B<sub>wt</sub>), depending on orientation.

\*\* To omit the motor, enter 0 VAC, but specify if used for 60Hz or 50Hz application.

Belt Drive Components

**Technical data for AS2B/M-H and AS2B/S-H drives**

Nominal conveyor speed	=	See table 3-2
Permissible loading weight	=	250 kg
Maximum conveyor unit length	=	50 m (150 ft.)
Motor RPM at 50 Hz	=	1400
Motor RPM at 60 Hz	=	1700
Motor, electrical specifications	=	See Table 3-2



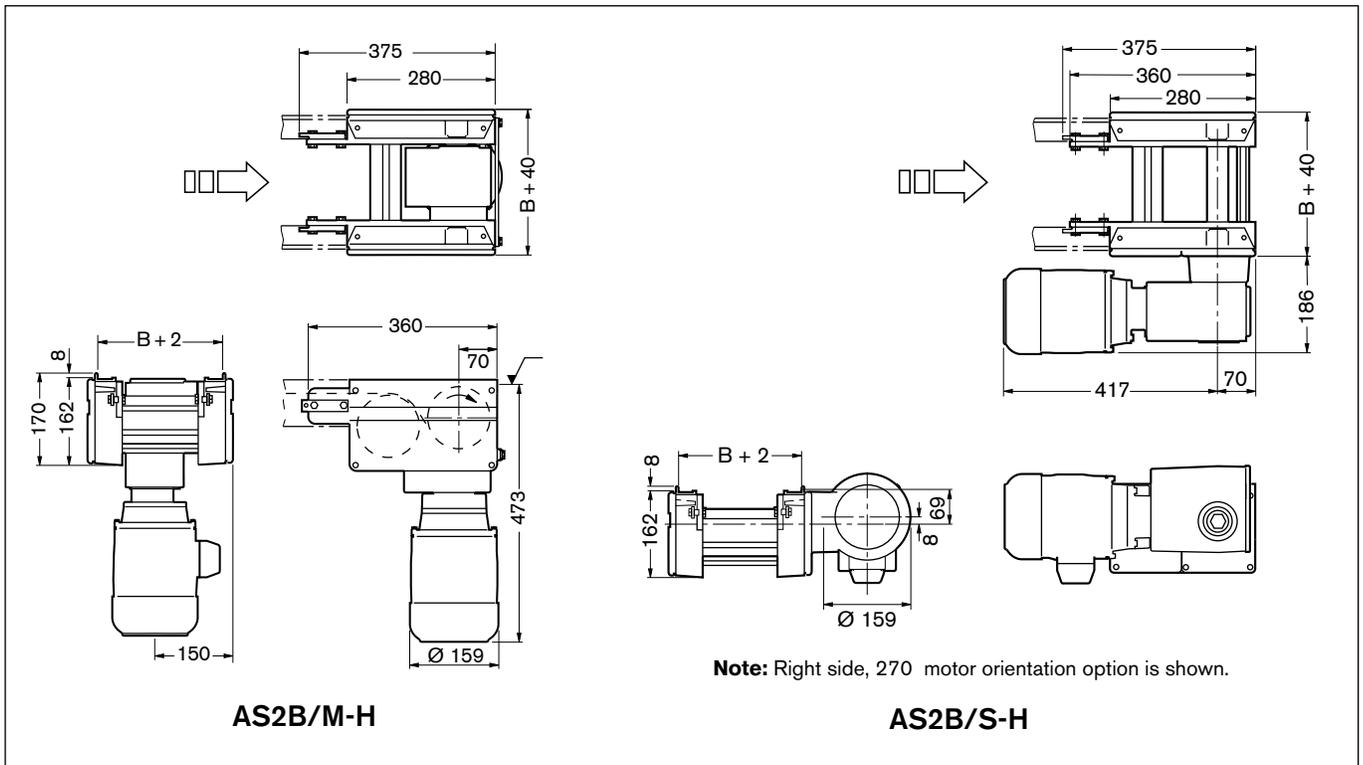
**Electrical data for AS2B/M-H and AS2B/S-H drives**

Nom. M/min	Actual Speed		HP		Full Load Amps @					
	50 Hz	60 Hz	50 Hz	60 Hz	208/60	240/60	380/50	415/50	480/60	575/60
9	10.6	8.9	0.75	0.5	1.9	1.8	1.6	1.6	.82	.69
12	12.9	12.9	0.75	0.75	3.0	3.0	1.6	1.6	1.6	1.2
15	15.2	15.6	1.0	1.0	3.8	3.8	2.2	2.2	2.2	1.6
18	18.4	18.4	1.0	1.0	3.8	3.8	2.2	2.2	2.2	1.6

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 3-2

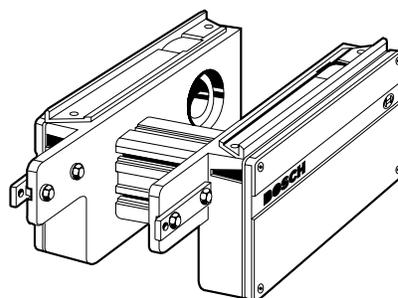
**Dimensional data for AS2B/M-H and AS2B/S-H drives**



Belt Drive Components

# Belt Return Unit

Model UM2/B



A return unit is required for each belt drive unit to direct or “return” the continuous loop of belt from the center channel in the conveyor rail back up to the transport level. The width of both the drive and return units should be specified to match the width or length of the workpiece pallet, depending on the orientation.

All hardware needed to mount the return unit to a conveyor section is included.

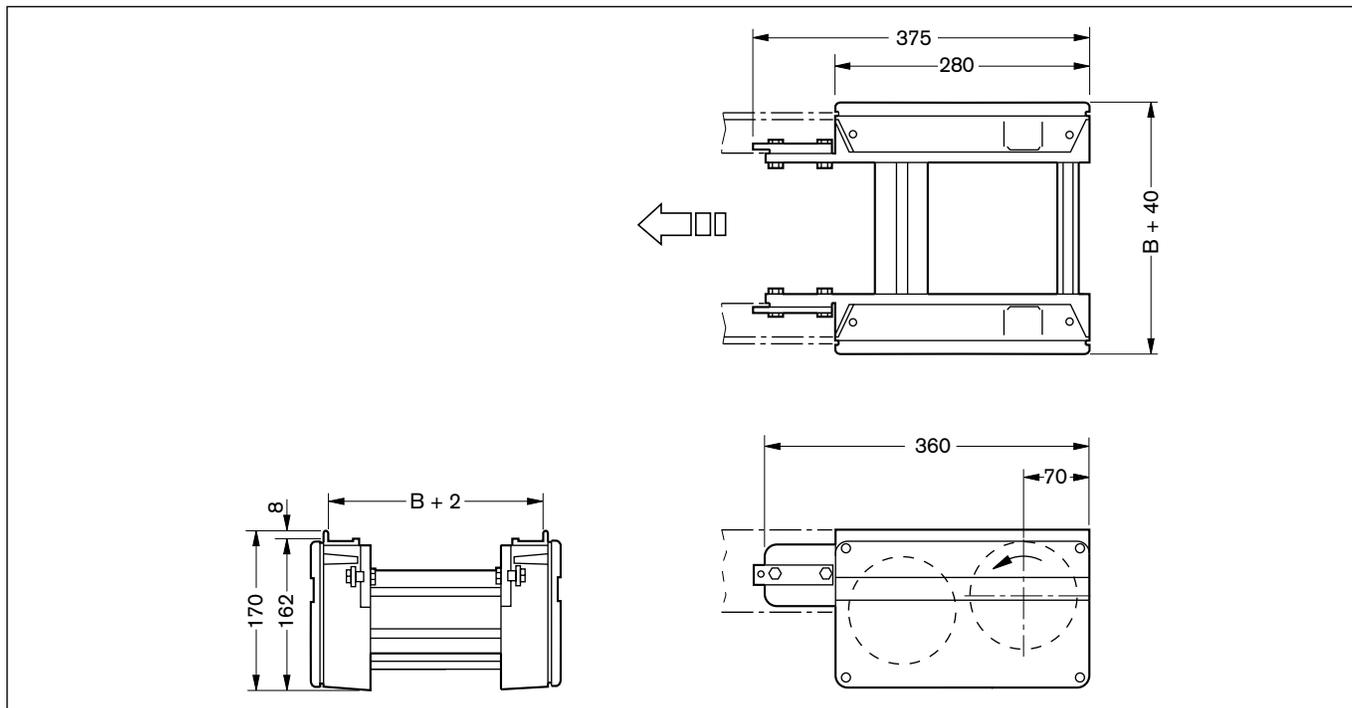
3

### Ordering Information for Belt Return Unit UM2/B

Specify part number, then select from the options below.	Your choices are:	<b>Part Number</b> <b>3842 999 090</b>
		Your selection: _____
Return Unit Width* (B) in mm	160, 240, 320, 400 480, 640, 800, 1040	

\* Return unit width must match workpiece pallet width ( $B_{wp}$ ) or length ( $L_{wp}$ ), depending on orientation.

### Dimensional Data for UM2/B

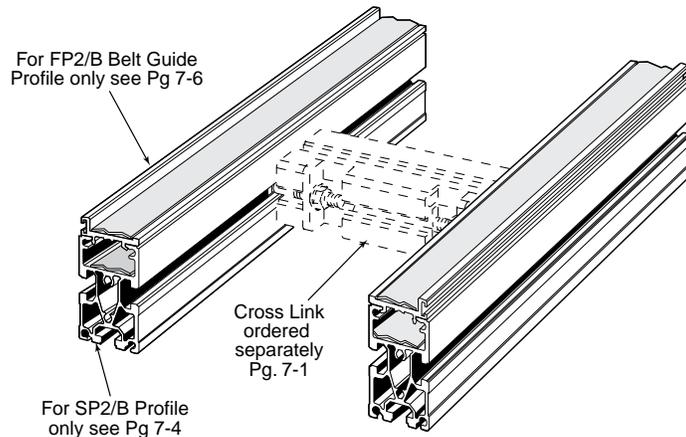


Belt Drive Components

# Conveyor Section (Belt)

Model ST2/B, ST2/B100

The conveyor section is the structural element that supports and guides the workpiece pallet. Use the ST2/B for pallet payloads up to 30 kg. Workpiece pallet payloads over 30 kg require the ST2/B100 conveyor section. Each section consists of two anodized aluminum belt profiles, and two belt guide profiles. The snap-in guide profiles serve as wear strips and as a bearing surface for the belt.



Standard belt section length is 2000 mm. Other customer specified lengths are available in 1 mm increments, from 200 mm up to 6000 mm. Belt sections can be connected end-to-end with connection links (page 7-1) to extend the conveyor length.

Cross links (not included--see page 7-1 to order) must be used every 2000 mm to maintain proper belt section width and alignment.

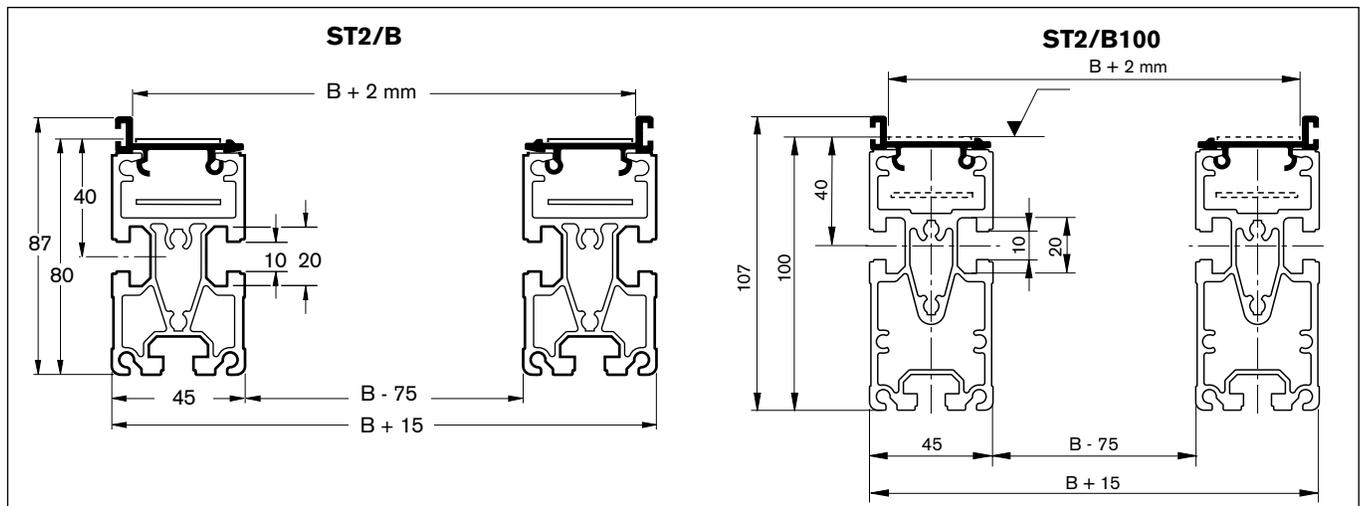
The 10 mm T-slot in each side and the bottom of the aluminum belt profile allows conveyor modules or peripheral devices to be mounted using T-bolts or T-nuts, eliminating the need for special machining.

## Ordering Information for Conveyor Sections ST2/B, ST2/B100

Description	Part Number
Conveyor section ST2/B (pallet payloads under 30 kg)	3842 992 650/...
Conveyor section ST2/B100 (pallet payloads over 30 kg)	3842 994 927/...

\* To order conveyor sections 200-6000 mm long, please specify desired length at the end of the part number. For example, to order a standard 2000 mm belt conveyor section, your part number should look like this: **3842 992 650/2000**.

## Dimensional Data for ST2/B, ST2/B100



B=Nominal conveyor width

Belt Drive Components

# Transport Belt

## Model GT2/B

The anti-static belt transports the work-piece pallets. In normal operation, the belts run continuously, carrying the pallet on their surface. Due to the low coefficient of friction between the belt and the pallet frames, pallets can be stopped on the conveyor while the belts continue to run.

Belt is available in up to 250 meter rolls, or can be ordered pre-cut to the desired length in 1 meter increments. The maximum available uncut length is 250 meters.

When installing or replacing belts, they must be tensioned and welded to create a continuous loop in each conveyor section. Tensioning ensures proper positive contact with the drive pulleys. This requires the use of a belt welding kit, which can be ordered on page 3-9. The belt welding kit includes the necessary tools for tensioning, grinding, and welding the belt ends.

**Material:**

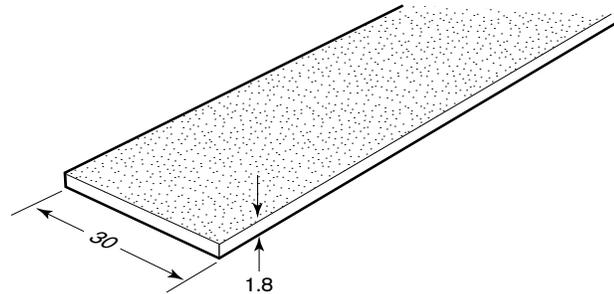
Polyamide 12 with an electrically conductive (antistatic) fabric covering.

**Shipping Information:**

This belt is shipped in rolls, pre-cut to specified lengths.

**Application Note:**

For large systems with multiple drives Rexroth recommends ordering in less than 100 m segments. This will avoid having to splice a short drop off piece onto the next roll.



### Ordering Information for Antistatic Belt GT2/B

Conveying media	Part Number
Anti-static belt, specify length*	<b>3842 992 811</b>
Anti-static belt, 250 m roll	<b>3842 539 479</b>

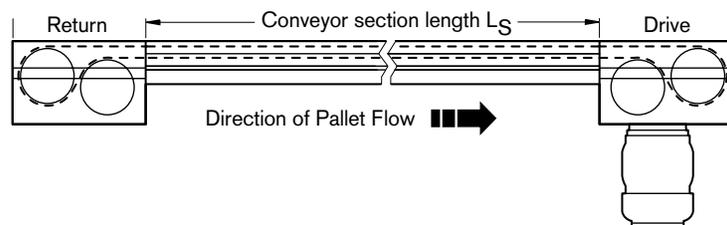
\* To order belt, in lengths up to 250 meters, please indicate the desired length in meters, in 1 meter increments. For example, to order 46 meters of belt, the part number would read as follows: **3842 992 811 Qty. = 46 meters**

### How to calculate belt length

To calculate the length of belt needed, please refer to the formulas below. Two belts are required for a conveyor section.

Drive Type	2 x conveyor section length (in mm)	Belt needed for AS 2 and UM 2 (in mm)	Factor for pre-tensioning	Belt needed for overlap at weld (in mm)
AS2B/M, AS2B/S	Belt length for conveyor sections <b>≤ 4 meters</b> in length (1 side)	$[(2 \times L_S + 1320 \text{ mm}) \times 0.980] + 60 \text{ mm}$		
AS2B/M, AS2B/S	Belt length for conveyor sections <b>&gt; 4 meters</b> in length (1 side)	$[(2 \times L_S + 1320 \text{ mm}) \times 0.975] + 60 \text{ mm}$		
AS2B/M-H, AS2B/S-H	Belt length for conveyor sections <b>&gt; 1 meter</b> in length (1 side)	$[(2 \times L_S + 1320 \text{ mm}) \times 0.965] + 60 \text{ mm}$		

Minimum Length  $L_S = 1000 \text{ mm}$  between drive and return



## Belt Drive Components

## Belt Welding Equipment

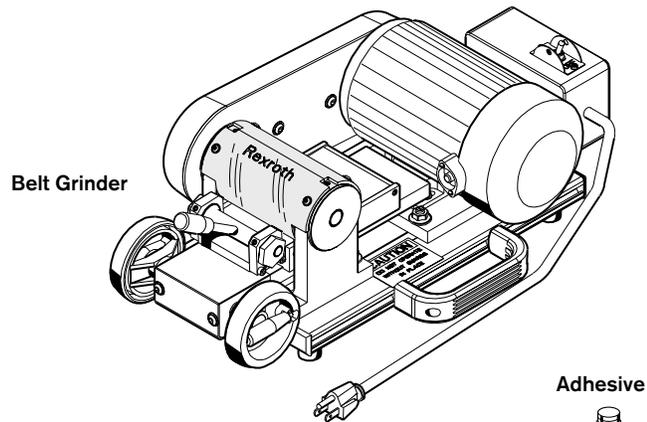
To weld belt ends together, a Size 1 or Size 2 belt welding kit is needed. The Size 1 belt welding kit is used on conveyors 160 mm to 480 mm wide; the Size 2 kit is used on conveyors 560 mm to 1040 mm wide. Each belt welding kit includes a belt-grinding device for beveling the ends of the belt, a heat press for fusing the ends of the belt together, and a ratchet-tensioning unit and clamping jaw for pre-tensioning. An abrasive band, brush, and cleaning agent are also included. Adhesive is ordered separately.

To cut welding time in half, a second heating press is recommended for welding together two adjacent belts at the same time.

**NOTE:** This kit is **not** intended for use with toothed belts such as those on BS2 transverse conveyors.



p/n 3842 510 684

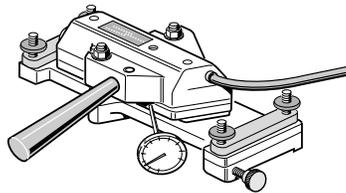


Belt Grinder

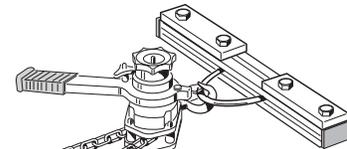
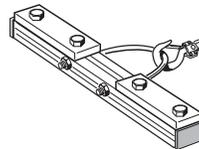
Adhesive



Belt Heating Press, 110VAC, 60Hz



Clamping Jaw



Tensioning Device

### Ordering Information for Belt Welding Equipment

Description	Part Number
Size 1 – for 160 mm to 480 mm conveyors includes: 110V grinder, 110V heating press, tensioner, and clamping jaw	<b>R980 023 722</b>
Size 2 – for 560 mm to 1040 mm conveyors includes: 110V grinder, 110V heating press, tensioner, and clamping jaw	<b>R980 023 723</b>
Belt Heating Press, 110VAC, 60Hz	<b>R980 025 490</b>
Belt Heating Press, 220VAC, 50Hz	<b>3842 315 101</b>
Belt Grinder, 110VAC, 60Hz	<b>R980 024 059</b>
Belt Adhesive, 50g, (1.75 oz.)	<b>3842 315 106</b>

**Note:** The R980 024 059 belt grinder is only designed for use at 110V. For applications requiring a 220V belt grinder, we recommend the use of the Rexroth drill-powered belt grinder, p/n 3842 510 684.

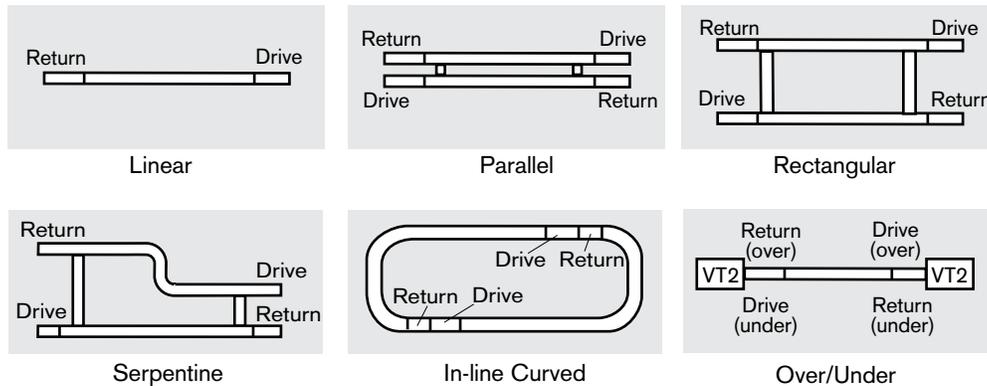
Flat-top Chain Drive Component

## Section 4 – Flat-top Chain Drive Components

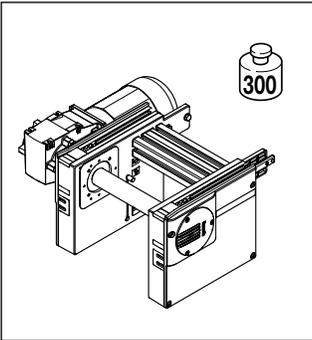
TSplus flat-top chain drives are the most versatile of the three conveying media that Bosch Rexroth offers. Drives and returns can be linked together end-to-end to create extended conveyor lines of almost any length. The side flexing flat-top chain allows you to utilize in-line, serpentine, carousel or a mix to meet just about any assembly requirement. Drive units are available in standard and heavy duty models.

All modules offer various electrical options and motor mounting positions.

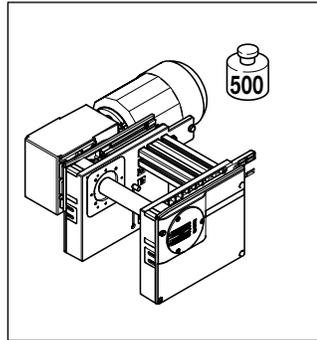
**Flat-top Chain Drive components in this section can be configured into any of the basic line layouts below.**



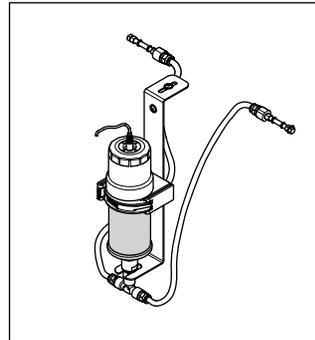
Flat-top Chain Drive Component



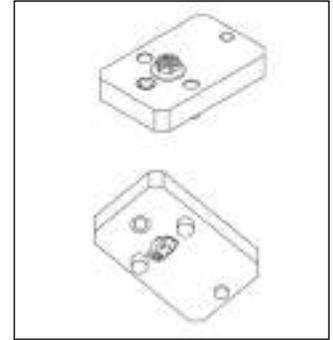
**AS2/C**  
Standard Flat-top Chain  
Drives 4-2 to 4-3



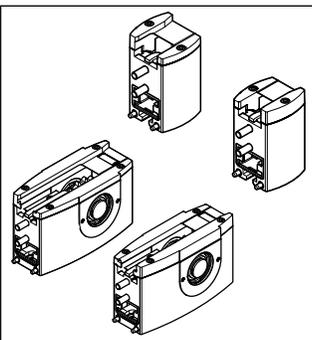
**AS2/C-H**  
Heavy Duty Flat-top Chain  
Drives 4-4 to 4-5



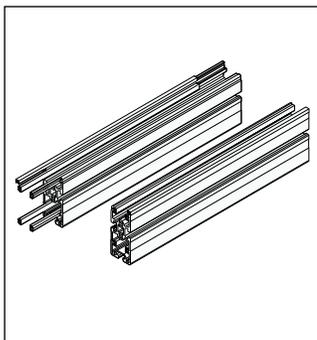
**LU2**  
Chain Lubrication –  
Automatic 4-6



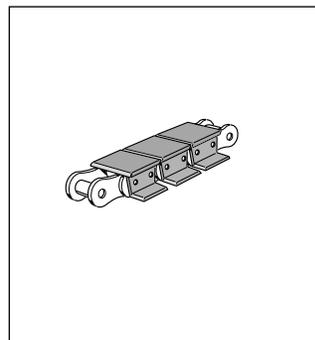
**LU2**  
Chain Lubrication –  
Manual 4-7



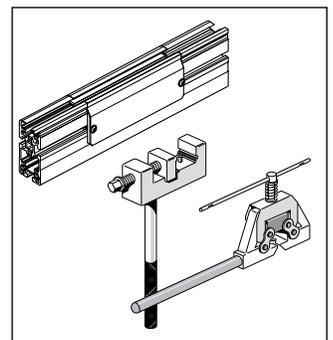
**UM2/C**  
Return Units  
4-8



**ST2/C, CRV2/1, CRV2/2**  
Straight and Curved Conveyor  
Sections 4-9 to 4-13



**GT2/C**  
Flat-top Chain  
4-14



**ST2/C-W** Maintenance,  
Module and Flat-top Chain  
Tools 4-16

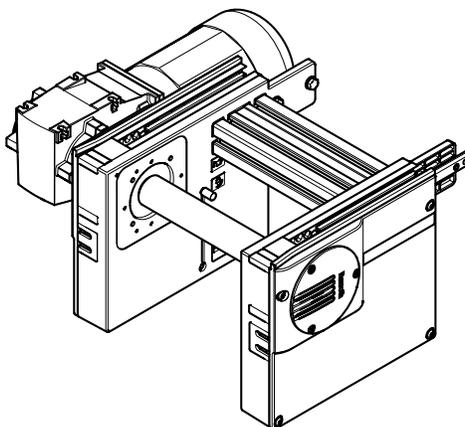
Flat-top Chain Drive Components

# Flat-Top Chain Drive Module

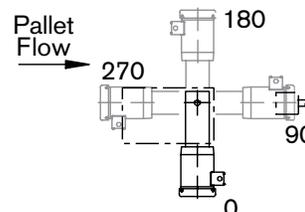


## Model AS2/C

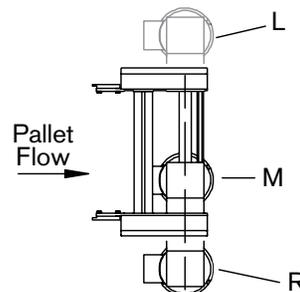
This drive module in conjunction with a return module pulls flat top chain along straight or curved conveyor sections, and provides the flexibility to create rectangular, serpentine or in-line curved configurations. The AS2/C is available with either an outboard-mounted or mid-mounted gearmotor. The outboard-mounted option (left or right side) is available in widths from 160 mm to 1040 mm, while the mid-mounted option is available in widths from 320 mm to 1040 mm. Both styles include automatic chain tensioners.



### Outboard Mounted Motor Orientation



### Motor Position



Select the mid-mounted option when space prohibits a side mounted configuration. The side mount, however, is generally preferred for accessibility—particularly for lines with multiple conveyor sections end-to-end.

Ordering parameters allow you to specify the motor voltage, frequency, conveyor speed, and motor mounting angle (outboard-mounted drives only). Outboard-mounted drive units are delivered with the motor in the customer-specified orientation, but can be rotated to any of the four positions as shown. All gearmotors include CE compliant wiring terminals.

The AS2/C drive module includes hardware required to mount it to a chain conveyor section, as well as fasteners to connect drives and returns end-to-end. For non-standard widths, speed, or voltages, please contact our applications engineering department.

**NOTE:** In addition to a visual inspection of chain stretch via the tensioner indicator, chain stretch can also be sensed with proximity switches. An SH2/UV proximity switch bracket and 12 mm barrel proximity switch can be mounted to the drive castings. Two proximity switches and two brackets are required per drive. See Section 17 for proximity switch ordering information.

### Ordering Information for AS2/C

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 998 038
		Your selection:
Drive Unit Width (B)*	160, 240, 320, 400, 480, 640, 800, 1040	_____ mm
Nominal Speed**	9, 12, 15, 18	_____ M/min
Motor Voltage/Frequency	See Table 4-1	_____ V _____ Hz
Motor Position	L, M, or R	_____ mm
Motor Orientation † (outboard mount only)	0°, 90°, 180°, 270°	_____

\* 160 & 240 (B) only available with L or R motor positions

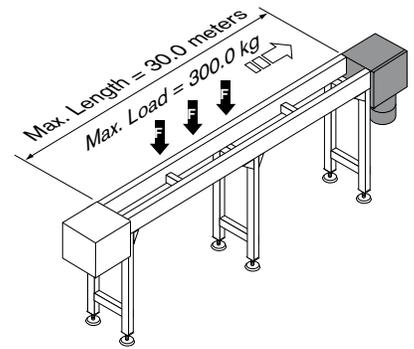
\*\* Full load conveyor speeds vary depending on motor frequency. See Table 4-1

† 90°, 180°, & 270° motor orientations are only available with L or R motor positions

Flat-top Chain Drive Components

**Technical data for AS2/C drives**

Nominal conveyor speed	=	See Table 4-1
Permissible loading weight	=	300 kg***
Maximum conveyor unit length	=	30 m (100 ft)
Motor RPM at 50 Hz	=	900-1410
Motor RPM at 60 Hz	=	1080-1692
Motor electrical specifications	=	See Table 4-1



\*\*\* Maximum payload decreases when pulled through curves. Consult Bosch Rexroth Corporation for details.

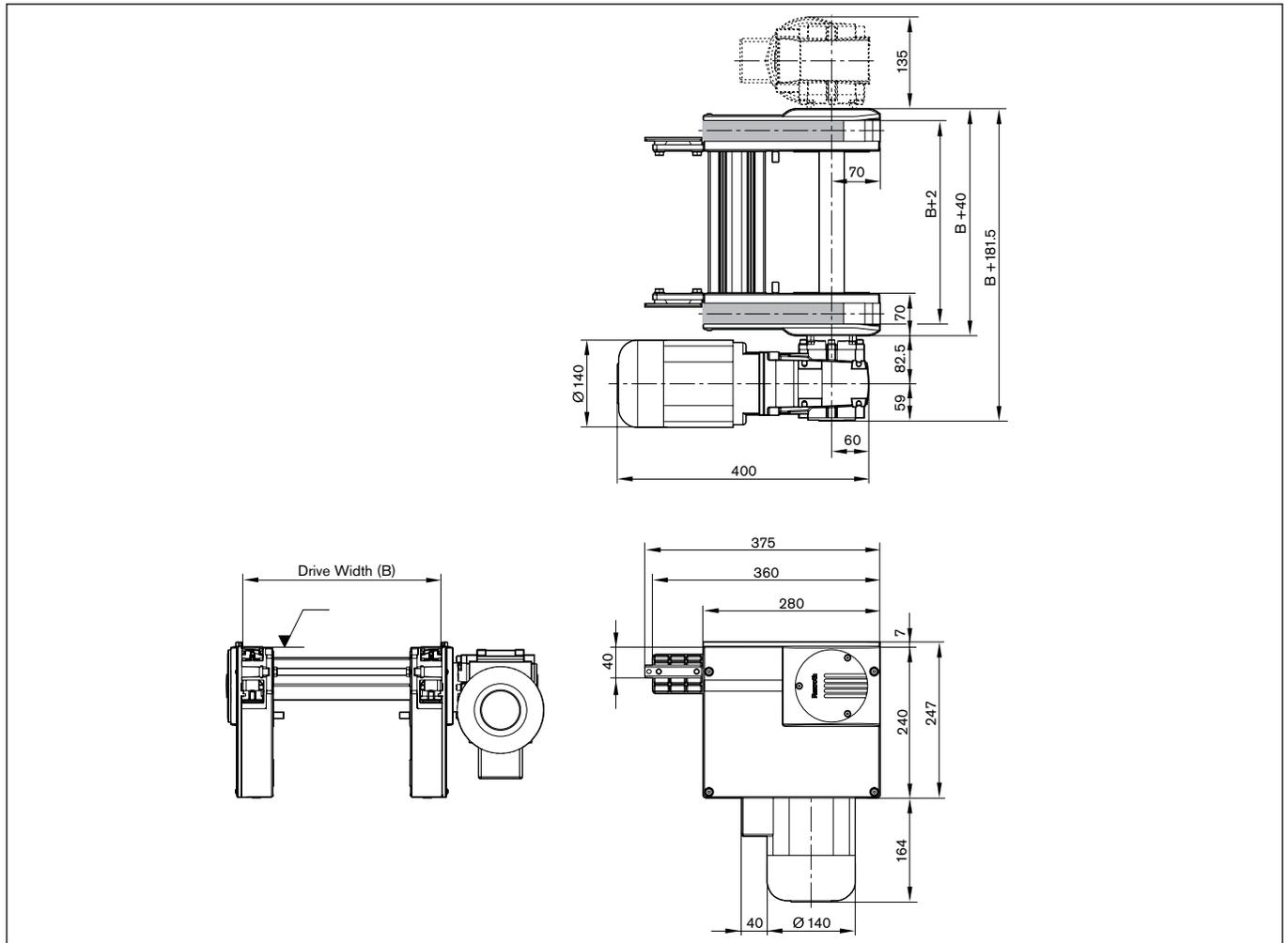
**Electrical data for AS2/C**

Nom. M/min	Actual Speed		Full Load Amps/HP @											
	50 Hz	60 Hz	208/60		240/60		380/50		415/50		480/60		575/60	
			AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP
9	7.9	9.5	1.6	3/8	1.6	3/8	0.8	3/8	0.8	3/8	0.8	3/8	0.7	3/8
12	9.91	11.9	2.4	1/2	2.4	1/2	1.2	1/2	1.2	1/2	1.2	5/8	1.0	5/8
15	12.6	15.1	2.4	1/2	2.4	1/2	1.2	1/2	1.2	1/2	1.2	5/8	1.0	5/8
18	16.4	19.7	3.2	3/4	3.2	3/4	1.6	3/4	1.7	3/4	1.7	7/8	1.0	3/4

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 4-1

**Dimensional data for AS2/C**



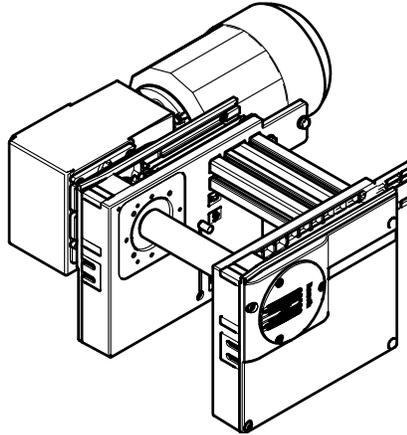
Flat-top Chain Drive Components

# Heavy Duty Flat-top Chain Drive Module

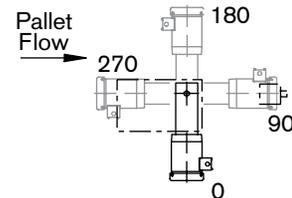


Model AS2/C-H

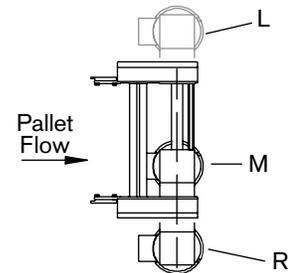
This drive module uses a larger gearbox and motor in conjunction with a return unit to pull the flat-top chain along straight or curved conveyor sections giving you the flexibility to create rectangular, serpentine or in-line curved configurations. The AS2/C-H is available with either an outboard-mounted or mid-mounted gearbox and motor. The outboard-mounted option (left or right side) is available in widths from 160mm to 1040 mm, while the mid-mounted option is available in widths from 320 mm to 1040 mm. Both styles include automatic chain tensioners.



### Outboard Mounted Motor Orientation



### Motor Position



Select the mid-mounted option when space prohibits a side mounted configuration. The side mount, however, is generally preferred for accessibility—particularly for lines with multiple conveyor sections end-to-end.

Ordering parameters allow you to specify the motor voltage, frequency, conveyor speed, and motor mounting angle (outboard-mounted drives only). Outboard-mounted drive units are delivered with the motor in the customer-specified orientation, but can be rotated to any of the four locations, as shown. All motors include CE compliant wiring terminals.

The AS2/C-H drive module includes all of the required mounting hardware. For non-standard widths, speed, or voltages please contact our applications engineering department.

**Note:** In addition to a visual inspection of chain stretch via the tensioner indicator, chain stretch can also be sensed with proximity switches. An SH2/UV proximity switch bracket and 12 mm barrel proximity switch can be mounted to the drive castings. Two proximity switches and two brackets are required per drive. See Section 17 in the TSpus catalog for proximity switch ordering information.

### Ordering Information for AS2/C-H

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 998 039
		Your selection:
Drive Unit Width (B)*	160, 240, 320, 400, 480, 640, 800, 1040	_____mm
Nominal Speed**	9, 12, 15, 18	_____M/min
Motor Voltage/Frequency	See Table 4-2	_____ V _____ Hz
Motor Position	L, M, or R	_____mm
Motor Orientation † (outboard mount only)	0°, 90°, 180°, 270°	_____

\* 160 & 240 (B) only available with L or R motor positions

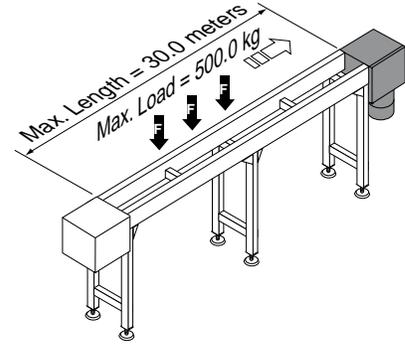
\*\* Full load conveyor speeds vary depending on motor frequency. See Table 4-2

† 90°, 180°, & 270° motor orientations are only available with L or R motor positions

Flat-top Chain Drive Components

**Technical data for AS2/C-H**

Nominal conveyor speed	=	See Table 4-2
Permissible loading weight	=	500 kg***
Maximum conveyor unit length	=	30 m (100 ft)
Motor RPM at 50 Hz	=	1390-1410
Motor RPM at 60 Hz	=	1660-1700
Motor electrical specifications	=	See Table 4-2



\*\*\* Maximum payload decreases when pulled through curves. Consult Bosch Rexroth Corporation for details.

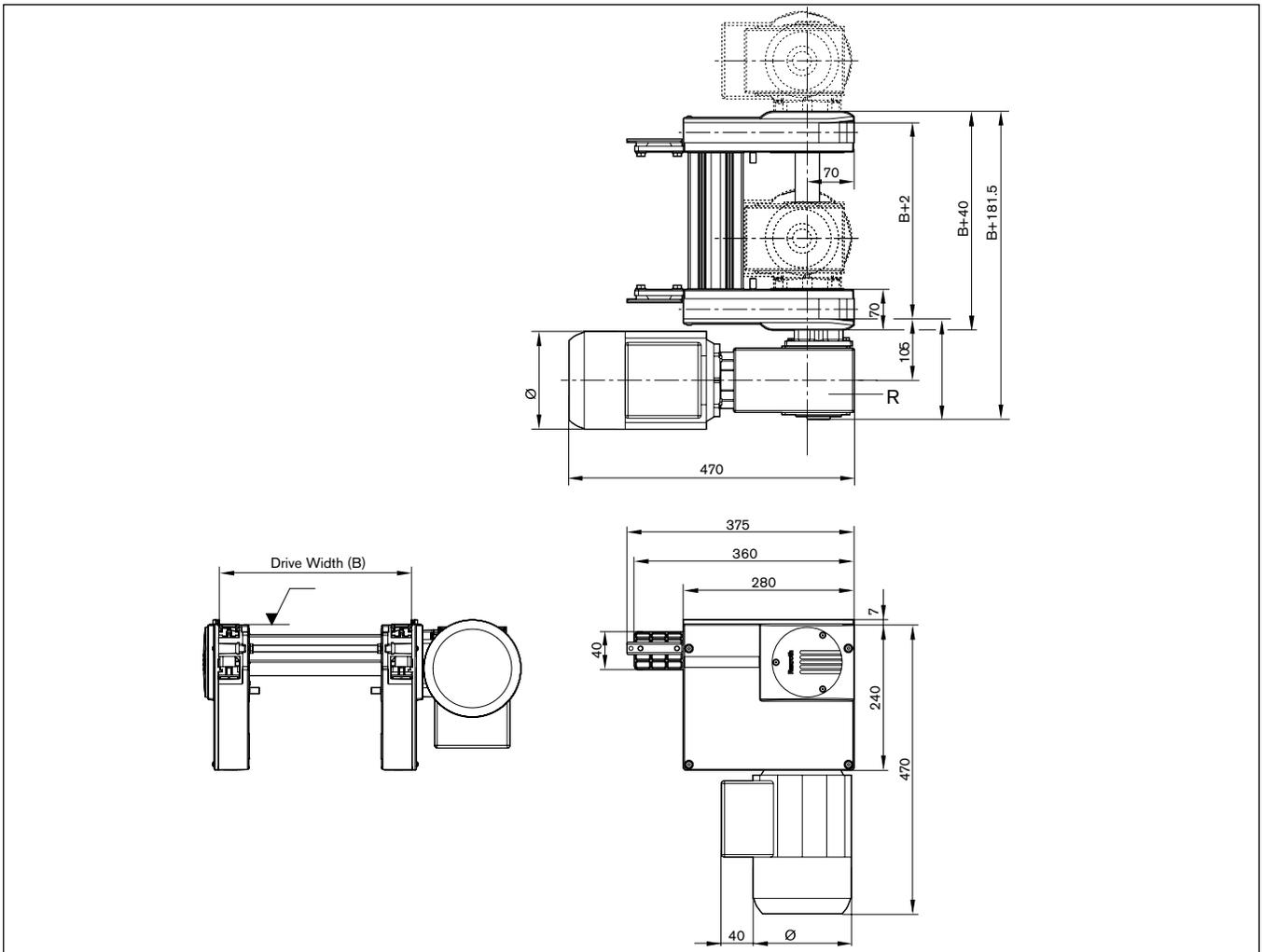
**Electrical data for AS2/C-H**

Nom. M/min	Actual Speed		Full Load Amps/HP @											
	50 Hz	60 Hz	208/60		240/60		380/50		415/50		480/60		575/60	
			AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP
9	9.7	8.1	1.9	1/2	1.8	1/2	1.6	3/4	1.6	3/4	0.82	1/2	0.71	3/4
12	11.76	11.59	3.0	3/4	3.0	3/4	1.6	3/4	1.6	3/4	1.6	3/4	1.2	1/2
15	14.07	14.3	3.8	1.0	3.8	1.0	2.2	1.0	2.2	1.0	2.2	1.0	1.7	1.0
18	16.97	16.86	3.8	1.0	3.8	1.0	2.2	1.0	2.2	1.0	2.2	1.0	1.7	1.0

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 4-2

**Dimensional data for AS2/C-H**



Flat-top Chain Drive Components

# Automatic Chain Lubrication Module

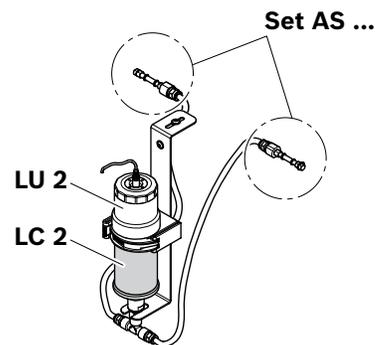
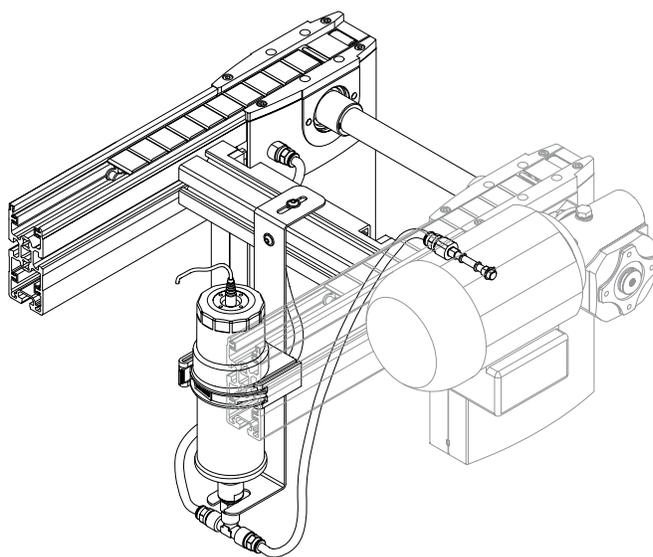
## Model LU2

The LU2 automatic lubrication module provides continuous and maintenance-free lubrication for all TSplus flat-top chain and roller chain medias. The LU2 module can be used with both mainline conveyor and transverse conveyor sections.

Drive specific adapter sets ensure the optimum amount of lubrication is applied directly to the chain links. The module requires a 24V dc power supply. Depending on the section length and chain type, the power supply must be cycled at intervals between 1 and 12 hours, with a 15 second off time minimum. The metering process is controlled by an external PLC.

One LU2 module, one AS adapter set, and one LC2 oil cartridge are required for each drive.

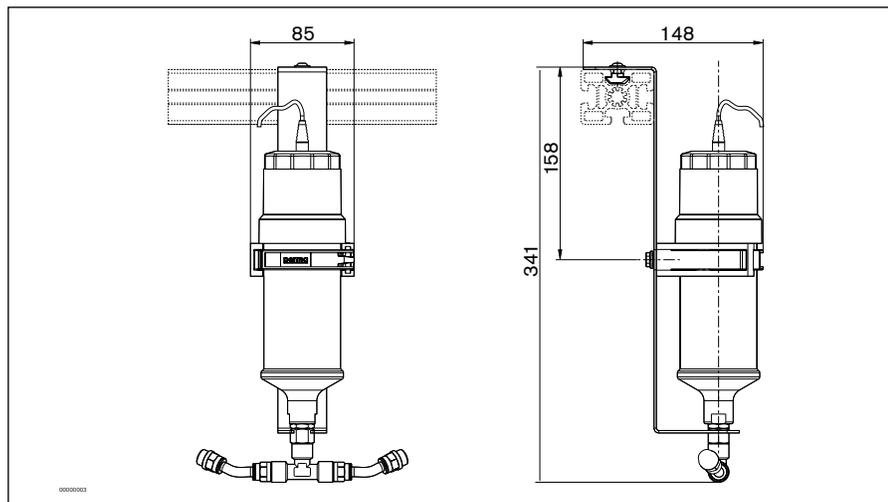
The LU2 module includes the lubrication unit, hoses, fittings, and all mounting hardware. Drive adapter sets and oil cartridges must be ordered separately.



### Ordering Information for Automatic Chain Lubrication Module

Description	Part Number
LU2 Automatic Lubrication Module	<b>3842 543 482</b>
LC2 Oil Cartridge – 0.25L Kluber Structovis GHD, lot size 4	<b>3842 543 469</b>
Adapter Set (for BS2/C, BS2/C-H)	<b>3842 543 483</b>
Adapter Set (for AS2/C, AS2/C-H)	<b>3842 543 484</b>
Adapter Set (for BS2/R, BS2/R-H)	<b>3842 543 485</b>
Adapter Set (for AS2/R, AS2/R-H)	<b>3842 543 486</b>
Adapter Set (for AS2/R Vplus, AS2/R-H Vplus)	<b>3842 543 487</b>

### Dimensional data for LU2 Automatic Chain Lubrication Module



Flat-top Chain Drive Components

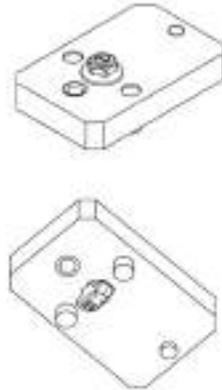
# Manual Chain Lubrication – Drill Fixture

As an alternative to lubricating chain automatically with the LU2 module, flat-top and roller chains can also be lubricated manually.

The chain lubrication drill fixture is used for drilling an 8mm diameter access hole for manually lubricating chain in the return channel of the conveyor section.

The drill fixture is compatible with ST2/C-100, ST2/C-H, ST2/R-100, ST2/R-H, and ST2/R Vplus conveyor section.

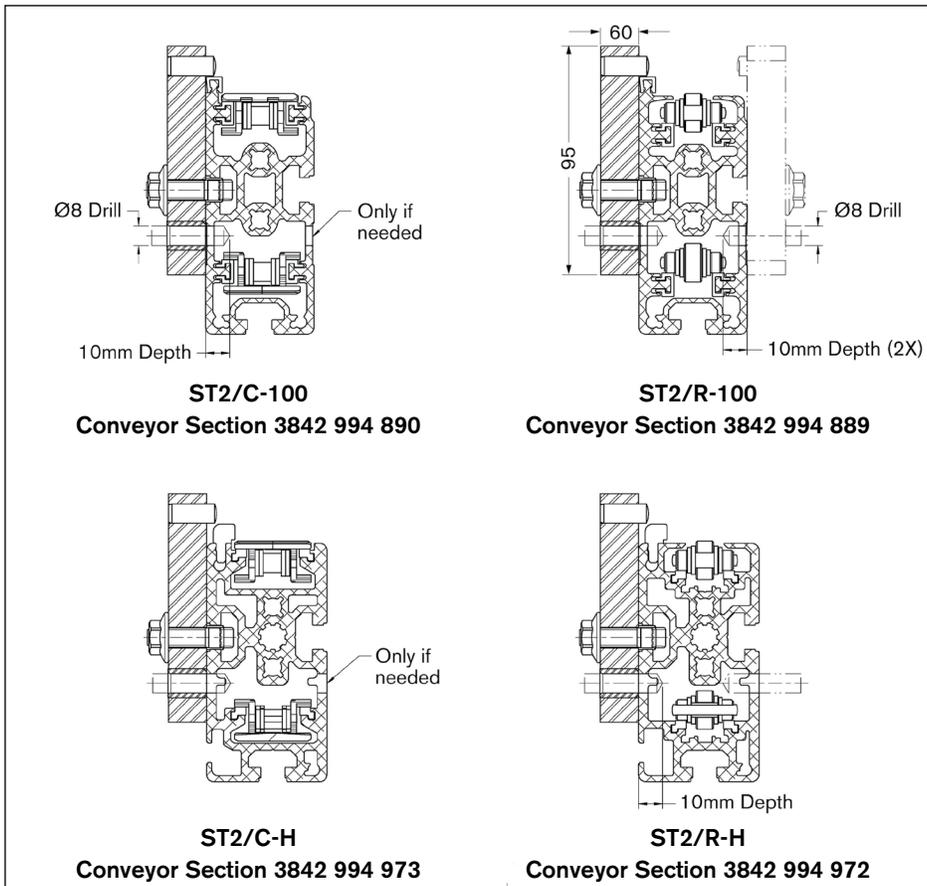
Chain oil is ordered separately.



## Ordering Information for Manual Chain Lubrication Drill Fixture and Oil

Description	Part Number
Manual Chain Lubrication Drill Fixture	<b>R980 025 504</b>
Oil Cannister – 0.5L Kluber Structovis GHD, lot size 1	<b>0842 904 229</b>

## Dimensional data

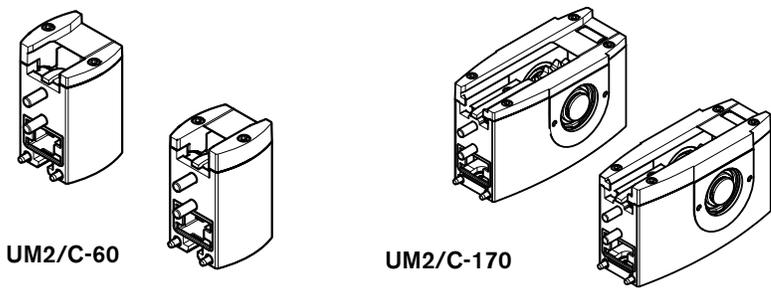


Flat-top Chain Drive Components

# Flat-top Chain Return Unit

Model **UM2/C-60**  
**UM2/C-170**

A return unit is required for each in-line drive unit to direct or “return” the continuous loop of chain from the center channel in the conveyor rail back up to the transport level. All hardware needed to mount the return units to a conveyor sections is included.



4

The **UM2/C-60** returns use a sliding block to return the chain to the top of the system. This return is designed for conveyor sections up to 6000mm long.

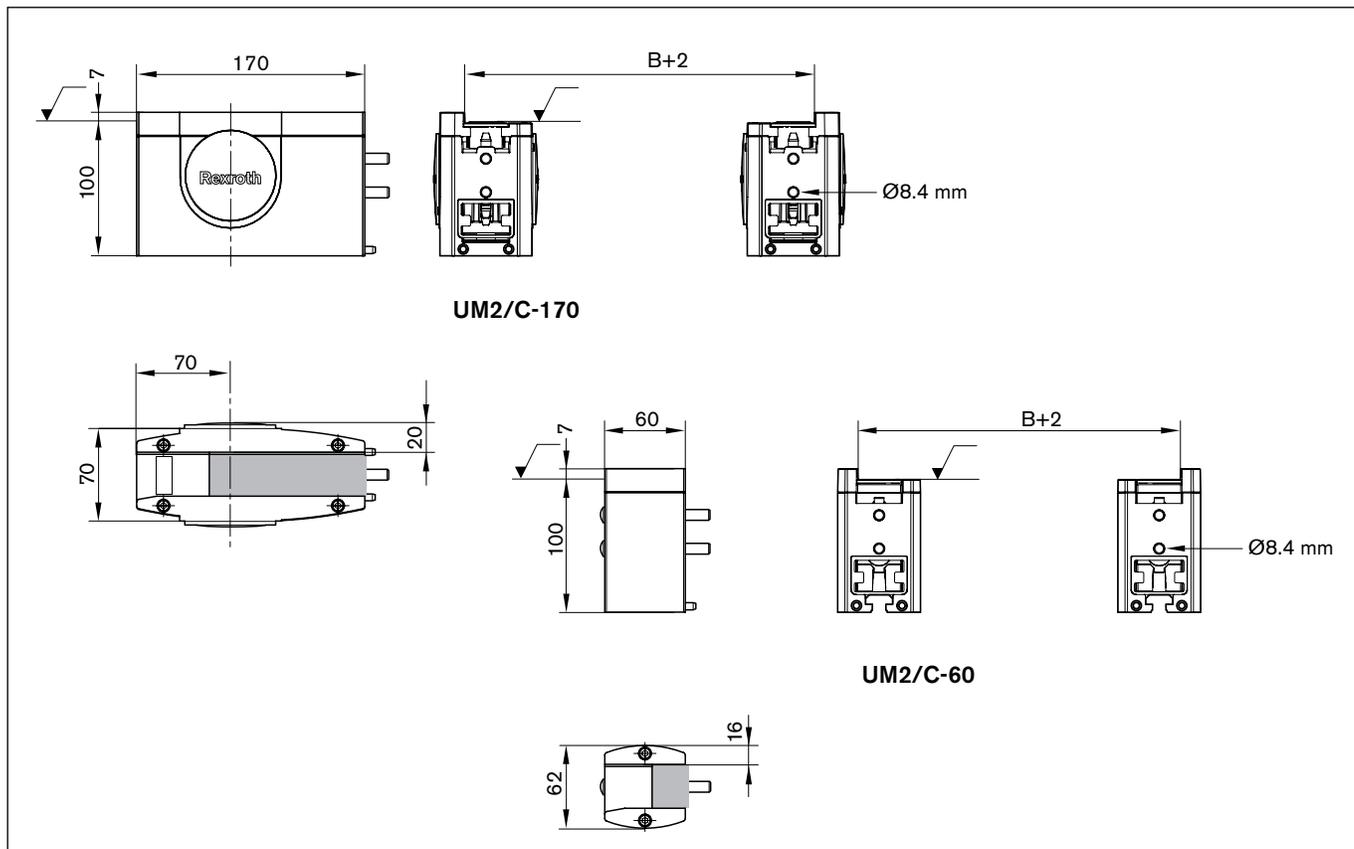
The **UM2/C-170** returns use a sprocket to return the chain to the top of the system. This return is recommended for conveyor sections over 6000mm long

**NOTE:** Refer to the connection kits on page 9-3 to mount a UM2/C end-to-end to an AS2, BS2 or KE2.

### Ordering Information for Return Unit UM2/C

Description	Part Number
Return Unit UM2/C-60 (qty. 2)	<b>3842 528 802</b>
Return Unit UM2/C-170 (qty. 2)	<b>3842 528 806</b>

### Dimensional data for UM2/C Return Units

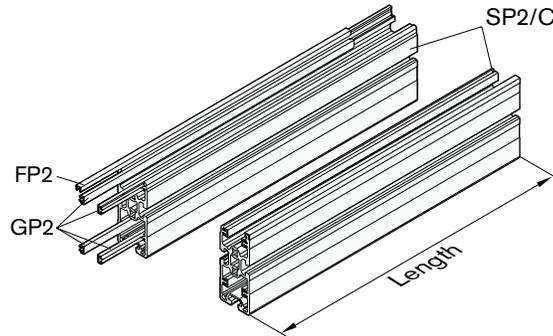


Flat-top Chain Drive Components

# Straight Flat-top Chain Conveyor Sections

Model ST2/C-100

The conveyor section is the structural element that supports and guides the workpiece pallet. Each section consists of two anodized aluminum chain profiles (SP2/C), with upper/lower side profile (GP2), and plastic guide profile (FP2) installed. The installed slide profiles serve as wear strips and as a bearing surface for the chain. Order cross connectors separately on page 7-1.



The 10 mm T-slot in each side and bottom of the aluminum chain profile allows conveyor modules or peripheral devices to be mounted using T-bolts or T-nuts, eliminating the need for special machining.

Chain sections can be connected end-to-end with connection links to extend the conveyor length (see page 7-1).

**Note:** Since leg sets are required at minimum 2 m intervals we stock standard pre-cut 2000 mm sections for quick delivery.

See page 4-10 for 90° and 180° curved conveyor sections.

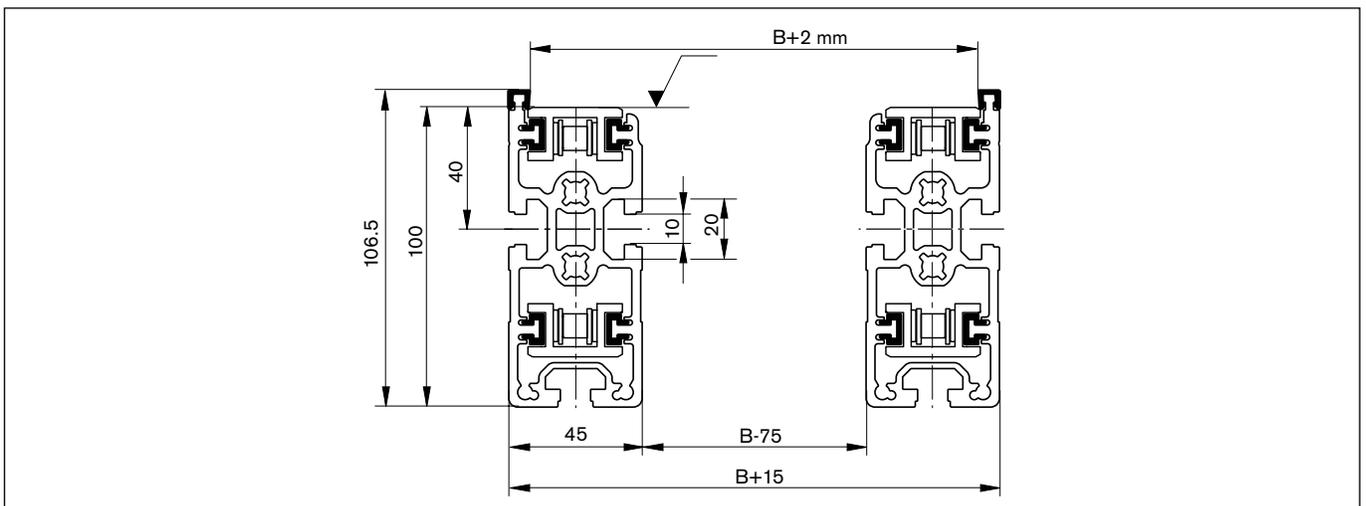
Maximum chain section length is 6000 mm, however, Rexroth will custom cut at no charge straight conveyor sections in 1 mm increments, from 200-6000 mm. To order conveyor sections, add the length (in mm) required for your system onto the part number.

## Ordering Information for Conveyor Sections ST2/C-100

Description	Part number
Flat-top chain ST2/C-100	3842 994 890/...

\* To order conveyor sections 200-6000 mm long, please specify desired length at the end of the part number. For example, to order a 2000 mm conveyor section, your part number should look like this: **3842 994 890/2000**.

## Dimensional data for ST2/C-100



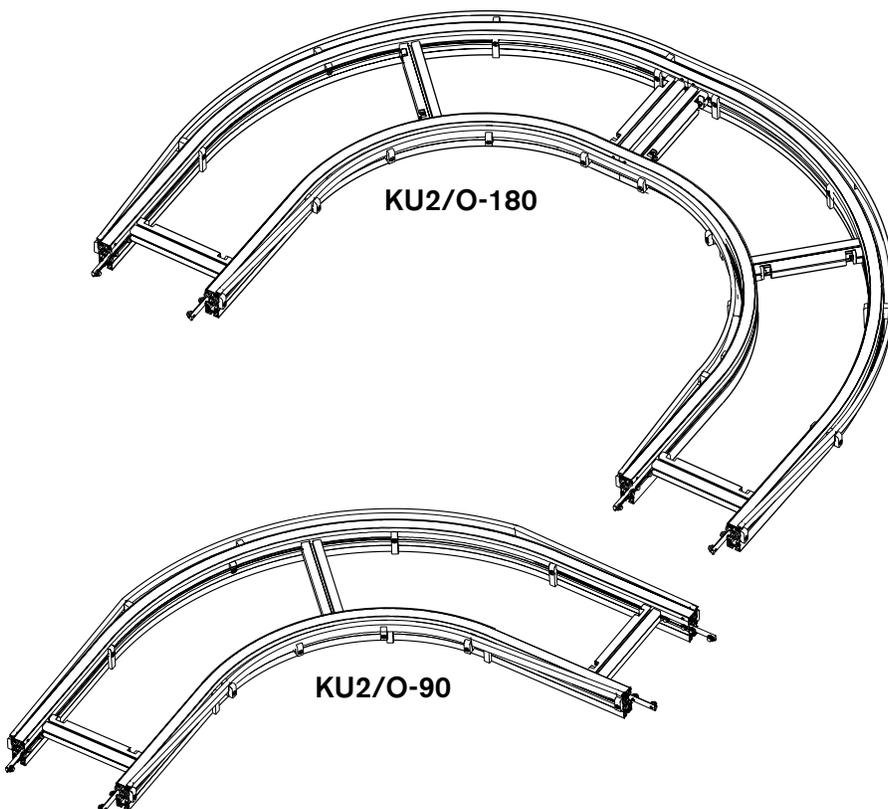
B = nominal conveyor width

Flat-top Chain Drive Components

# Curved Flat-top Chain Conveyor Sections

Model KU2/O-90, KU2/O-180

Curved conveyor sections are used to construct serpentine and carousel style conveyor configurations. They are available in both 90° and 180° sections as shown. The outside radius of the curve varies according to the dimensions of the workpiece pallet used in the system.



4 Curved sections are available for line widths from 160 to 1040mm and the inner, outer and return chain guides are installed. Order legsets separately as required from page 8-1.

**NOTE:** Pallet repeatability cannot be maintained in a curved section. In addition, pallet stopping and queuing is not allowed in curved sections.

### Ordering Information for KU2/O-90 Curve

Specify part number, then select from the options below.	Your Choices are:	Part Number R980 999 268
Pallet Width ( $B_{WT}$ ) in mm *	160, 240, 320, 400 480, 560, 640, 720, 800, 880, 960, 1040	_____mm
Pallet Length ( $L_{WT}$ ) in mm *	160, 240, 320, 400 480, 560, 640, 720, 800, 880, 960, 1040	_____mm

\* See technical data table for allowable pallet width ( $B_{WT}$ ) and pallet length ( $L_{WT}$ ) combinations.

### Ordering Information for KU2/O-180 Curve

Specify part number, then select from the options below.	Your Choices are:	Part Number R980 999 269
Pallet Width ( $B_{WT}$ ) in mm *	160, 240, 320, 400 480, 560, 640, 720, 800, 880, 960, 1040	_____mm
Pallet Length ( $L_{WT}$ ) in mm *	160, 240, 320, 400 480, 560, 640, 720, 800, 880, 960, 1040	_____mm

\* See technical data table for allowable pallet width ( $B_{WT}$ ) and pallet length ( $L_{WT}$ ) combinations.

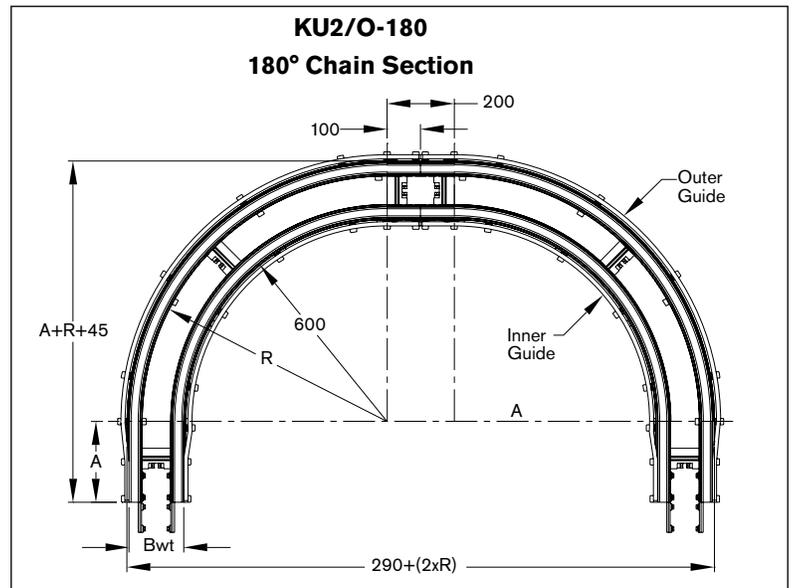
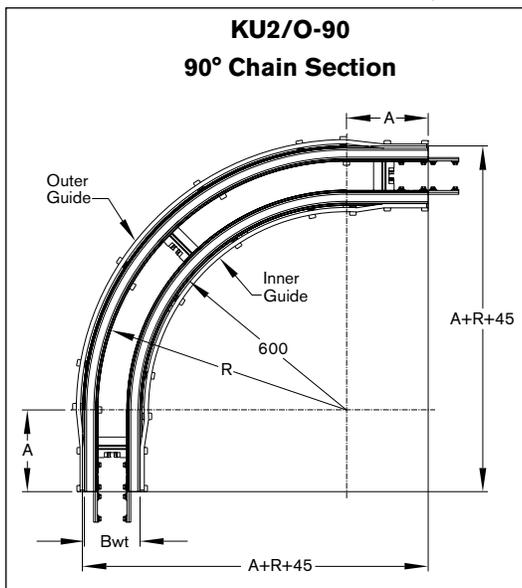
Flat-top Chain Drive Components

Technical data for KU2/O-90, KU2/O-180

Workpiece pallet size in mm		Dimensions in mm (see diagrams below)		Chain req'd. in meters (order on page 4-14)	
Width (B <sub>WT</sub> )	Length (L <sub>WT</sub> )	A	R	90° section	180° section
160	160	240	730	6.4	11.6
	240				
	320				
	400				
240	480	810	8.6	13.8	
	240				
	320				
	400				
320	480	890	8.8	14.4	
	320				
	400				
	480				
400	560	970	9.2	14.8	
	640				
	480				
	560				
480	720	1050	9.4	15.4	
	800				
	640				
	720				

Workpiece pallet size in mm		Dimensions in mm (see diagrams below)		Chain req'd. in meters (order on page 4-14)	
Width (B <sub>WT</sub> )	Length (L <sub>WT</sub> )	A	R	90° section	180° section
560	560	640	1130	11.2	17.2
	640				
	720				
	800				
640	880	720	1210	13.2	19.0
	880				
	960				
	1040				
720	720	800	1290	13.4	19.4
	800				
	880				
	960				
800	1040	880	1370	14.0	20.6
	880				
	960				
	1040				
880	880	960	1450	14.6	21.8
	960				
	1040				
960	960	1040	1530	16.2	22.8
1040	1040	1040	1610	16.4	23.4

Dimensional data for KU2/O-90, KU2/O-180



Flat-top Chain Drive Components

# H.D. Straight Flat-top Chain Conveyor Sections

## Model ST2/C-H

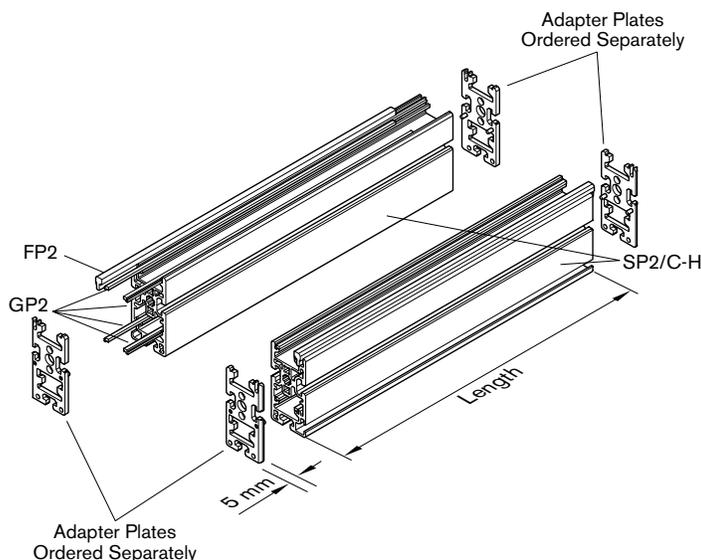
The conveyor section is the structural element that supports and guides the workpiece pallet. Each section consists of two anodized aluminum chain profiles (SP2/C-H), upper/lower slide profile (GP2), and steel guide profile (FP2), installed. The installed slide profiles serve as wear strips and as a bearing surface for the chain. Order cross links separately on page 7-1.

The H.D. flat-top chain conveyor section is designed for use with standard, antistatic, and steel flat-top chain. It is available with either steel or plastic slide profile.

The H.D. flat-top chain conveyor mounts to standard AS2/C drive and UM2/C return modules.

**NOTE:** Adapter plates (3842 536 801) must be used to connect the ST2/C-H to an AS/C drive and a UM2/C return.

The 10mm T-slot in each side and bottom of the aluminum chain profile allows conveyor modules or peripheral devices to be mounted using T-bolts or T-nuts eliminating the need for special machining.



The ST2/C-H section also includes an integrated cable duct on the outside of the profile. This cable duct can be covered with standard 10mm Cover Strip from the Rexroth structural framing product line.

Maximum chain section length is 6000 mm, however, Rexroth will custom cut at no charge straight conveyor sections in 1 mm increments from 200-6000 mm.

Chain sections can be connected end-to-end with connection links to extend the conveyor length (see page 7-1).

### Ordering Information for ST2/C-H Conveyor Section

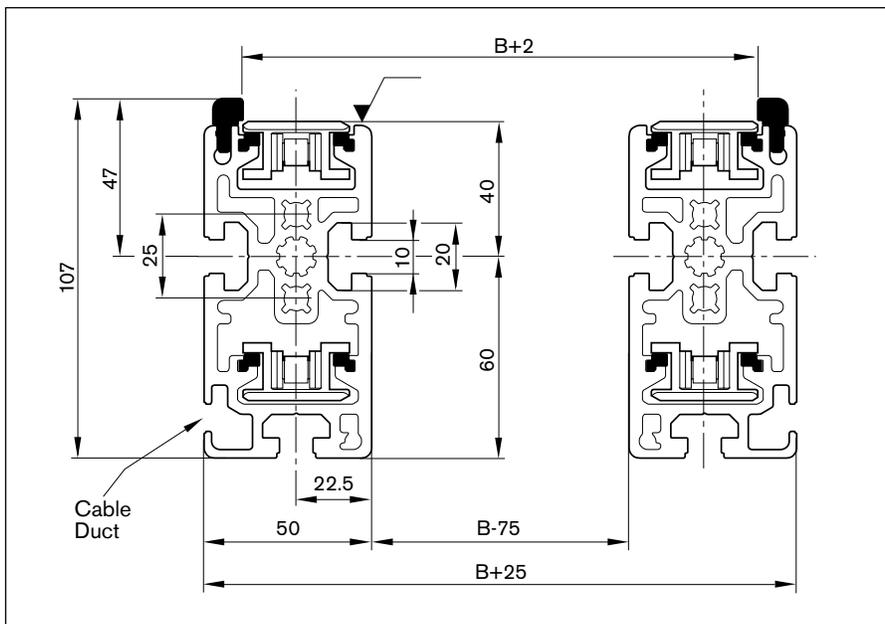
Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 994 973
Conveyor Section Length (L) in mm	200 to 6000 mm (in 1 mm increments)	_____mm
Slide Profile (GP2)	Plastic (GP2/H-Kst)* Steel (P2/H-St)	_____
Attachment Location (AO)	0 (intermediate) 1 (end-to-intermediate) 2 (end-to-end)	_____

Adapter Plate Kit (set of 4)	<b>3842 536 801</b>
------------------------------	---------------------

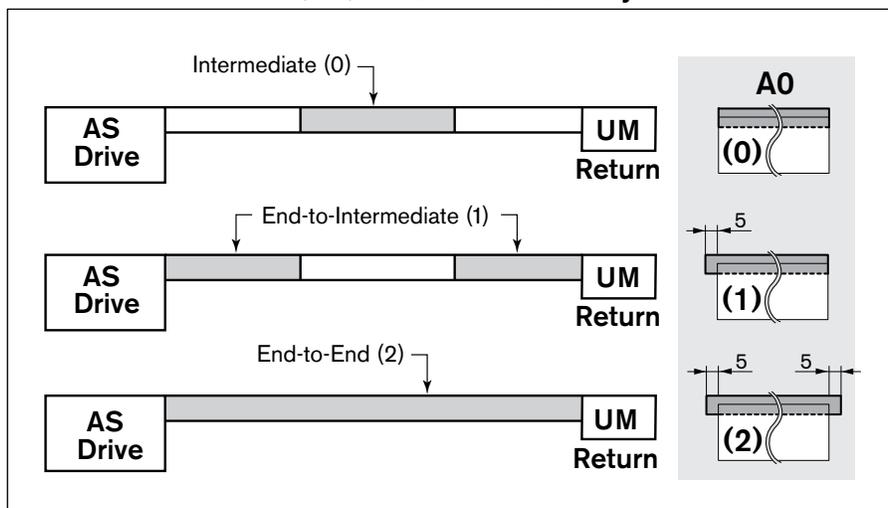
\*NOTE: In order to capture and prevent movement of the plastic slide profile (GP2) inside the conveyor section, it can only be used in an end-to-end configuration (AO = 2).

Flat-top Chain Drive Components

Dimensional data for ST2/C-H



Attachment locations (AO) for ST2/C-H Conveyor Sections



Flat-top Chain Drive Components

# Flat-top Chain

## Model GT2/C

Flat-top chain is #40 type with extended link pins. It is available in 6 and 12 meter rolls. Flat-top chain is available in three styles- standard, steel and antistatic.

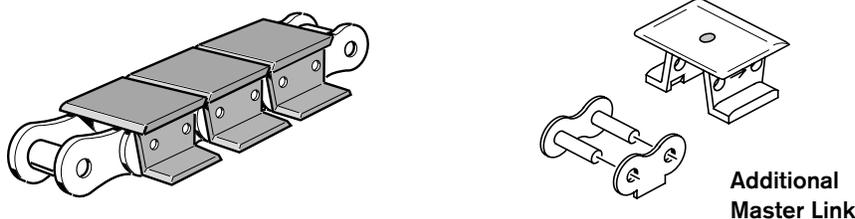
**NOTE: Antistatic and steel chain cannot be used in curve sections.**

Snap-on, wear-resistant caps cover each link. See page 4-16 for flat-top chain assembly and disassembly tools. Each roll includes one master link with a white cap for easy visual identification.

Additional master links and accompanying white caps for flat-top chain may be ordered separately.

On straight conveyor sections use the formula, the ordering table, and corresponding diagram to determine how much chain you will need.

For assistance calculating quantity of chain required, please contact the Bosch applications engineering department.

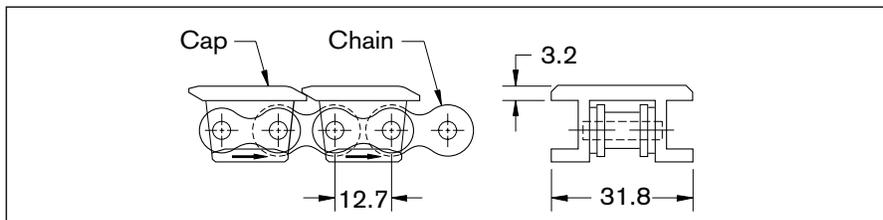


### Ordering Information for Flat-top chain GT2/C

Standard Flat-top Chain	Part Number
6 m roll	8981 022 169
12 m roll	8981 022 170
Antistatic Flat-top Chain	
12 m roll	3842 535 327
Components	
Master link	8981 022 172
Master link replacement cap (white) *	8981 022 173
Standard replacement cap (black) *	8981 022 174

\*Note: Replacement caps are non-conductive

### Dimensional data for GT2/C

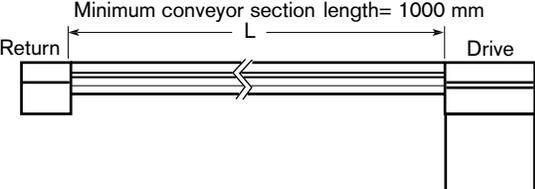


Flat-top Chain Drive Components

**Calculating chain requirements:**

**For In-line Straight and Curved**

Minimum conveyor section length= 1000 mm

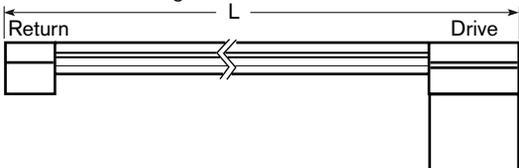


(Number of drives) x (3,000 mm) \_\_\_\_\_ mm  
 (Number of curves) x (chain required table on 4-11) \_\_\_\_\_ mm  
 (4 x L) (L= length of the straight chain section) \_\_\_\_\_ mm  
**Total chain required\*** \_\_\_\_\_ mm

---

**For BS2/C Transverse Conveyors**

Minimum length = 300 mm



$[(L - 234) \times 4] + 1070 = \text{Total chain required}^* \text{ _____ mm}$

\* This number includes the total chain required for both conveyor sections including drives and returns.

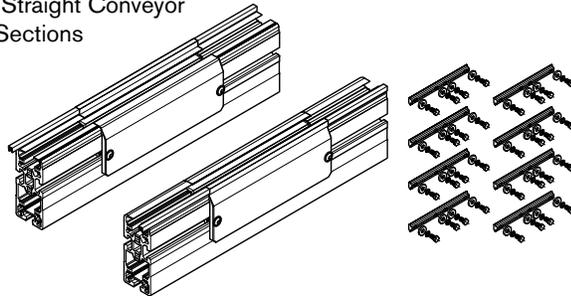
**Note:** Divide the total chain required above by 12,000 to determine the number of 12 m rolls to order.

Flat-top Chain Drive Components

# Flat-top Chain Maintenance Module

Model ST2/C-W, ST2/C-W-H

Use only with ST2/C-100 (pg. 4-9) and ST2/C-W-H (pg. 4-12) Straight Conveyor Sections



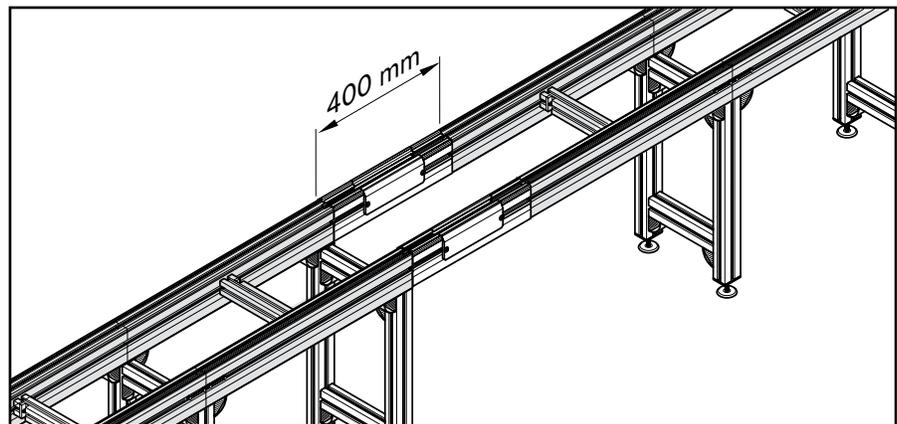
The **ST2/C-W** maintenance module is designed to be used with ST2/C-100 straight conveyor sections and provides an access point for assembly, disassembly, or lubrication of a flat-top chain conveyor section. This module is specifically for use with flat-top conveyor sections (ST2/C-100 pg. 4-9 only).

The **ST2/C-W-H** maintenance module is designed to be used with ST2/C-H straight conveyor sections and provides an access point for assembly, disassembly, or lubrication of a flat-top chain conveyor section. This module is specifically for use with H.D. flat-top conveyor sections (ST2/C-H pg.4-12 only).

The maintenance module consists of two 400mm long sections. Each section includes two removable, electrically conductive side covers. Connection links are used to mount each maintenance module to the conveyor sections.

All mounting hardware is included.

### Dimensional Data for ST2/C-W, ST2/C-W-H Maintenance Module



### Ordering Information for ST2/C-W Maintenance Module

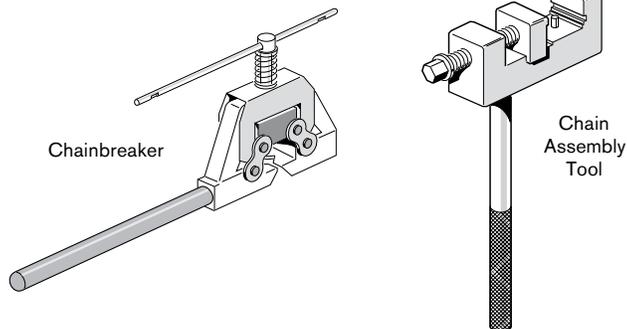
Description	Part Number
ST2/C-W Maintenance Module	3842 532 777
ST2/C-W-H Maintenance Module	3842 537 310

# Flat-top Chain Tools

Use the flat-top chain assembly and disassembly tools when adding or removing links from the flat-top chain conveyor.

The chain breaker tool presses out the pins from the chain allowing you shorten and rejoin the chain using a master link.

The chain assembly tool presses the pin link into the link plate of the master link when joining the ends of flat-top chain.



Description	Part Number
Flat-top chain break tool	8981 010 510
Flat-top chain assembly tool	8981 010 650

Roller Chain Drive Components

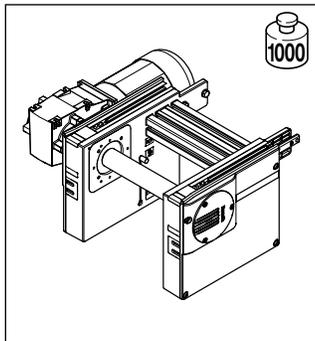
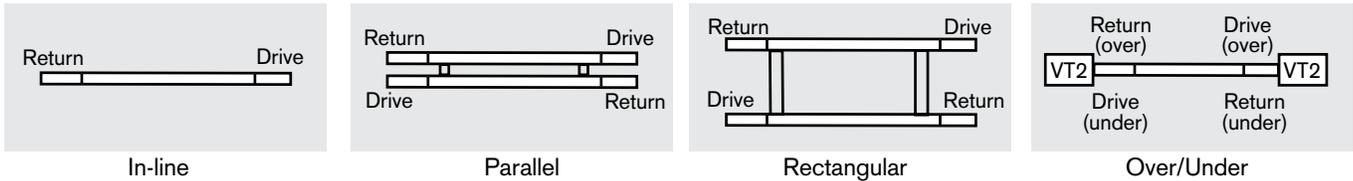
# Section 5 – Roller Chain Drive Components

*TSplus* roller chain drives provide the largest payload carrying capacity of the three conveying media in the *TSplus* line. Drives and returns can be linked together end-to-end to create extended conveyor lines of almost any length. The standard drives provide a payload carrying capac-

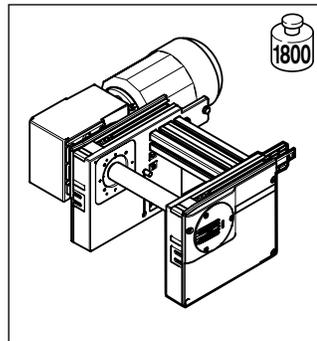
ity of 1000 kg and the heavy duty drives have a 1800 kg rating.

Both standard and heavy duty drives have various electrical options and motor mounting positions to select from.

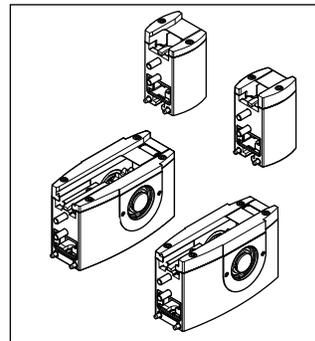
**Roller Chain Drive components in this section can be configured into any of the basic line layouts below.**



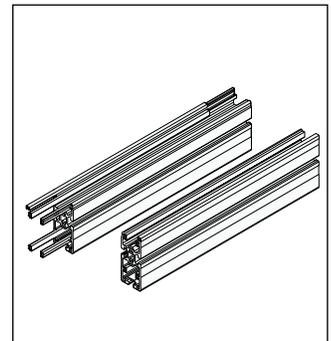
**AS2/R**  
Standard Roller Chain  
Drives 5-2 to 5-3



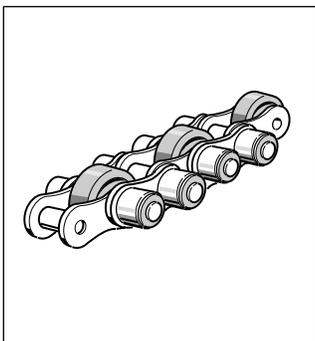
**AS2/R-H**  
Heavy Duty Roller Chain  
Drives 5-4 to 5-5



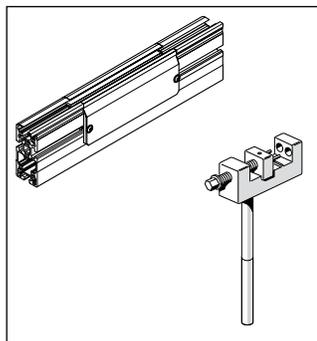
**UM2/R**  
Return Units  
5-6 to 5-6



**ST2/R**  
Conveyor Sections  
5-8 to 5-9



**GT2/R**  
Roller Chain  
5-10

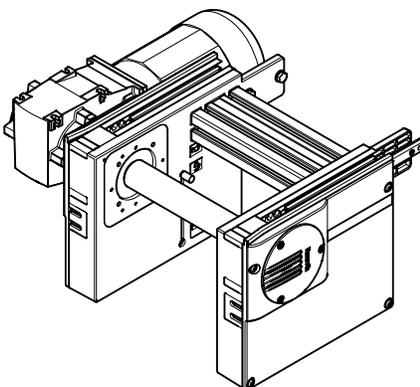


**ST2/R-W, ST2/R-W-H**  
Chain Maintenance Module  
and Chain Tool 5-11

Roller Chain Drive Components

# Roller Chain Drive Module

Model AS2/R



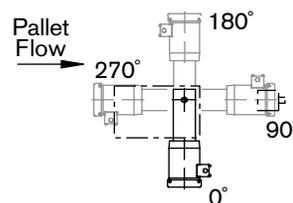
This drive module in conjunction with a return module pulls roller chain along straight conveyor sections giving you the flexibility to create rectangular, in-line, parallel or over/under configurations. The AS2/R is available with either an outboard-mounted or mid-mounted gearmotor. The outboard-mounted option (left or right side) is available in widths from 160 mm to 1040 mm, while the mid-mounted option is available in widths from 320 mm to 1040 mm. Both styles include automatic chain tensioners.

Select the mid-mounted option when space prohibits a side mounted configuration. The side mount, however, is generally preferred for accessibility—particularly for lines with multiple conveyor sections end-to-end.

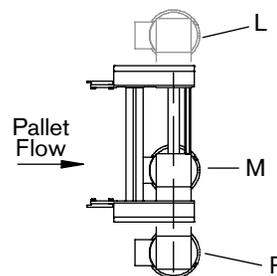
Ordering parameters allow you to specify the motor voltage, frequency, conveyor speed, and motor mounting angle (outboard-mounted drives only). Outboard-mounted drive units are delivered with the motor in the customer-specified orientation, but can be rotated to any of the four locations, as shown. All gearmotors include CE compliant wiring terminals.

The AS2/R drive module includes hardware required to mount it to a chain conveyor section, as well as fasteners to connect drives and returns end-to-end. For non-standard widths, speed, or voltages, please contact our applications engineering department.

### Outboard Mounted Motor Orientation



### Motor Position



**NOTE:** In addition to a visual inspection of chain stretch via the tensioner indicator, chain stretch can also be sensed with proximity switches. An SH2/UV proximity switch bracket and 12 mm barrel proximity switch can be mounted to the drive castings. Two proximity switches and two brackets are required per drive. See Section 17 for proximity switch ordering information.

### Ordering Information for Drive Unit AS2/R

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 998 040
		Your selection:
Drive Unit Width (B)*	160, 240, 320, 400, 480, 640, 800, 1040	_____ mm
Nominal Speed**	9, 12, 15, 18	_____ M/min
Motor Voltage/Frequency	See Table 5-1	_____ V _____ Hz
Motor Position	L, M, or R	_____ mm
Motor Orientation † (outboard mount only)	0°, 90°, 180°, 270°	_____

\* 160 & 240 (B) only available with L or R motor positions

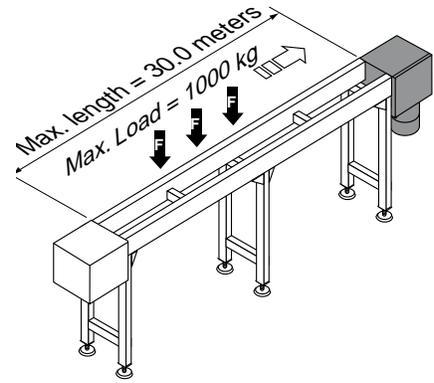
\*\* Full load conveyor speeds vary depending on motor frequency. See Table 5-1

† 90°, 180°, & 270° motor orientations are only available with L or R motor positions

Roller Chain Drive Components

**Technical data for AS2/R**

Nominal conveyor speed	=	See Table 5-1
Permissible loading weight	=	1000 kg
Maximum conveyor unit length	=	30 m (100 ft)
Motor RPM at 50 Hz	=	900-1410
Motor RPM at 60 Hz	=	1080-1692
Motor electrical specifications	=	See Table 5-1



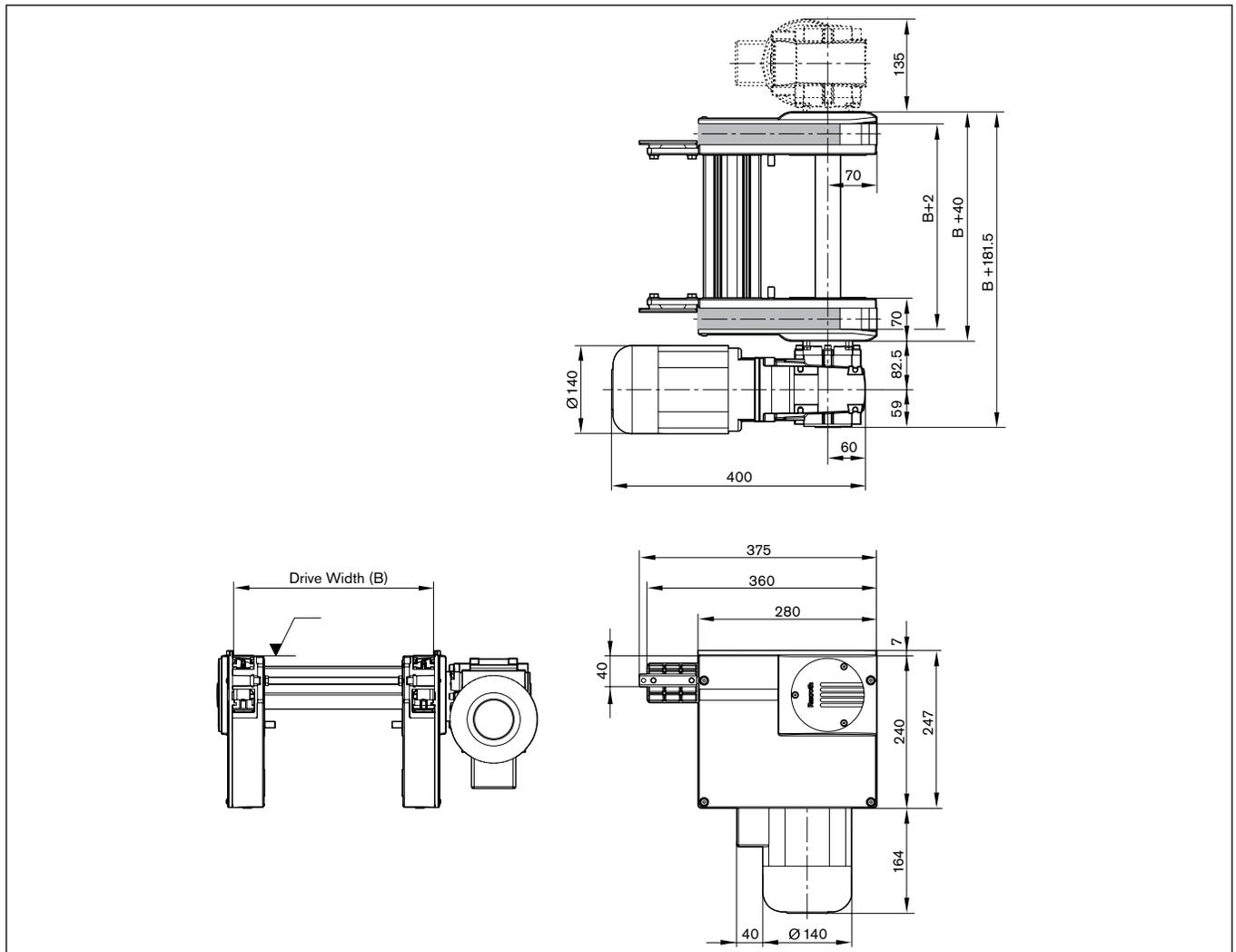
**Electrical data for AS2/R**

Nom. M/min	Actual Speed		Full Load Amps/HP @											
	50 Hz	60 Hz	208/60		240/60		380/50		415/50		480/60		575/60	
			AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP
9	8.2	9.83	1.6	3/8	1.6	3/8	0.8	3/8	0.8	3/8	0.8	3/8	0.7	3/8
12	10.3	12.5	2.4	1/2	2.4	1/2	1.2	1/2	1.2	1/2	1.2	5/8	1.0	5/8
15	13.3	15.9	2.4	1/2	2.4	1/2	1.2	1/2	1.2	1/2	1.2	5/8	1.0	5/8
18	17	20.4	3.2	3/4	3.2	3/4	1.6	3/4	1.7	3/4	1.7	7/8	1.0	3/4

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 5-1

**Dimensional data for AS2/R**



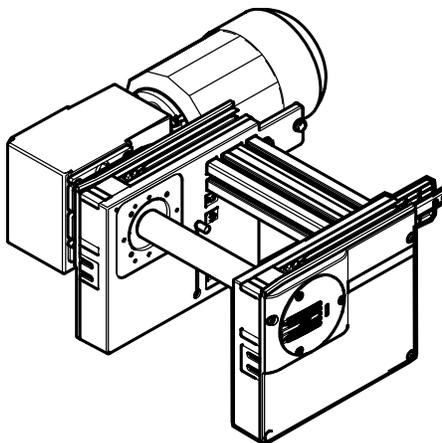
Roller Chain Drive Components

# Heavy Duty Roller Chain Drive Module

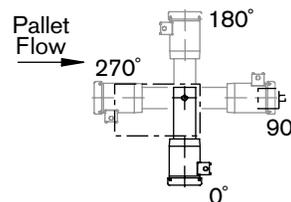


## Model AS2/R-H

This drive module uses a larger gearbox and motor in conjunction with a return unit to pull the roller chain along straight conveyor sections giving you the flexibility to create rectangular, in-line, parallel or over/under configurations. The AS2/R-H is available with either an outboard-mounted or mid-mounted gearbox and motor. The outboard-mounted option (left or right side) is available in widths from 160 mm to 1040 mm, while the mid-mounted option is available in widths from 320 mm to 1040 mm. Both styles include automatic chain tensioners.



### Outboard Mounted Motor Orientation



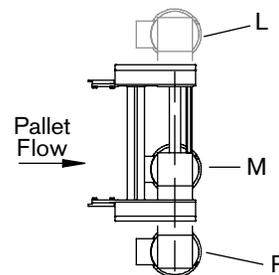
Select the mid-mounted option when space prohibits a side mounted configuration. The side mount, however, is generally preferred for accessibility - particularly for lines with multiple conveyor sections end-to-end.

Ordering parameters allow you to specify the motor voltage, frequency, conveyor speed, and motor mounting angle (outboard-mounted drives only). Outboard-mounted drive units are delivered with the motor in the customer-specified orientation, but can be rotated to any of the four locations, as shown. All motors include CE compliant wiring terminals.

The AS2/R-H drive module includes all of the required mounting hardware. For non-standard widths, speed, or voltages please contact our applications engineering department.

**NOTE:** In addition to a visual inspection of chain stretch via the tensioner indicator, chain stretch can also be sensed with proximity switches. An SH2/UV proximity switch bracket and 12 mm barrel proximity switch can be mounted to the drive castings. Two proximity switches and two brackets are required per drive. See Section 17 for proximity switch ordering information.

### Motor Position



### Ordering Information for Drive Unit AS2/R-H

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 998 041
		Your selection:
Drive Unit Width (B)*	160, 240, 320, 400, 480, 640, 800, 1040	_____ mm
Nominal Speed**	9, 12, 15, 18	_____ M/min
Motor Voltage/Frequency	See Table 5-2	_____ V _____ Hz
Motor Position	L, M, or R	_____ mm
Motor Orientation † (outboard mount only)	0°, 90°, 180°, 270°	_____

\* 160 & 240 (B) only available with L or R motor positions

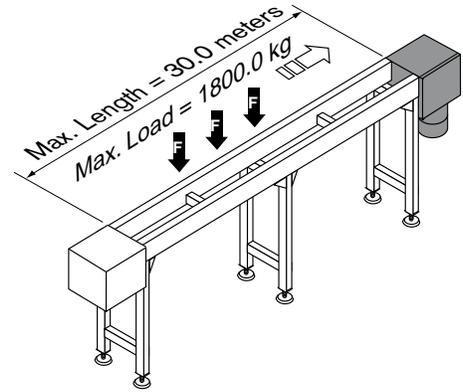
\*\* Full load conveyor speeds vary depending on motor frequency. See Table 5-2

† 90°, 180°, & 270° motor orientations are only available with L or R motor positions

Roller Chain Drive Components

**Technical data for AS2/R-H**

Nominal conveyor speed	=	See Table 5-2
Permissible loading weight	=	1800 kg
Maximum conveyor unit length	=	30 m (100 ft)
Motor RPM at 50 Hz	=	1390-1410
Motor RPM at 60 Hz	=	1660-1700
Motor electrical specifications	=	See Table 5-2



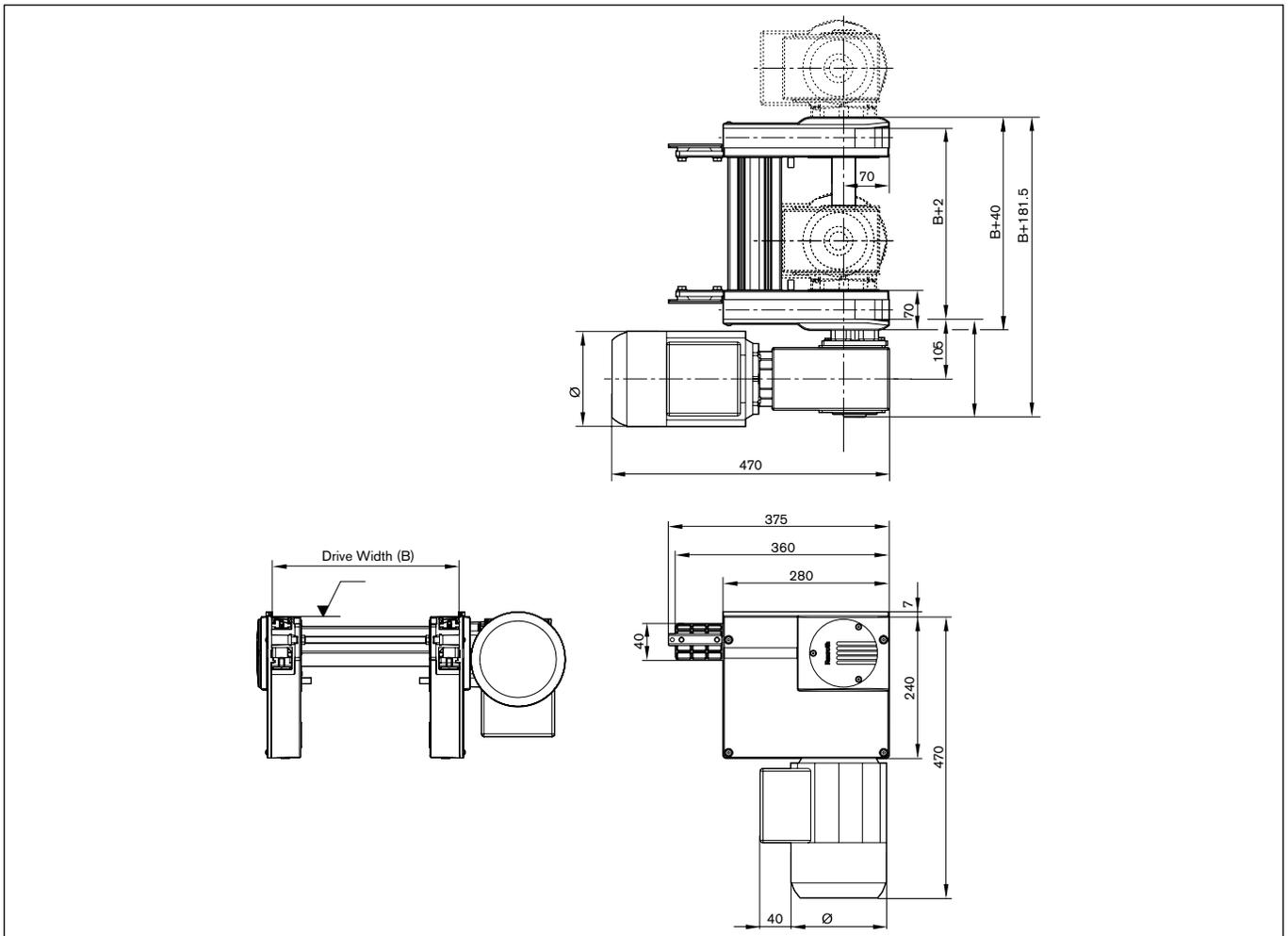
**Electrical data for AS2/R-H**

Nom. M/min	Actual Speed		Full Load Amps/HP @											
	50 Hz	60 Hz	208/60		240/60		380/50		415/50		480/60		575/60	
			AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP
9	10.06	8.4	1.9	1/2	1.8	1/2	1.6	3/4	1.6	3/4	0.82	1/2	0.71	3/4
12	12.19	12.01	3.0	3/4	3.0	3/4	1.6	3/4	1.6	3/4	1.6	3/4	1.2	3/4
15	15.59	14.83	3.8	1.0	3.8	1.0	2.2	1.0	2.2	1.0	2.2	1.0	1.7	1.0
18	17.59	17.48	3.8	1.0	3.8	1.0	2.2	1.0	2.2	1.0	2.2	1.0	1.7	1.0

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 5-2

**Dimensional data for AS2/R-H**

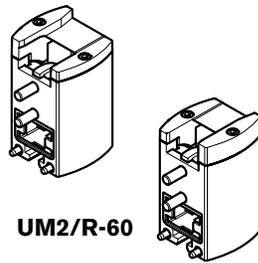


Roller Chain Drive Components

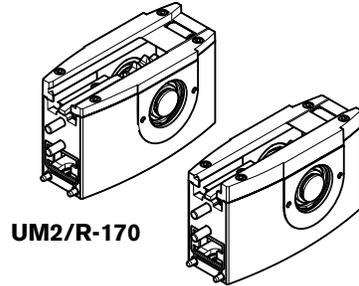
# Return Unit

Model UM2/R-60, UM2/R-170

A return unit is required for each in-line drive unit to direct or "return" the continuous loop of chain from the center channel in the conveyor rail back up to the transport level. All hardware needed to mount the return unit to a conveyor section is included.



UM2/R-60



UM2/R-170

The **UM2/R-60** returns use a sliding block to return the chain to the top of the system. This return is designed for conveyor sections up to 6000mm long.

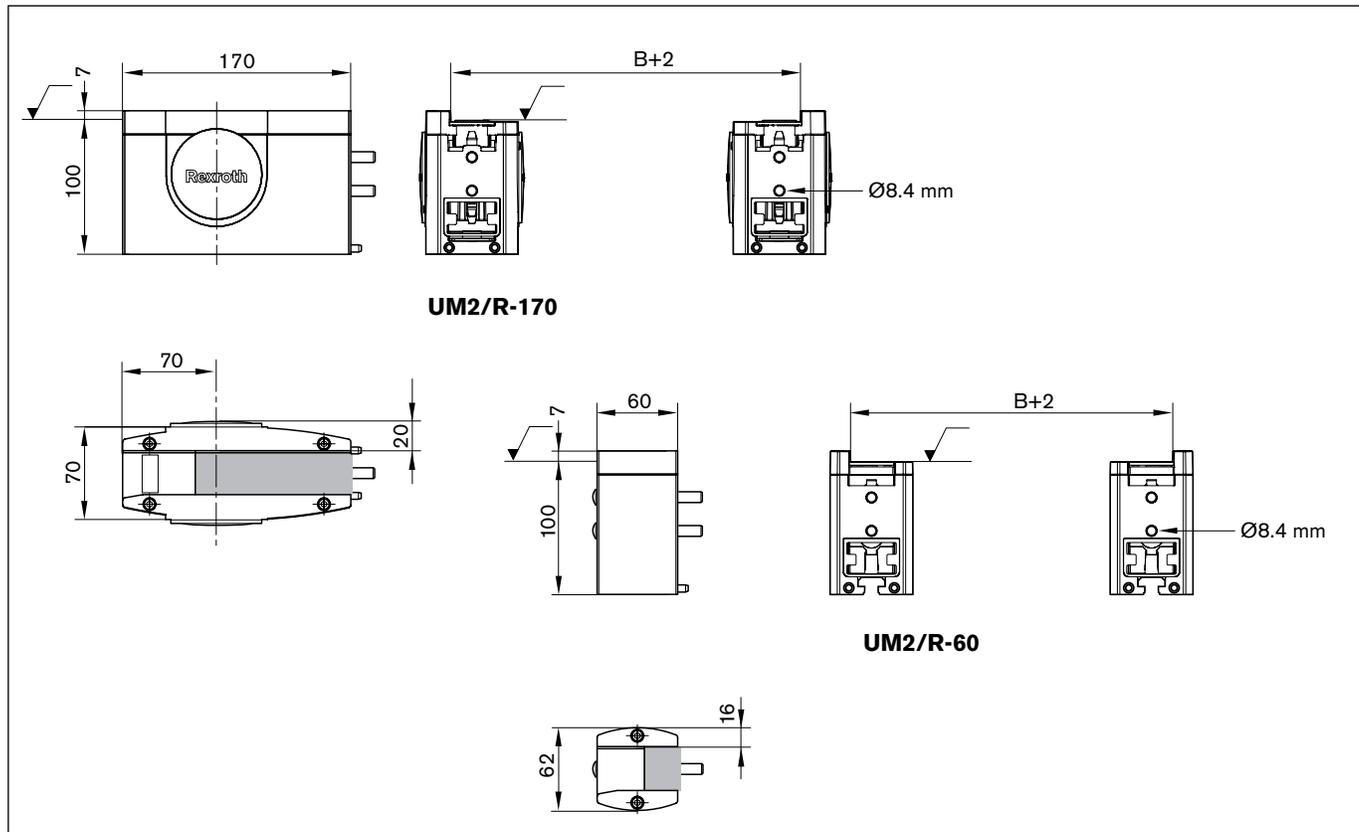
**NOTE:** Refer to the connection kits on page 10-8 to mount a UM2/R end-to-end to an AS2, BS2 or KE2.

The **UM2/R-170** returns use a sprocket to return the chain to the top of the system. This return is recommended for conveyor sections over 6000mm long.

### Ordering Information for Return Unit UM2/R

Description	Part Number
Return Unit UM2/R-60 (qty 2)	3842 528 803
Return Unit UM2/R-170 (qty 2)	3842 528 807

### Dimensional data for UM2/R

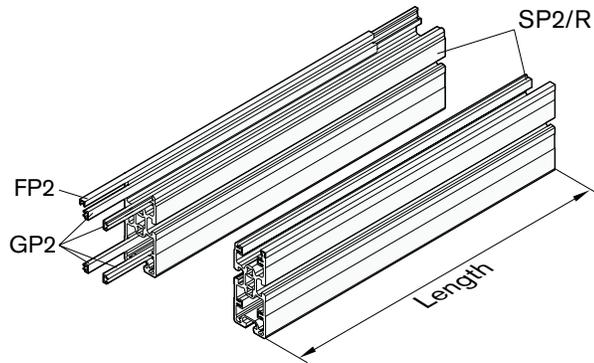


Roller Chain Drive Components

# Roller Chain Conveyor Sections

## Model ST2/R-100

The conveyor section is the structural element that supports and guides the workpiece pallet. Each section consists of two anodized aluminum chain profiles (SP2/R), upper/lower slide profile (GP2), and plastic guide profile (FP2) installed. Cross connectors to connect the conveyor profiles are ordered separately on page 7-1.



Since leg sets are required at 2 m intervals we stock standard pre-cut 2000 mm sections for quick delivery.

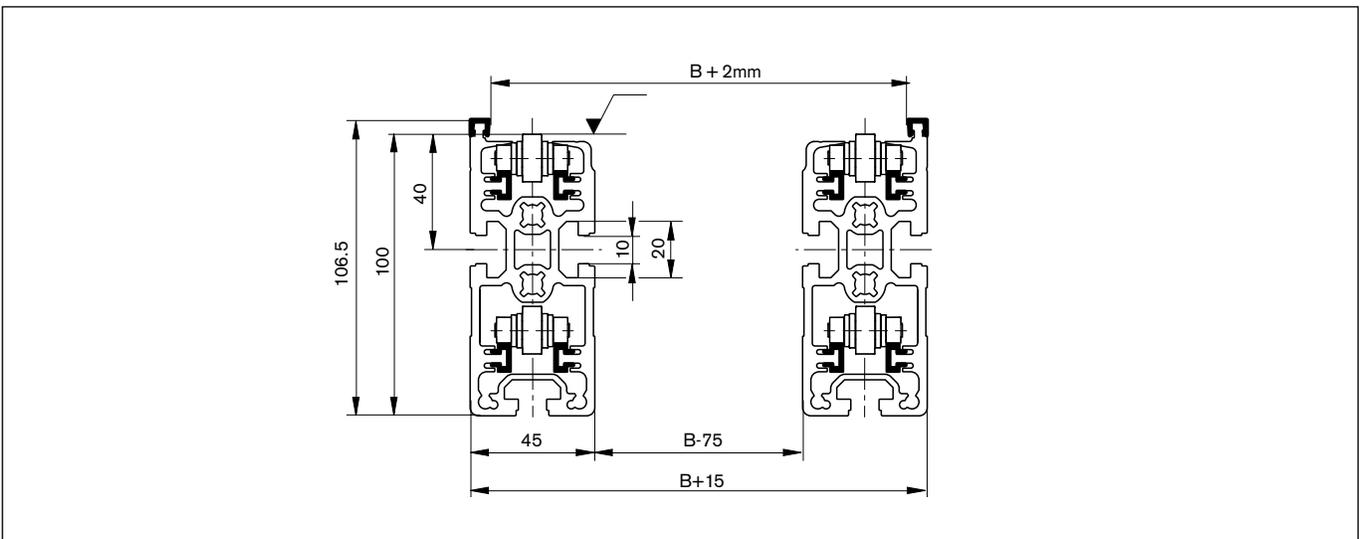
Bosch Rexroth will custom cut at no charge straight conveyor sections in 1 mm increments, from 200-6000 mm (approx. 8" to 236"). To order conveyor sections, add the length (in mm) required for your system to the end of the part number. Chain sections can be connected end-to-end with connection links to extend conveyor length (see page 7-1).

### Ordering Information for Conveyor Sections ST2/R-100

Description	Part Number
Roller chain ST2/R-100*	<b>3842 994 889/...</b>

\* To order conveyor sections 200-6000 mm long, please specify desired length at the end of the part number. For example, to order a 3560 mm conveyor section, your part number should look like this: **3842 994 889/3560**.

### Dimensional data for ST2/R-100



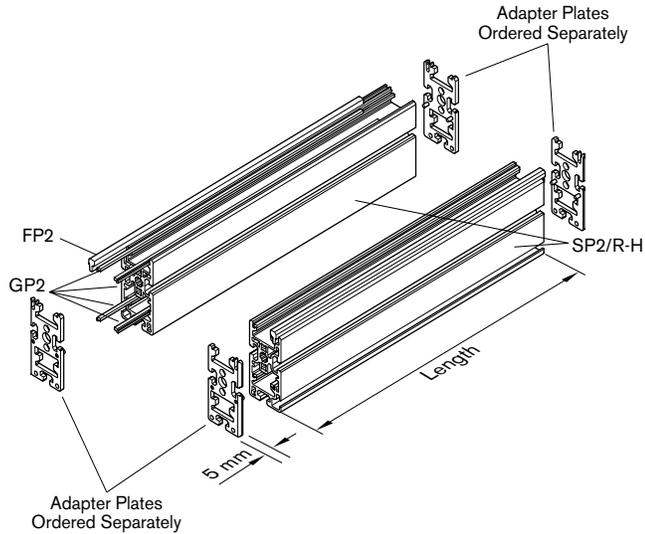
B = nominal conveyor width

Roller Chain Drive Components

# H.D. Straight Roller Chain Conveyor Sections

## Model ST2/R-H

The conveyor section is the structural element that supports and guides the workpiece pallet. Each section consists of two anodized aluminum chain profiles (SP2/R), upper/lower slide profile (GP2), and steel guide profile (FP2), installed. The installed slide profiles serve as wear strips and as a bearing surface for the chain. Order cross connectors separately on page 7-1.



**5** The H.D. roller chain conveyor section is designed for used with both polyamide and steel roller chains. It is available with either steel or plastic slide profile.

The H.D. roller chain conveyor section can be mounted to standard AS2/R drive and UM2/R return modules.

**NOTE:** adapter plates (3842 536 800) must be used to connect the ST2/R-H to an AS2/R drive and a UM2/R return.

The 10mm T-slot in each side and bottom of the aluminum chain profile allows conveyor modules or peripheral devices to be mounted using T-bolts or T-nuts eliminating the need for special machining.

The ST2/R-H section also includes an integrated cable duct on the outside of the profile. This cable duct can be covered with standard 10mm Cover Strip from the Rexroth structural framing product line.

Maximum chain conveyor section length is 6000 mm, however, Rexroth will custom cut at no charge straight conveyor sections in 1 mm increments from 200-6000 mm.

Chain sections can be connected end-to-end with connection links to extend the conveyor length (see page 7-1).

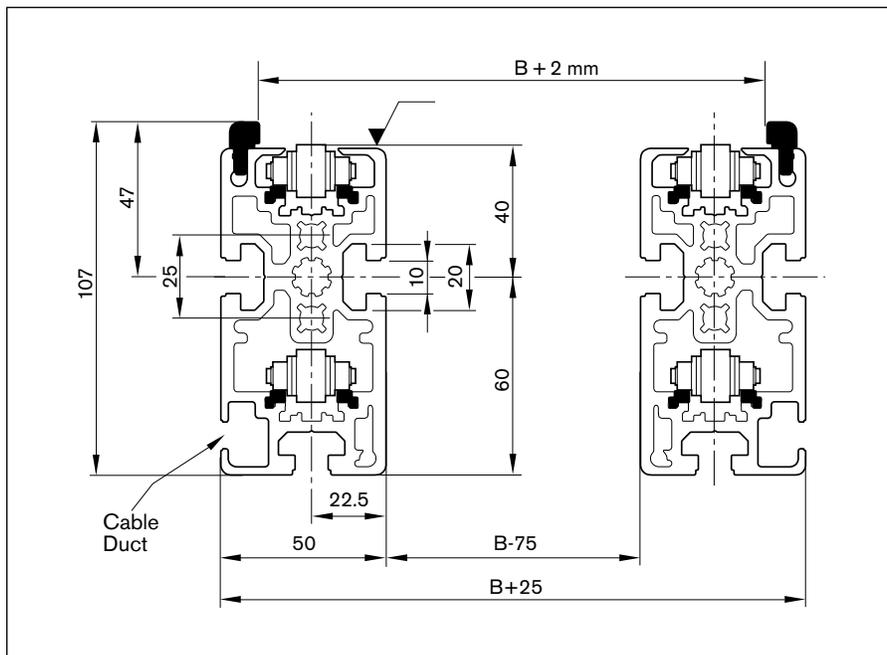
### Ordering Information for ST2/R-H Conveyor Sections

Specify part number, then select from the options below.	Your Choices are:	<b>Part Number 3842 994 972</b>
Conveyor Section Length (L) in mm	200 to 6000 mm (in 1 mm increments)	_____mm
Slide Profile (GP2)	Plastic (GP2/H-Kst) Steel (GP2/H-St)	_____
Attachment Location (AO)	0 (intermediate) 1 (end-to-intermediate) 2 (end-to-end)	_____

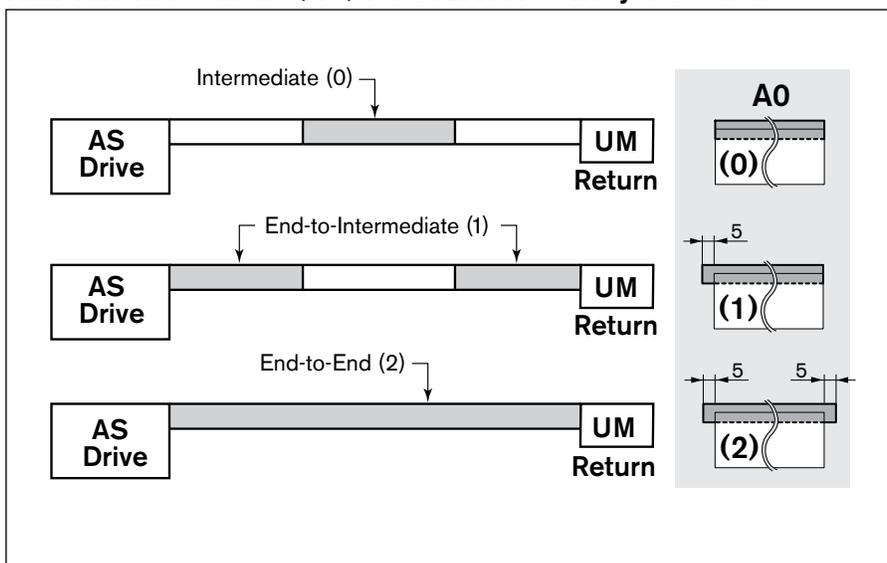
Adapter Plate Kit (set of 4)	<b>3842 536 800</b>
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Roller Chain Drive Components

Dimensional Data for ST2/R-H



Attachment locations (AO) for ST2/R-H Conveyor Sections

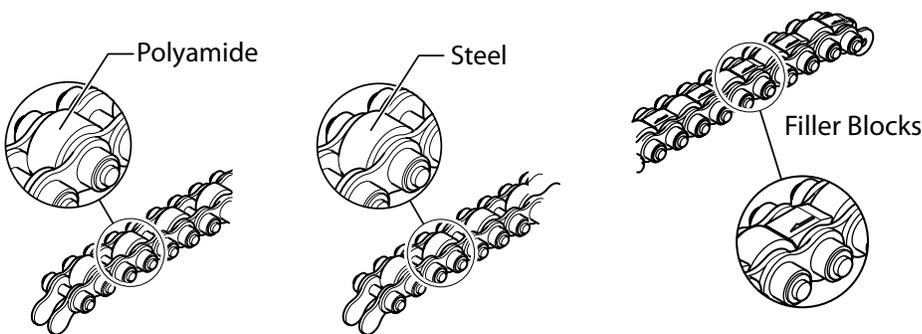


Roller Chain Drive Components

# Roller Chain

## Model GT2/R

Roller chain can be ordered in two lengths (6 or 12 meters), with two different types of rollers (polyamide or steel), and with or without plastic filler blocks. Filler blocks are designed to prevent small parts or debris from becoming wedged between the rollers.



All rolls include a roller chain master link. A roller chain disassembly tool is available on page 5-11 to remove chain from an existing line or to shorten chain sections.

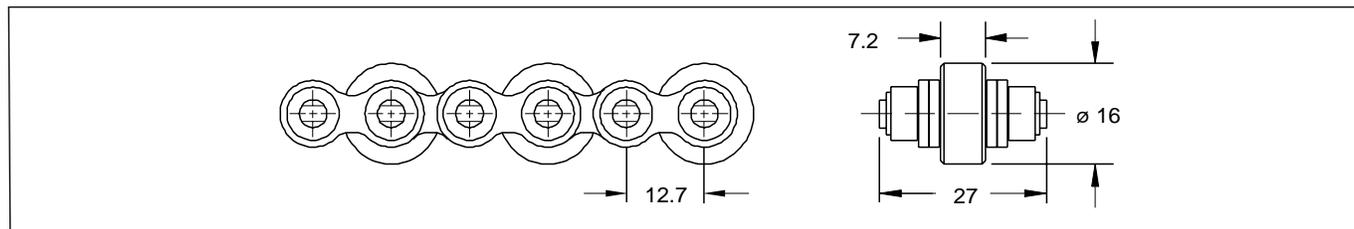
Order roller chain using the formula, diagram, and table below to determine the total length of chain needed.

For assistance calculating quantity of chain required, please contact our applications engineering department.

### Ordering Information for Roller Chain GT2/R

Roller Chain with Polyamide Rollers	Part Number
6 m roll	8981 010 661
12 m roll	8981 001 675
Roller Chain with Polyamide Rollers & Filler Blocks	
12 m roll	3842 536 268
Roller Chain with Steel Rollers	
12 m roll	3842 530 864
Roller Chain with Steel Rollers & Filler Blocks	
12 m roll	3842 536 270
Components	
Master link	8981 009 767

### Dimensional data for GT2/R



### Calculating chain requirements:

<p><b>For Roller Chain Drive Systems</b></p> <p>(Number of drives) x (3,050 mm) _____ mm</p> <p>(4) x L + (length of the straight chain sections) _____ mm</p> <p><b>Total chain required*</b> _____ mm</p>	<p>Minimum conveyor section length = 1000 mm</p>
<p><b>For BS2/R Transverse Conveyors</b></p> <p><math>[(L - 234) \times 4] + 1102 = \text{Total chain required}^*</math> _____ mm</p>	<p>Minimum length = 300 mm</p>
<p>* This number includes the total chain required for both conveyor sections including drives and returns.</p>	

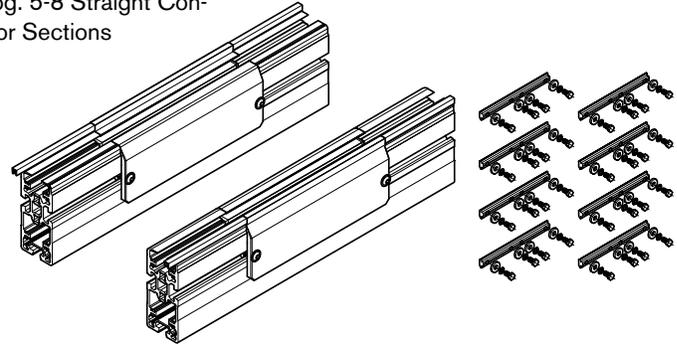
**Note:** Divide the total chain required above by 12,000 to determine the number of 12 m rolls to order.

Roller Chain Drive Components

# Roller Chain Maintenance Module

Model **ST2/R-W, ST2/R-W-H**

Use only with ST2/R-100 pg. 5-7 or ST2/R-H pg. 5-8 Straight Conveyor Sections



The **ST 2/R-W** maintenance module is designed to be used with ST2/R-100 straight conveyor sections on pg. 5-7 and provides an access point for assembly, disassembly, or lubrication of a roller chain conveyor section. This module is specifically for use with roller chain conveyor sections (ST2/R-100) only.

The **ST 2/R-W-H** maintenance module is designed to be used with Heavy Duty ST2/R-H straight conveyor sections on pg. 5-8 and provides an access point for assembly, disassembly, or lubrication of a roller chain conveyor section. This module is designed specifically for use with H.D. roller chain conveyor sections (ST2/R-H) only.

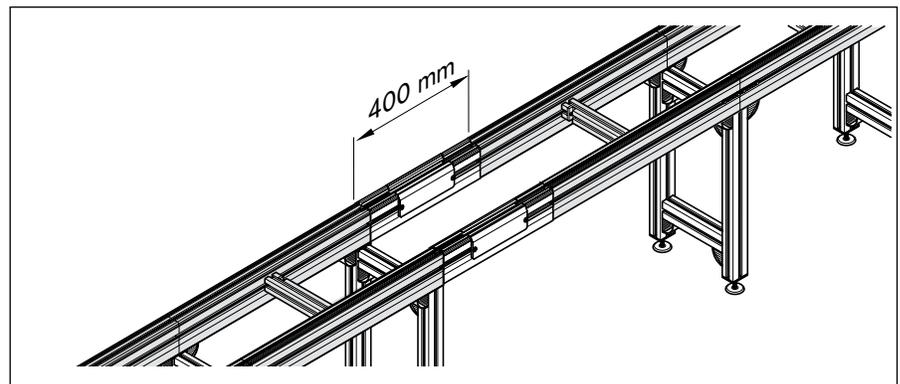
The maintenance module consists of two 400mm long sections. Each section includes two removable, electrically conductive side covers. Connection links are used to mount the maintenance module to the conveyor sections.

All mounting hardware is included.

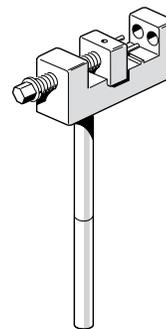
### Ordering Information for ST2/R-W Maintenance Modules

Description	Part Number
ST2/R-W Maintenance Module	<b>3842 532 778</b>
ST2/R-W-H Maintenance Module	<b>3842 537 319</b>

### Dimensional Data for ST2/R-W



# Roller Chain Tool



Use the roller chain disassembly tool to remove links from the chain. The tool presses out the pins from the chain allowing you shorten and rejoin the chain using a master link.

### Ordering Information for Roller Chain Tool

Description	Part Number
Roller Chain Disassembly Tool	<b>8981 010 511</b>

Accelerator Chain Drive Components

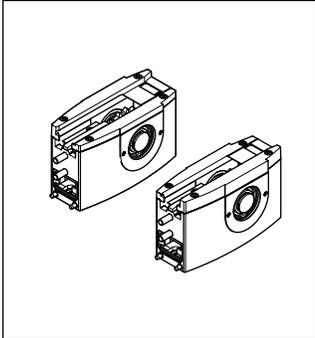
# Section 6 – Accelerator Chain Drive Components

Unlike traditional power and free roller chain (GT2/R), accelerating roller chain (Vplus) allows for workpiece pallets to reach a conveying speed that is 2.5 times higher than the nominal chain speed. As a result, a lower chain speed can be selected, which results in low-noise operation and reduced wear. Another key advantage is the accelerating effect that allows the workpiece pallet to reach a faster return to conveying speed after a processing station or after being released from a stop gate.

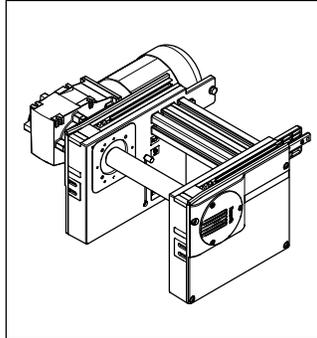
**How it works.** Vplus roller chain is constructed of two different size rollers that are attached to a common shaft. The large center (support) roller supports the workpiece pallet, while the two smaller (transport) rollers provide the sliding friction. When loaded, the transport roller is driven by the supporting rollers via sliding friction. Due to the difference in size between the transport and support rollers, the workpiece pallet travels at a conveying speed up to 2.5 times faster than the nominal chain speed. Once the

workpiece pallet stops, the support roller comes to a standstill and the supporting rollers continue to move freely via sliding friction.

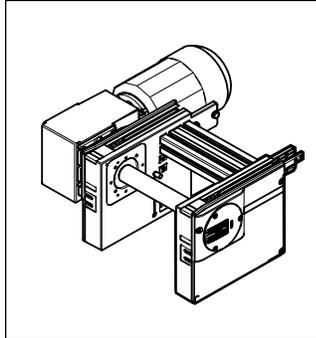
Due to the unique design characteristics of the chain, specially adapted drive modules, return modules, conveyor sections, and maintenance sections are required for use with the Vplus chain.



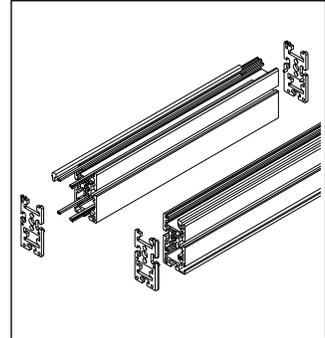
**UM2/R Vplus**  
Return Units  
6-1



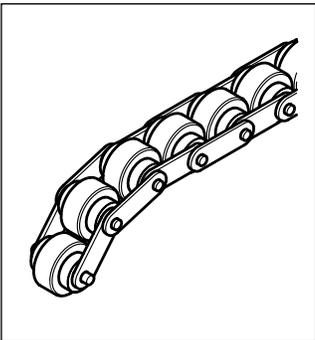
**AS2/R Vplus**  
Acceleration Drive Units  
6-2 to 6-3



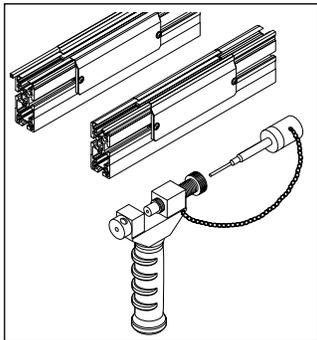
**AS2/R-H Vplus**  
Acceleration Drive Units  
6-4 to 6-5



**ST2/R-H Vplus**  
Conveyor Section Profiles  
6-6 to 6-7



**GT2/R Vplus**  
Acceleration Roller Chain  
6-8



**ST2/R-W Vplus**  
Maintenance Module &  
Chain Break  
6-9

Accelerator Chain Drive Components

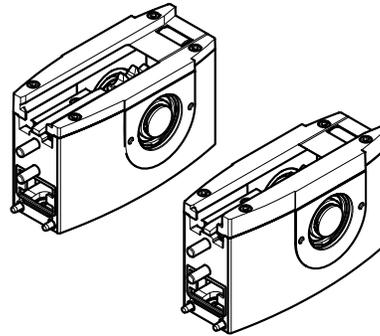
# Return Unit

Model UM2/R Vplus

**CAUTION:** *This return unit has been specially adapted to only work with other Vplus modules and components. It cannot be used with any other roller chains, conveyor sections or return units.*

A return unit is required for each Vplus drive unit to direct or "return" the continuous loop of Vplus roller chain from the center channel in the Vplus conveyor rail back up to the transport level. All hardware needed to mount the return unit to a conveyor section is included.

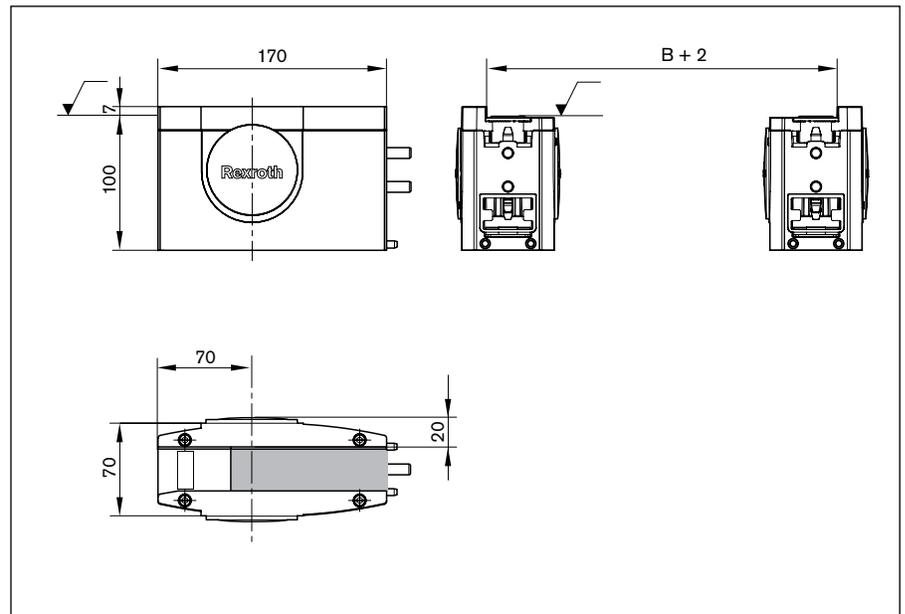
**NOTE:** Refer to the connection kits on page 10-3 to mount a UM2/R end-to-end to an AS2, BS2 or KE2.



## Ordering Information for Return Unit UM2/R Vplus

Description	Part Number
Return Unit UM2/R Vplus (qty 2)	3842 536 803

## Dimensional data for UM2/R Vplus



Accelerator Chain Drive Components

# Roller Chain Drive Module



## Model AS2/R Vplus

**CAUTION:** This drive has been specially adapted to only work with other Vplus modules and components. It cannot be used with any other roller chains, conveyor sections or return units.

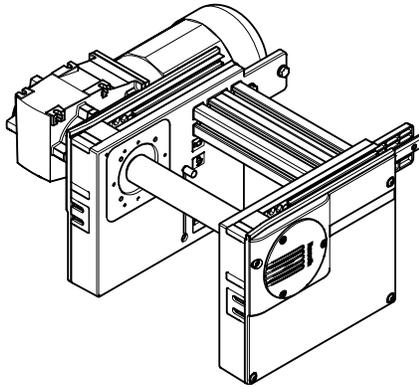
This drive module in conjunction with a Vplus return unit pulls Vplus roller chain along straight Vplus conveyor sections giving you the flexibility to create rectangular, in-line, parallel or over/under configurations. The AS2/R Vplus is available with either an outboard-mounted or mid-mounted gearmotor. The outboard-mounted option (left or right side) is available in widths from 160mm to 1040mm, while the mid-mounted option is available in widths from 320mm to 1040mm. Both styles include automatic chain tensioners.

Select the mid-mounted option when space prohibits a side mounted configuration. The side mount, however, is generally preferred for accessibility – particularly for lines with multiple conveyor sections end-to-end.

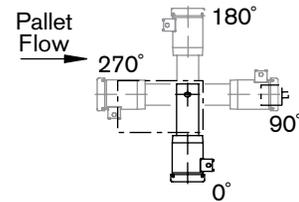
Ordering parameters allow you to specify the motor voltage, frequency, conveyor speed, and motor mounting angle (outboard mounted drives only). Outboard mounted drive units are delivered with the motor in the customer specified orientation, but can be rotated to any of the four locations, as shown. All gearmotors include CE compliant wiring terminals.

**NOTE:** On accelerating roller chain, workpiece pallets can reach a conveying speed that is up to 2.5 times higher than the nominal chain speed. For this reason, nominal chain speeds are limited to 12m/min. Refer to the electrical data table for nominal chain speeds and nominal conveying speeds.

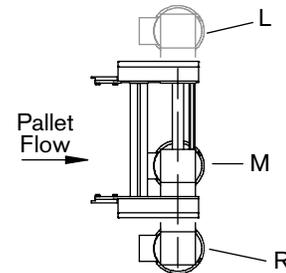
The AS2/R Vplus drive module includes hardware required to mount it to a chain conveyor section, as well as fasteners to connect drives and returns end-to-end.



### Outboard Mounted Motor Orientation



### Motor Position



For nonstandard widths, nominal chain speeds >12m/min., or voltages, please contact our applications engineering department.

In addition to a visual inspection of chain stretch via the tensioner indicator, chain stretch can also be sensed with proximity switches. An SH2/UV proximity switch bracket and 12mm barrel proximity switch can be mounted to the drive castings. Two proximity switches and two brackets are required per drive. See Section 17 for proximity switch ordering information.

### Ordering Information for Drive Unit AS2/R Vplus

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>3842 998 233</b>
		Your selection:
Drive Unit Width (B)*	160, 240, 320, 400, 480, 640, 800, 1040	_____ mm
Nominal Chain Speed**	6, 9, 12	_____ M/min
Motor Voltage/Frequency	See Table 6-1	_____ V _____ Hz
Motor Position	L, M, or R	_____ mm
Motor Orientation † (outboard mount only)	0°, 90°, 180°, 270°	_____

\* 160 & 240 (B) only available with L or R motor positions

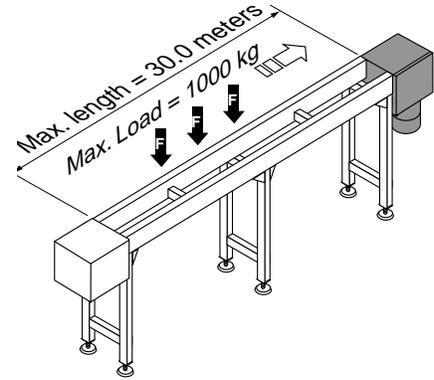
\*\* Full load conveyor speeds vary depending on motor frequency. See Table 6-1

† 90°, 180°, & 270° motor orientations are only available with L or R motor positions

Accelerator Chain Drive Components

**Technical data for AS2/R Vplus**

Nominal conveyor speed	=	See Table 6-1
Permissible loading weight	=	1000 kg
Maximum conveyor unit length	=	30 m (100 ft)
Motor RPM at 50 Hz	=	900-1410
Motor RPM at 60 Hz	=	1080-1692
Motor electrical specifications	=	See Table 6-1



**Electrical data for AS2/R Vplus**

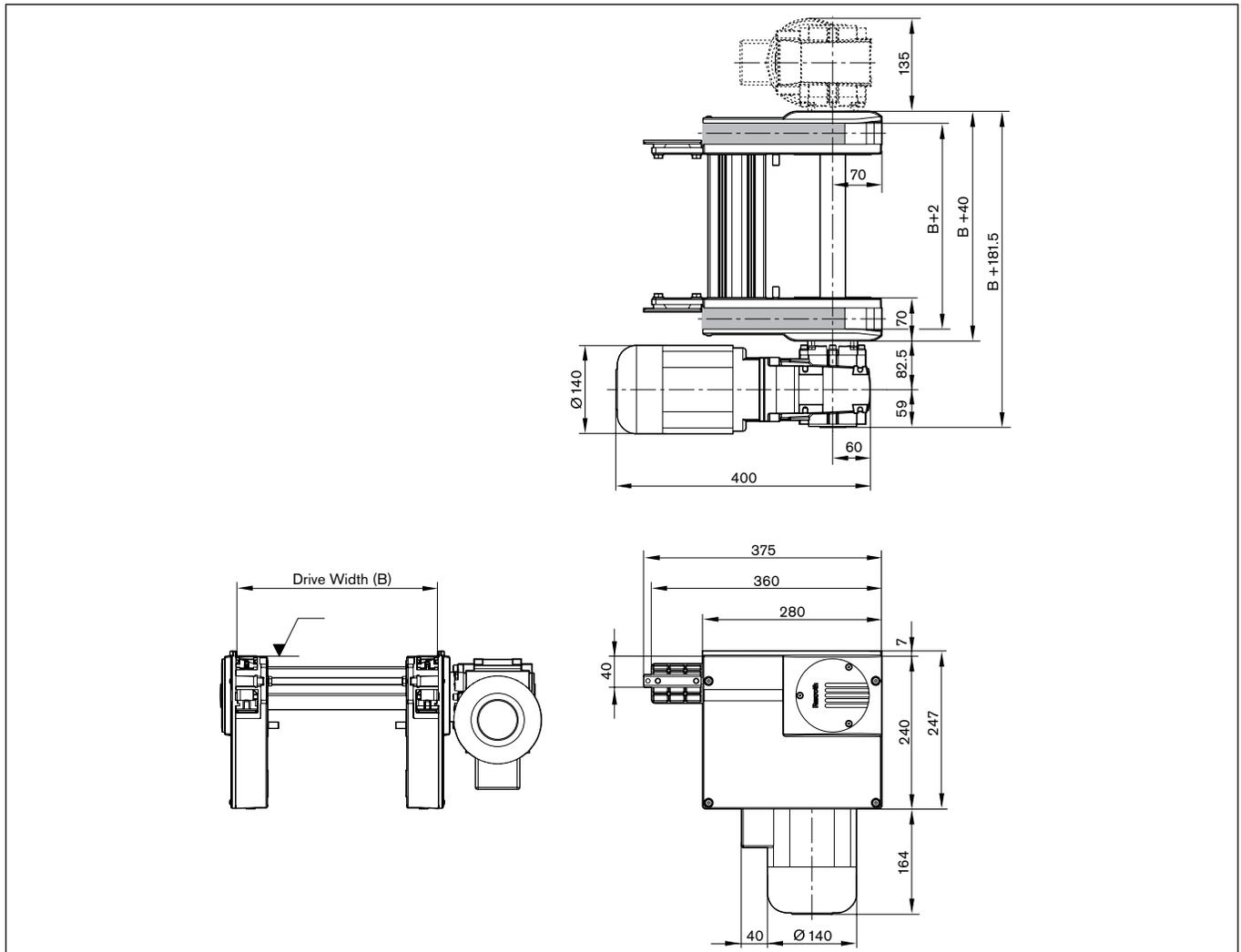
Nominal Conveying Speed M/min*	Nom. Chain Speed M/min	Actual Chain Speed		Full Load Amps/HP @											
		50 Hz	60 Hz	208/60		240/60		380/50		415/50		480/60		575/60	
				AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP
15	6	5.17	6.20	1.4	1/4	1.4	1/4	1.2	1/4	1.2	1/4	1.2	1/4	1.0	1/4
22.5	9	8.10	9.68	1.8	3/8	1.8	3/8	1.3	3/8	1.3	3/8	1.3	3/8	1.0	3/8
30	12	9.90	12.06	2.3	1/2	2.3	1/2	1.6	1/2	1.6	1/2	1.6	1/2	1.1	1/2

**\*Caution:** Nominal conveying speed is 2.5 times greater than nominal chain speed. Special requirements must be observed for conveying speeds > 18m/min.

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 6-1

**Dimensional data for AS2/R Vplus**



Accelerator Chain Drive Components

# Heavy Duty Roller Chain Drive Module



Model AS2/R-H Vplus

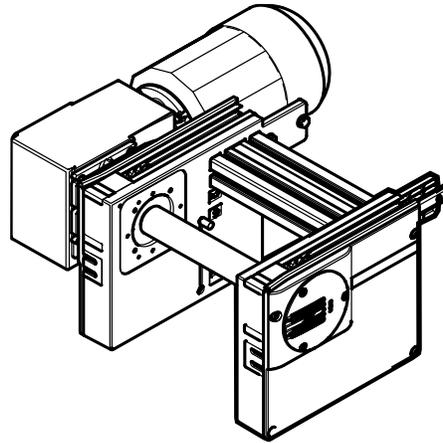
**CAUTION:** *This drive has been specially adapted to only work with other Vplus modules and components. It cannot be used with any other roller chains, conveyor sections or return units.*

This drive module uses a larger gearbox and motor in conjunction with a Vplus return unit to pull Vplus roller chain along straight Vplus conveyor sections giving you the flexibility to create rectangular, in-line, parallel or over/under configurations. The AS2/R-H Vplus is available with either an outboard-mounted or mid-mounted gearbox and motor. The outboard-mounted option (left or right side) is available in widths from 160mm to 1040mm, while the mid-mounted option is available in widths from 320mm to 1040mm. Both styles include automatic chain tensioners.

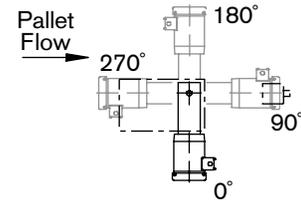
Select the mid-mounted option when space prohibits a side mounted configuration. The side mount, however, is generally preferred for accessibility – particularly for lines with multiple conveyor sections end-to-end.

Ordering parameters allow you to specify the motor voltage, frequency, conveyor speed, and motor mounting angle (outboard mounted drives only). Outboard mounted drive units are delivered with the motor in the customer specified orientation, but can be rotated to any of the four locations, as shown. All motors include CE compliant wiring terminals.

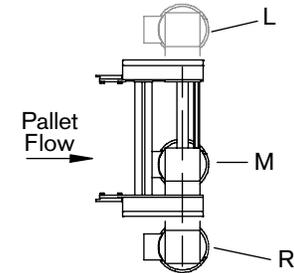
**NOTE:** *On accelerating roller chain, workpiece pallets reach a conveying speed that is 2.5 times higher than the nominal chain speed. For this reason, nominal chain speeds are limited to 12m/min. Refer to the electrical data table for nominal chain speeds and nominal conveying speeds.*



### Outboard Mounted Motor Orientation



### Motor Position



The AS2/R-H Vplus drive includes all of the required mounting hardware. For non-standard widths, nominal chain speeds >12m/min., or voltages, please contact our applications engineering department.

**NOTE:** In addition to a visual inspection of chain stretch via the tensioner indicator, chain stretch can also be sensed with proximity switches. An SH2/UV proximity switch bracket and 12mm barrel proximity switch can be mounted to the drive castings. Two proximity switches and two brackets are required per drive. See Section 17 for proximity switch ordering information.

### Ordering Information for Drive Unit AS2/R-H Vplus

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 998 234
		Your selection:
Drive Unit Width (B)*	160, 240, 320, 400, 480, 640, 800, 1040	_____mm
Nominal Chain Speed**	6, 9, 12	_____M/min
Motor Voltage/Frequency	See Table 6-2	_____ V _____Hz
Motor Position	L, M, or R	_____mm
Motor Orientation † (outboard mount only)	0°, 90°, 180°, 270°	_____

\* 160 & 240 (B) only available with L or R motor positions

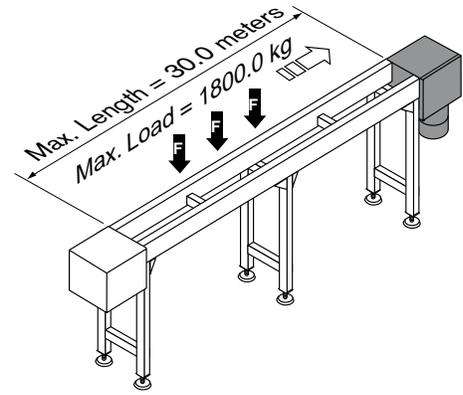
\*\* Full load conveyor speeds vary depending on motor frequency. See Table 6-2

† 90°, 180°, & 270° motor orientations are only available with L or R motor positions

Accelerator Chain Drive Components

**Technical data for AS2/R-H Vplus**

Nominal conveyor speed	=	See Table 6-2
Permissible loading weight	=	1800 kg
Maximum conveyor unit length	=	30 m (100 ft)
Motor RPM at 50 Hz	=	1390-1410
Motor RPM at 60 Hz	=	1660-1700
Motor electrical specifications	=	See Table 6-2



**Electrical data for AS2/R-H Vplus**

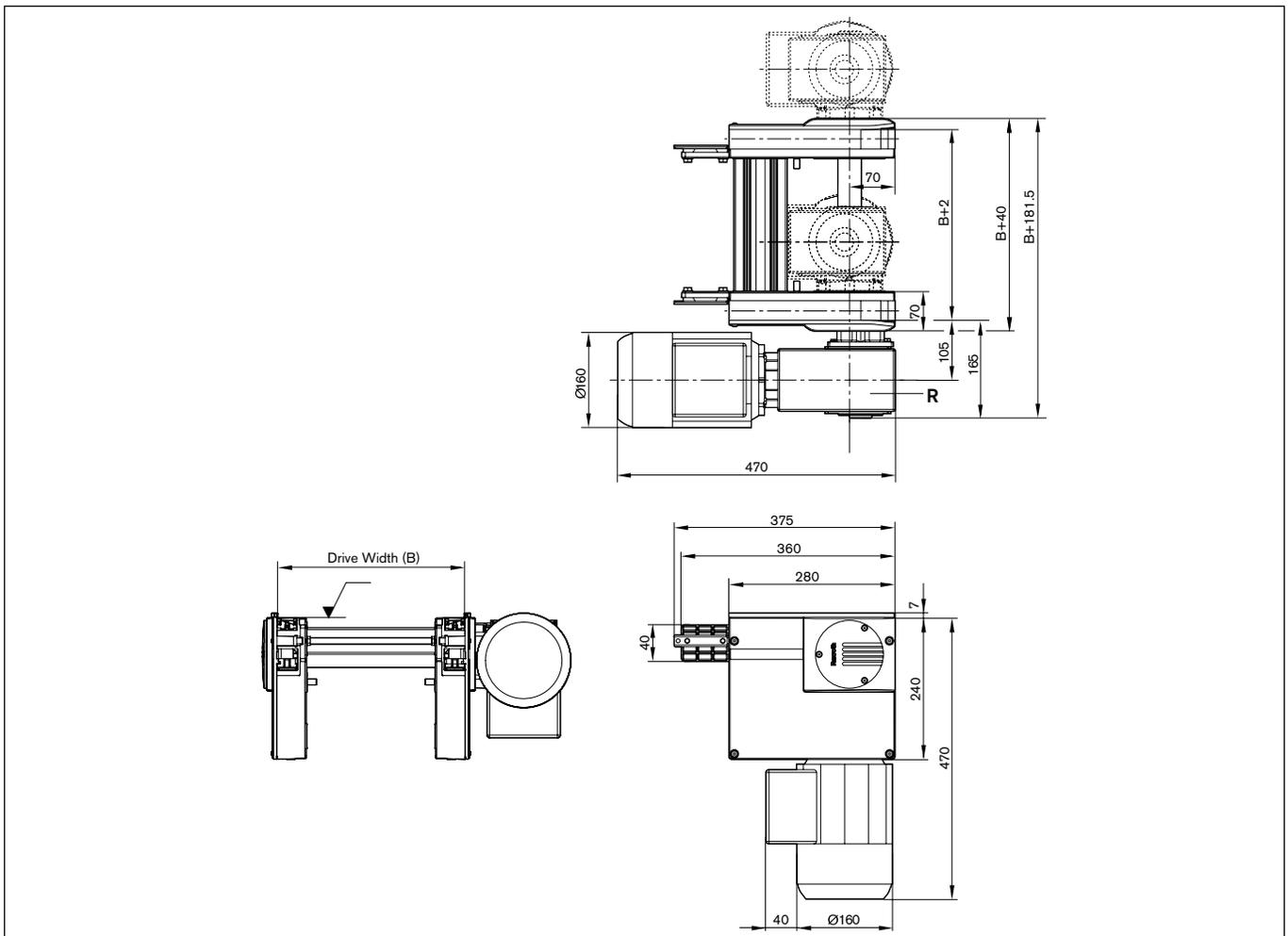
Nominal Conveying Speed M/min*	Nom. Chain Speed M/min	Actual Chain Speed		Full Load Amps/HP @											
		50 Hz	60 Hz	208/60		240/60		380/50		415/50		480/60		575/60	
		AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP		
15	6	6.69	6.50	1.9	1/2	1.9	1/2	1.0	1/2	1.0	1/2	0.8	1/2	0.7	1/2
22.5	9	9.73	8.12	1.9	1/2	1.9	1/2	1.6	3/4	1.6	3/4	0.8	1/2	0.7	3/4
30	12	11.80	11.76	2.4	3/4	2.4	3/4	1.6	3/4	1.6	3/4	1.6	3/4	1.2	3/4

**\*Caution:** Nominal conveying speed is 2.5 times greater than nominal chain speed. Special requirements must be observed for conveying speeds > 18m/min.

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 6-2

**Dimensional data for AS2/R-H Vplus**



Accelerator Chain Drive Components

# H.D. Straight Roller Chain Conveyor Sections

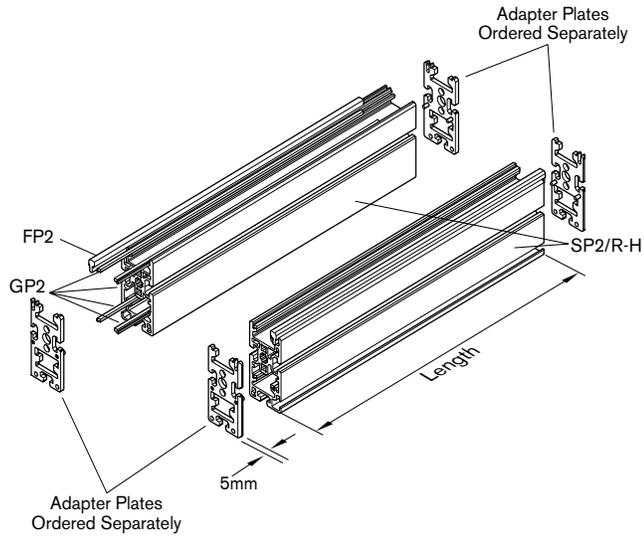
## Model ST2/R-H Vplus

**CAUTION:** *This conveyor section can only be used in conjunction with other Vplus modules and components. It cannot be used with standard drive modules, return units, or roller chain.*

The Vplus conveyor section is the structural element that supports and guides the workpiece pallet. Each section consists of two anodized aluminum chain profiles (SP2/R-H), upper/lower slide profile (GP2/H-St), and steel guide profile (FP2/H-St), installed. The installed slide profiles serve as wear strips and as a bearing surface for the chain. Order cross connectors separately on page 7-1.

The Vplus roller chain conveyor section is designed only for use with accelerating roller chain. It can only be mounted to Vplus drive modules and Vplus return units.

**NOTE:** adapter plates (3842 536 802) must be used to connect the ST2/R-H Vplus to an AS2/R Vplus drive and a UM2/R Vplus return.



The 10mm T-slot in each side and bottom of the aluminum chain profile allows conveyor modules or peripheral devices to be mounted using T-bolts or T-nuts eliminating the need for special machining.

The ST2/R-H Vplus section also includes an integrated cable duct on the outside of the profile. This cable duct can be

covered with standard 10mm Cover Strip from the Rexroth structural framing product line.

Maximum chain section length is 6000 mm, however, Rexroth will custom cut at no charge straight conveyor sections in 1 mm increments from 200-6000 mm. Chain sections can be connected end-to-end with connection links to extend the conveyor length (see page 7-1).

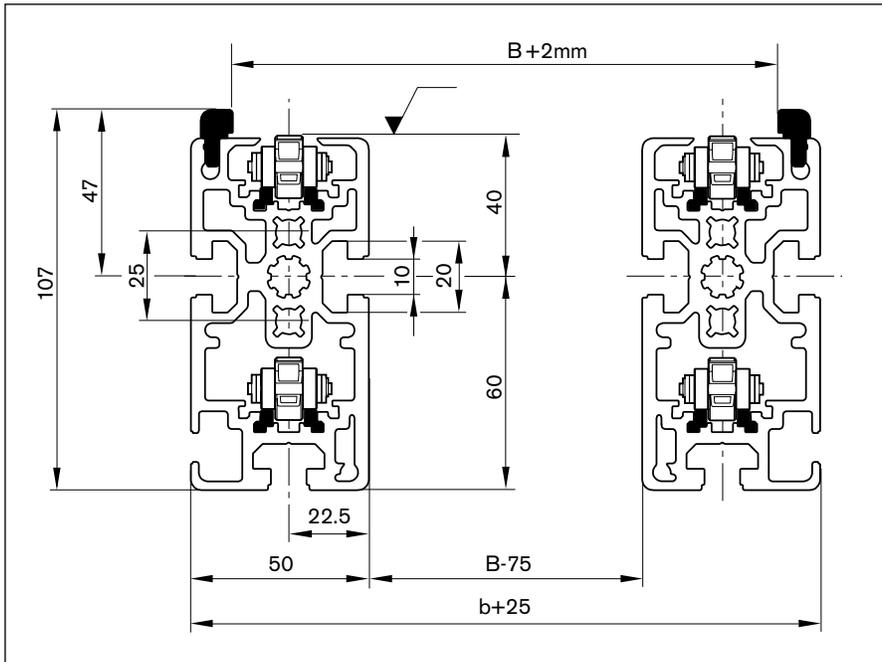
### Ordering Information for ST2/R-H Vplus Conveyor Sections

Specify part number, then select from the options below.	Your Choices are:	<b>Part Number 3842 995 000</b>
Conveyor Section Length (L) in mm	200 to 6000 mm (in 1 mm increments)	_____mm
Slide Profile (GP2)	Steel (GP2/H-St)	<u>Steel (GP2/H-St)</u>
Attachment Location (AO)	0 (intermediate) 1 (end-to-intermediate) 2 (end-to-end)	_____

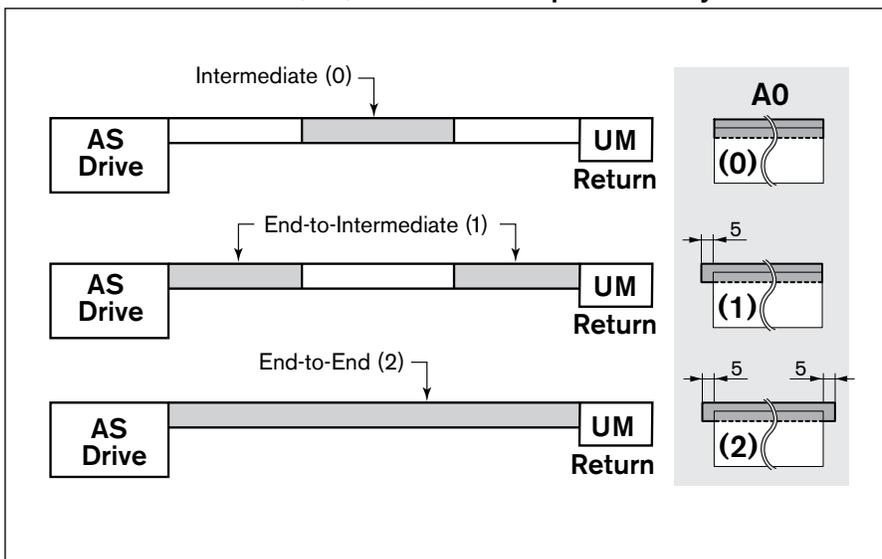
Adapter Plate Kit (set of 4)	<b>3842 536 802</b>
------------------------------	---------------------

Accelerator Chain Drive Components

**Dimensional Information for ST2/R-H Vplus Conveyor Sections**



**Attachment locations (AO) for ST2/R-H Vplus Conveyor Sections**



Accelerator Chain Drive Components

# Accelerating Roller Chain

## Model GT2/R Vplus

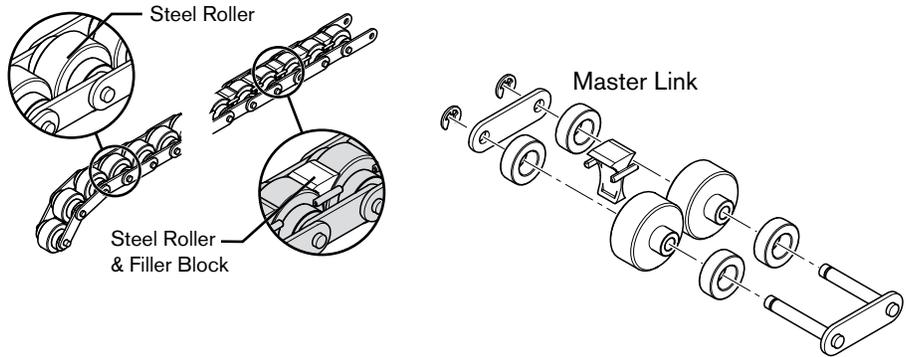
**CAUTION:** *This roller chain can only be used in conjunction with other Vplus modules and components. It cannot be used with standard drive modules, return units, or conveyor sections.*

Accelerating roller chain, which includes steel transport and support rollers, is available in 12 meter rolls. It can be ordered with or without PA12 polyamide filler blocks. Filler blocks are designed to prevent small parts or debris from becoming wedged between the rollers.

All rolls include a roller chain master link. A roller chain disassembly tool is available on page 6-9 to remove chain from an existing line or to shorten chain sections.

Order accelerating roller chain using the formula, diagram, and table on page 5-10 to determine the total length of chain needed.

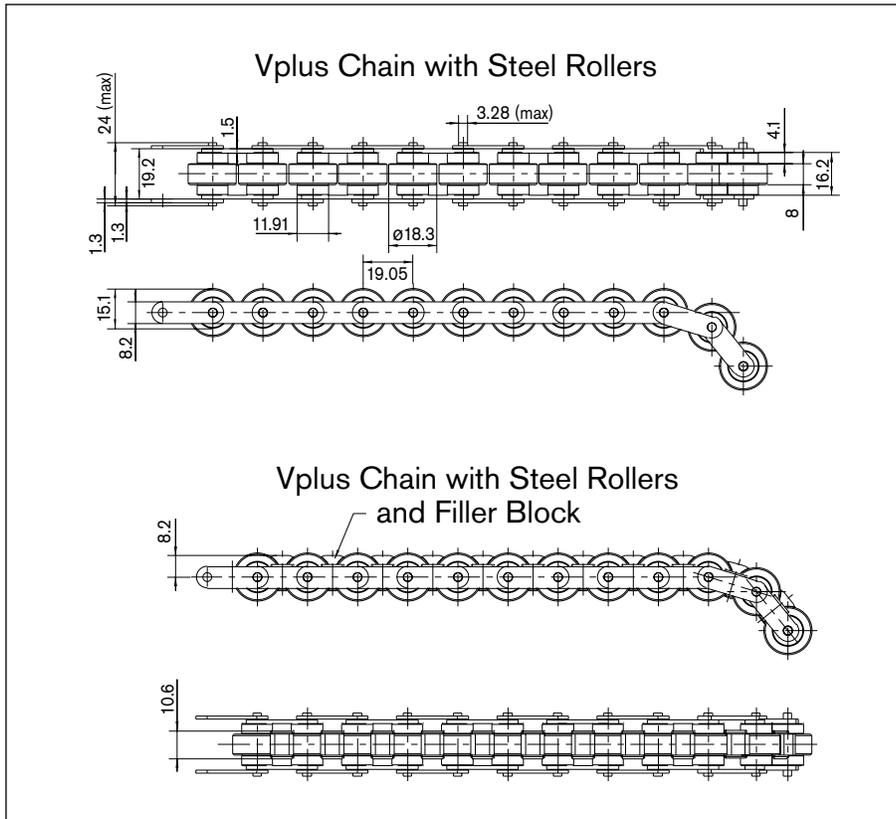
For assistance calculating quantity of chain required, please contact our applications engineering department.



### Ordering Information for GT2/R Vplus Roller Chain

Vplus Roller Chain with Steel Rollers	Part Number
12 m roll	3842 538 869
Vplus Roller Chain with Steel Rollers & Filler Blocks	
12 m roll	3842 538 870
Components	
Master link	3842 538 872

### Dimensional data for GT2/R Vplus Roller Chain



Accelerator Chain Drive Components

# Accelerating Roller Chain Maintenance Module

Model ST2/R-H Vplus

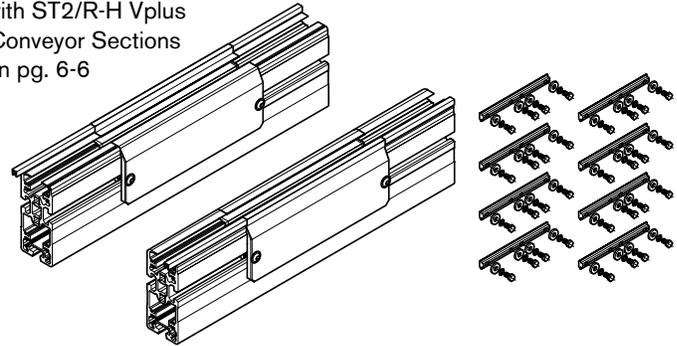
**CAUTION:** *This maintenance module can only be used in conjunction with ST2/R-H Vplus straight conveyor sections.*

The ST2/R-H Vplus maintenance module provides an access point for assembly, disassembly, or lubrication of a Vplus roller chain conveyor section.

The maintenance module consists of two 400mm long sections. Each section includes two removable, electrically conductive side covers.

Connection links are used to mount the maintenance module to the conveyor sections. All mounting hardware is included.

Use only with ST2/R-H Vplus Straight Conveyor Sections on pg. 6-6

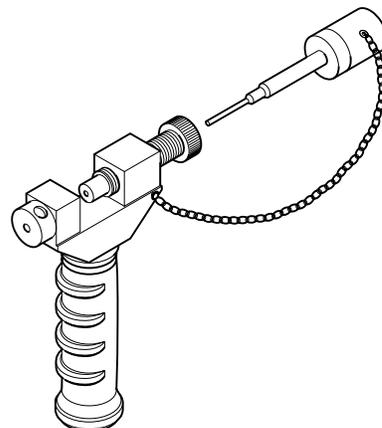


## Ordering Information for ST2/R-W Vplus Maintenance Modules

Description	Part number
ST2/R-W-H Vplus Maintenance Module	<b>3842 537 320</b>

# Vplus Roller Chain Tool

Use the Vplus roller chain disassembly tool to remove links from the Vplus accelerating roller chain. The tool presses out the pins from the chain allowing you shorten and rejoin the chain using a master link.



## Ordering Information for Vplus Roller Chain Tool

Description	Part number
Vplus Roller Chain Break Tool	<b>3842 539 357</b>

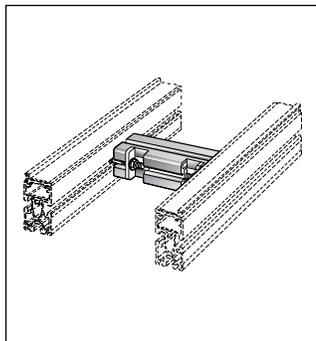
Conveyor Profiles, Hardware and Guides

## Section 7 – Conveyor Profile, Hardware and Guides

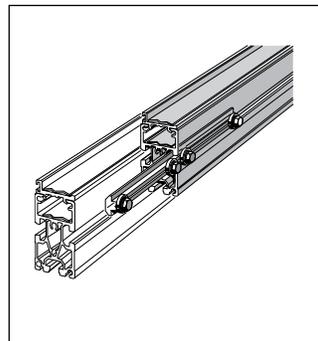
With the 10 mm T-slot on the sides and bottom of the conveyor section profile it is possible, using connection links and cross connectors, to extend the conveyor to any length requirement you may have. Cross connectors are used to keep the conveyor rails parallel and should be used at 2000 mm intervals. Connection links are used to extend conveyor profile sections. Guide profile functions as a bearing surface for the belt or chain and also guides the workpiece pallet.

In addition, the T-slots provide a mounting location for pallet guides, wiper kits or other components and accessories.

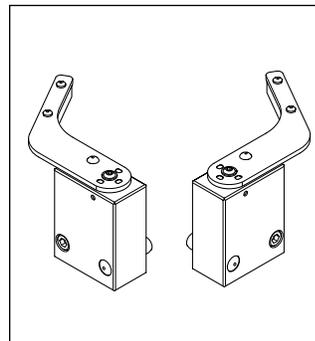
7



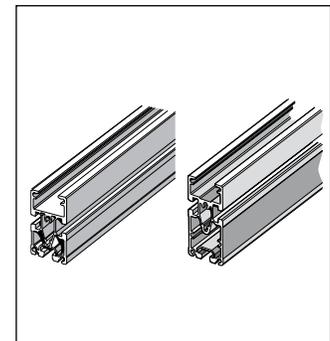
**QV2**  
Cross Connectors  
7-1



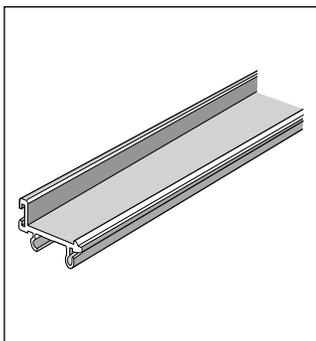
Connection Links  
7-1



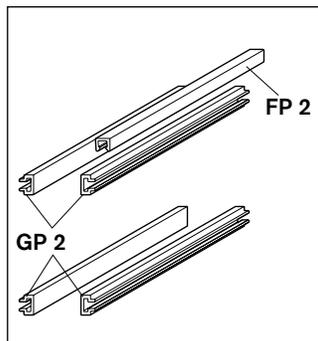
**CW2**  
Conveyor Wiper Kit  
7-2



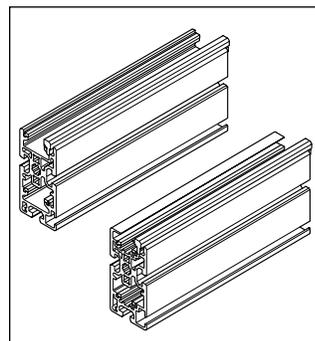
**SP2/B, SP2/B-50,  
SP2/B-100, SP2/R, SP2/C**  
Conveyor Section Profiles  
7-3 to 7-5



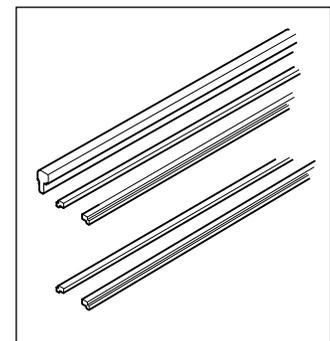
**FP2/B, FP2/B-100**  
Belt Guide Profile  
7-6



**FP2/R, FP2/C**  
Roller & Flat-Top  
Chain Guide Profile  
7-7



**SP2/C-H, SP2/R-H**  
H.D. Conveyor Section  
Profiles  
7-8



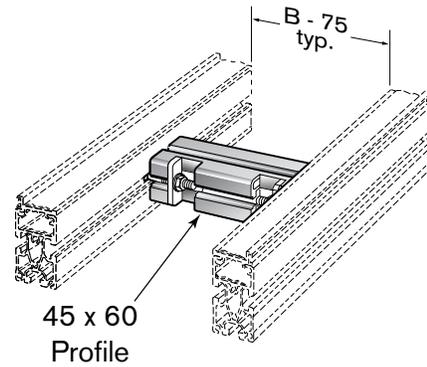
**FP2/H, GP2/H**  
H.D. Flat-top and Roller  
Guide Profile  
7-9

Conveyor Profiles, Hardware and Guides

# Cross Connectors

Model QV2

Cross connectors are used to maintain conveyor section width and alignment. Typically, cross connectors are placed at the mid-point of 2000 mm conveyor sections. Additional cross connectors are required for longer sections and should be spaced at a maximum of 2000 mm apart. They are ordered according to line width. Connection hardware is included.



## Ordering Information for Cross Connectors QV2

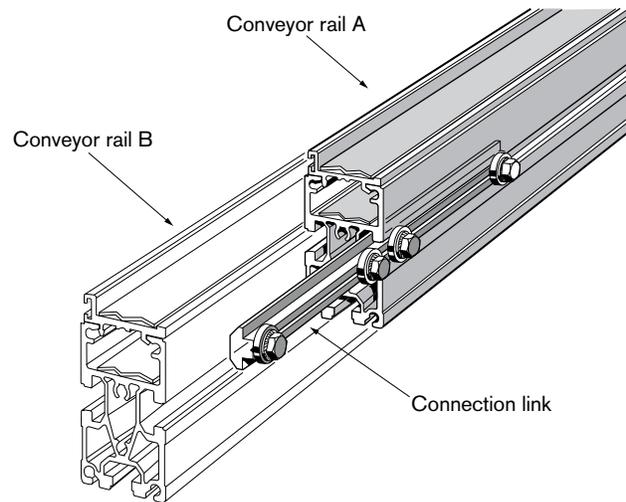
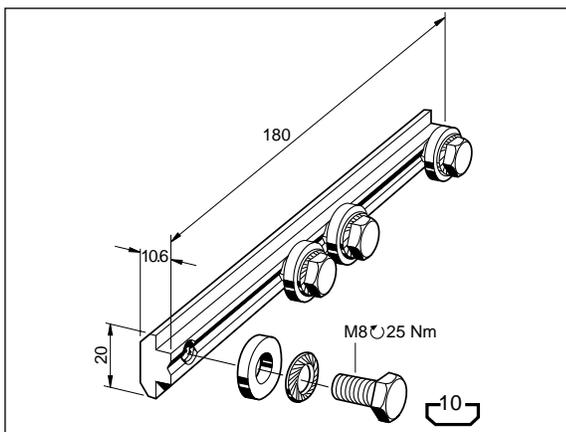
Specify part number, then select from the options below.	Your choices are:	<b>Part Number</b> <b>3842 994 635</b>
		Your selection:
Width* (B) in mm	160, 240, 320, 400 480, 640, 800, 1040	_____

\* Cross link length corresponds to nominal workpiece pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ).

# Connection Link

Connection links join conveyor sections end-to-end. Two connection links are required to join conveyor sections, one on each rail. They are constructed of steel for maximum strength and come with all required fastening hardware.

## Dimensional data for Connection Link



## Ordering Information for Connection Link

Description	Part Number
Connection Link (qty.1)	<b>3842 528 746</b>

Conveyor Profiles, Hardware and Guides

# Conveyor Wiper Kit

## Model CW2

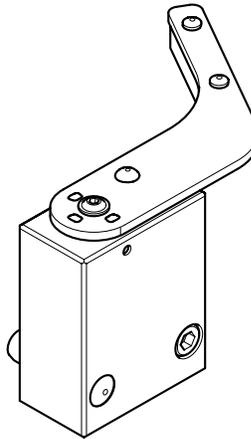
This wiper will mechanically remove any foreign material from the belt or flat-top chain surface (e.g. screws, nuts or other assembly hardware) that could damage or jam the conveyor and drive if not removed.

Wiper kits are designed for pallet payloads with weights of 3kg or greater. Reverse operation is not possible on conveyor sections equipped with wiper kits.

The wiper kit is delivered fully assembled. A right hand and left hand kit is required for each conveyor section.

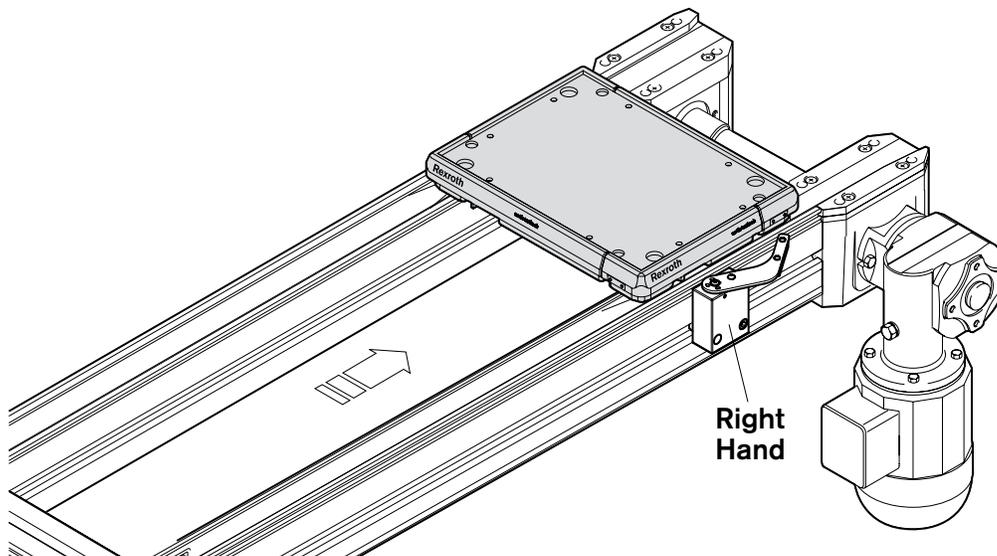
**Application Note:** Conveyor wiper kits are not for use with roller chain.

**Installation Note:** To install a conveyor wiper, the GP2 guide profile will have to be cut out (for belt) or milled (for flat top chain) to allow for the wiper to retract.



### Ordering Information for Wiper Kit CW2

Description	Part Number
Conveyor Wiper, Right Hand	3842 532 679
Conveyor Wiper, Left Hand	3842 532 680



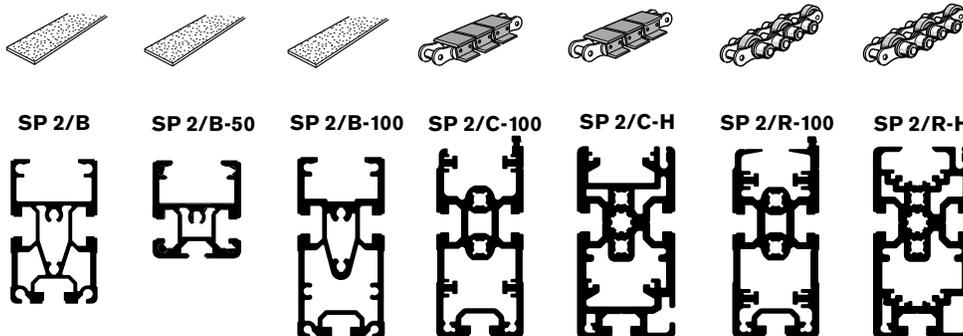
Conveyor Profiles, Hardware and Guides

# Conveyor Section Profiles

Model SP2/...

All Rexroth Conveyor section profile is a natural-colored anodized extruded aluminum. The T-slot in each side and on the bottom of the profile allow conveyor modules or peripheral devices to be attached with T-bolts or T-nuts, eliminating the need for additional machining.

## Technical specifications:



Moment of Inertia	$I_x$ [cm <sup>4</sup> ]	49.6	46.2	95.1	128	156.8	144	155.6
	$I_y$ [cm <sup>4</sup> ]	25.8	16.9	30.4	37	54.9	40.1	51.3
Section Modulus	$W_x$ [cm <sup>3</sup> ]	12.1	5.3	20.0	24.6	31.9	27.7	31.6
	$W_y$ [cm <sup>3</sup> ]	11.5	7.5	13.5	16.4	21.4	17.8	19.8
Profile Surface	A [cm <sup>2</sup> ]	10.40	6.90	11.9	15.0	19.3	16.4	19.0
Weight	m [kg/m]	2.8	1.9	3.2	4.0	5.3	4.4	5.2
Profile Groove Size	[mm]							
Page		7-4	7-4	7-4	7-5	7-8	7-5	7-8

Conveyor Profiles, Hardware and Guides

# Conveyor Section Profile

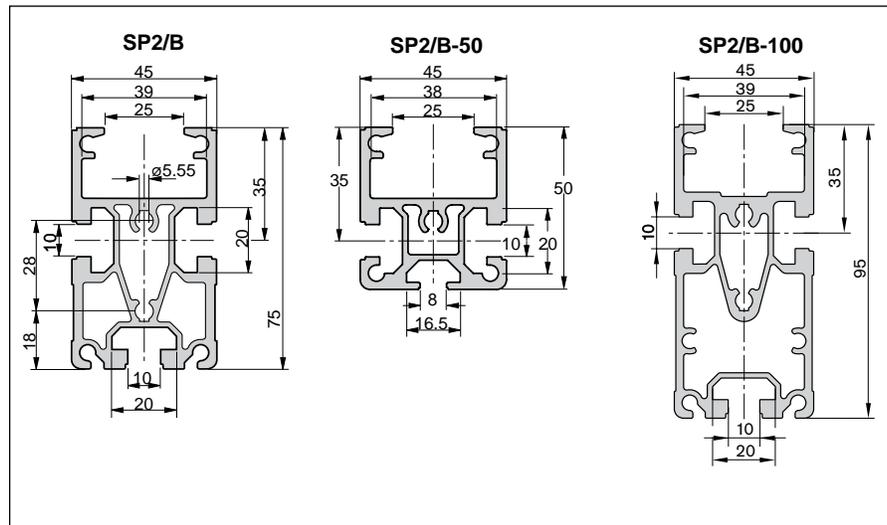
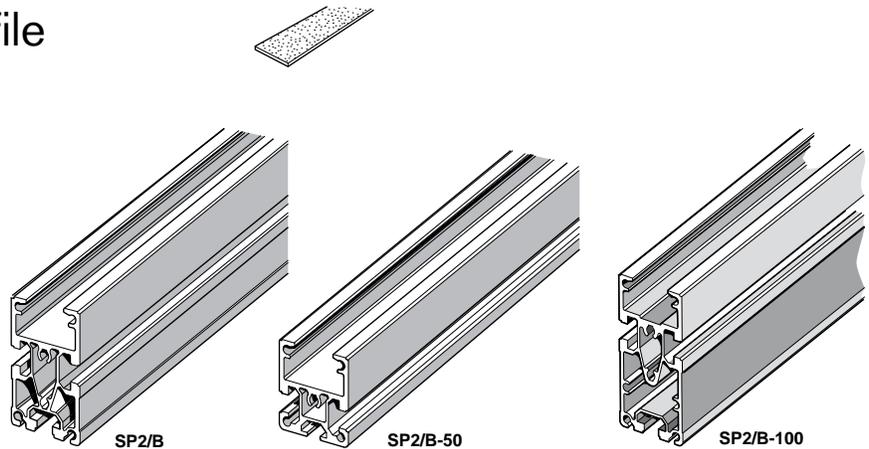
Model SP2/...

The belt profile is a natural-color anodized aluminum extrusion. The T-slot in each side and on the bottom of the profile allow conveyor modules or peripheral devices to be attached with T-bolts or T-nuts, eliminating the need for additional machining.

There are three types of conveyor section profile:

- Standard SP2/B profile is used for applications where the pallet payload is under 30 kg.
- The SP2/B-50 profile has a lower height, making it ideal for use at manual workstations where lighter section loads and increased clearance (e.g. for operator leg room) are required.
- The SP2/B-100 profile is used where pallet payloads exceed 30 kg.

Profile is available in cut-to-order lengths, or full uncut lengths. Please refer to the ordering options below for available lengths.



7

## Ordering Information SP2/B Belt Conveyor Profile

Cut-to-length, each
<b>Part Number 3842 992 884/...</b>

Min. cut length = 200 mm  
Max. cut length = 6000 mm

To order conveyor profile 200-6000 mm long, please specify desired length at the end of the part number. For example, to order a standard 2000 mm belt conveyor profile, your part number should look like this:  
3842 992 884/2000.

Single uncut stick, L = 6170 mm, each
<b>Part Number 3842 532 698</b>

## Ordering Information SP2/B-50 Belt Conveyor Profile

Cut-to-length, each
<b>Part Number 3842 992 903/...</b>

Min. cut length = 200 mm  
Max. cut length = 6000 mm

To order conveyor profile 200-6000 mm long, please specify desired length at the end of the part number. For example, to order a standard 2000 mm belt conveyor profile, your part number should look like this:  
3842 992 903/2000.

Single uncut stick, L = 6170 mm, each
<b>Part Number 3842 532 670</b>

## Ordering Information SP2/B-100 Belt Conveyor Profile

Cut-to-length, each
<b>Part Number 3842 993 259/...</b>

Min. cut length = 200 mm  
Max. cut length = 6000 mm

To order conveyor profile 200-6000 mm long, please specify desired length at the end of the part number. For example, to order a standard 2000 mm belt conveyor profile, your part number should look like this:  
3842 993 259/2000.

Single uncut stick, L = 6170 mm, each
<b>Part Number 3842 532 592</b>

Conveyor Profiles, Hardware and Guides

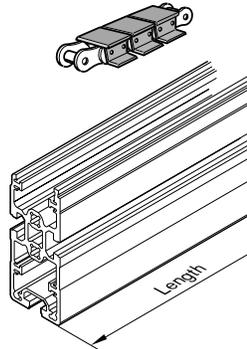
# Conveyor Section Profile

Model SP2/C-100, SP2/R-100

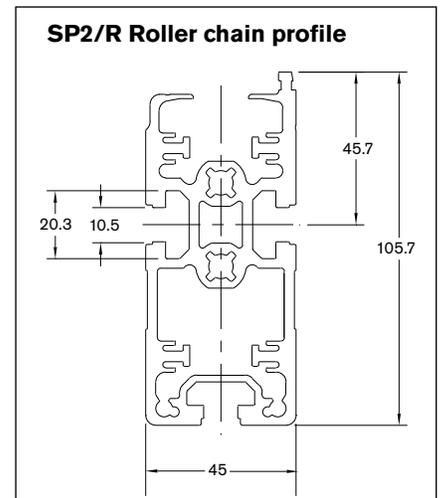
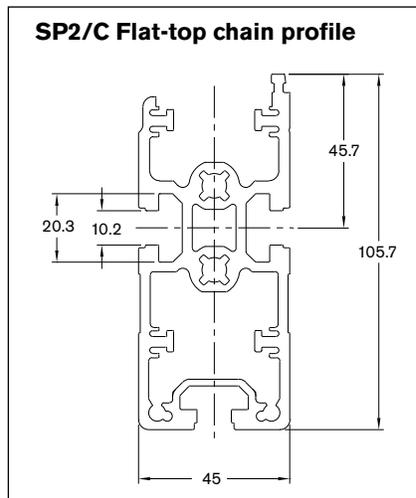
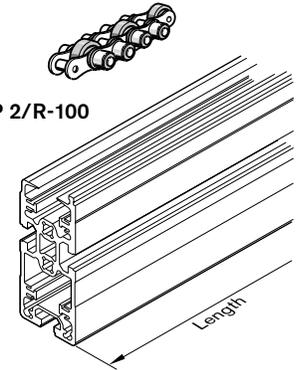
This natural-colored anodized aluminum extrusion is available in two styles; one for roller chain, and one for flat-top chain. Use the SP2/R profile with roller chain conveyors and the SP2/C profile with flat-top chain conveyors.

The T-slot in each side and on the bottom of the profile allow conveyor modules or peripheral devices to be attached with T-bolts or T-nuts, eliminating the need for additional machining.

SP 2/C-100



SP 2/R-100



## Ordering Information SP2/C Flat-top chain Conveyor Profile

Cut-to-length, each
<b>Part Number 3842 993 065/...</b>

Min. cut length = 200 mm  
Max. cut length = 6000 mm

To order conveyor profile 200-6000 mm long, please specify desired length at the end of the part number. For example, to order a standard 2000 mm chain conveyor profile, your part number should look like this:

3842 993 065/2000.

Uncut Stick, L = 6100 mm, each
<b>Part Number 3842 532 593</b>

## Ordering Information SP2/R Roller chain Conveyor Profile

Cut-to-length, each
<b>Part Number 3842 993 064/...</b>

Min. cut length = 200 mm  
Max. cut length = 6000 mm

To order conveyor profile 200-6000 mm long, please specify desired length at the end of the part number. For example, to order a standard 2000 mm chain conveyor profile, your part number should look like this:

3842 993 064/2000.

Uncut Stick, L = 6100 mm, each
<b>Part Number 3842 529 935</b>

Conveyor Profiles, Hardware and Guides

# Belt Guide Profile

Model FP2/B

The belt guide profile FP2/B functions as both a bearing surface for the belt and a guide for the workpiece pallet. Belt guide FP2/B is for use with all belt section profiles: SP2/B, SP2/B50, and SP2/B100. Belt guides mechanically snap in place.

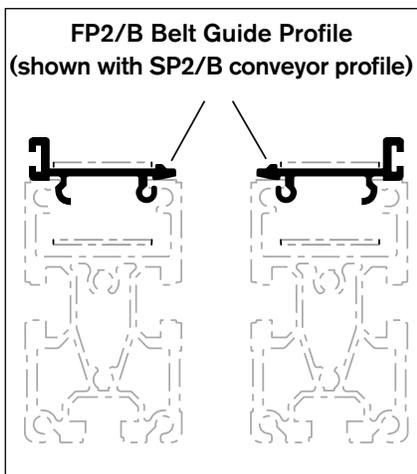
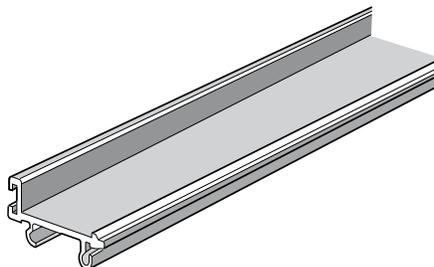
NOTE: Belt sections (page 3-7) come with the belt guide profile pre-installed.

**Material:**

Electrically conductive polyamide PA 12.

**Color:**

Black



**Ordering Information FP2/B,  
Belt Guide Profile**

Cut-to-length, each
<b>Part Number 3842 992 651/...</b>

Min. cut length = 200 mm  
Max. cut length = 6000 mm

To order guide profile 200-6000 mm long, please specify desired length at the end of the part number. For example, to order a standard 2000 mm belt guide profile, your part number should look like this:

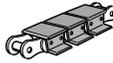
3 842 992 651/2000.

Uncut Stick, L = 6000 mm, each
<b>Part Number 3842 532 594</b>

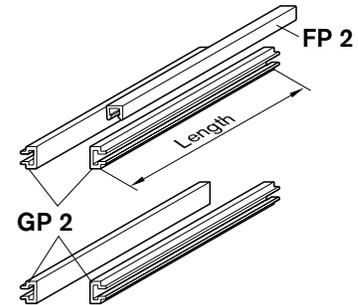
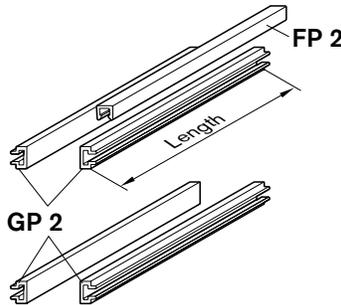
Conveyor Profiles, Hardware and Guides

# Chain Guide Profile

Models FP2, GP2



The slide profile acts as a bearing surface for the flat-top chain or roller chain while the guide profile guides the workpiece pallet. Both the GP2 slide profile and FP2 guide profile slide onto the aluminum conveyor profile.



The same guide profile and slide profile are used for both standard roller chain and flat-top chain conveyor sections (ST2/R-100, ST2/C-100).

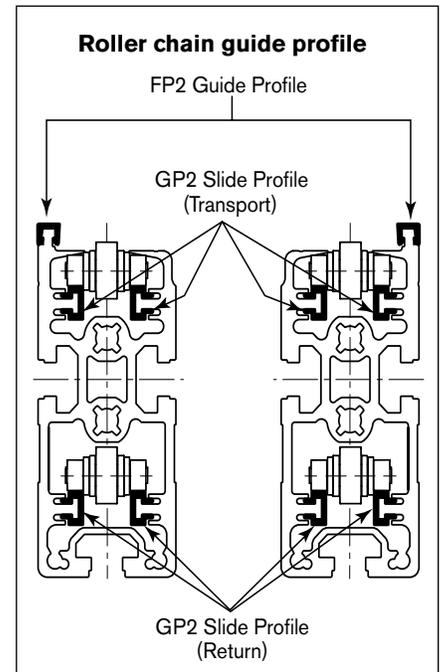
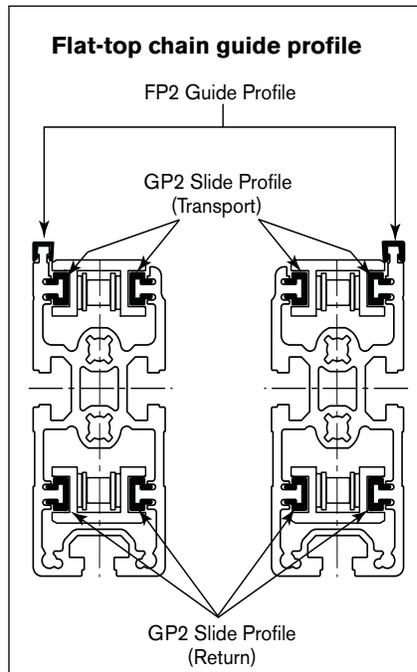
Each upper flat-top chain transport GP2 slide profile should be single pinned to the aluminum profile at the return end of the section. Instructions on how to pin the slide profile are included in the operation, assembly and installation manual.

**Note:** Each conveyor section profile requires 4 GP2 slide profiles and 1 FP2 guide profile. All profiles are sold in a quantity of one.

**Material:**

GP2: Polyamide (anti-static)

FP2: Polyamide (anti-static)



## Ordering Information for FP2, GP2 Guide Profiles

Description	Length (mm)	Qty Req. per Conveyor Rail	Part Number
<b>Guide Profile</b>			
Guide Profile FP2/R-C (cut-to-length)	100-6000	1	3842 993 090/...mm
Guide Profile FP2/R-C (uncut stick)	6000	1	3842 529 938
<b>Slide Profile</b>			
Slide Profile GP2/R-C (cut-to-length)	100-6000	4	3842 993 066/...mm
Slide Profile GP2/R-C (uncut stick)	6000	4	3842 529 937

Conveyor Profiles, Hardware and Guides

# H.D. Conveyor Section Profile

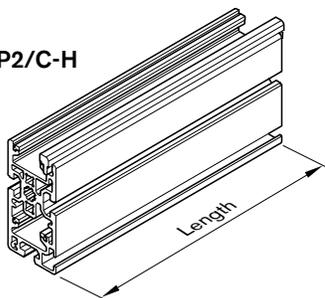
Models SP2/C-H, SP2/R-H



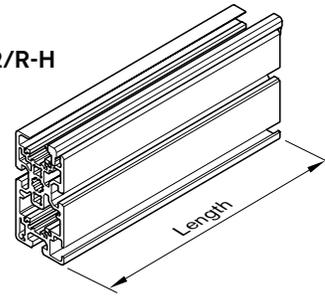
This natural-colored anodized aluminum extrusion is available in two styles. One for roller chain and one for flat-top chain. Use the SP2/R-H profile with heavy duty roller chain conveyors (ST2/R-H and ST2/R-H Vplus) and the SP2/C-H profile with heavy duty flat-top chain conveyors (ST2/C-H).

The T-slot in each side and on the bottom of the profile allows conveyor modules or peripheral devices to be attached with T-bolts or T-nuts, eliminating the need for additional machining. Both heavy duty profiles also include an integrated cable duct, located on the outside of the profile.

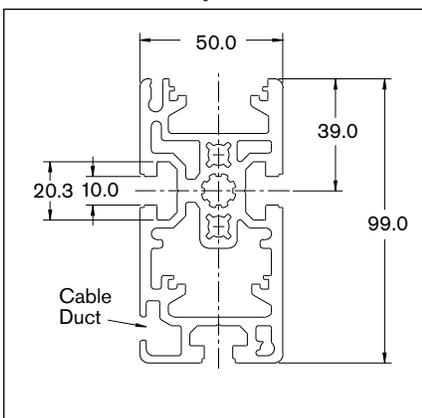
SP2/C-H



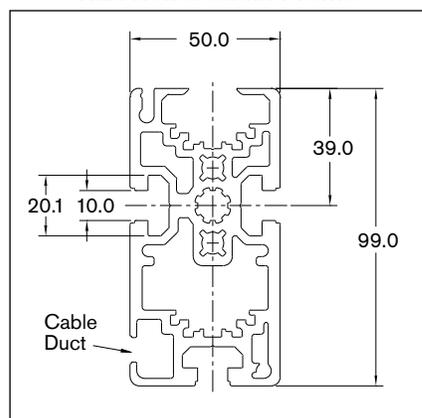
SP2/R-H



**SP2/C-H**  
**H.D. Flat-Top Chain Profile**



**SP2/R-H**  
**H.D. Roller Chain Profile**



**Ordering Information SP2/C-H**  
**H.D. Flat-top Chain Conveyor Profile**

Cut-to-length, each
<b>Part Number 3842 993 438/...</b>

Min. cut length = 200 mm  
Max. cut length = 6000 mm

To order conveyor profile 200-6000 mm long, please specify desired length at the end of the part number. For example, to order a standard 2000 mm H.D. flat-top chain conveyor profile, your part number should look like this:  
3842 993 438/2000.

Uncut Stick, L = 6170 mm, each
<b>Part Number 3842 536 766</b>

**Ordering Information SP2/R-H**  
**H.D. Roller Chain Conveyor Profile**

Cut-to-length, each
<b>Part Number 3842 993 437/...</b>

Min. cut length = 200 mm  
Max. cut length = 6000 mm

To order conveyor profile 200-6000 mm long, please specify desired length at the end of the part number. For example, to order a standard 2000 mm H.D. roller chain conveyor profile, your part number should look like this:  
3842 993 437/2000.

Uncut Stick, L = 6170 mm, each
<b>Part Number 3842 536 767</b>

Conveyor Profiles, Hardware and Guides

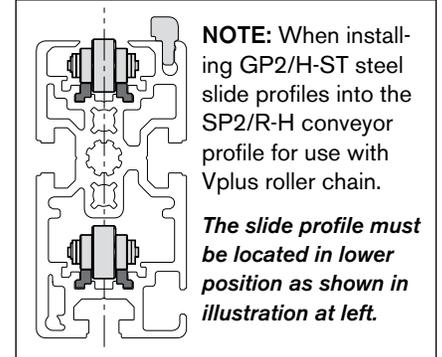
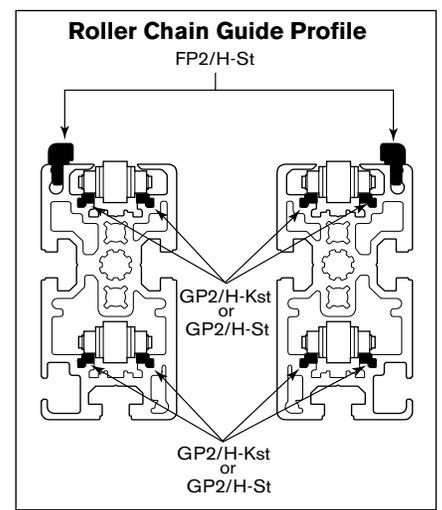
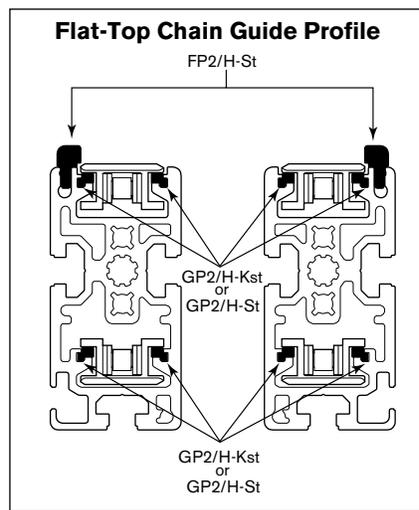
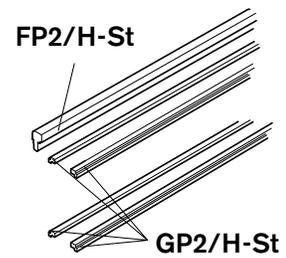
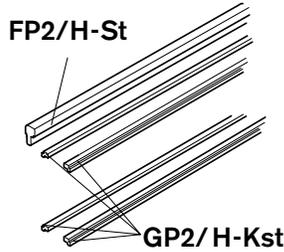
# H.D. Chain Guide Profile

Models FP2/H-St, GP2/H-St, GP2/H-Kst

The slide profile acts as a bearing surface for the flat-top chain or roller chain while the guide profile guides the workpiece pallet. These guide and slide profiles are designed specifically for use with the H.D. aluminum conveyor profile sections (ST2/C-H, ST2/R-H and ST2/R H-Vplus).

The same guide profile and slide profile(s) are used for both H.D. aluminum conveyor profile sections (ST2/C-H, ST2/R-H and ST2/R-H Vplus). The guide profile (FP2/H-St) is made of steel, while the slide profile is available in either plastic (GP2/H-Kst) or steel (GP2/H-St).

Each H.D. conveyor profile requires 4 GP2/H slide profiles and 1 FP2/H guide profile. All profiles are sold in lengths of 3 meters and in a quantity of one.



## Ordering Information for FP2/H-St, GP2/H-St, GP2/H-Kst

Description	Length (mm)	Qty Req. per Conveyor Rail	Part Number
<b>Guide Profile</b>			
Guide Profile FP2/H-St (Steel)	3000	1	3842 537 893
<b>Slide Profile</b>			
Slide Profile GP2/H-St (Steel)	3000	4	3842 537 891
Slide Profile GP2/H-Kst (Plastic)	3000	4	3842 537 892

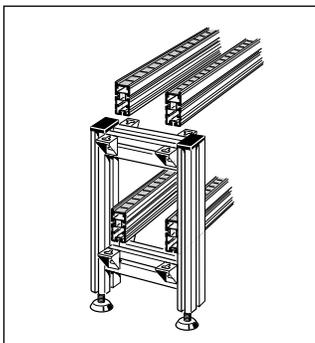
Leg Sets and Foundation Brackets

## Section 8 – Leg Sets and Foundation Brackets

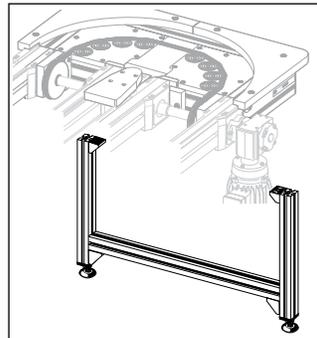
Leg sets are constructed of rugged extruded aluminum profile. The T-slotted design of the leg sets provides a convenient mounting location for control systems as well as a wide variety of other components and accessories.

Foundation brackets are available in steel or die-cast aluminum. The die-cast aluminum brackets also have a cover cap to prevent dirt accumulation and at the same time provides a clean finished appearance.

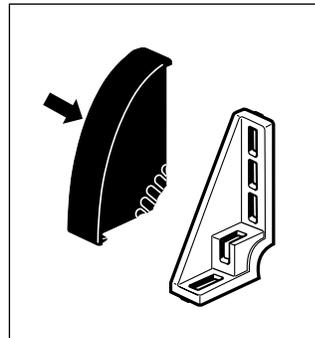
8



**SZ2/E, SZ2/E-H, SZ2/T,  
SZ2/T-H, SZ2/U, SZ2/U-H**  
Leg Sets  
8-1 to 8-4



**SZ2/K90, SZ2/K180**  
Curve Unit Leg Sets  
8-5



Foundation Brackets  
8-6

Leg Sets and Foundation Brackets

# Leg Sets

Leg sets support the conveyor sections. Each leg set consists of aluminum extrusions, M16 x 44 mm leveling feet with gussets and mounting hardware. Heavy Duty leg sets use larger gussets and the SZ2/T-H and SZ2/U-H leg sets use a larger 45 x 90 cross link between the leg supports.

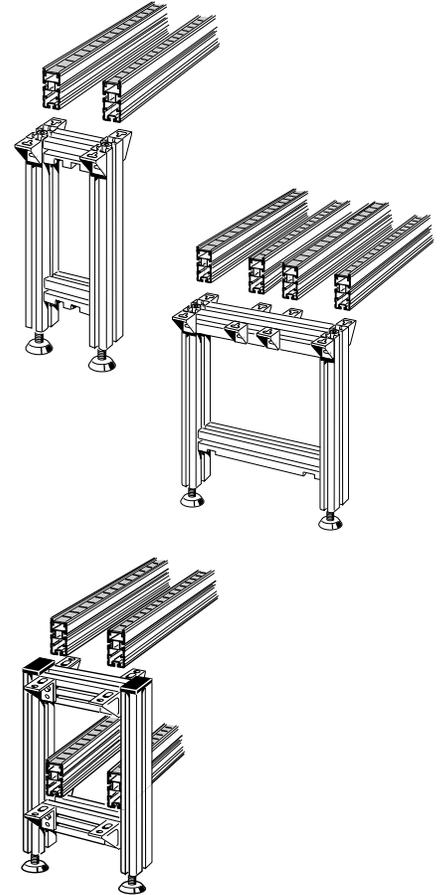
Leg sets must be used at each drive and return unit, and at maximum 2000 mm intervals along the conveyor section. They must be anchored to the floor using foundation brackets which are ordered separately on page 8-6. The leg set used is determined by the conveyor configuration.

Single leg sets are used to support points along the line between drive and

return units. The same leg sets are also used when mounting drive and return units. Please note, however, that when supporting a drive or return unit, the gussets on the side of the leg set nearest the drive or return must be discarded.

Over/under leg sets are also available for use with lines equipped with the vertical transfer units on page 12-8.

Parallel leg sets are used to configure parallel conveyor systems and are available for single level lines. When configuring parallel lines both lanes must be the same profile height. Do not mix 80 mm and 100 mm profile.

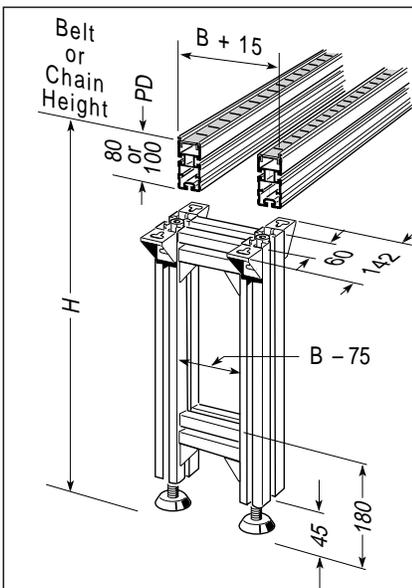


**Important**

Standard ergonomic line heights are 880 and 980 mm. When ordering indicate your selection in the spaces after the part number. Leveling feet have an adjustment range of 80 mm. This provides a height adjustment of 10mm down and 70mm up from the specified line height.

# Leg Sets

## SZ2/E Single Leg Set



**Ordering Information for SZ2/E**

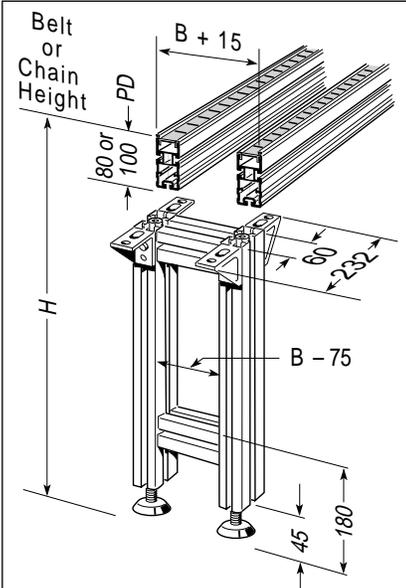
Specify part number, then select from the options below.	Your Choices are:	Part Number <b>3842 999 816</b>
		Your selection:
Line width (B)	160, 240, 320, 400, 480, 640, 800, 1040	_____ mm
Profile Depth (PD)	80 or 100 mm	_____ mm
Transport line height (H)	350 - 1500 in 1 mm increments	_____ mm

Leg Sets and Foundation Brackets

# Leg Sets

Model SZ2/E-H, SZ2/T

## SZ2/E-H Heavy Duty Single Leg Set

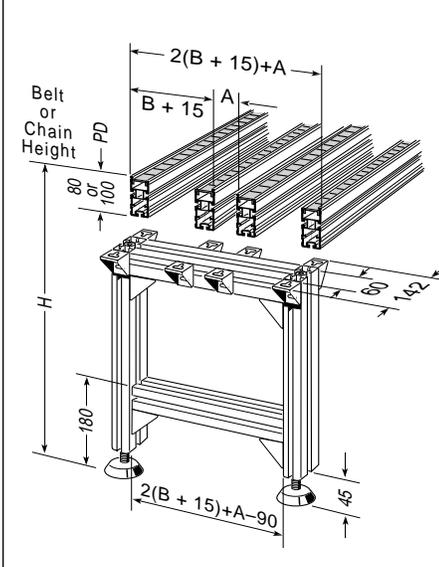


**Ordering Information for Heavy Duty Single Leg Set SZ2/E-H**

Specify part number, then select from the options below.	Your Choices are:	<b>Part Number 3842 999 705</b>
		Your selection:
Line width (B)	240, 320, 400, 480, 640, 800, 1040	_____ mm
Profile Depth (PD)	80 or 100 mm	_____ mm
Transport line height (H)	350 - 1500 in 1 mm increments	_____ mm

8

## SZ2/T Parallel Leg Set



**Ordering Information for Parallel Leg Set SZ2/T**

Specify part number, then select from the options below.	Your Choices are:	<b>Part Number 3842 999 818</b>
		Your selection:
Gap (A)	45, 90 or 135 mm	_____ mm
Line width (B)	160, 240, 320, 400, 480	_____ mm
Profile Depth (PD)	80 or 100 mm	_____ mm
Transport line height (H)	350 - 1500 in 1 mm increments	_____ mm

**Important**

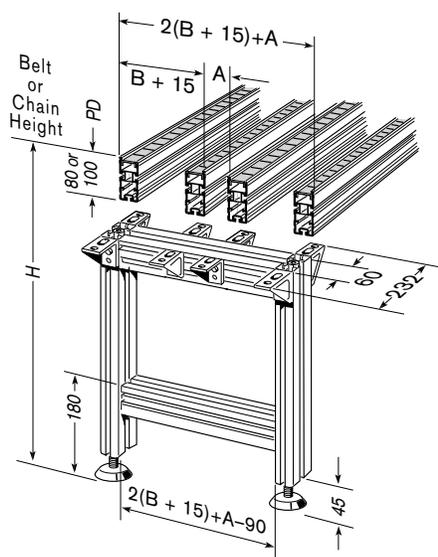
Standard ergonomic line heights are 880 and 980 mm. When ordering indicate your selection in the spaces after the part number. Leveling feet have an adjustment range of 80 mm. This provides a height adjustment of 10mm down and 70mm up from the specified line height.

Leg Sets and Foundation Brackets

# Leg Sets

Model SZ2/T-H, SZ2/U

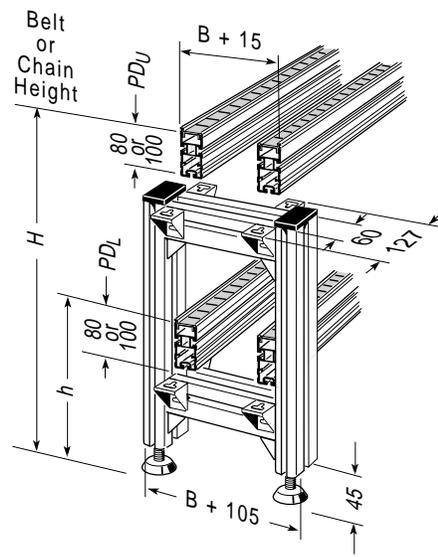
## SZ2/T-H Heavy Duty Parallel Leg Set



**Ordering Information for Heavy Duty Parallel Leg Set SZ2/T-H**

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>8981 999 249</b>
		Your selection:
Gap (A)	45, 90 or 135 mm	_____ mm
Line width (B)	160, 240, 320, 400, 480	_____ mm
Profile Depth (PD)	80 or 100 mm	_____ mm
Transport line height (H)	350 - 1500 in 1 mm increments	_____ mm

## SZ2/U Over/under Leg Set



**Ordering Information for SZ2/U**

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>3842 999 817</b>
		Your selection:
Line width (B)	160, 240, 320, 400, 480, 640, 800, 1040	_____ mm
Upper Profile Depth (PDU)	80 or 100 mm	_____ mm
Upper Line Height (H)	350 - 1500 in 1 mm increments	_____ mm
Lower Profile Depth (PDL)	80 or 100 mm	_____ mm
Lower Line Height (h)	250 - 1000 in 1 mm increments	_____ mm

Leg Sets and Foundation Brackets

# Leg Sets

Model SZ2/U

## SZ2/U-H Heavy Duty Over/under Leg Set

**Ordering Information for SZ2/U-H**

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>3842 999 706</b>
		Your selection:
Line width (B)	160, 240, 320, 400, 480, 640, 800, 1040	_____ mm
Upper Profile Depth (PDU)	80 or 100 mm	_____ mm
Upper Line Height (H)	350 - 1500 in 1 mm increments	_____ mm
Lower Profile Depth (PDL)	80 or 100 mm	_____ mm
Lower Line Height (h)	250 - 1000 in 1 mm increments	_____ mm

8

**Important**

Standard ergonomic line heights are 880 and 980 mm. When ordering indicate your selection in the spaces after the part number. Leveling feet have an adjustment range of 80 mm. This provides a height adjustment of 10mm down and 70mm up from the specified line height.

Leg Sets and Foundation Brackets

# Curve Leg Sets

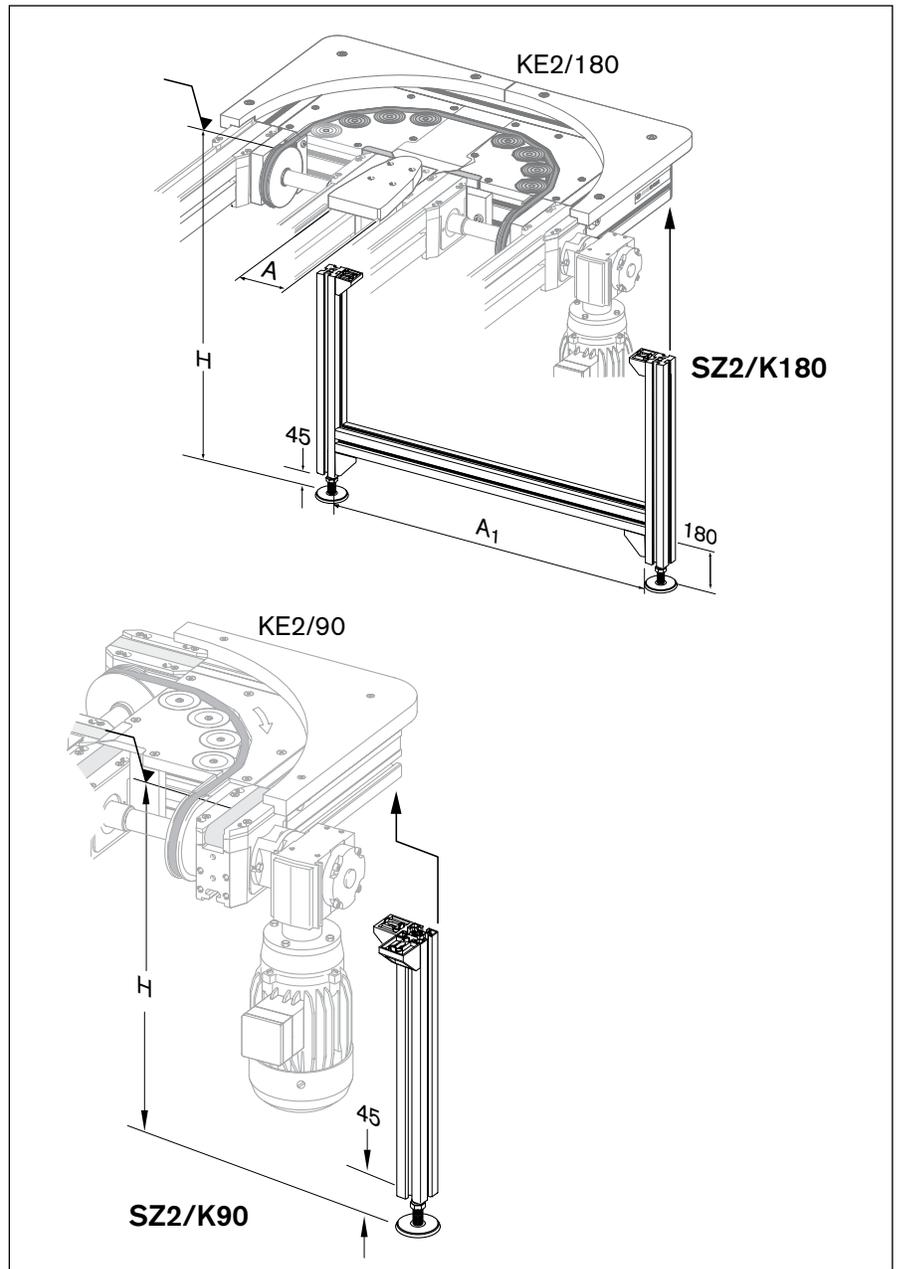
Models SZ2/K90, SZ2/K180

Curve leg sets are used to support KE2/90 and KE2/180 series curves. Each leg set consists of aluminum extrusions, leveling feet with gussets and mounting hardware.

Leg sets must be used on each curve unit to provide proper support and stability. They must be anchored to the floor using foundation brackets which are ordered separately on page 8-6. The leg set used is determined by the type of curve.

SZ2/K180 leg sets are used to support KE2/180 and KE2/180-0 curve modules.

SZ2/K90 leg sets are used to support KE2/90 and KE2/90-0 curve modules.



### Order Information for SZ2/K180

Part Number 3842 999 601	
Your Options are:	Your Selection is:
Center Gap (A) 90, 135	A=_____ mm
Width (B <sub>T</sub> ) 160, 240, 320, 400	B <sub>T</sub> =_____ mm
Leg Height (H) 350 - 1500	H=_____ mm

### Order Information for SZ2/K90

Part Number 3842 994 601	
Your Options are:	Your Selection is:
Leg Height (H) 350 - 1500	H=_____ mm

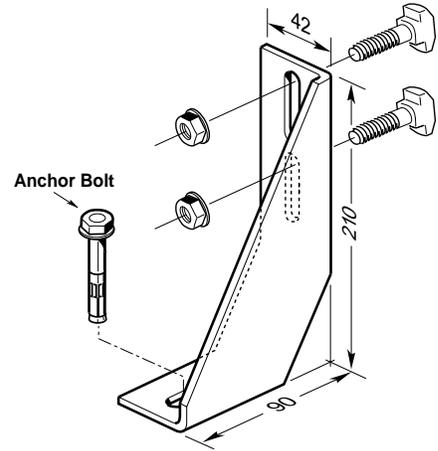
Leg Sets and Foundation Brackets

# Foundation Brackets

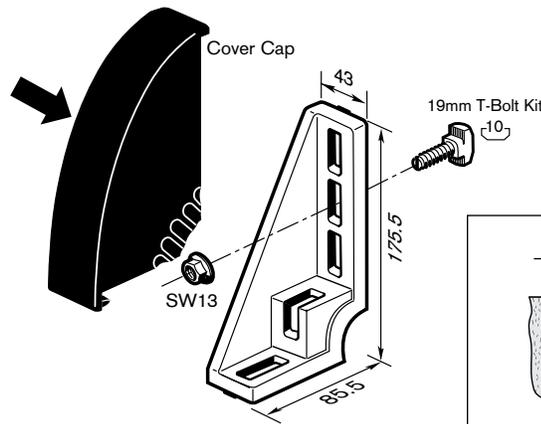
Foundation brackets secure the leg sets to the floor after the conveyor has been leveled and aligned. Two foundation brackets should be used for leg sets at drive and return units, and one at intermediate positions as shown below.

The steel foundation bracket has a zinc plated silver finish and includes the T-bolt fastening kit to attach the bracket to the leg set. Order the anchor bolts separately.

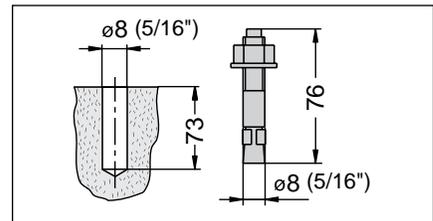
The die-cast aluminum bracket has a natural aluminum finish. The cover cap, available separately, provides a clean finished appearance and also prevents dirt accumulation in the bracket. Order the mounting hardware and anchor bolts separately.



**Steel**



**Aluminum**

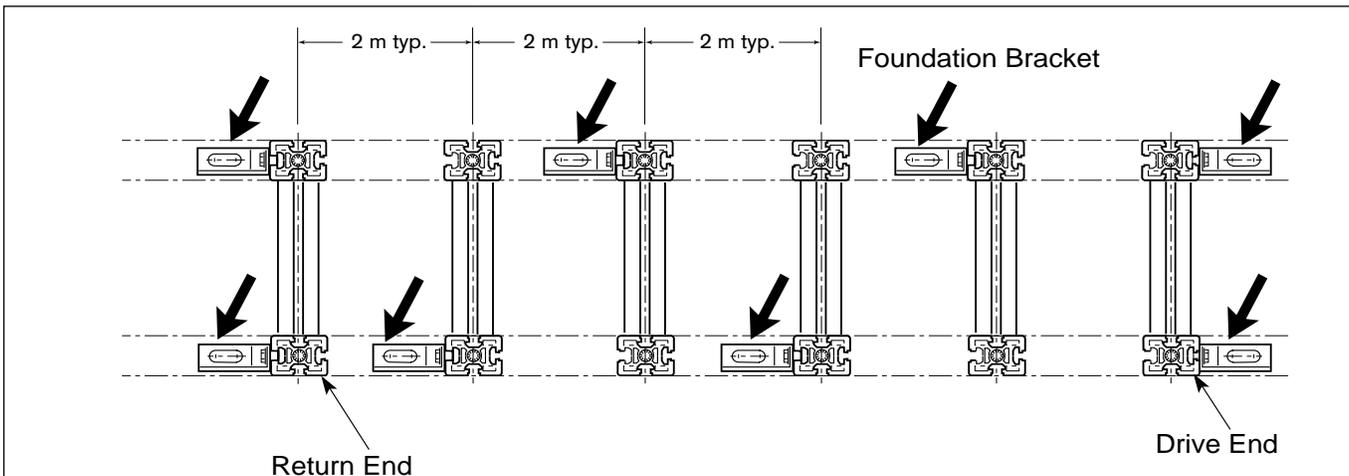


8

## Ordering Information for Foundation Brackets

Description	Part Number
Steel Foundation Bracket kit (includes bracket & two T-bolt fastening kits)	8981 003 224
Die-cast Aluminum Foundation Bracket Kit (includes two T-bolt fastening kits)	3842 527 535
8mm Anchor Bolt, one	3842 526 560
Round 45 x 180 Cover Cap only	3842 523 585
Round 45 x 45 Cover Cap only, for standard leg set gussets	3842 523 563
Round 45 x 90 Cover Cap only, for heavy duty leg set gussets	3842 523 572

## Recommended foundation bracket placement



Transverse Conveyors

# Section 9 – Transverse Conveyors

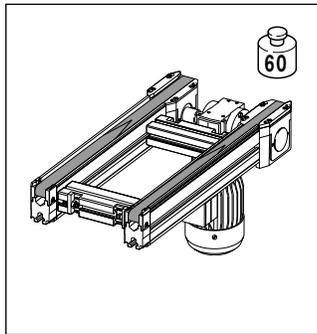
BS2/... Transverse conveyors are designed to transfer pallets for short transport distances (e.g. between two rectangular lines) or as cycle-independent workstations. The BS2, BS2/M, and BS2/K are powered units that use standard or antistatic toothed belts for pallet transport. The BS2/O is a non-powered toothed belt unit designed to be driven

by a standard BS2 using a special drive coupling, thus saving the cost of a gearbox and motor. Unless otherwise stated, transverse conveyors are reversible.

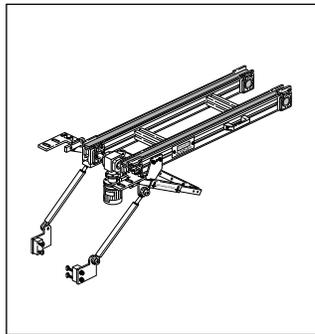
Flat-top chain and roller chain BS2 units are available in standard and heavy duty configurations and provide increased payload carrying capacity.

Specify conveyor width, length, conveyor speed, motor voltage/frequency, motor position, and motor orientation when ordering.

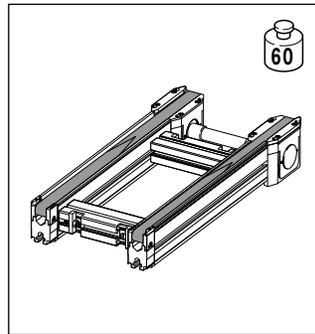
The LG2 lift gate kit provides personnel and vehicle access through a conveyor line and uses a standard BS2 unit.



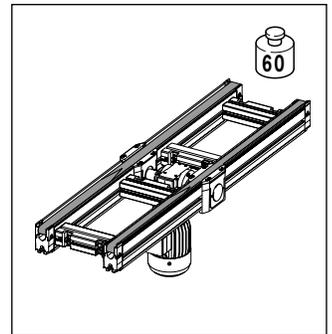
**BS2**  
Transverse Conveyors  
9-2 to 9-3



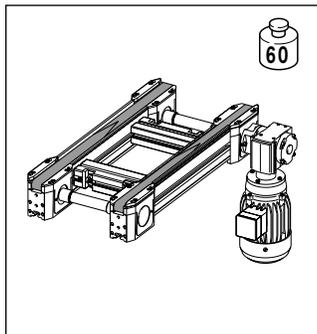
**LG2**  
Lift Gates  
9-4 to 9-5



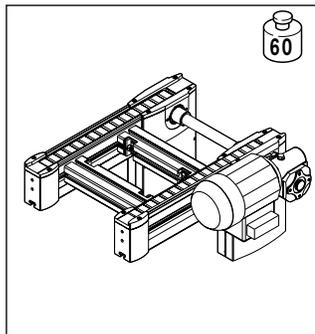
**BS2/O**  
Transverse Conveyors  
9-6 to 9-7



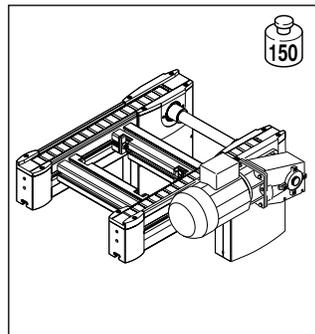
**BS2/M**  
Transverse Conveyors  
BS2/M 9-8 to 9-9



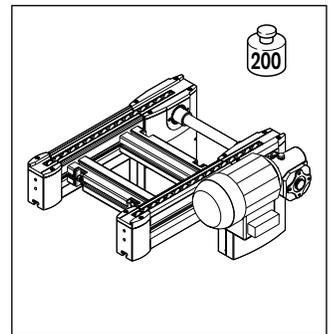
**BS2/K**  
Transverse Conveyors  
9-10 to 9-11



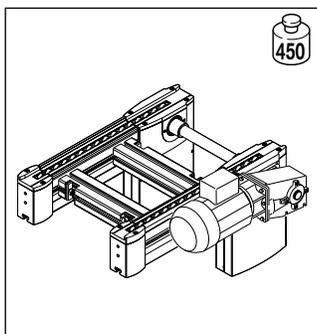
**BS2/C** Flat-top Chain  
Transverse Conveyors  
9-12 to 9-13



**BS2/C-H** H.D. Flat-top Chain  
Transverse Conveyors  
9-14 to 9-15



**BS2/R** Roller Chain  
Transverse Conveyors  
9-16 to 9-17

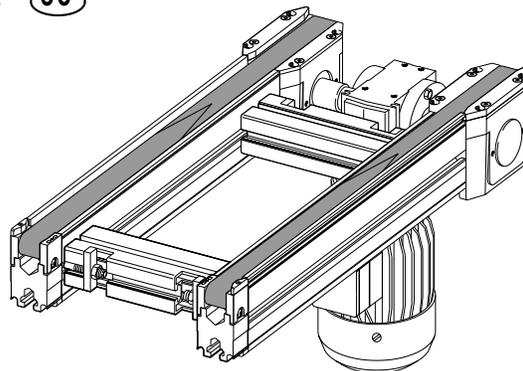


**BS2/R-H** H. D. Roller Chain  
Transverse Conveyors  
9-18 to 9-19

Transverse Conveyors

# Transverse Conveyor

## Model BS2



Transverse conveyors are most often used to transfer workpiece pallets between parallel conveyor sections. They are also used to construct cycle-independent workstations, or small systems with short conveying lengths. The unit itself is modular and comes with its own mid-mounted or outboard mounted drive and pre-installed toothed belts.

Workpiece pallet movement can be reversed if desired. In normal operation, the maximum load capacity for transverse conveyors is 60 kg forward and 30 kg in reverse. In addition, positioning and control modules can be mounted on transverse conveyors.

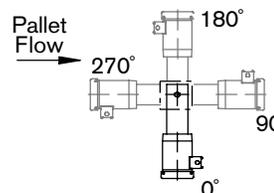
Transverse conveyors are available in any length from 240 mm to 6000 mm in 5 mm increments. Specify conveyor width, length, conveyor speed, motor voltage/frequency, motor position, motor orientation and belt version when ordering.

Transverse conveyors come fully assembled and include all required mounting hardware. Motor voltage and frequency options are described in table 9-1.

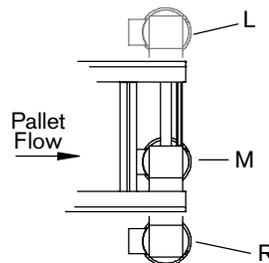
**NOTE:** Transverse conveyor widths (B) in excess of 160 mm are available with either a mid-mounted or outboard mounted motor as shown.

Please contact our applications engineering department for non-standard length, width, speed, or voltage.

### Outboard Mounted Motor Orientation



### Motor Position



### Ordering Information for Transverse Conveyor BS2

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 999 716
		Your selection:
Width (B) in mm	160, 240, 320, 400, 480, 640, 800, 1040	_____ mm
Motor Position	R, M*, L	_____
Motor Orientation (outboard mount only)	0°, 90°, 180°, 270°	_____
Belt Version	Non-Antistatic (N) Antistatic (A)	_____
Transverse Conveyor length (L)	240 mm to 6000 mm (in 5 mm increments)	_____ mm
Nominal Conveyor Speed (m/min)**	6, 9, 12, 15, 18**	_____ m/min
Motor Voltage/Frequency	See Table 9-1	_____ V _____ Hz

\* Mid-mounted motor not available in 160 mm wide transverse conveyors.

\*\* Full load conveyor speeds vary depending on motor frequency. See table 9-1

Transverse Conveyors

**Technical data for BS2**

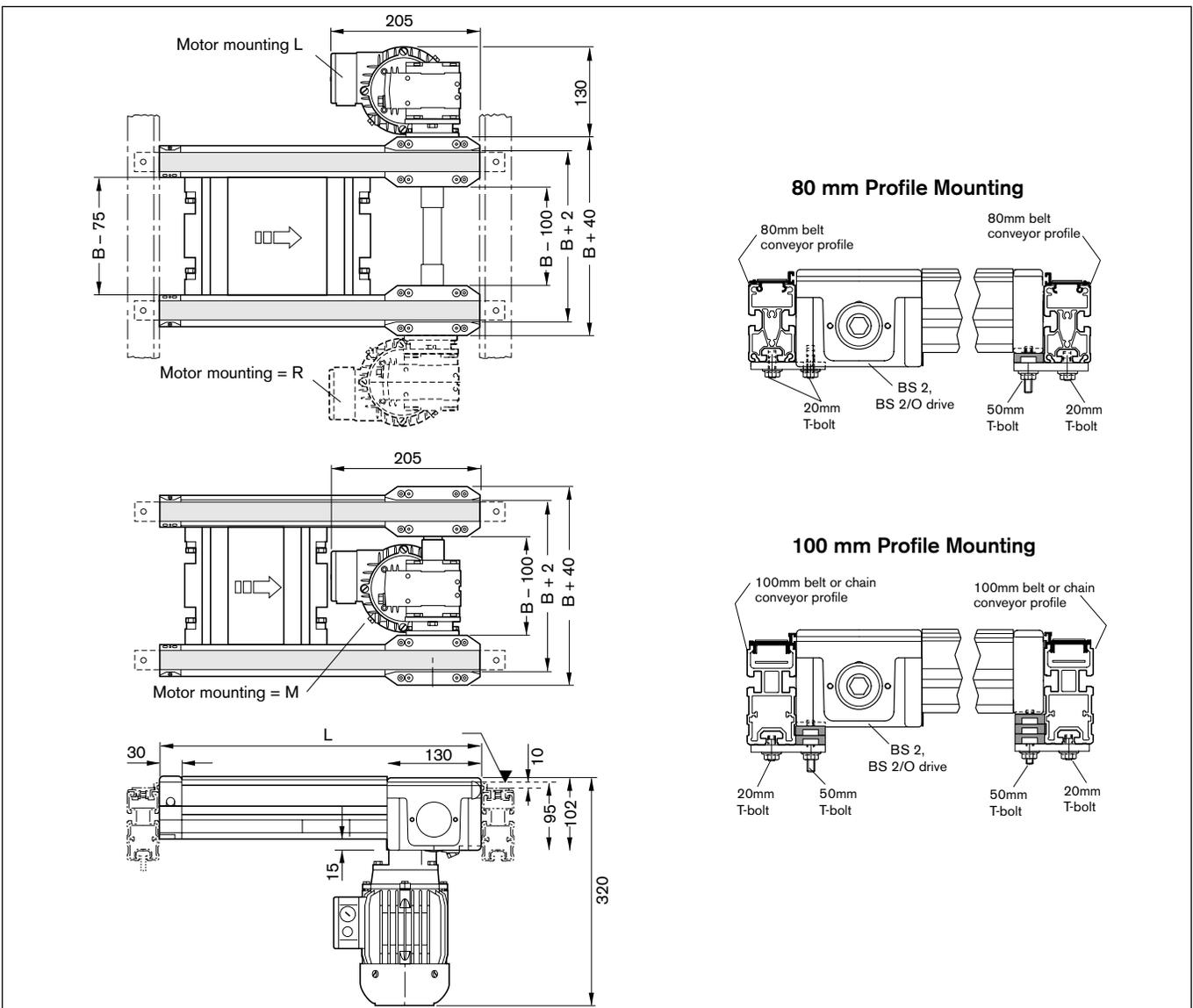
Nominal belt speed	= See Table 9-1
Load capacity forward	= 60 kg
Load capacity reverse	= 30 kg
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60 Hz	= 1700
Motor electrical specifications	= See Table 9-1

**Electrical data for BS2**

Nom. M/min	Actual Speed		HP		Full Load Amps @					
	50 Hz	60 Hz	50Hz	60Hz	208/60	240/60	380/50	415/50	480/60	575/60
6	6.1	7.4	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
9	9.1	8.9	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
12	12.2	11.1	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
15	15.2	14.8	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
18	18.3	18.5	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.  
Table 9-1

**Dimensional data for BS2**



Transverse conveyor width ( $B_{WT}$ ) must match pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ), depending on orientation.

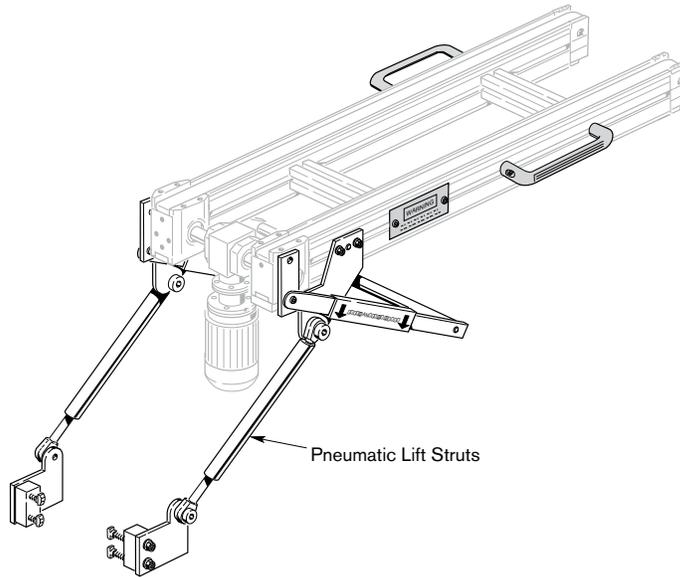
Transverse Conveyors

# Lift Gate

## Model LG2

The lift gate provides personnel and vehicle access through a conveyor line by utilizing a BS2 transverse conveyor (ordered separately). The lift gate kit consists of hinges and pneumatic lift struts on one end, and rest support brackets on the other. It is typically used to provide worker access to the inside of a line for maintenance or assembly processes. It can also be used to provide a through way on long in-line sections.

The pneumatic lift struts ease the lifting effort and provide an additional measure of safety, while the hinge features an automatic locking mechanism to prevent accidental closure. A proximity switch mounting kit is included to prevent flow into the open lift gate.

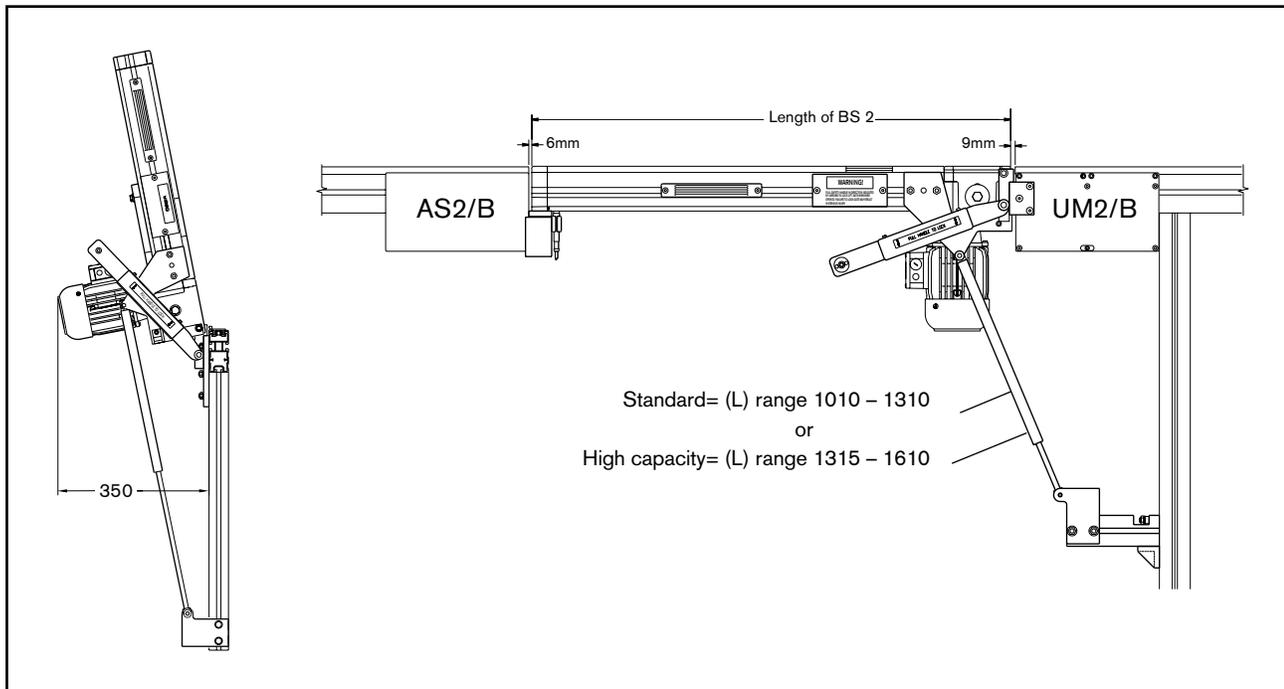


Lift gate kits are available in pallet widths from 160-800 mm, and two different pneumatic lift struts are used depending upon BS2 length. Standard lift struts handle BS2 conveyors in length ranges of 1010 to 1310 mm while high capacity

lift struts are used for BS2 conveyors in length ranges of 1315 to 1610 mm. Lift gate kits can be mounted in any of the four basic configurations shown on page 9-5.

**NOTE:** The hinge end must be mounted to the drive end of the BS2.

### Dimensional Data for LG2



Lift gate width (B) must match pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ), depending on orientation.

Transverse Conveyors

**Ordering Information for LG2**

Specify part number, then select from the options below.	Your choices are:	Part Number <b>8981 999 238</b>
		Your selection:
Lift Gate width (B) in mm	160 <sup>†</sup> , 240, 320, 400, 480, 640, 800	_____ mm
Hinge end mounting <sup>††</sup>	AS2B / UM2B*, UM2-60, UM2-170, BS2B, BS2C / BS2R, T-Line, KE2**	_____
Rest end mounting <sup>††</sup>	AS2B / UM2B, AS2C / AS2R, BS2B, BS2C / BS2R, T-Line, KE2	_____
Allowable BS2 length (L) range	Specify length range: 1010 - 1310 or 1315 - 1610	_____

\* Hinge end mounting to AS2B / UM2B is only available with a mid-mount motor mount.

\*\* Hinge end mounting to KE2 requires an additional mounting kit (included).

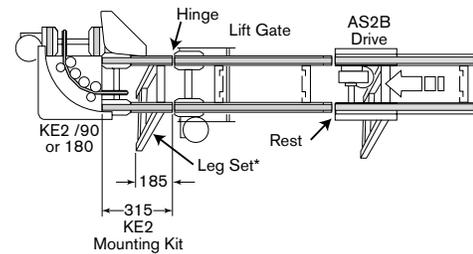
<sup>†</sup> 160mm requires BS2 with outboard mounted motor and includes special hinge mounting bracket.  
240mm and larger requires BS2 with mid-mounted motor.

<sup>††</sup> Not compatible with flat-top chain or roller chain drives. Consult Applications Engineering for modified standard options.

**Lift Gate Configurations – (NOTE: The hinge end must be mounted to the drive end of the BS2)**

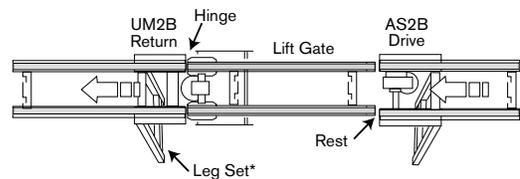
**Powered curve configuration**

The lift gate is connected to the powered curve, mounting to either the hinge end or the rest end. An additional mounting kit is included and requires a 185mm gap.



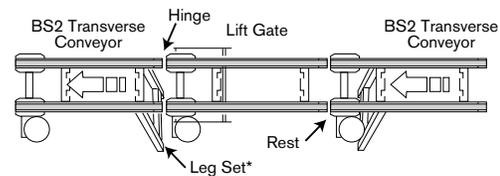
**In-Line Drive to Return**

The lift gate is installed between two standard conveyor sections, attaching to the drive on one end, and the return on the other.



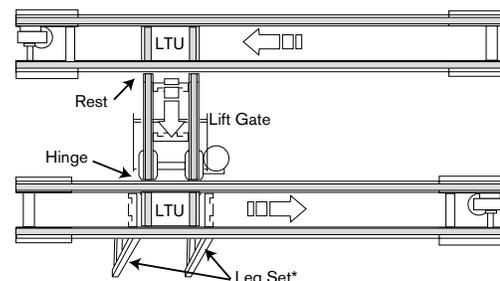
**In-Line transverse conveyor**

The lift gate connects two standard BS 2 transverse conveyors.



**T-Line configuration**

The lift gate spans the gap between two parallel conveyor lines and transfers pallets onto and off the main lines with lift-transfer units.

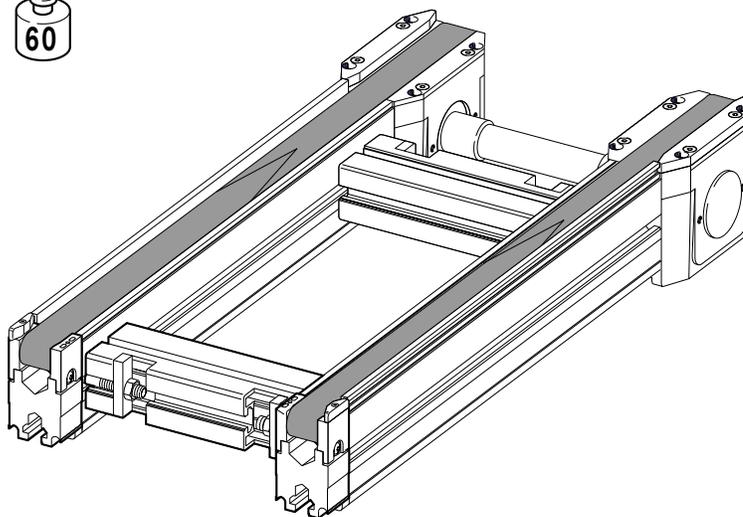


\* Leg sets are required for the connecting module at the hinge end mount.

Transverse Conveyors

# Transverse Conveyor

Model BS2/O



Transverse conveyors are most often used to transfer workpiece pallets between parallel conveyor sections. They are also used to construct cycle-independent workstations, or small systems with short conveying lengths. The BS2/O is not powered and is driven by a standard BS2 operating in the same direction via a special coupling (see page 9-7).

Workpiece pallet movement can be reversed if desired, dependent on the coupled BS2. In normal operation, the combined maximum load capacity for the powered and slave driven transverse conveyor is 60 kg forward and 30 kg in reverse. Positioning and control modules can also be mounted to transverse conveyors.

Transverse conveyors are available in any length from 240 mm to 6000 mm in 5 mm increments. Specify conveyor width, length, and belt version when ordering.

Transverse conveyors come fully assembled and include all required mounting hardware.

Please contact our applications engineering department for special applications.

**NOTE:** To order drive coupling components for standard applications see page 9-7.

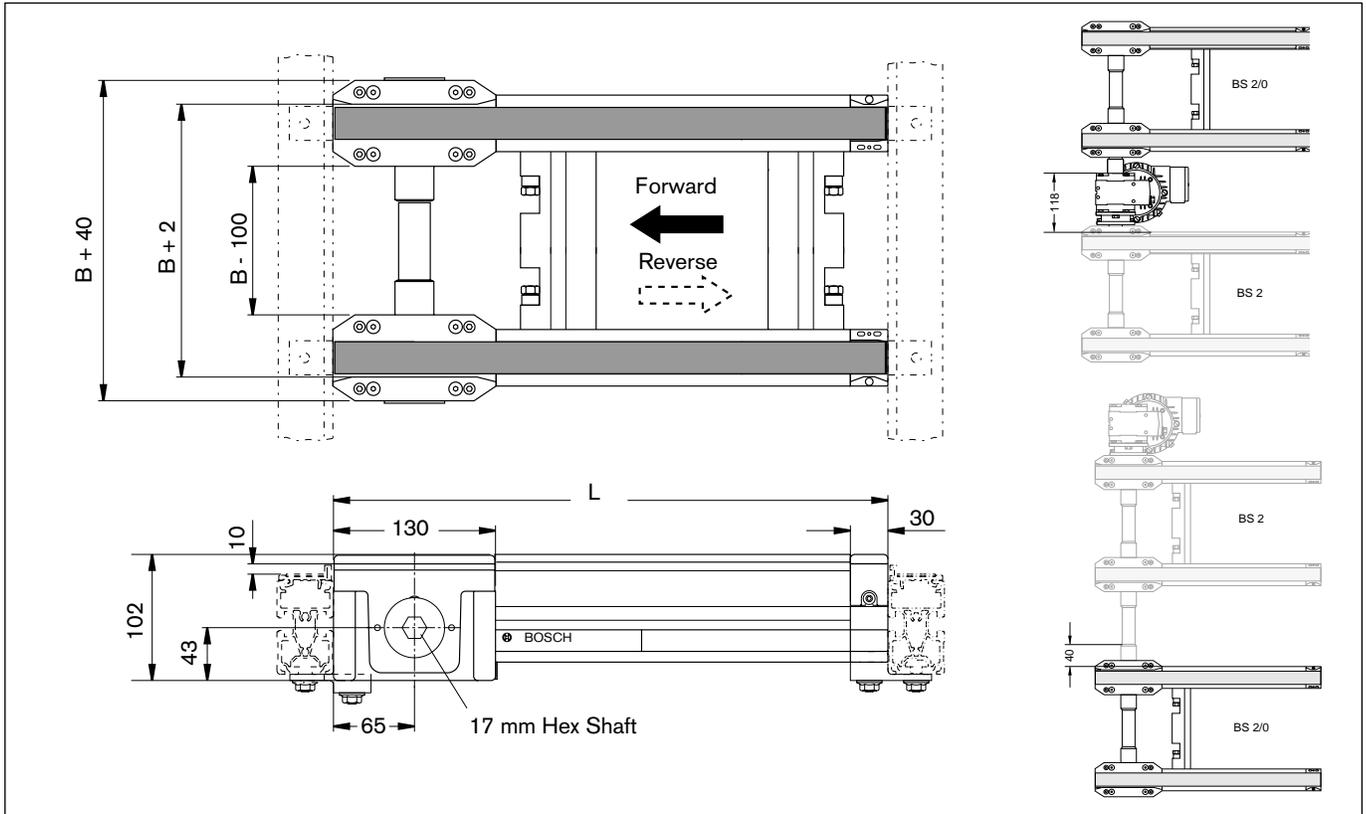
### Ordering Information for Transverse Conveyor BS2/O

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>3842 999 724</b>
		Your selection:
Width (B) in mm*	160, 240, 320, 400, 480, 640, 800, 1040	_____ mm
Belt Version	Non-Antistatic (N) Antistatic (A)	_____
Transverse Conveyor length (L)	240 mm to 6000 mm (in 5 mm increments)	_____ mm

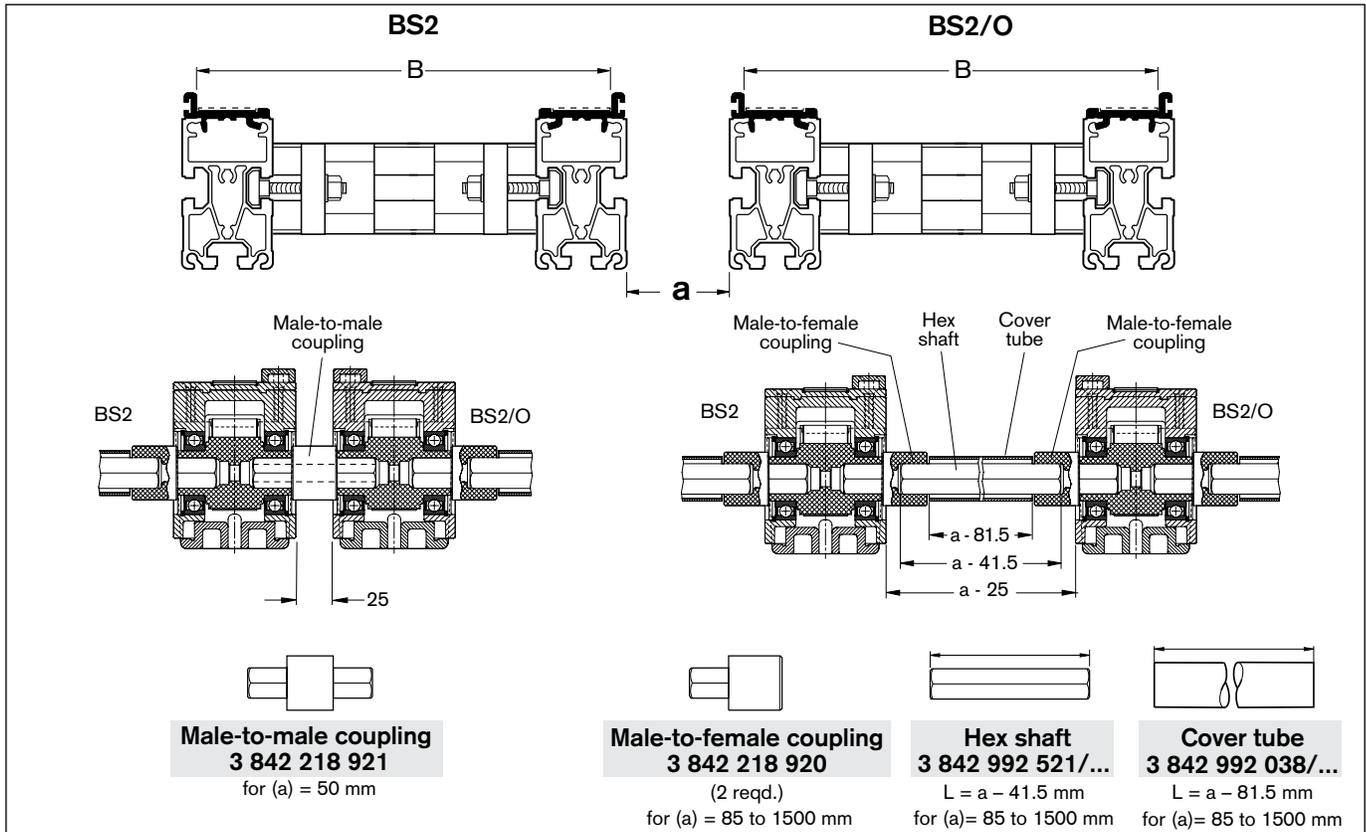
\* Transverse conveyor width (B) must match pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ), depending on orientation.

Transverse Conveyors

Dimensional Information for BS2/O



Ordering Information for BS2/O Drive Couplings

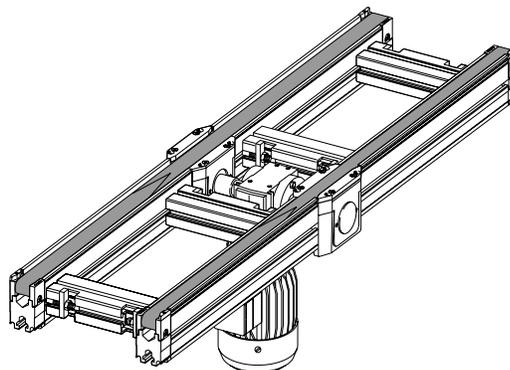


a = Distance between BS2 and BS2/O

Transverse Conveyors

# Transverse Conveyor

## Model BS2/M



Transverse conveyors are most often used to transfer workpiece pallets between parallel conveyor sections. They are also used to construct cycle-independent workstations, or small systems with short conveying lengths. The unit itself is modular and comes with its own mid-mounted or outboard mounted drive with toothed belts.

Mounting the drive in the center of the conveyor's length rather than at its end makes the BS2/M more compact, making it suitable for areas with limited clearance. In addition, positioning and control modules can be mounted at the very end of transverse conveyors.

In normal configuration, the maximum load capacity for the BS2/M is 60 kg in the forward direction and 30 kg in reversed direction. However payload will be reduced to 30kg forward and reverse if the length of L<sub>1</sub> is not one third or less of the overall length (L).

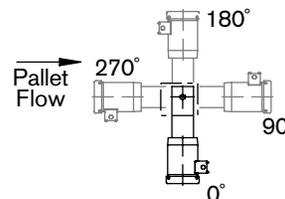
Transverse conveyors are available in any length from 310 mm to 6000 mm in 5 mm increments. Specify conveyor width, length, conveyor speed, motor voltage/frequency, motor mounting and belt version when ordering.

Transverse conveyors come fully assembled and include all required mounting hardware.

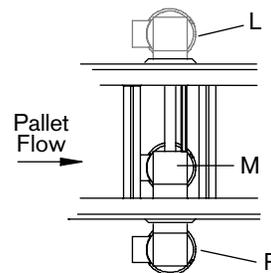
Motor voltage and frequency options are described in table 9-2.

**NOTE:** Transverse conveyor widths (B) in excess of 160 mm are available with either a mid-mounted motor or the outboard mounted motor as shown.

### Outboard Mounted Motor Orientation



### Motor Position



### Ordering information for Transverse Conveyor BS2/M

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 999 717
		Your selection:
Width (B) in mm	160, 240, 320, 400, 480, 640, 800, 1040	_____ mm
Motor Position	R, M*, L	_____
Motor Orientation (outboard mount only)	0°, 90°, 180°, 270°	_____
Belt Version	Non-Antistatic (N) Antistatic (A)	_____
Transverse Conveyor length (L)	310 mm to 6000 mm (in 5 mm increments)	_____ mm
Section 1 Length (L <sub>1</sub> )	90 mm to 5770 mm (in 5 mm increments)	_____ mm
Nominal Conveyor Speed (m/min)**	6, 9, 12, 15, 18**	_____ m/mm
Motor Voltage/Frequency	See Table 9-2	_____ V _____ Hz

\* Mid-mounted motor not available in 160 mm wide conveyors

\*\* Full load conveyor speeds vary depending on motor frequency. See table 9-2.

Transverse Conveyors

**Technical data for BS2/M**

Nominal belt speed	= See Table 9-2
Load capacity forward	= 60 kg
Load capacity reverse	= 30 kg
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60 Hz	= 1700
Motor electrical specifications	= See Table 9-2

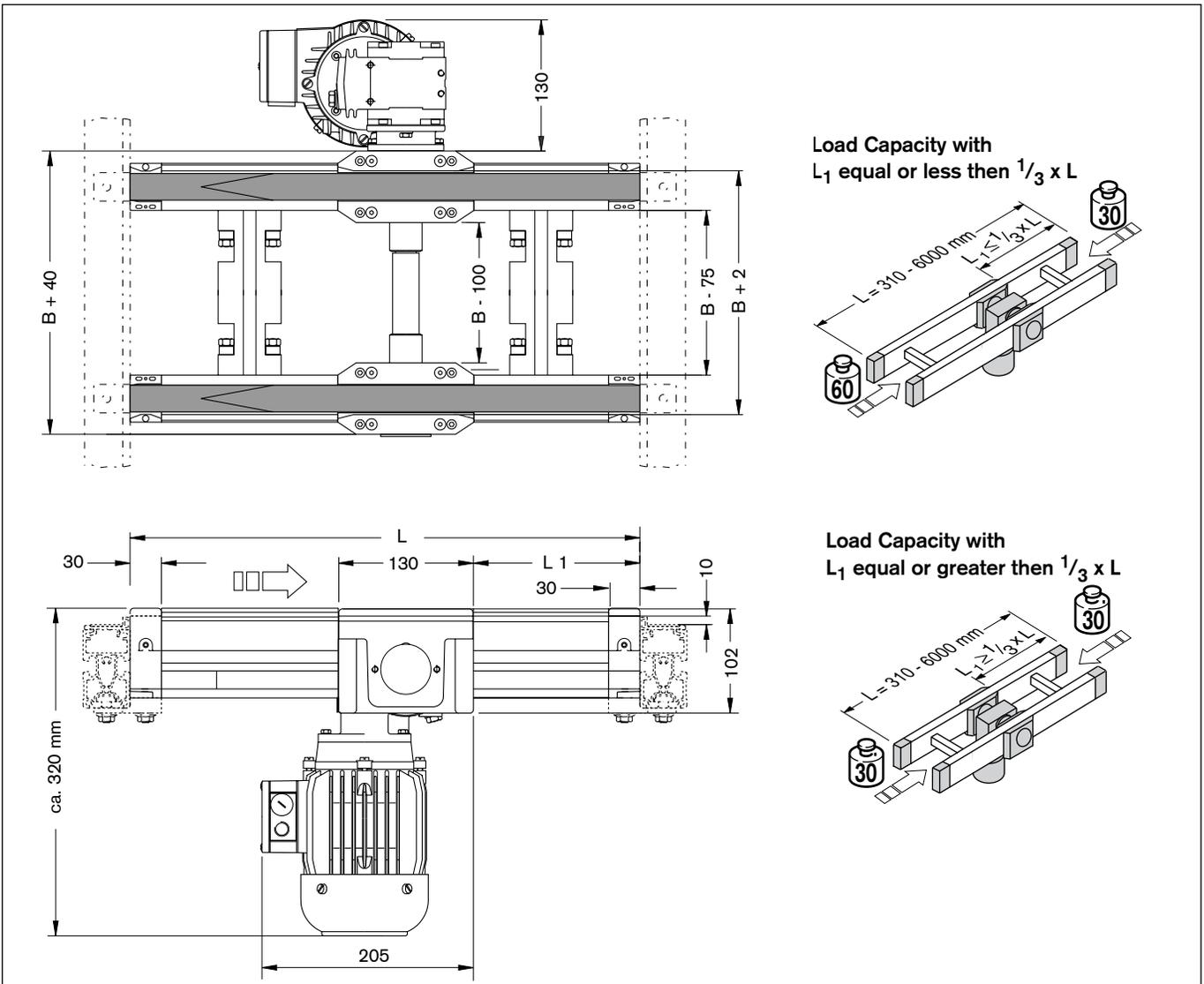
**Electrical data for BS2/M**

Nom. M/min	Actual Speed		HP		Full Load Amps @					
	50 Hz	60 Hz	50Hz	60Hz	208/60	240/60	380/50	415/50	480/60	575/60
6	5.7	7.0	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
9	9.5	8.7	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
12	11.5	11.6	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
15	14.3	13.9	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
18	19.1	17.4	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 9-2

**Dimensional data for BS2/M**

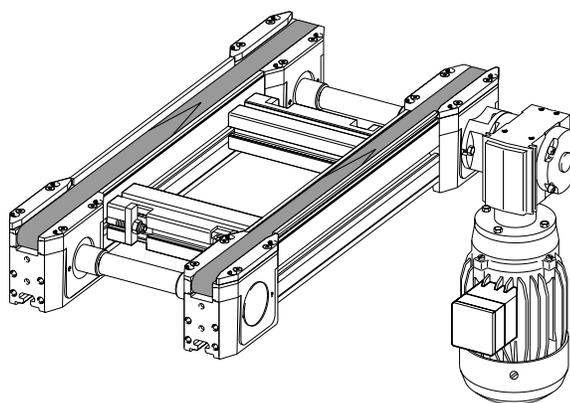


Transverse conveyor line width (B) must match pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ), depending on orientation.

Transverse Conveyors

# Transverse Conveyors

## Model BS2/K



Transverse conveyors are most often used to transfer workpiece pallets between parallel conveyor sections. They are also used to construct cycle-independent workstations, or small systems with short conveying lengths. The unit itself is modular and comes with its own mid-mount or outboard-mounted drive with toothed drive belts.

The BS2/K is specially designed to drive KE2/90-O and KE2/180-O curves via an auxiliary output shaft at the return end. The BS2/K is not reversible. Please note that although the BS2/K is available in widths up to 1040 mm, the KE2 curves have a maximum width of 400 mm.

In normal operation, the maximum load capacity for transverse conveyors is 60 kg forward. In addition, positioning and control modules can be mounted on transverse conveyors.

Transverse conveyors are available in any length from 325 mm to 6000 mm in 5 mm increments. Specify conveyor width,

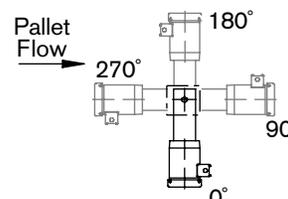
length, conveyor speed, motor voltage/frequency, motor mounting and belt version when ordering. Motor voltage and frequency options are described in table 9-3.

Transverse conveyors come fully assembled and include all required mounting hardware.

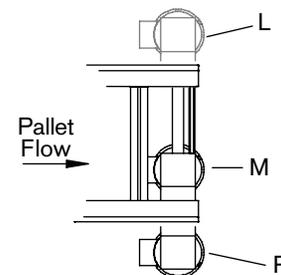
**NOTE:** Transverse conveyor widths in excess of 240 mm are available with either a mid-mounted or outboard-mounted motor as shown.

Please contact our applications engineering department for special applications.

### Outboard Mounted Motor Orientation



### Motor Position



## Ordering Information for Transverse Conveyors BS2/K

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 999 715
		Your selection:
Width (B) in mm <b>Note:</b> When using KE2 curves, maximum width is 400 mm	160, 240, 320, 400, 480, 640, 800, 1040	_____ mm
Motor Position	R, M*, L	_____
Motor Orientation (outboard mount only)	0°, 90°, 180°, 270°	_____
Belt Version	Non-Antistatic (N) Antistatic (A)	_____
Transverse Conveyor length (L)	325 mm to 6000 mm (in 5 mm increments)	_____ mm
Nominal Conveyor Speed (m/min)**	6, 9, 12, 15, 18**	_____ m/min
Motor Voltage/Frequency	See Table 9-3	_____ V _____ Hz

\* Mid-mounted motor not available in 160 mm or 240 mm wide conveyors

\*\* Full load conveyor speeds vary depending on motor frequency. See table 9-3.

Transverse Conveyors

**Technical data for BS2/K**

Nominal belt speed	= See Table 9-3
Load capacity forward	= 60 kg
Load capacity reverse	= N/A
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60 Hz	= 1700
Motor electrical specifications	= See Table 9-3

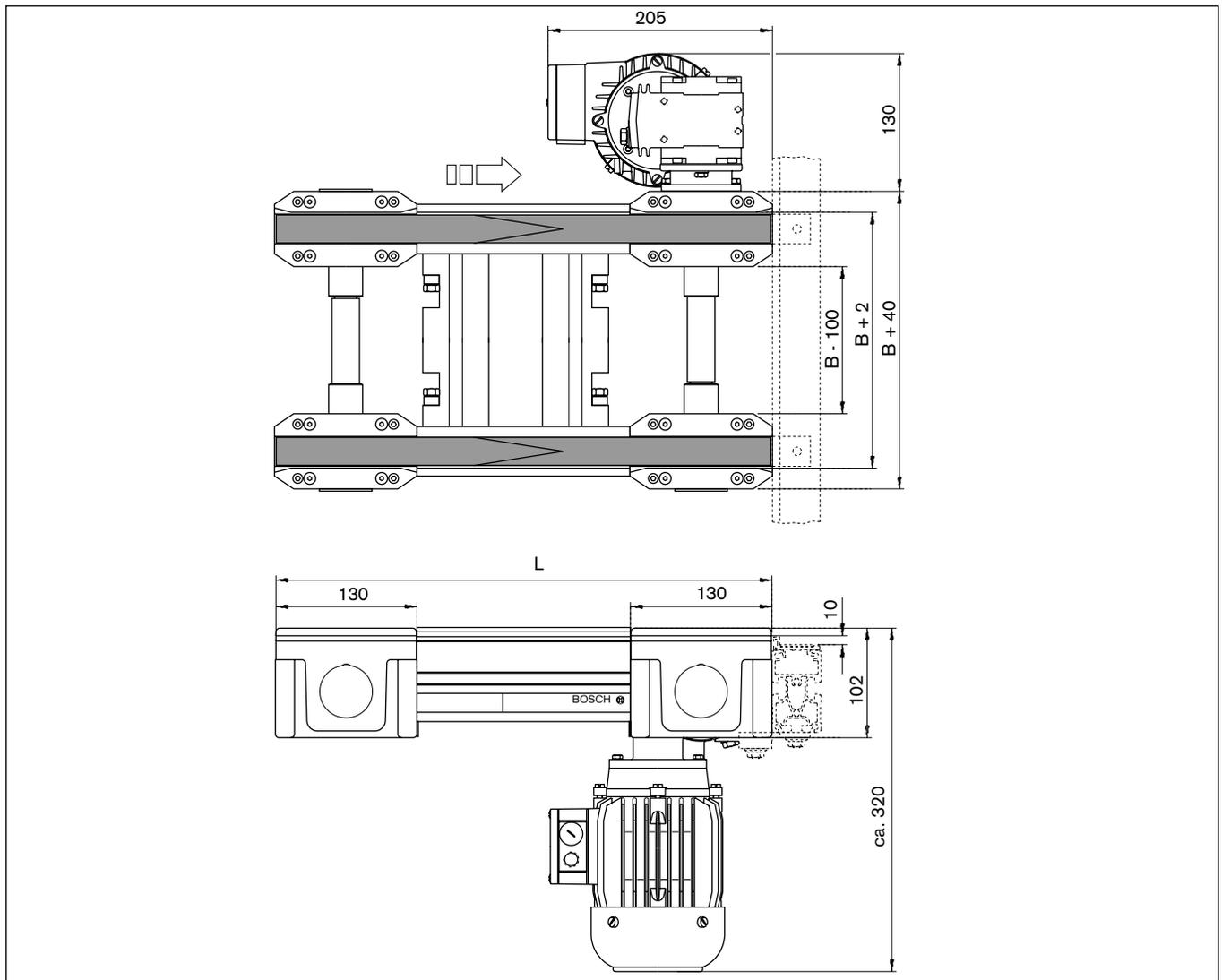
**Electrical data for BS2/K**

Nom. M/min	Actual Speed		HP		Full Load Amps @					
	50 Hz	60 Hz	50Hz	60Hz	208/60	240/60	380/50	415/50	480/60	575/60
6	6.1	7.4	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
9	9.1	8.8	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
12	12.1	11.1	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
15	15.2	14.7	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
18	18.2	18.4	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 9-3

**Dimensional data for BS2/K**

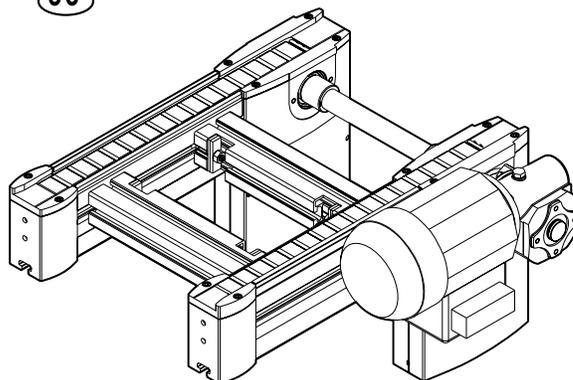
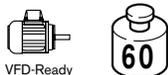


Transverse conveyor width (B) must match pallet length ( $L_{wp}$ ) or width ( $B_{wp}$ ), depending on orientation.

Transverse Conveyors

# Transverse Conveyors

## Model BS2/C



Flat-top chain transverse conveyors are used to transfer moderate workpiece pallet payloads between parallel conveyor sections. They are also used to construct cycle-independent workstations and are especially suitable for modular system layouts with short conveyor sections at moderate loads. The unit itself is modular and comes with its own drive, return, and pre installed flat-top chain.

In normal operation, the maximum load capacity for the BS2/C is 60kg. **Reverse operation is not possible** Flat-top chains are used as the conveyor media and the unit is delivered with an automatic chain tensioning device.

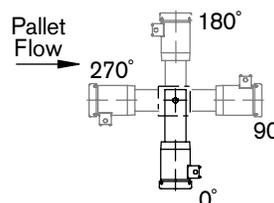
The flat-top chain transverse conveyor is available in lengths from 300mm to 6000mm in 5mm increments. Specify conveyor width, length, conveyor speed, motor voltage/frequency, motor position, and motor orientation when ordering. Motor voltage and frequency are described in the Technical Data table.

Transport media selection is either standard or antistatic flat-top chain. The unit is delivered fully assembled and includes all required mounting hardware.

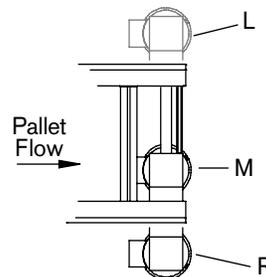
Conveyor widths (B) in excess of 160mm are available with either a mid-mounted or outboard mounted motor as shown.

Please contact our applications engineering department for nonstandard length, width, speed, or voltage.

### Outboard Mounted Motor Orientation



### Motor Position



### Ordering Information for BS2/C

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 999 917
		Your selection:
Width (B) in mm	160, 240, 320, 400, 480, 640, 800, 1040	_____ mm
Motor Position	R, M*, L	_____
Motor Orientation (outboard mount only)	0°, 90°, 180°, 270°	_____
Transverse Conveyor length (L)	300 mm to 6000 mm (in 5 mm increments)	_____ mm
Nominal Conveyor Speed (m/min)**	6, 9, 12, 15, 18**	_____ m/mm
Motor Voltage/Frequency	See Table 9-4	_____ V _____ Hz
Flat-top Chain Type	Standard (N) or Antistatic (A)	_____

\* Mid-mounted motor not available in 160 mm wide transverse conveyors

\*\* Full load conveyor speeds vary depending on motor frequency. See table 9-4.

Transverse Conveyors

**Technical Data for BS2/C**

Nominal conveyor speed	= See Table 9-4
Load capacity forward	= 60 kg
Load capacity reverse	= NA
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60Hz	= 1700
Motor electrical specifications	= See Table 9-4

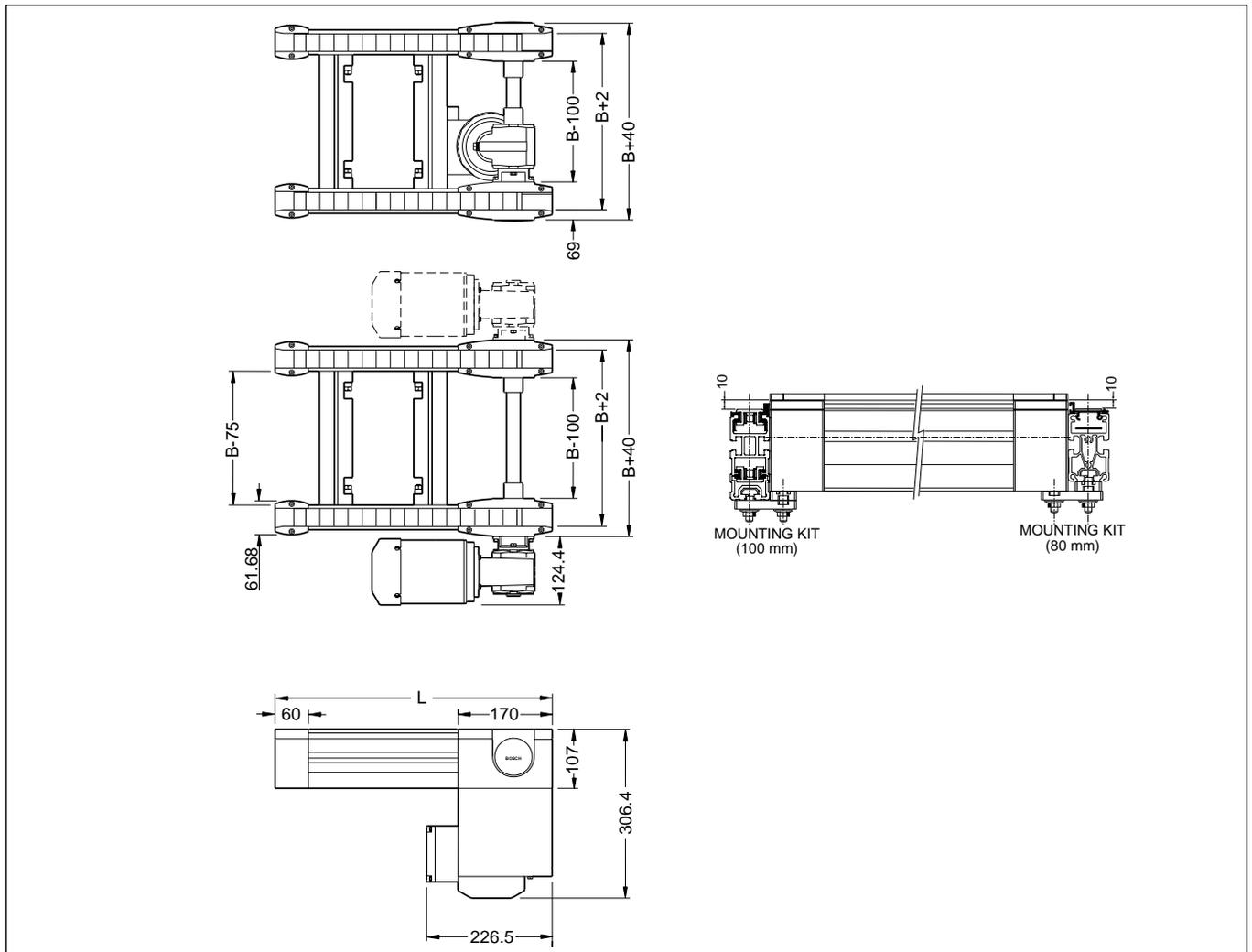
**Electrical Data for BS2/C**

Nom. M/min	Actual Speed		HP	Full Load Amps @					
	50 Hz	60 Hz		208/60	240/60	380/50	415/50	480/60	575/60
6	5.7	7.0	.25	1.6	1.3	0.86	0.72	0.67	0.55
9	9.5	8.7	.25	1.6	1.3	0.86	0.72	0.67	0.55
12	11.5	11.6	.25	1.6	1.3	0.86	0.72	0.67	0.55
15	14.3	13.9	.25	1.6	1.3	0.86	0.72	0.67	0.55
18	19.1	17.4	.25	1.6	1.3	0.86	0.72	0.67	0.55

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 9-4

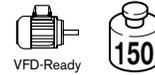
**Dimensional Data for BS2/C**



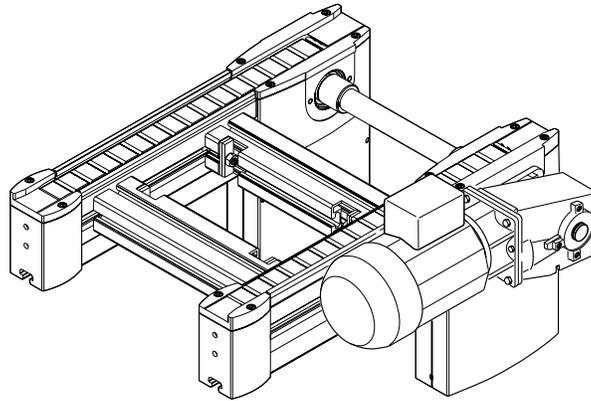
Transverse conveyor width (B) must match pallet length (L<sub>WT</sub>) or width (B<sub>WT</sub>), depending on orientation.

Transverse Conveyors

# Heavy Duty Flat-Top Chain Transverse Conveyors



Model BS2/C-H



Heavy duty flat top chain transverse conveyors utilize a gearmotor and are designed to transfer workpiece pallet payloads between parallel conveyor sections. They are also used to construct cycle-independent workstations and are especially suitable for modular system layouts with short conveyor sections at moderate loads. The unit itself is modular and comes with its own drive, return, and pre installed flat-top chain.

In normal operation, the maximum load capacity for the BS2/C-H is 150kg.

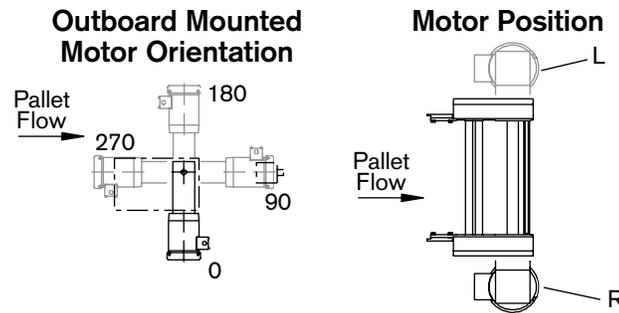
**Reverse operation is not possible.**

Flat-top chains are used as the conveyor media and the unit is delivered with an automatic chain tensioning device.

The flat-top chain transverse conveyor is available in lengths from 300 mm to 6000 mm in 5 mm increments. Specify conveyor width, length, conveyor speed, motor voltage/frequency, motor position, and motor orientation when ordering. Motor voltage and frequency are described in the Technical Data table.

**NOTE:** mid-mount motor position is not an option with heavy duty flat top chain transverse conveyors.

Transport media is either standard or antistatic flat-top chain. The unit comes fully assembled and includes all required mounting hardware. Please contact our applications engineering department for nonstandard length, width, speed, or voltage.



### Ordering Information for Transverse Conveyor BS2/C-H

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>3842 999 985</b>
		Your selection:
Drive Unit Width (B)	160, 240, 320, 400, 480, 640, 800, 1040	_____mm
Motor Position	L or R	_____
Motor Orientation	0°, 90°, 180°, 270°	_____mm
Transverse Conveyor Length (L)	300mm to 6000mm (in 5mm increments)	_____
Nominal Speed*	9, 12, 15, 18	_____M/min
Motor Voltage/Frequency	See Table 9-5	_____ V _____ Hz
Flat-top Chain Type	Standard (N) or Antistatic (A)	_____

\* Full load conveyor speeds vary depending on motor frequency. See Table 9-5

Transverse Conveyors

**Technical data for BS2/C-H**

Nominal conveyor speed	=	See Table 9-5
Load capacity forward	=	150 kg
Load capacity reverse	=	N/A
Motor RPM @ 50 Hz	=	1380-1410
Motor RPM @ 60 Hz	=	1656-1728
Motor electrical specifications	=	See Table 9-5

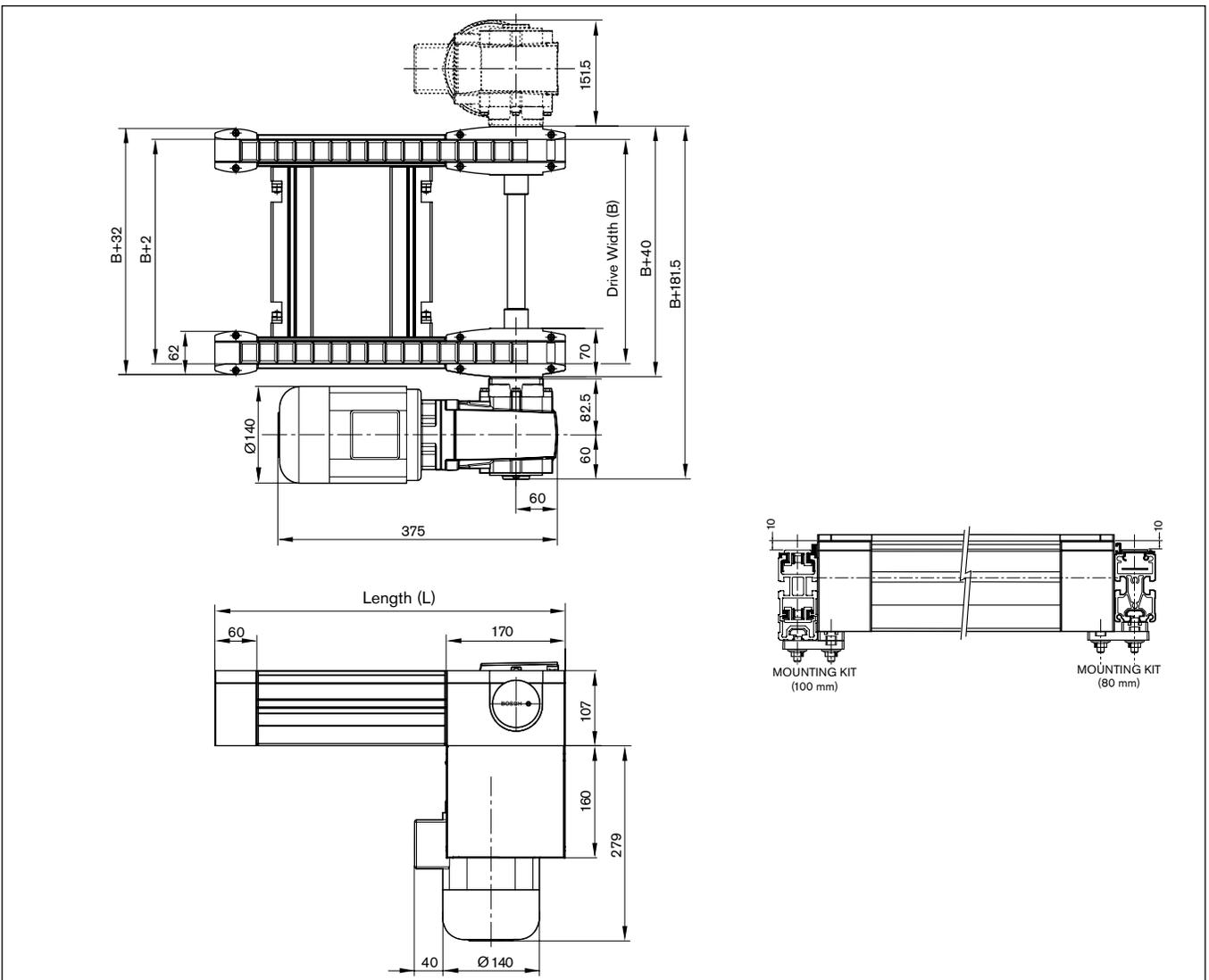
**Electrical data for BS2/C-H**

Nom. M/min	Actual Speed		Full Load Amps/HP @											
	50 Hz	60 Hz	208/60		240/60		380/50		415/50		480/60		575/60	
			AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP
9	9.2	8.5	2.4	1/2	2.4	1/2	1.6	3/4	1.7	3/4	1.2	5/8	1.0	5/8
12	11.5	10.9	2.4	1/2	2.4	1/2	1.6	3/4	1.7	3/4	1.2	5/8	1.0	5/8
15	14.1	13.8	2.4	1/2	2.4	1/2	1.2	1/2	1.2	1/2	1.2	5/8	1.0	5/8
18	17.2	16.9	2.4	1/2	2.4	1/2	1.2	1/2	1.2	1/2	1.2	5/8	1.0	5/8

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 9-5

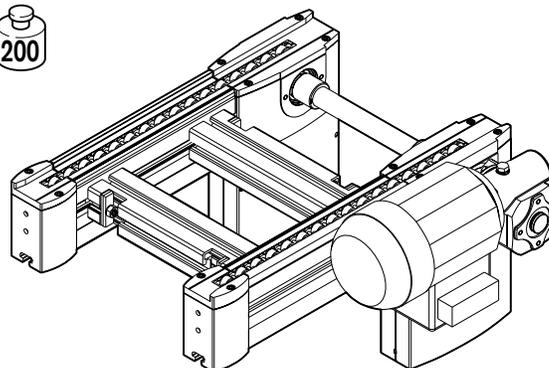
**Dimensional data for BS2/C-H**



Transverse Conveyors

# Transverse Conveyors

## Model BS2/R



Roller chain transverse conveyors are used to transfer heavy workpiece pallet payloads between parallel conveyor sections. They are also used to construct cycle-independent workstations and are especially suitable for modular system layouts with short conveyor sections at high loads. The unit itself is modular and comes with its own drive, return, and pre installed roller chain.

In normal operation, the maximum load capacity for the BS2/R is 200kg (forward), and 100kg (reverse). The unit uses roller chain as the conveying medium and is delivered with a spring chain tensioning device. Reverse operation is not possible on lengths (L) over 2000mm or when specifying filler blocks (3) or (4) as the roller chain type.

**NOTE: When reverse operation is specified, a fixed chain tensioner is used instead of the spring tensioner.**

The roller chain transverse conveyor is available in lengths from 300mm to 6000 mm in 5 mm increments. Specify

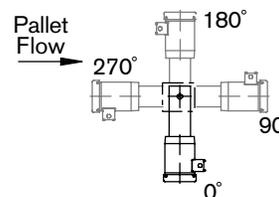
conveyor width, length, conveyor speed, motor voltage/frequency, motor position, reverse option, and motor orientation when ordering. Motor voltage and frequency are described in the Technical Data table. Transport media selection is one of 4 chain options– polyamide rollers, steel rollers, polyamide rollers with filler blocks or steel rollers with filler blocks.

The unit comes fully assembled and includes all required mounting hardware.

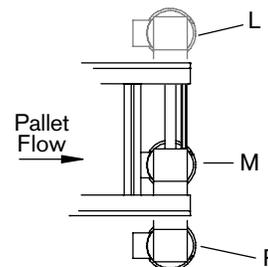
Conveyor widths (B) in excess of 160mm are available with either a mid-mounted or outboard mounted motor as shown.

Please contact our applications engineering department for nonstandard length, width, speed, or voltage.

### Outboard Mounted Motor Orientation



### Motor Position



### Ordering Information for BS2/R

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 999 904
		Your selection:
Width (B) in mm	160, 240, 320, 400, 480, 640, 800, 1040	_____ mm
Motor Position	R, M*, L	_____
Motor Orientation (outboard mount only)	0°, 90°, 180°, 270°	_____
Reverse Operation	YES=Fixed tensioner NO=Spring tensioner	_____
Transverse Conveyor length (L)	300 mm to 6000 mm (in 5 mm increments)	_____ mm
Nominal Conveyor Speed (m/min)**	6, 9, 12, 15, 18**	_____ m/mm
Motor Voltage/Frequency	See Table 9-6	_____ V _____ Hz
Roller Chain Type	Polyamide Rollers (1) Steel Rollers (2) Polyamide Rollers & Filler Blocks (3) Steel Rollers & Filler Blocks (4)	( )

\* Mid-mounted motor not available in 160 mm wide transverse conveyors

\*\* Full load conveyor speeds vary depending on motor frequency. See table 9-6.

Transverse Conveyors

**Technical Data for BS2/R**

Nominal conveyor speed	= See Table 9-6
Load capacity forward	= 200 kg
Load capacity reverse	= 100 kg with fixed tensioner
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60Hz	= 1700
Motor electrical specifications	= See Table 9-6

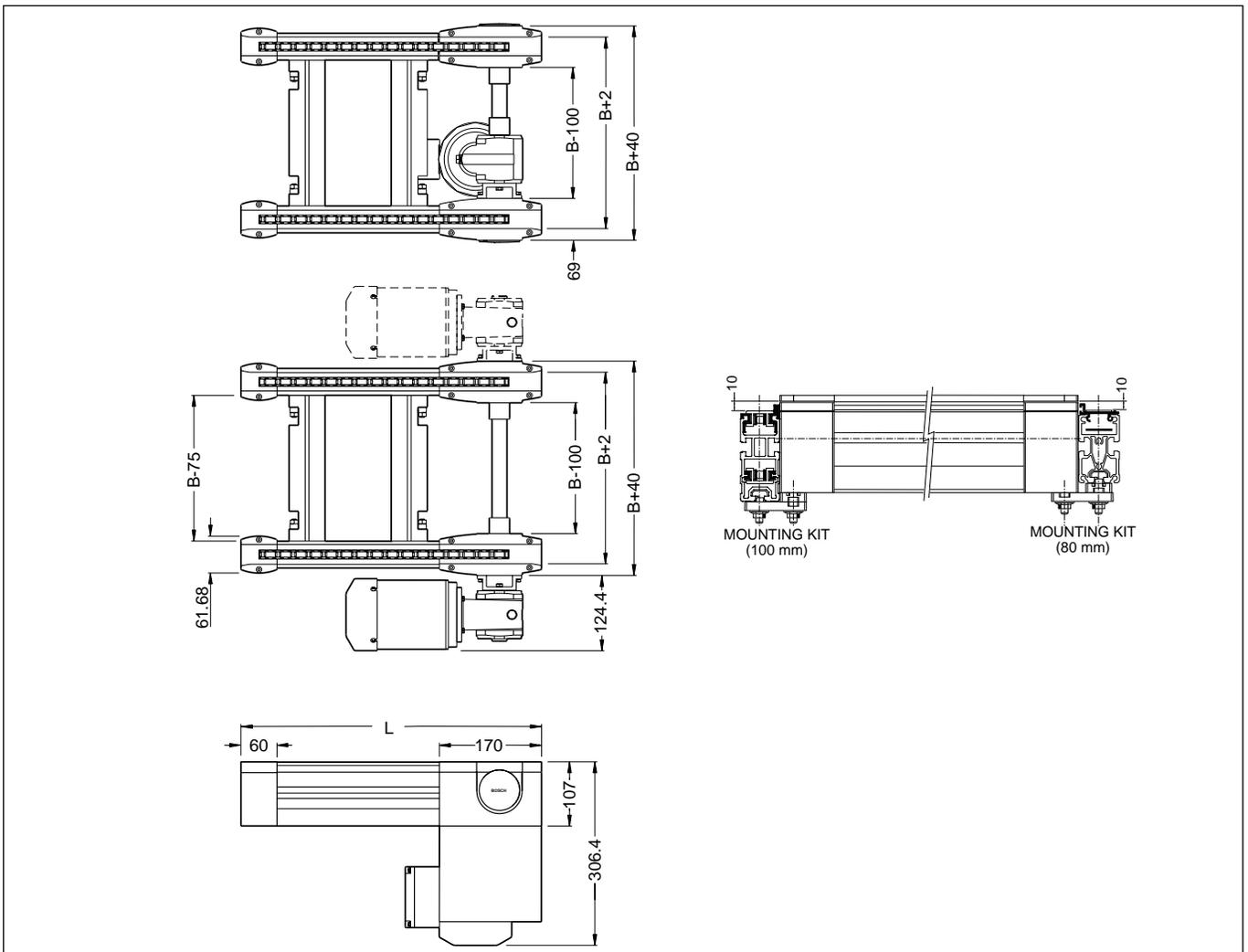
**Electrical Data for BS2/R**

Nom. M/min	Actual Speed		HP	Full Load Amps @					
	50 Hz	60 Hz		208/60	240/60	380/50	415/50	480/60	575/60
6	5.7	7.0	.25	1.6	1.3	0.86	0.72	0.67	0.55
9	9.5	8.7	.25	1.6	1.3	0.86	0.72	0.67	0.55
12	11.5	11.6	.25	1.6	1.3	0.86	0.72	0.67	0.55
15	14.3	13.9	.25	1.6	1.3	0.86	0.72	0.67	0.55
18	19.1	17.4	.25	1.6	1.3	0.86	0.72	0.67	0.55

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 9-6

**Dimensional Data for BS2/R**

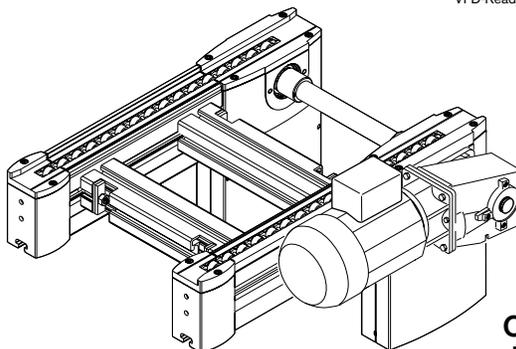


Transverse conveyor width (B) must match pallet length ( $L_{VT}$ ) or width ( $B_{VT}$ ), depending on orientation.

Transverse Conveyors

# Heavy Duty Roller Chain Transverse Conveyor

Model BS2/R-H



Heavy duty roller chain transverse conveyors utilize a gearmotor and are designed to transfer workpiece pallet payloads between parallel conveyor sections. They are also used to construct cycle-independent workstations and are especially suitable for modular system layouts with short conveyor sections at high loads. The unit itself is modular and comes with its own drive, return, and pre installed roller chain. In normal operation, the maximum load capacity for the BS2/R-H is 450kg (forward) and 225 kg (reverse). The unit uses roller chain as the conveying medium and is delivered with an automatic chain tensioning device. Reverse operation is not possible on lengths (L) over 2000mm or when specifying filler blocks (3) or (4) as the roller chain type.

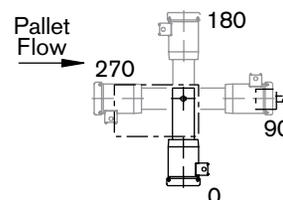
The roller chain transverse conveyor is available in lengths from 300mm to 6000mm in 5mm increments. Specify conveyor width, length, conveyor speed, motor voltage/frequency, motor position, reverse option, and motor orienta-

tion when ordering. Motor voltage and frequency are described in the Technical Data table. Transport media selection is one of 4 chain options– polyamide rollers, steel rollers, polyamide rollers with filler blocks or steel rollers with filler blocks.

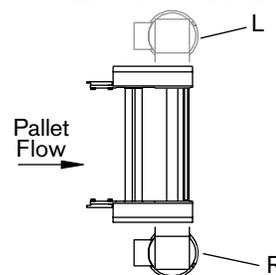
**NOTE: When reverse operation is specified, a fixed chain tensioner is used instead of the spring tensioner.**

**NOTE:** mid-mount motor position is not an option with heavy duty roller chain transverse conveyors. The unit comes fully assembled and includes all required mounting hardware. Please contact our applications engineering department for nonstandard length, width, speed, or voltage.

### Outboard Mounted Motor Orientation



### Motor Position



## Ordering Information for Transverse Conveyor BS2/R-H

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 998 096
		Your selection:
Drive Unit Width (B)	160, 240, 320, 400, 480, 640, 800, 1040	_____mm
Motor Position	L or R	_____
Reverse Operation	YES=fixed tensioner NO=spring tensioner	_____
Motor Orientation	0°, 90°, 180°, 270°	_____mm
Transverse Conveyor Length	300 mm to 6000 mm (in 5mm increments)	_____
Nominal Speed*	9, 12, 15, 18	_____M/min
Motor Voltage/Frequency	See Table 9-7	_____ V _____Hz
Roller Chain Type	Polyamide Rollers (1) Steel Rollers (2) Polyamide Rollers & Filler Blocks (3) Steel Rollers & Filler Blocks (4)	( )

\* Full load conveyor speeds vary depending on motor frequency. See Table 9-7

Transverse Conveyors

**Technical data for BS2/R-H drive**

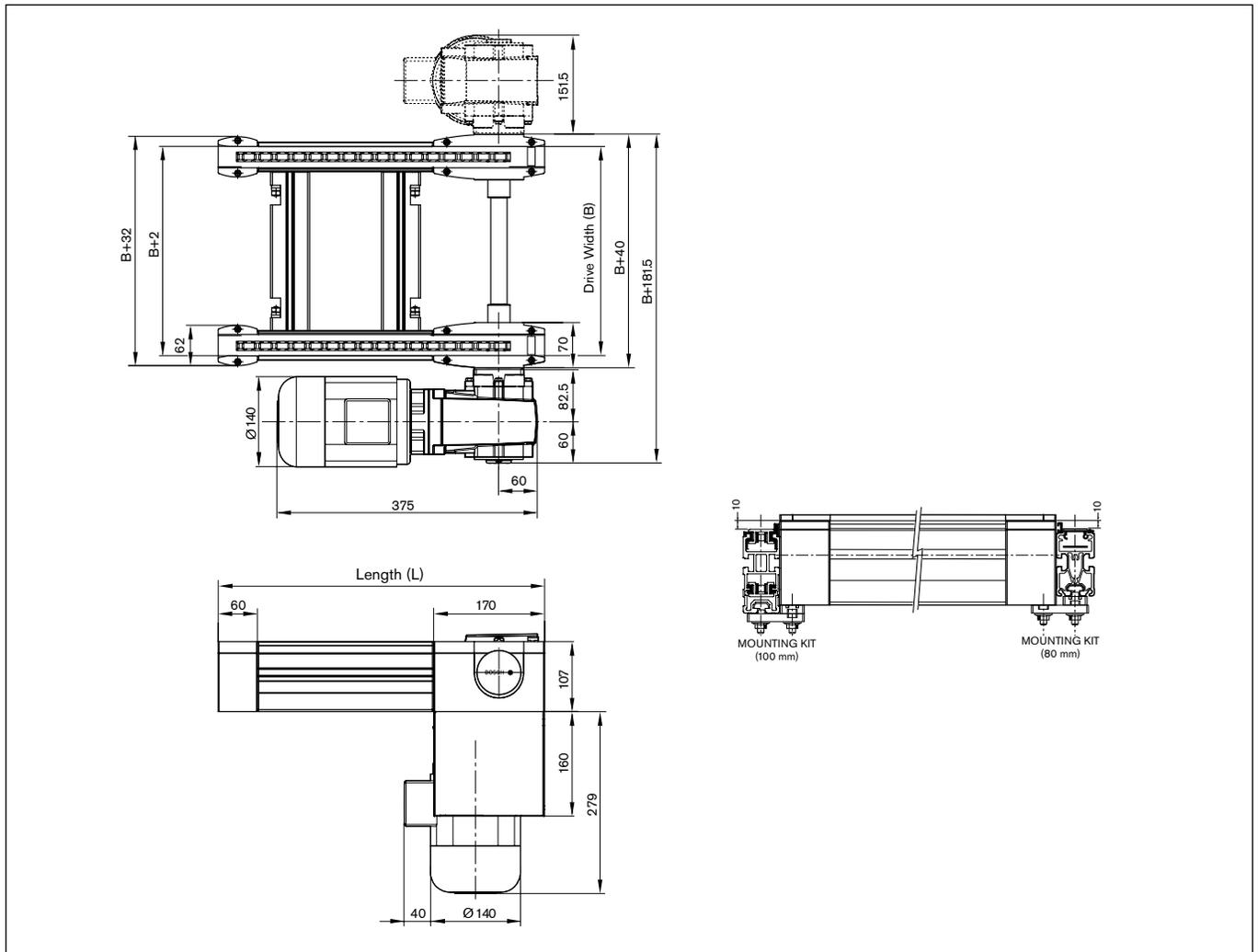
Nominal conveyor speed	=	See Table 9-7
Load capacity forward	=	450 kg
Load capacity reverse	=	225 kg with fixed tensioner
Motor RPM @ 50 Hz	=	1380-1410
Motor RPM @ 60 Hz	=	1656-1728
Motor electrical specifications	=	See Table 9-7

**Electrical data for BS2/R-H**

Nom. M/min	Actual Speed		Full Load Amps/HP @											
	50 Hz	60 Hz	208/60		240/60		380/50		415/50		480/60		575/60	
			AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP	AMPS	HP
9	9.78	9.1	2.4	1/2	2.4	1/2	1.6	3/4	1.7	3/4	1.2	5/8	1.0	5/8
12	12.3	11.7	2.4	1/2	2.4	1/2	1.6	3/4	1.7	3/4	1.2	5/8	1.0	5/8
15	14.9	14.7	2.4	1/2	2.4	1/2	1.2	1/2	1.2	1/2	1.2	5/8	1.0	5/8
18	18.3	17.9	2.4	1/2	2.4	1/2	1.2	1/2	1.2	1/2	1.2	5/8	1.0	5/8

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.  
Table 9-7

**Dimensional Data for BS2/R-H**

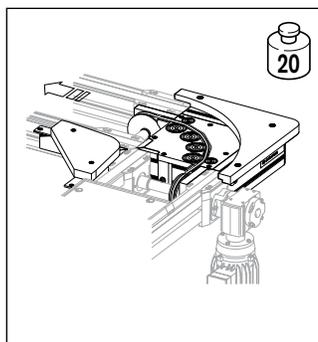


## Curve Units

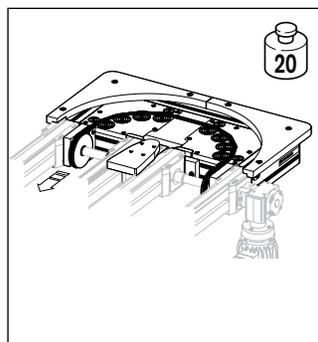
## Section 10 – Curve Units

Curved units provide a 90° or 180° change in pallet direction while still maintaining leading edge orientation. They can help lower system cost by reducing control complexity and system requirements as compared to the use of lift-transfer units.

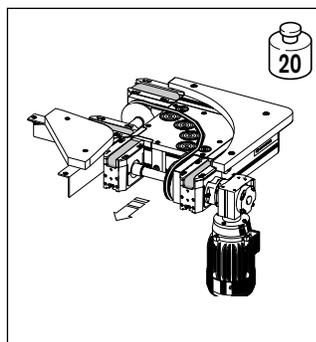
The KE2/90 and KE2/180 modules use a polyurethane belt to pull pallets through the curve and can transfer up to 20 kg.



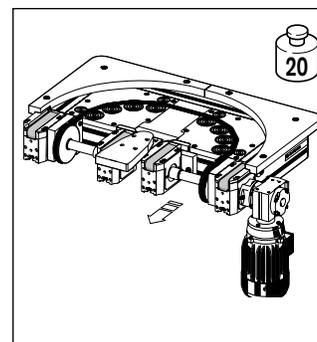
**KE2/90-0**  
Slave Driven  
10-1



**KE2/180-0**  
Slave Driven  
10-2 to 10-3



**KE2/90**  
90° Powered Curve  
10-4 to 10-5



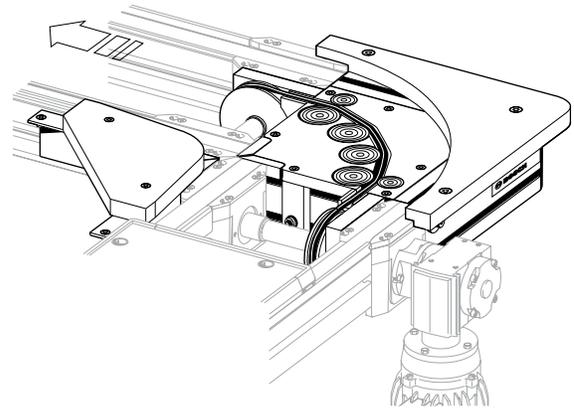
**KE2/180**  
180° Powered Curve  
10-6 to 10-7

Curve Units

# 90° Curve (slave driven)



Model KE2/90-O



KE2 series curves are a simple way to change pallet direction while maintaining leading edge orientation. They can be used to construct a carousel style layout. 90° powered and slave driven versions are available.

An antistatic polyurethane belt is used to pull the pallet through the curve. The curves are suitable for both left and right-hand rotation. Curves are not reversible, and pallet flow is always in the direction of the drive, whether self-powered or slave driven.

Loads must be centrally located on the pallet to ensure proper operation, and a stop gate must be mounted before the curve to prevent pallet accumulation in the curve.

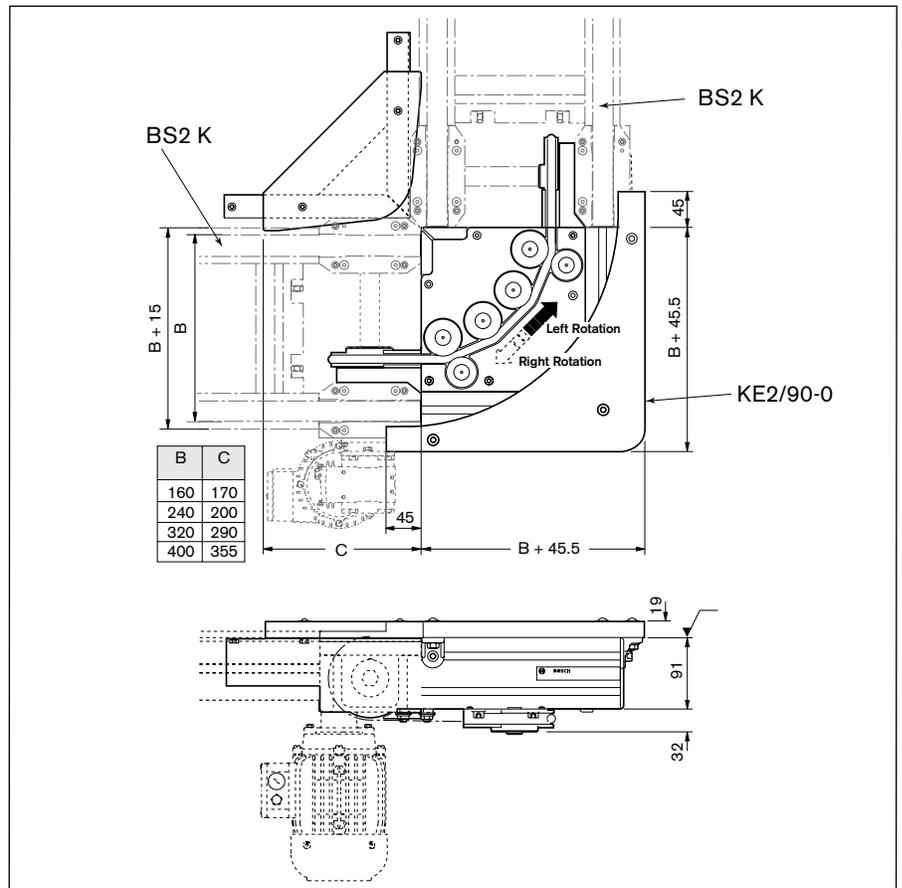
KE2/90-O curves are driven via a BS2/K transverse conveyor (page 9-10), and include all necessary hardware to connect them to the auxiliary output drive shaft on the BS2/K. The curve's transport speed is dependent on the BS2/K that drives it.

The KE2/90-O comes partly assembled, and includes all necessary mounting hardware to fasten to a BS2/K. Leg sets, shown on page 8-5, are used to support the curves.

### Ordering Information for Curve Unit KE2/90-0

Specify part number, then select from the options below.	Your Choices are:	<b>Part Number 3842 999 725</b>
		Your selection:
Curve Size (B x L) in mm	160 x 160, 160 x 240, 240 x 160, 240 x 240, 240 x 320, 320 x 240, 320 x 320, 320 x 400, 400 x 320, 400 x 400	B _____ x L _____ mm
Belt Version	Antistatic (A)	_____ A _____

### Dimensional information for KE2/90-0



Curve width (B) must match pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ), depending on orientation.

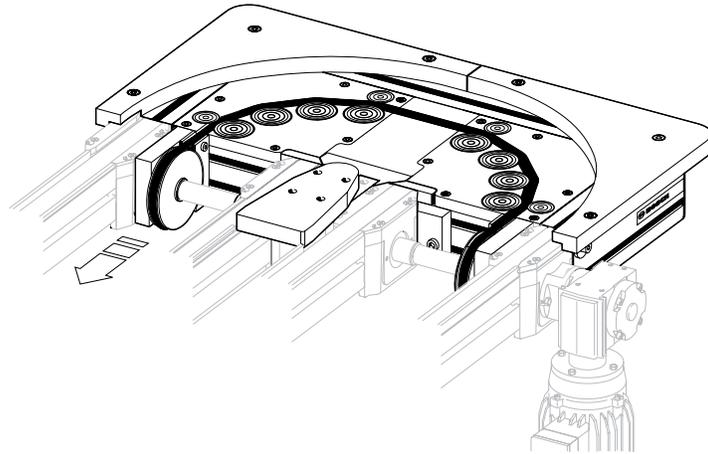
Curve Units

# 180° Curve (slave driven)



Model KE2/180-O

KE2 series curves are a simple way to change pallet direction while maintaining leading edge orientation. They reduce controls complexity and system cost compared to the use of lift transfer units. Powered and slave driven versions are available, in both 90 and 180 degree curves.



An antistatic polyurethane belt is used to pull the pallet through the curve. The curves are suitable for both left and right-hand rotation. Curves are not reversible, and pallet flow is always in the direction of the drive, whether self-powered or slave driven.

Loads must be centrally located on the pallet to ensure proper operation, and a stop gate must be mounted before the curve to prevent pallet accumulation in the curve.

The KE2/180-O curve provides a means of changing pallet direction 180° while maintaining leading edge orientation. Two different line spacing (dimension "a" at right) versions are available.

KE2/180-O curves are driven via a BS2/K transverse conveyor (page 9-10), and include all necessary hardware to connect them to the auxiliary output drive shaft on the BS2/K.

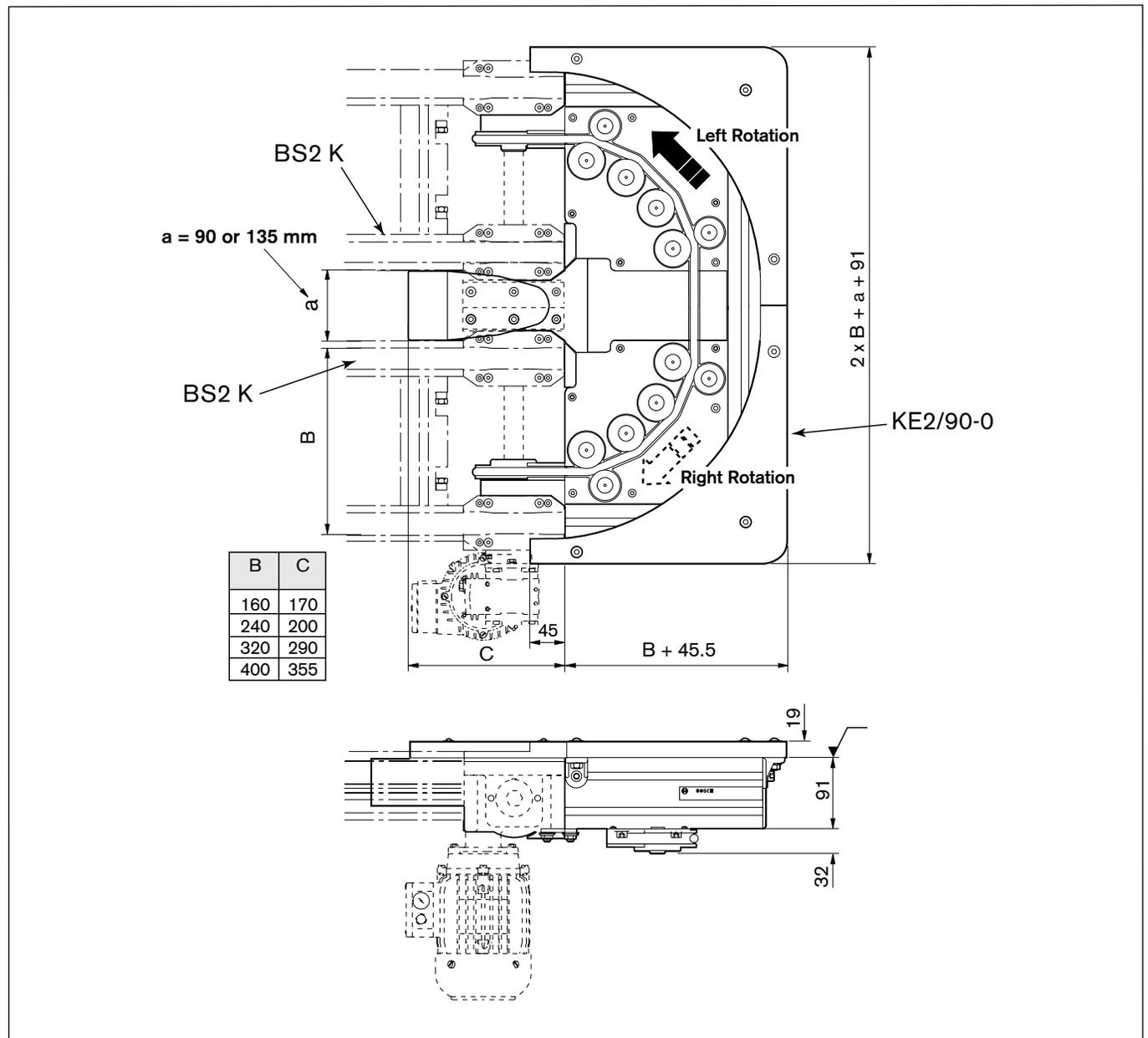
The KE2/180-O comes partially assembled, and includes all necessary mounting hardware to fasten to a BS2/K. Leg sets, shown on page 8-5, are used to support the curves.

### Ordering Information for Curve Unit KE2/180-0

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 999 726
		Your selection:
Line Gap (a)	90 or 135 mm	_____ mm
Curve Size (B x L) in mm	160 x 160, 160 x 240, 240 x 160, 240 x 240, 240 x 320, 320 x 240, 320 x 320, 320 x 400, 400 x 320, 400 x 400	B _____ x L _____ mm
Belt Version	Antistatic (A)	_____ A _____

Curve Units

Dimensional Information for KE2/180-0

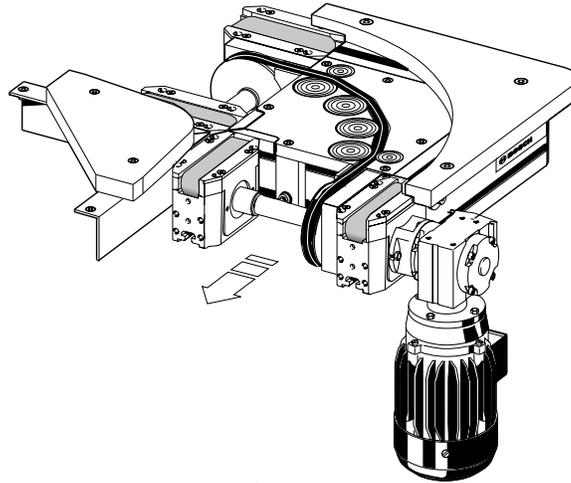


Curve width (B) must match pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ), depending on orientation.

Curve Units

# 90° Curve (powered)

## Model KE2/90



KE2 series curves are a simple way to change pallet direction while maintaining leading edge orientation. They can be used to construct a carousel style layout. Powered and slave driven versions are available in 90 degree configurations.

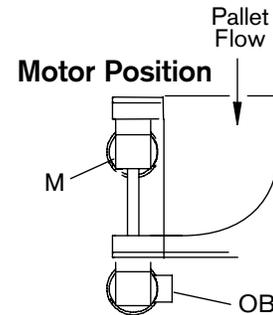
An antistatic polyurethane belt is used to pull the pallet through the curve. The curves are suitable for both left and right-hand rotation. Curves are not reversible, and pallet flow is always in the direction of the drive, whether self-powered or slave driven.

Loads must be centrally located on the pallet to ensure proper operation, and a stop gate must be mounted before the curve to prevent pallet accumulation in the curve.

The KE2/90 has its own drive motor and can be used with most standard TSplus drives, returns, and transverse conveyors. Two short toothed belt conveyor segments transfer pallets to and from adjacent conveyor sections.

The KE2/90 comes fully assembled, and includes all necessary mounting hardware for use with BS2 belt transverse conveyors as well as AS2 and UM2 style drives and returns.

Leg sets (shown on page 8-5) are used to support the curves and must be ordered separately.



### Ordering Information for Curve Unit KE2/90

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>3842 999 727</b>
		Your selection:
Motor Location	Outboard	<u>Outboard</u>
Curve Size (B x L) in mm	160 x 160, 160 x 240, 240 x 160, 240 x 240, 240 x 320, 320 x 240, 320 x 320, 320 x 400, 400 x 320, 400 x 400	B_____ x L_____ mm
Direction of Rotation	Left, Right	_____
Nominal Curve Speed (m/min)*	9, 12, 15	_____ m/min
Motor Voltage/Frequency	See Table 10-1	_____ V _____ Hz
Belt Version	Antistatic (A)	<u>A</u>

\* Full load conveyor speeds vary depending on motor frequency. See table 10-1

Curve Units

**Technical data for KE2/90**

Nominal belt speed	= see table 10-1
Load capacity	= 20 kg
Motor rated power	= .12 HP
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60 Hz	= 1700
Motor Electrical Specifications	= See table 10-1

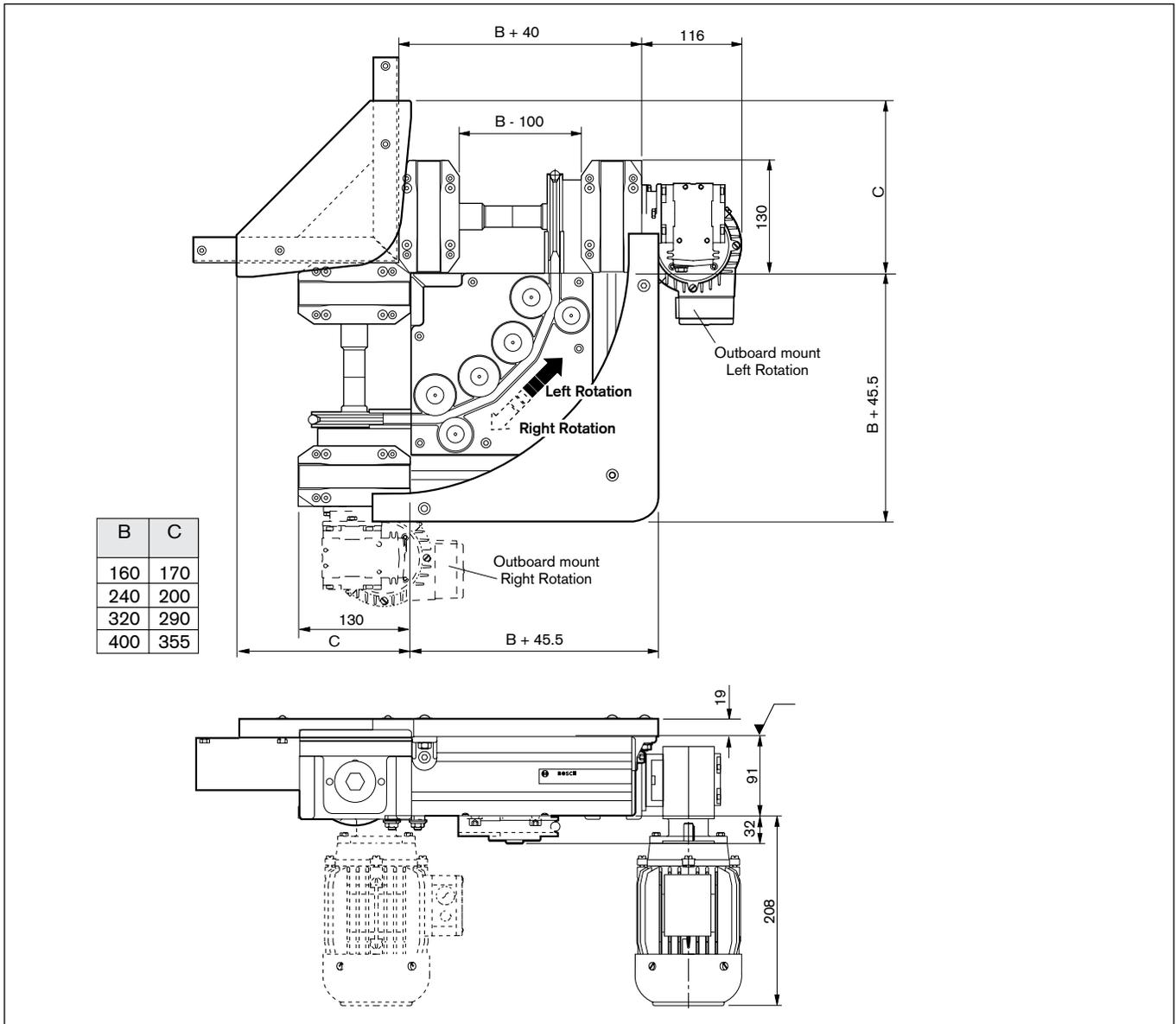
**Electrical data for KE2/90**

Nom. M/min	Actual Speed		HP	Full Load Amps @					
	50 Hz	60 Hz		208/60	240/60	380/50	415/50	480/60	575/60
9	8.2	N/A	.12	N/A	N/A	0.43	0.38	N/A	N/A
12	12.0	14.1	.12	0.58	0.58	0.43	0.38	0.40	0.34
15	15.2	17.9	.12	0.58	0.58	0.43	0.38	0.40	0.34

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 10-1

**Dimensional data for KE2/90**

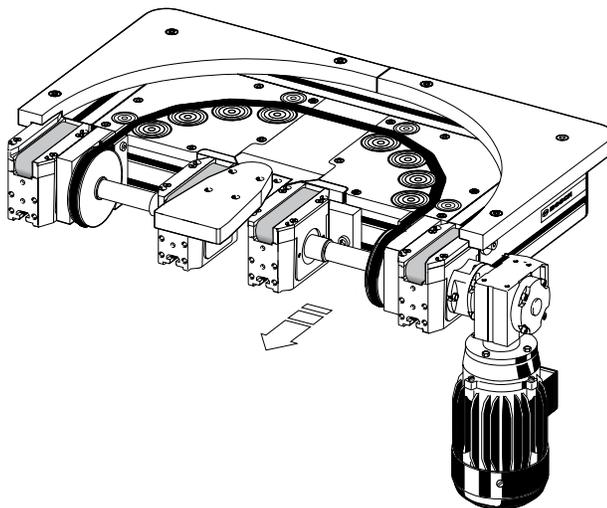


Curve width (B) must match pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ), depending on orientation.

Curve Units

# 180° Curve (powered)

Model KE2/180



KE2/180 series curves are a simple way to change pallet direction while maintaining leading edge orientation. They reduce controls complexity and system cost compared to the use of lift transfer units. Powered and slave driven versions are available in 180 degree configurations.

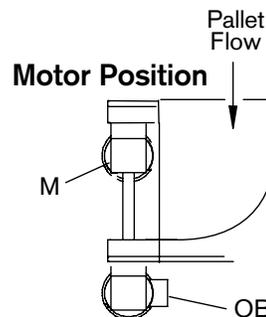
An antistatic polyurethane belt is used to pull the pallet through the curve. The curves are suitable for both left and right-hand rotation. Curves are not reversible, and pallet flow is always in the direction of the drive, whether self-powered or slave driven.

Loads must be centrally located on the pallet to ensure proper operation, and a stop gate must be mounted before the curve to prevent pallet accumulation in the curve.

The KE2/180 curve provides a means of changing pallet direction 180° while maintaining leading edge orientation. Two different line spacing (dimension "a" at right) versions are available.

KE2/180 curves have their own drive motor and can be used with most standard TSplus drives, returns, and transverse conveyors. Two short toothed belt conveyor segments transfer pallets to and from adjacent conveyor sections.

The KE2/180 comes fully assembled, and includes all necessary mounting hardware for use with BS2 transverse conveyors as well as AS2 and UM2 style drives and returns. Leg sets (shown on page 8-5) are used to support the curves and must be ordered separately.



10

## Ordering Information for Curve Unit KE2/180

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 999 728
		Your selection:
Line Gap (a)	90 or 135 mm	_____ mm
Motor Location	Outboard	<u>Outboard</u>
Curve Size (B x L) in mm	160 x 160, 160 x 240, 240 x 160, 240 x 240, 240 x 320, 320 x 240, 320 x 320, 320 x 400, 400 x 320, 400 x 400	B_____ x L_____ mm
Direction of Rotation	Left, Right	_____
Nominal Curve Speed (m/min)*	9, 12, 15	_____ m/min
Motor Voltage/Frequency	See Table 10-2	_____ V _____ Hz
Belt Version	Antistatic (A)	<u>A</u>

\* Full load conveyor speeds vary depending on motor frequency. See table 10-2.

Curve Units

**Technical data for KE2/180**

Nominal belt speed	= see table 10-2
Load capacity	= 20 kg
Motor rated power	= .12 HP
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60 Hz	= 1700
Motor Electrical Specifications	= See table 10-2

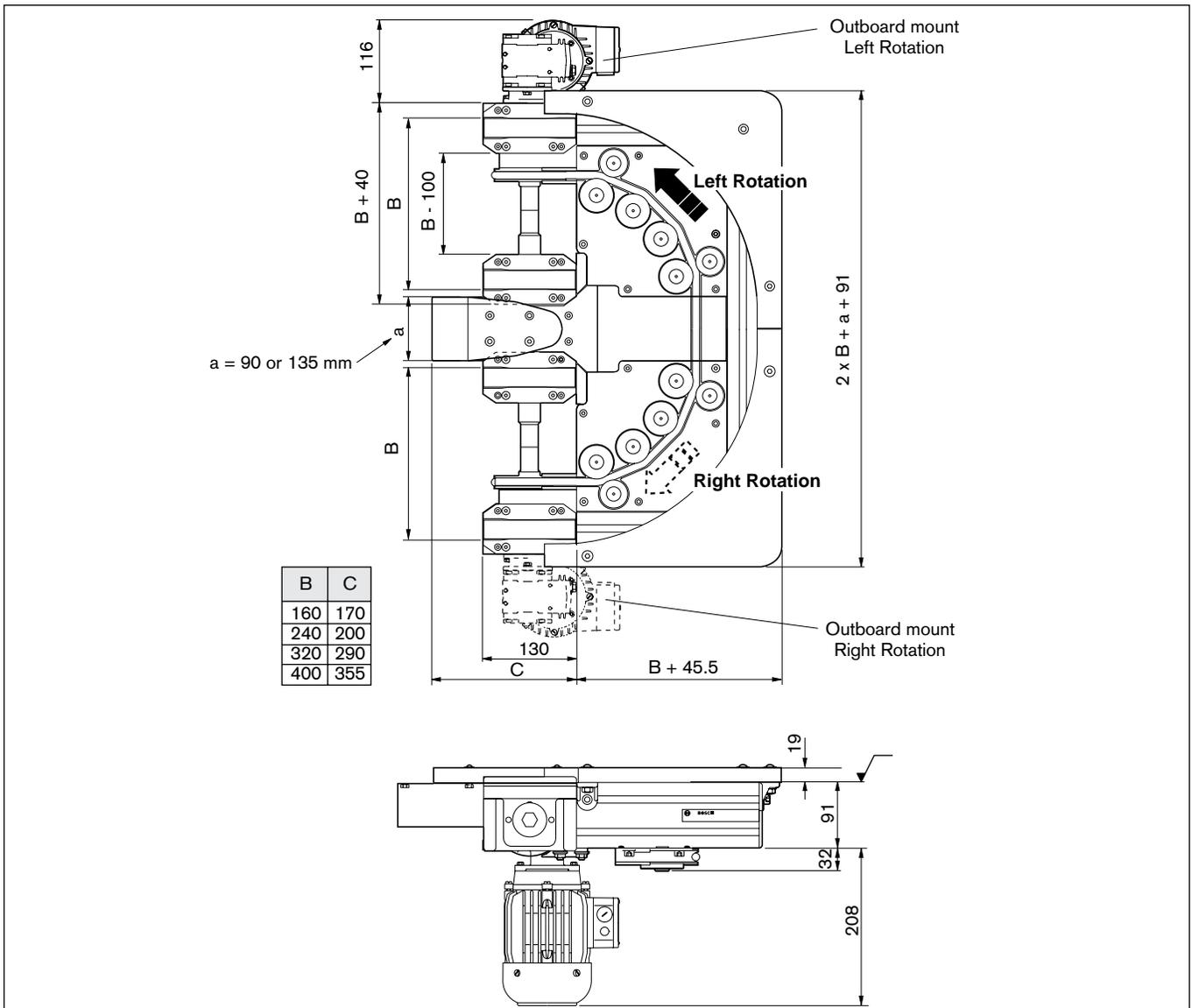
**Electrical data for KE2/180**

Nom. M/min	Actual Speed		HP	Full Load Amps @					
	50 Hz	60 Hz		208/60	240/60	380/50	415/50	480/60	575/60
9	8.2	N/A	.12	N/A	N/A	0.43	0.38	N/A	N/A
12	12.0	14.1	.12	0.58	0.58	0.43	0.38	0.40	0.34
15	15.2	17.9	.12	0.58	0.58	0.43	0.38	0.40	0.34

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 10-2

**Dimensional data for KE2/180**



Curve width (B) must match pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ), depending on orientation.

Curve Units

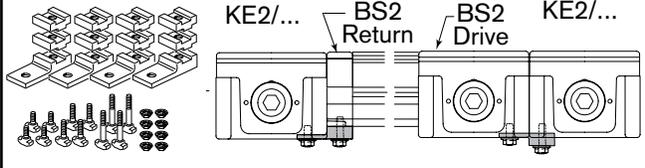
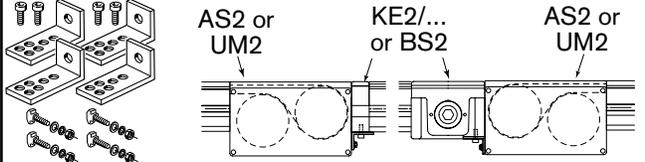
# Connecting Kits

Two connecting kits are available.

One kit contains all the mounting blocks, spacers and hardware needed to connect KE2/90 or KE2/180 powered and slave units to both ends of a BS2 transverse conveyor.

The other kit contains all of the L-brackets and hardware required to connect both ends of a KE2 Powered Curve or BS2 unit to an AS2 drive or UM2 return.

## Ordering Information for Connecting Kits

Connection		Part Number
	<p>3842 525 110</p>	
	<p>3842 518 828</p>	

Lift-Transfer Units

# Section 11 – Lift-Transfer Units

TSplus lift-transfer units vertically lift and horizontally transfer workpiece pallets from one conveyor section to a receiving lift-transfer unit located at an adjacent conveyor section.

All four styles of lift-transfer units may be mounted to either 80 mm or 100 mm deep conveyor profiles. All units are reversible with no reduction in payload carrying capacity.

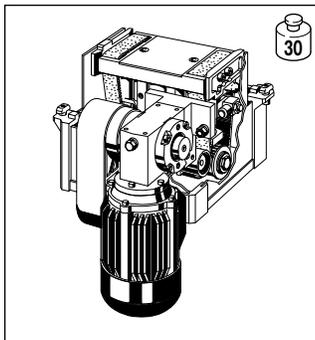
In all lift-transfer units, the vertical pneumatic movement has three positions in common:

- The spring centered middle position in which the unit is 1 mm below the transport level of the main conveyor.

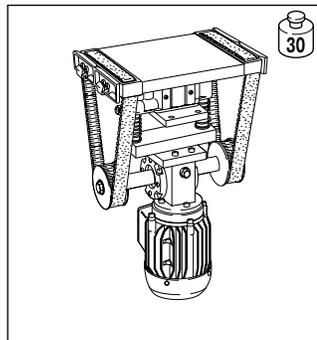
- The transfer conveying position in which the unit is 10 mm above the transport level of the main conveyor.
- The lower transport position in which the unit is 11 mm below the transport level of the main conveyor.

The three vertical positions serve the following functions:

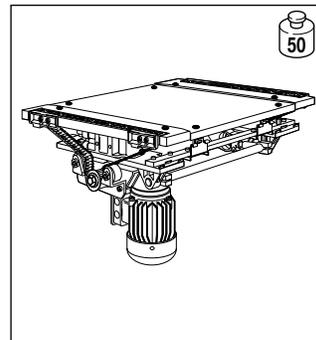
- Stops the pallet on the main conveyor.
- Transfers the pallet off the main conveyor.
- Allows the pallet to pass by on the main conveyor.



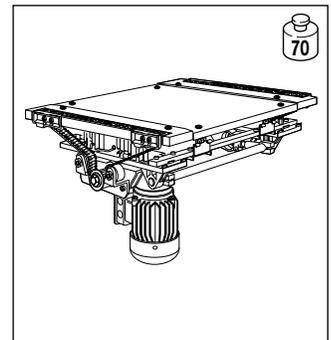
**HQ2/S**  
Lift-Transfer Unit  
11-2 to 11-3



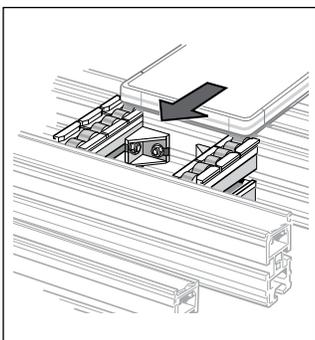
**HQ2/U**  
Lift-Transfer Unit  
11-4 to 11-5



**HQ2/U2**  
Lift-Transfer Unit  
11-5 to 11-6



**HQ2/U3**  
Lift-Transfer Unit  
11-7 to 11-8

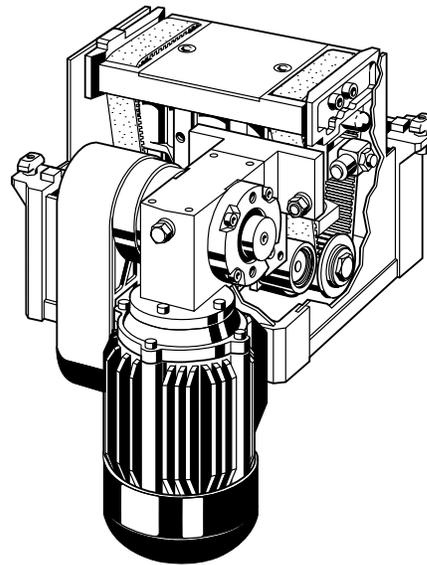


**RS2/P**  
Track Rollers  
11-10

Lift-Transfer Units

# Lift Transfer Unit

## Model HQ2/S



The HQ2/S Lift-Transfer Unit transfers workpiece pallets to or from conveyor sections at right angles. It is used in conjunction with standard control modules to manage workpiece pallet traffic through conveyor intersections. The lift-transfer unit stops the workpiece pallet and, on signal from a controller, lifts it from the conveyor section and transfers the workpiece pallet to an adjacent transverse conveyor. To complete the transfer, a second lift transfer unit receives the workpiece pallet and lowers it onto the receiving conveyor section. Transfer is accomplished with a toothed transfer belt which can be reversed. The HQ2/S includes a drive motor and all mounting hardware.

The HQ2/S has three vertical positions: Lift and lower movements are operated by double-acting, spring-centered pneumatic cylinders.

- Spring-centered position— HQ2 transfer belts positioned one millimeter below conveyor section belt height. Workpiece pallet stopped by unit's stop dog.
- Lift-transfer position—HQ2 transfer belts positioned ten millimeters above conveyor section belt height.

- Lower position—HQ2 transfer belts positioned 11 millimeters below conveyor section belt height. Workpiece pallets pass over the unit unobstructed.

The HQ2/S is shipped as five individual component assemblies as shown in the Dimensional information on page 11-3.

Size I units are 400 x 400 and smaller and use a single pneumatic lift cylinder.

Size II units are 400 x 480 and larger and use two mechanically coupled lift cylinders.

**NOTE:** The side mounted motor is especially suited for conveyors with minimal bottom clearance.

### Ordering Information for Lift-transfer unit HQ2/S

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>3842 999 888</b>
		Your selection:
Belt version	Non-Antistatic (N) Antistatic (A)	_____
Lift Transfer unit length (B <sub>L</sub> )	160, 240, 320, 400, 480	_____ mm
Lift Transfer unit widths (B <sub>O</sub> )	160, 240, 320, 400, 480, 640, 800	_____ mm
Nominal belt speed (m/min)*	6, 9, 12, 15, 18	_____ m/min
Motor Voltage/frequency	See Table 11-1	_____ V _____ Hz
Conveyor profile mounting height**	80, 100 mm	_____ mm

\* Full load conveyor speeds vary depending on motor frequency. See table 11-1

\*\* For B<sub>L</sub> = 160, please specify the height of the conveyor profile, 80 mm or 100 mm.

Lift-Transfer Units

Technical data for HQ2/S

Nominal belt speed	= see table 11-1
Load capacity	= 30 kg
Motor rated power	= .125 HP
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60 Hz	= 1700
Motor electrical specifications	= See table 11-1
Air pressure	= 4-6bar
Cylinder diameter	= 50 mm
Cylinder stroke	= 21 mm
Air fittings	= 8 mm (5/16") push-lock

Electrical data for HQ2/S

Nom. M/min	Actual Speed		HP	Full Load Amps @					
	50 Hz	60 Hz		208/60	240/60	380/50	415/50	480/60	575/60
6	6.1	5.8	.12	.58	.58	.43	.38	.35	.34
9	9.1	7.4	.12	.58	.58	.43	.38	.35	.34
12	12.1	11.1	.12	.58	.58	.43	.38	.35	.34
15	15.2	14.7	.12	.58	.58	.43	.38	.35	.34
18	18.2	18.4	.12	.58	.58	.43	.38	.35	.34

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 11-1

Dimensional data for HQ2/S

Qty Description

- 1 Lift transfer base unit ①
- 1 Drive motor ②
- 1 Connecting kit ③
- 1 Motor mounting kit ④
- 1 Protective cover ⑤

SIZE I-Transfer Width, B<sub>Q</sub>

Transfer Length, B <sub>L</sub>	160	240	320	400	480
160	•	•	•	N/A	N/A
240	•	•	•	•	N/A
320	•	•	•	•	•
400	N/A	•	•	•	N/A
480	N/A	N/A	N/A	N/A	N/A

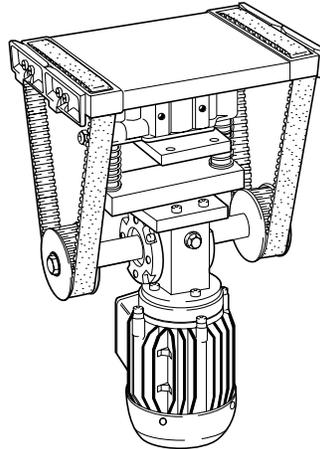
SIZE II-Transfer Width, B<sub>Q</sub>

Transfer Length, B <sub>L</sub>	400	480	640	800
160	N/A	N/A	N/A	N/A
240	N/A	N/A	N/A	N/A
320	N/A	N/A	N/A	N/A
400	N/A	•	•	•
480	•	•	•	•

Lift-Transfer Units

# Lift-Transfer Unit

## Model HQ2/U



The HQ2/U Lift-Transfer Unit (LTU) is used to transfer pallets perpendicularly off the conveyor. It is used primarily at corners and intersections, but can also be used for pallet routing changes.

The HQ2/U lift plate is powered up and down by a single lift cylinder. In the center, or rest position, the LTU belts are located 1 mm below the bottom of the pallet. A stop bar mounted to the lift plate may be used to stop pallets on the LTU, or inverted so pallets pass through freely.

The LTU is raised by applying air pressure to the bottom of the cylinder. This lifts the LTU to a position 10 mm above the nominal conveyor height. As the LTU rises, the LTU belts engage the pallet and directs (or accepts) the pallet.

The LTU may also be lowered 11 mm below the nominal conveyor height to release a pallet along the conveyor. This functionality enables the standard LTU to function as a simple corner or a complex decision point for multiple routing requirements.

The LTU may be used to direct pallets in either direction by reversing the drive motor.

**NOTE:** reversing the belt more frequently than every six seconds may cause reduced motor life.

LTUs may be used to direct or accept pallets to/from another LTU via track rollers, to a BS2 transverse conveyor, or to the transport level on a conveyor section.

For pallet sizes larger than 400 x 400 mm, the HQ2/U2 or HQ2/U3 Lift Transfer Unit (Page 11-6 to 11-9) must be used. These units have multiple lift cylinders mechanically linked together to provide accurate raising/lowering of the pallet.

The HQ2/U includes a drive motor to power the toothed belts, a spring centered 3-position lift cylinder, stop bar/guide bar, protective covers, pneumatic connections and mounting hardware.

A proximity switch mounting kit is also included. Due to the stroke, all three positions may not be sensed, as three proximity switches will not fit into the space available. It is recommended that the center "pallet stopping" position be sensed and the signal lost on the up and down strokes. The proximity switch mounting kit can also be ordered separately under part number: **3842 311 922**.

Please contact our applications engineering department for non-standard length, width, speed, or voltage.

### Ordering Information for Lift-Transfer Unit HQ2/U

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>3842 999 903</b>
		Your selection:
Belt version	Non-Antistatic (N) Antistatic (A)	_____
Lift Transfer unit length (B <sub>L</sub> )	160, 240, 320, 400	_____ mm
Lift Transfer unit widths (B <sub>Q</sub> )	160, 240, 320, 400, 480	_____ mm
Nominal belt speed (m/min)*	6, 9, 12, 18	_____
Motor Voltage/frequency	See Table 11-2	_____ V _____ Hz
Conveyor profile mounting height**	80, 100 mm	_____ mm

\* Full load conveyor speeds vary depending on motor frequency. See table 11-2

\*\* For B<sub>L</sub> = 160, please specify the height of the conveyor profile, 80 mm or 100 mm.

Lift-Transfer Units

**Technical Data for HQ2/U**

Nominal belt speed	= see Table 11-2
Load Capacity	= 30 kg
Motor rated power	= .12 HP
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60 Hz	= 1700
Motor electrical specifications	= see Table 11-2
Air pressure	= 4-8 bar
Cylinder diameter	= 50 mm
Cylinder stroke	= 21 mm
Air fittings	= 8 mm (5/16") push-lock

**Electrical Data for HQ2/U**

Nom. M/min	Actual Speed		HP	Full Load Amps @					
	50 Hz	60 Hz		208/60	240/60	380/50	415/50	480/60	575/60
6	5.6	6.8	.12	.58	.58	.43	.38	.25	.34
9	8.3	10.1	.12	.58	.58	.43	.38	.25	.34
12	10.5	12.7	.12	.58	.58	.43	.38	.25	.34
18	21.0	19.1	.12	.58	.58	.43	.38	.25	.34

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 11-2

**Dimensional Data for HQ2/U**

The technical drawings include:

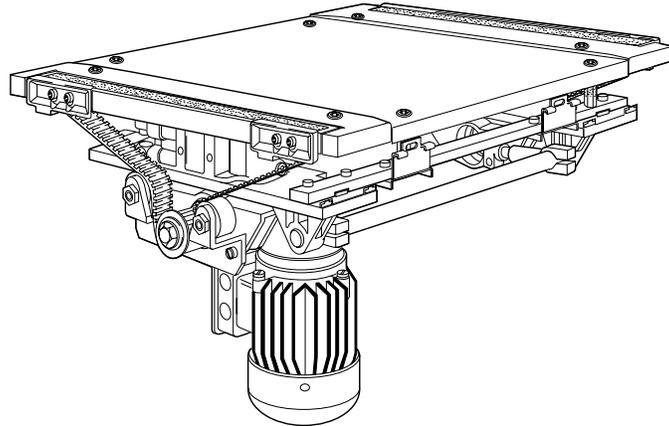
- Top View:** Shows the transfer width  $B_Q$  and transfer length  $B_L$ . Dimensions include  $B_L - 30$  and  $B_Q + 44$ . Arrows indicate 'Transverse conveyor transport direction' and 'Longitudinal conveyor transport direction'.
- Side View:** Shows the motor and protective cover. Dimensions include '21 Stroke', '7', '5\*', '80', and '60'. Labels include 'Top of Transport media' and 'Protective cover'.
- Front View:** Shows the motor and transfer width. Dimensions include '21 Stroke', '90', and '450'. The transfer width is labeled as  $B_Q + 30$ .

Transfer Length, $B_L$	Transfer Width, $B_Q$				
	160	240	320	400	480
160	•	•	•	•	N/A
240	•	•	•	•	N/A
320	•	•	•	•	•
400	•	•	•	•	N/A

Lift-Transfer Units

# Lift-Transfer Unit

## Model HQ2/U2



The HQ2/U2 Lift-Transfer Unit (LTU) is used to transfer pallets perpendicularly off the conveyor. It is used primarily at corners and intersections, but can also be used for pallet routing changes.

The HQ2/U2 will transfer pallet sizes between 400 x 400 and 640 x 800 with payloads up to 50 Kg, using two lift cylinders. These cylinders are mechanically linked together to provide accurate raising/lowering of the pallet.

The LTU lift plate is powered up and down by the lift cylinders. In the center, or rest position, the LTU belts are located 1 mm below the bottom of the pallet. A stop bar mounted to the lift plate may be used to stop pallets on the LTU, or inverted so pallets pass through freely.

The LTU is raised by applying air pressure to the bottom of the cylinders. This lifts the LTU to a position 10 mm above the nominal conveyor height. As the LTU rises, the LTU belts engage the pallet and directs (or accepts) the pallet.

The LTU may also be lowered 11 mm below the nominal conveyor height to release a pallet along the conveyor. This functionality enables the standard LTU to function as a simple corner or a complex decision point for multiple routing requirements.

The LTU may be used to direct pallets in either direction by reversing the drive motor.

**NOTE:** reversing the belt more frequently than every six seconds may cause reduced motor life.

LTUs may be used to direct or accept pallets to/from another LTU via track rollers, to a BS2 transverse conveyor, or to the transport level on a conveyor section.

The HQ2/U2 includes a drive motor to power the toothed belts, two spring centered 3-position lift cylinders, stop bar/guide bar, protective covers, pneumatic connections and mounting hardware.

A proximity switch mounting kit is also included. Due to the stroke, all three positions may not be sensed, as three proximity switches will not fit into the

space available. It is recommended that the center "pallet stopping" position be sensed and the signal lost on the up and down strokes. The proximity switch mounting kit can also be ordered separately under part number: **3842 311 894**.

Please contact our applications engineering department for non-standard length, width, speed, or voltage.

### Ordering Information for Lift-Transfer Unit HQ2/U2

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>3842 999 843</b>
		Your selection:
Belt version	Non-Antistatic(N) Antistatic (A)	_____
Lift Transfer unit length (B <sub>L</sub> )	400, 480, 640	_____ mm
Lift Transfer unit width (B <sub>O</sub> )	400, 480, 640, 800	_____ mm
Nominal belt speed (m/min)*	6, 9, 12, 15, 18	_____ m/min
Motor Voltage/frequency	See Table 11-3	_____ V _____ Hz

\* Full load conveyor speeds vary depending on motor frequency. See table 11-3

Lift-Transfer Units

**Technical Data for HQ2/U2**

Nominal belt speed	= see Table 11-3
Load Capacity	= 50 kg
Motor rated power	= .125 HP
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60 Hz	= 1700
Motor electrical specifications	= see Table 11-3
Air pressure	= 4-8 bar
Cylinder diameter	= 50 mm
Cylinder stroke	= 21 mm
Air fittings	= 8 mm (5/16") push-lock

**Electrical Data for HQ2/U2**

Nom. M/min	Actual Speed		HP	Full Load Amps @					
	50 Hz	60 Hz		208/60	240/60	380/50	415/50	480/60	575/60
6	6.1	5.8	.12	.58	.58	.43	.38	.35	.34
9	9.1	7.4	.12	.58	.58	.43	.38	.35	.34
12	12.1	11.1	.12	.58	.58	.43	.38	.35	.34
15	15.2	14.7	.12	.58	.58	.43	.38	.35	.34
18	18.2	18.4	.12	.58	.58	.43	.38	.35	.34

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.  
Table 11-3

**Dimensional Data for HQ2/U2**

The diagrams show the top and side views of the lift-transfer unit. The top view includes labels for 'Main line conveyor transport direction' (indicated by a vertical arrow), 'Transverse conveyor transport direction' (indicated by a horizontal arrow), and 'VE2/DA10 or VE2/DA30' and 'VE2/DA100' components. The side view shows a 'Protective cover' and a motor. Dimensions include a 21 mm stroke, a height of 80 mm, 100 mm, and ca. 205 mm. Widths are labeled as  $B_L + 12$  and  $B_Q + 36$ .

HQ2/U2 Available Sizes				
Transfer Length, $B_L$	Transfer Width, $B_Q$			
	400	480	640	800
400	•	•	•	•
480	•	•	•	•
640	•	•	•	•

Cushioned Stop Application Chart*			
LTU Length $B_L$	VE2/DA10 3842 515 349	VE2/DA30 3842 515 351	VE2/DA100 3842 525 733
400	YES	YES	YES
480	YES	YES	YES
640	NO	NO	YES

\*See Pg. 15-6 and 15-7 for cushioned stop gate information

Lift-Transfer Units

# Lift-Transfer Unit

## Model HQ2/U3



The Lift-Transfer Unit (LTU) is used to transfer pallets perpendicularly off the conveyor. It is used primarily at corners and intersections, but can also be used for pallet routing changes.

The HQ2/U3 will transfer pallet sizes between 640 x 640 and 1040 x 1040 with payloads up to 70 Kg, using four lift cylinders. These cylinders are mechanically linked together to provide accurate raising/lowering of the pallet.

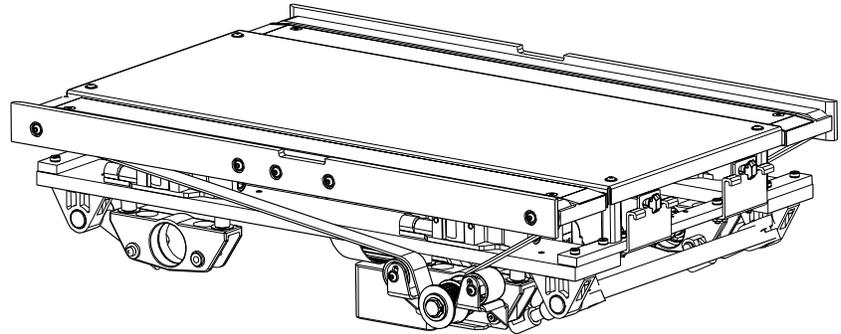
The LTU lift plate is powered up and down by the lift cylinders. In the center, or rest position, the LTU belts are located 1 mm below the bottom of the pallet. A stop bar mounted to the lift plate may be used to stop pallets on the LTU, or inverted so pallets pass through freely.

The LTU is raised by applying air pressure to the bottom of the cylinders. This lifts the LTU to a position 10 mm above the nominal conveyor height. As the LTU rises, the LTU belts engage the pallet and directs (or accepts) the pallet.

The LTU may also be lowered 11 mm below the nominal conveyor height to release a pallet along the conveyor. This functionality enables the standard LTU to function as a simple corner or a complex decision point for multiple routing requirements.

The LTU may be used to direct pallets in either direction by reversing the drive motor.

**NOTE:** reversing the belt more frequently than every six seconds may cause reduced motor life.



LTUs may be used to direct or accept pallets to/from another LTU via track rollers, to a BS2 transverse conveyor, or to the transport level on a conveyor section.

The HQ2/U3 includes a drive motor to power the toothed belts, four spring centered 3-position lift cylinders, stop bar/guide bar, protective covers, pneumatic connections and mounting hardware.

A proximity switch mounting kit is also included. Due to the stroke, all three positions may not be sensed, as three

proximity switches will not fit into the space available. It is recommended that the center "pallet stopping" position be sensed and the signal lost on the up and down strokes. The proximity switch mounting kit can also be ordered separately under part number: **3842 311 894**.

Please contact our applications engineering department for non-standard length, width, speed, or voltage.

### Ordering Information for Lift-Transfer Unit HQ2/U3

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>8981 999 251</b>
		Your selection:
Belt version	Non-Antistatic (N) Antistatic (A)	_____
Lift Transfer unit length (B <sub>L</sub> )	640, 800, 1040	_____ mm
Lift Transfer unit widths (B <sub>O</sub> )	640, 800, 1040	_____ mm
Nominal belt speed (m/min)*	6, 9, 12, 15, 18	_____ m/min
Motor Voltage/frequency	See Table 11-4	_____ V _____ Hz

\* Full load conveyor speeds vary depending on motor frequency. See table 11-4

\*\* For B<sub>L</sub> = 160, please specify the height of the conveyor profile, 80 mm or 100 mm.

Lift-Transfer Units

**Technical Data for HQ2/U3**

Nominal belt speed	= see Table 11-4
Load Capacity	= 70 kg
Motor rated power	= .125 HP
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60 Hz	= 1700
Motor electrical specifications	= see Table 11-4
Air pressure	= 4-8 bar
Cylinder diameter	= 50 mm
Cylinder stroke	= 21 mm
Air fittings	= 8 mm (5/16") push-lock

**Electrical Data for HQ2/U3**

Nom. M/min	Actual Speed		HP	Full Load Amps @					
	50 Hz	60 Hz		208/60	240/60	380/50	415/50	480/60	575/60
6	6.1	5.8	.28	1.6	1.3	.86	.72	.67	.55
9	9.1	7.4	.28	1.6	1.3	.86	.72	.67	.55
12	12.1	11.1	.28	1.6	1.3	.86	.72	.67	.55
15	15.2	14.7	.28	1.6	1.3	.86	.72	.67	.55
18	18.2	18.4	.28	1.6	1.3	.86	.72	.67	.55

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 11-4

**Dimensional Data for HQ2/U3**

Use Cushioned Stop  
VE2/DA100  
3842 525 733  
Page 15-6

10

153.5

$B_Q + 2$

$B_Q + 20$

$B_Q + 60$   
Cover

217.1

100

100

101.6

$B_L + 12$

(Raised/Transfer Position)

HQ2/U3 Available Sizes			
Transfer Length, $B_L$	Transfer Width, $B_Q$		
	640	800	1040
640	•	•	•
800	•	•	•
1040	•	•	•

Lift-Transfer Units

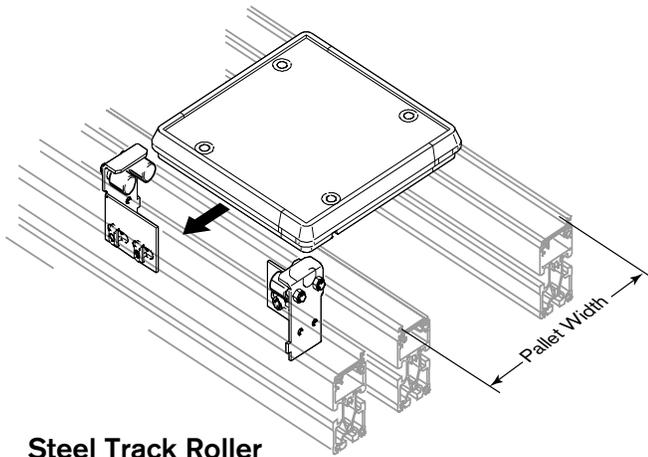
# Track Roller

Model RS2/P

A track-roller is a non-powered means of transferring workpiece pallets between parallel conveyor sections. It consists of fixed rollers in a conveyor extrusion. Both the steel and standard track rollers are available in lengths of 45 mm, 90 mm and 135 mm and can be used with all other pallets as listed. All mounting hardware is included.

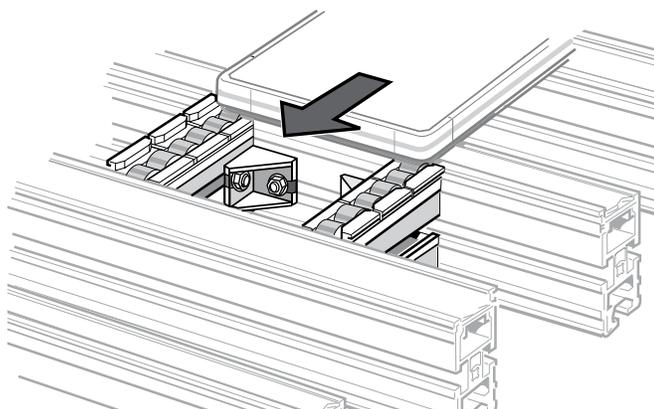
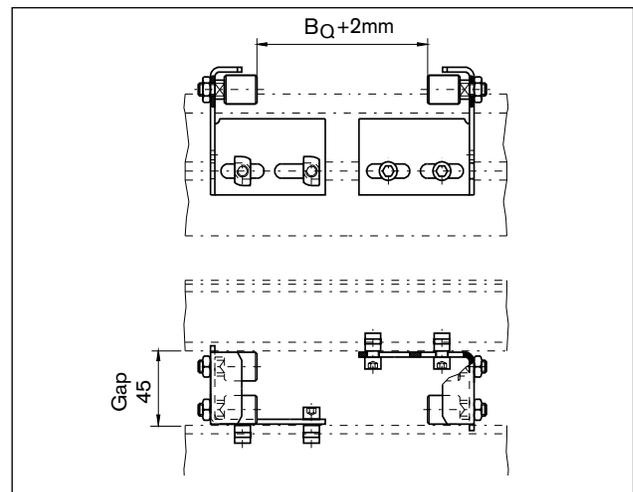
## Ordering Information for Track Roller RS2/P

Roller Style	Gap in mm	Pallet Width mm	Part Number
Steel	45	160, bracket I.B.	0842 600 280
Steel	45	160, bracket O.B.	8981 019 163
Steel	90	240, bracket I.B.	0842 600 281
Steel	135	320, bracket I.B.	0842 600 282
Standard	45	240 minimum pallet width	8981 022 962
Standard	90	240 minimum pallet width	8981 022 963
Standard	135	320 minimum pallet width	8981 022 964



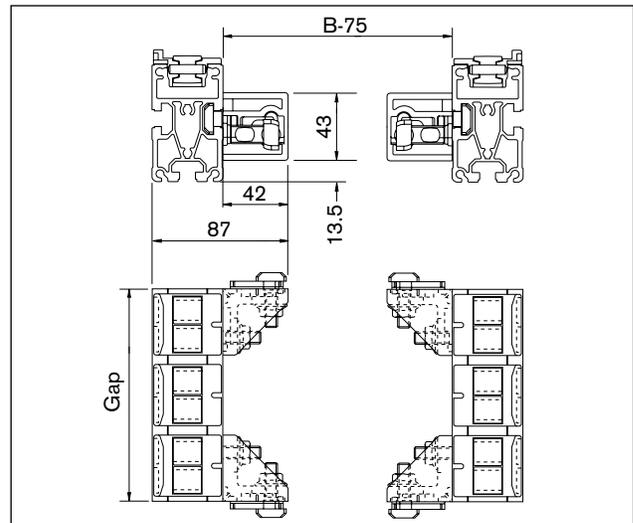
Steel Track Roller

## Dimensional Data for Steel Track Roller



Standard Track Roller

## Dimensional Data for Standard Track Roller



Tandem Lift-transfer Units and VT2

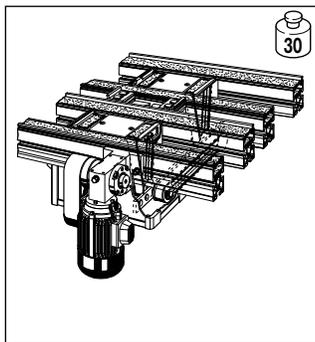
## Section 12 – Tandem Lift-transfer Units and VT2

EQ2 Units (electrical transverse conveyors) are used to move workpiece pallets horizontally from one conveyor section to a second adjacent conveyor section.

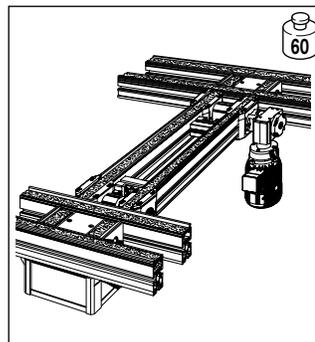
All EQ2 units are complete modules that have one drive motor that works in tandem with lift position units and or transverse conveyor sections.

The VT2 (vertical transfer unit) is used to transfer workpiece pallets vertically between upper and lower conveyor sections.

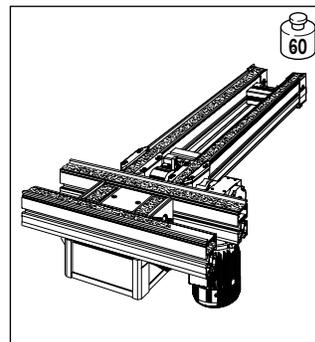
**NOTE:** See page 18-5 to 18-7 for pneumatic diagrams of the modules in this section.



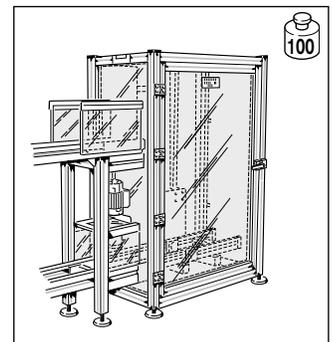
**EQ2/TR**  
Tandem Lift-Transfer Unit  
12-2 to 12-3



**EQ2/T**  
Tandem Lift-Transverse  
Conveyor Unit  
12-4 to 12-5



**EQ2/TE**  
Lift-Transverse Conveyor  
Unit  
12-6 to 12-7

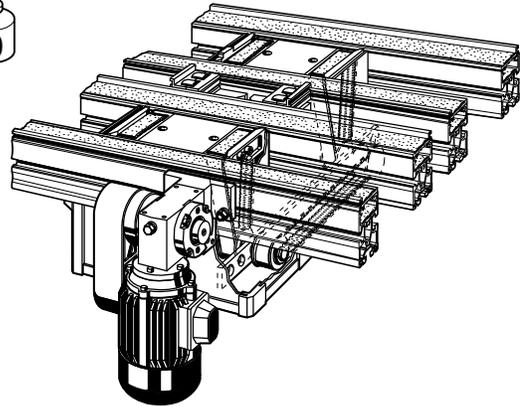


**VT2**  
Vertical Transfer Unit  
12-8 to 12-11

Tandem Lift-transfer Units and VT2

# Tandem Lift-Transfer Unit

Model EQ2/TR



The tandem Lift-Transfer Unit (LTU) transfers pallets perpendicularly between closely spaced (maximum of 135 mm, depending on pallet size) parallel conveyor sections using two lift-transfer units and a set of track rollers.

It consists of one electrically powered lift-transfer unit and one slave-driven lift-transfer unit, connected by a short track roller.

The two lift-transfer units are raised and lowered either independently or simultaneously by individual pneumatic lift cylinders. In the center, or rest position, the transfer belts are located 1 mm below the bottom of the pallet. A stop bar mounted to the LTUs may be used to stop pallets on the lift plate, or inverted so pallets pass through freely.

The LTUs are raised by applying air pressure to the bottom of the cylinders. This lifts the LTUs to a position 10 mm above the nominal conveyor height. As the LTUs rise, the transfer belts engage the pallet and transfer it across the track roller section.

The LTUs may also be lowered 11 mm below the nominal conveyor height to release a pallet along the conveyor.

LTUs with a pallet size larger than 400 x 400 mm use two pneumatic lift cylinders. These cylinders are slaved together to provide accurate raising/lowering of the pallet.

The EQ2/TR includes a motor driven conveyor section, two slave driven, spring centered 3-position lift plate with integrated transfer belts, slave drive kits, stop bar/guide bar, protective covers, pneumatic connections and mounting hardware.

A proximity switch mounting kit is also included. Due to the stroke, all three positions may not be sensed, as three proximity switches will not fit into the space available. It is recommended that the center "pallet stopping" position be sensed and the signal lost on the up

and down strokes. The proximity switch mounting kit can also be ordered separately under part number: **3842 311 920**.

Please contact our applications engineering department for non-standard length, width, speed, or voltage.

## Ordering information for Tandem Lift-Transfer Units EQ2/TR

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>3842 999 894</b>
		Your selection:
Track Roller Length (see track roller options Table 12-1)	45, 90, 135 mm	_____ mm
Belt version	Non-Antistatic (N) Antistatic (A)	_____
Lift-Transfer unit length (B <sub>L</sub> )	160, 240, 320, 400, 480	_____ mm
Lift-Transfer unit widths (B <sub>O</sub> )	160, 240, 320, 400, 480, 640, 800	_____ mm
Nominal belt speed (m/min)*	6, 9, 12, 15, 18	_____ m/min
Motor Voltage/frequency	See Table 12-2	_____ V _____ Hz
Conveyor profile mounting height**	80, 100 mm	_____ mm

\* Full load conveyor speeds vary depending on motor frequency. See table 12-2  
 \*\* For B<sub>L</sub> = 160, please specify the height of the conveyor profile, 80 mm or 100 mm.

## Transfer unit width (B<sub>L</sub>) /track roller options

Transfer Unit Width (B <sub>L</sub> )	Roller Track Length = 45 mm	Roller Track Length = 90 mm	Roller Track Length = 135 mm
160 mm	●	N/A	N/A
240 mm	●	●	N/A
320-480 mm	●	●	●

Table 12-1

Tandem Lift-transfer Units and VT2

**Technical Data for EQ2/TR**

Nominal belt speed	= see Table 12-2
Load Capacity	= 30 kg with single lift cylinder = 50 kg with two lift cylinders
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60 Hz	= 1700
Motor electrical specifications	= see Table 12-2
Air pressure	= 4-8 bar
Cylinder diameter	= 50 mm
Cylinder stroke	= 21 mm
Air fittings	= 8 mm (5/16") push-lock

**Electrical data for EQ2/TR**

Nom. M/min	Actual Speed		HP	Full Load Amps @					
	50 Hz	60 Hz		208/60	240/60	380/50	415/50	480/60	575/60
6	6.1	5.8	.12	.58	.58	.43	.38	.35	.34
9	9.1	7.4	.12	.58	.58	.43	.38	.35	.34
12	12.1	11.1	.12	.58	.58	.43	.38	.35	.34
15	15.2	14.7	.12	.58	.58	.43	.38	.35	.34
18	18.2	18.4	.12	.58	.58	.43	.38	.35	.34

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.

Table 12-2

**Dimensional data for EQ2/TR**

a = 45, 90, or 135 mm

**NOTE: Pallet travel preference is to pull toward the drive motor**

$B_L$  = LTU Length  
= Pallet width  $B_{WT}$  @ mounting location

$B_Q$  = LTU Width  
= Pallet length  $L_{WT}$  @ mounting location

EQ2/TR Available Sizes							
Transfer Length, $B_L$	Transfer Width, $B_Q$						
	160	240	320	400	480	640	800
160	•	•	•	N/A	N/A	N/A	N/A
240	•	•	•	•	•	N/A	N/A
320	•	•	•	•	N/A	N/A	N/A
400	N/A	•	•	•	•	•	•
480	N/A	N/A	N/A	•	•	•	•

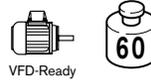
• = Unit has one pneumatic lift cylinder  
• = Unit has two pneumatic lift cylinders

Transverse conveyor width (B) must match pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ), depending on orientation.

Tandem Lift-transfer Units and VT2

# Tandem Lift-Transverse Conveyor

Model EQ2/T



The tandem Lift-Transverse Conveyor (LTC) transfers pallets perpendicularly between parallel conveyor sections via a reversible transverse conveyor and two slave-driven lift-transfer units. It is primarily used to create rectangular style layouts and to integrate cycle independent workstations.

It consists of an electrically powered belt conveyor segment and two slave-driven lift-transfer units.

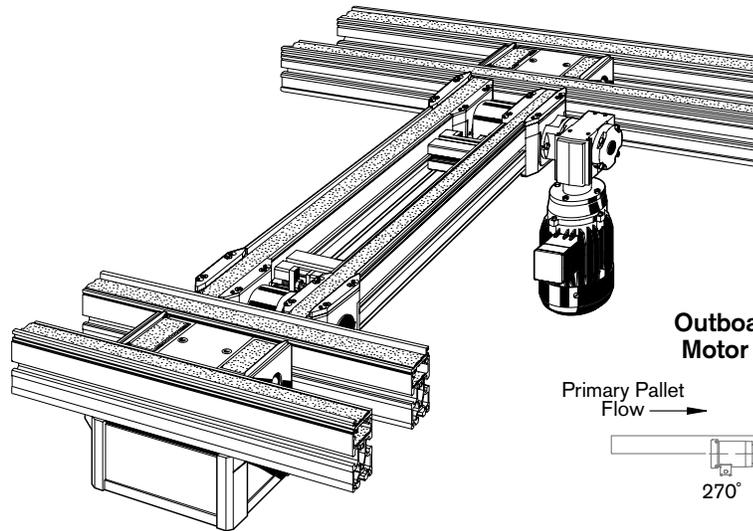
Each of the two LTU lift plates with toothed transfer belts is raised or lowered by a pneumatic lift cylinder. In the center, or rest position, the transfer belts are located 1 mm below the bottom of the pallet. A stop bar mounted to the lift plate may be used to stop pallets on the lift plate, or inverted so pallets pass through freely.

The lift plate is raised by applying air pressure to the bottom of the cylinder. This lifts the transfer belts on the lift plate to a position 10 mm above the nominal conveyor height. As the lift plate rises, the transfer belts engage the pallet and transfer the pallet to or from the transverse conveyor.

The lift plate may also be lowered 10 mm below the nominal conveyor height to release a pallet along the conveyor.

LTUs with a pallet size larger than 400 x 400 mm use two pneumatic lift cylinders. These cylinders are mechanically linked together to provide accurate raising/lowering of the pallet.

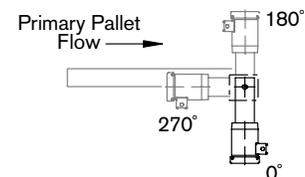
The EQ2/T includes a motor driven conveyor section, two slave driven, spring centered 3-position lift plates with



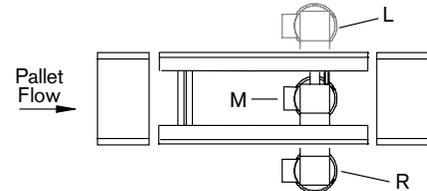
integrated transfer belts, slave drive kits, stop bar/guide bar, protective covers, pneumatic connections and mounting hardware.

Please contact our applications engineering department for non-standard length, width, speed, or voltage.

### Outboard Mounted Motor Orientation



### Motor Position



## Ordering information for Tandem Lift-Transfer Units EQ2/T

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 999 895
		Your selection:
Belt version	Non-Antistatic (N) Antistatic (A)	_____
Lift-Transfer unit length (B <sub>L</sub> )	160, 240, 320, 400, 480	_____ mm
Lift-Transfer unit widths (B <sub>Q</sub> )	160, 240, 320, 400, 480, 640, 800	_____ mm
Motor Mounting Position**	R, M,** L	_____
Motor Orientation	0°, 180°, 270°	_____
Transverse Conveyor Length (L)	325 mm to 4900 mm (in 5 mm increments)	_____ mm
Nominal belt speed (m/min)*	6, 9, 12, 15, 18	_____ m/min
Motor Voltage/frequency	See Table 12-3	_____ V _____ Hz
Conveyor profile mounting height†	80, 100 mm	_____ mm

\* Full load conveyor speeds vary depending on motor frequency. See table 12-3

\*\* Mid-mounted motor not available in 160 mm or 240 mm widths

† For B<sub>L</sub> = 160, please specify the height of the conveyor profile, 80 mm or 100 mm.

Tandem Lift-transfer Units and VT2

**Technical Data for EQ2/T**

Nominal belt speed	= see Table 12-3
Load Capacity	= 60 kg (forward) = 30 kg (reverse)
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60 Hz	= 1700
Motor electrical specifications	= see Table 12-3
Air pressure	= 4-8 bar
Cylinder diameter	= 50 mm
Cylinder stroke	= 21 mm
Air fittings	= 8 mm (5/16") push-lock

**Electrical data for EQ2/T**

Nom. M/min	Actual Speed		HP		Full Load Amps @					
	50 Hz	60 Hz	50 Hz	60 Hz	208/60	240/60	380/50	415/50	480/60	575/60
6	6.1	7.4	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
9	9.1	8.8	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
12	12.1	11.1	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
15	15.2	14.7	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
18	18.2	18.4	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.  
Table 12-3

**Dimensional data for EQ2/T**

RH, motor mounting shown

$B_L$  = LTU Length  
= Pallet width  $B_{WT}$  @ mounting location

$B_Q$  = LTU Width  
= Pallet length  $L_{WT}$  @ mounting location

Transfer Length, $B_L$	Transfer Width, $B_Q$						
	160	240	320	400	480	640	800
160	•	•	•	N/A	N/A	N/A	N/A
240	•	•	•	•	N/A	N/A	N/A
320	•	•	•	•	•	N/A	N/A
400	N/A	•	•	•	•	•	•
480	N/A	N/A	N/A	•	•	•	•

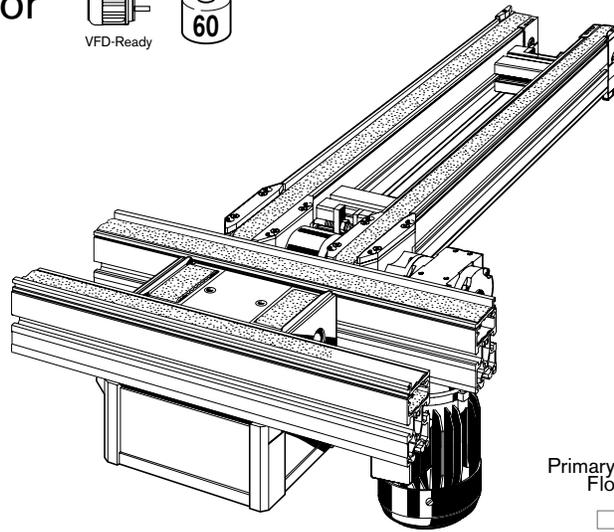
• = Unit has one pneumatic lift cylinder  
• = Unit has two pneumatic lift cylinders

Transverse conveyor width (B) must match pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ), depending on orientation.

Tandem Lift-transfer Units and VT2

# Lift-Transverse Conveyor

Model EQ2/TE



The Lift-Transverse Conveyor (LTC) transfers pallets perpendicularly off the main conveyor onto a reversible spur conveyor. It is used primarily for manual workstations and inspection stations, but can also be used for pallet routing changes.

It consists of an electrically powered belt conveyor segment and a slave driven lift transfer unit.

The LTU lift plate with toothed transfer belts is raised or lowered by a pneumatic lift cylinder. In the center, or rest position, the transfer belts are located 1 mm below the bottom of the pallet. A stop bar mounted to the lift plate may be used to stop pallets on the lift plate, or inverted so pallets pass through freely.

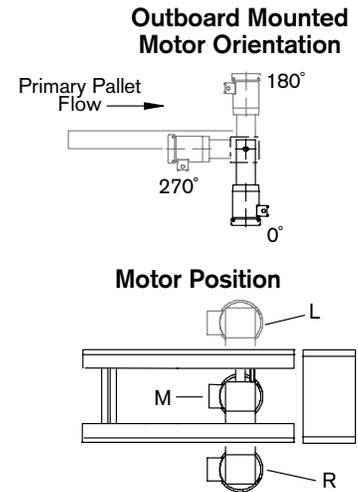
The lift plate is raised by applying air pressure to the bottom of the cylinder. This lifts the transfer belts on the lift plate to a position 10 mm above the nominal conveyor height. As the lift plate rises, the transfer belts engage the pallet and transfer the pallet to or from the transverse conveyor.

The lift plate may also be lowered 10 mm below the nominal conveyor height to release a pallet along the conveyor.

LTUs with a pallet size larger than 400 x 400 mm use two pneumatic lift cylinders. These cylinders are mechanically linked together to provide accurate raising/lowering of the pallet.

The EQ2/TE includes a motor driven conveyor section, a slave driven, spring centered 3-position lift plate with integrated transfer belts, slave drive kit, stop bar/guide bar, protective covers, pneumatic connections and mounting hardware.

Please contact our applications engineering department for non-standard length, width, speed, or voltage.



## Ordering Information for Lift-Transverse Conveyor EQ2/TE

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 999 896
		Your selection:
Belt version	Non-Antistatic (N) Antistatic (A)	_____
Lift-Transfer unit length (B <sub>L</sub> )	160, 240, 320, 400, 480	_____ mm
Lift-Transfer unit widths (B <sub>Q</sub> )	160, 240, 320, 400, 480, 640, 800	_____ mm
Motor Mounting Position**	R, M,** L	_____
Motor Orientation	0°, 180°, 270°	_____
Transverse Conveyor Length (L)	240 mm to 4900 mm (in 5 mm increments)	_____ mm
Nominal belt speed (m/min)*	6, 9, 12, 15, 18	_____ m/min
Motor Voltage/frequency	See Table 12-4	_____ V _____ Hz
Conveyor profile mounting height†	80, 100 mm	_____ mm

\*Full load conveyor speeds vary depending on motor frequency. See table 12-4

\*\*Mid-mounted motor not available in 160 mm or 240 mm widths

† For B<sub>L</sub> = 160, please specify the height of the conveyor profile, 80 mm or 100 mm.

Tandem Lift-transfer Units and VT2

**Technical Data for EQ2/TE**

Nominal belt speed	= See Table 12-4
Load Capacity	= 60 kg (forward) = 30 kg (reverse)
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60 Hz	= 1700
Motor electrical specifications	= See Table 12-4
Air pressure	= 4-8 bar
Cylinder diameter	= 50 mm
Cylinder stroke	= 21 mm
Air fittings	= 8 mm (5/16") push-lock

**Electrical data for EQ2/TE**

Nom. M/min	Actual Speed		HP		Full Load Amps @					
	50 Hz	60 Hz	50 Hz	60 Hz	208/60	240/60	380/50	415/50	480/60	575/60
6	6.1	7.4	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
9	9.1	8.8	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
12	12.1	11.1	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
15	15.2	14.7	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55
18	18.2	18.4	.24	.28	1.6	1.3	0.86	0.72	0.67	0.55

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.  
Table 12-4

**Dimensional data for EQ2/TE**

RH motor mounting shown

$B_L + 15$

$B_Q + 60$

$B_Q$

$130$

$B_L = \text{LTU Length}$   
= Pallet width  $B_{WT}$  @ mounting location

$B_Q = \text{LTU Width}$   
= Pallet length  $L_{WT}$  @ mounting location

$L_{total} = L + B_L + 15$

$10$

$180$

$100$

$320$

EQ2/T Available Sizes							
Transfer Length, $B_L$	Transfer Width, $B_Q$						
	160	240	320	400	480	640	800
160	•	•	•	N/A	N/A	N/A	N/A
240	•	•	•	•	N/A	N/A	N/A
320	•	•	•	•	•	N/A	N/A
400	N/A	•	•	•	•	•	•
480	N/A	N/A	N/A	•	•	•	•

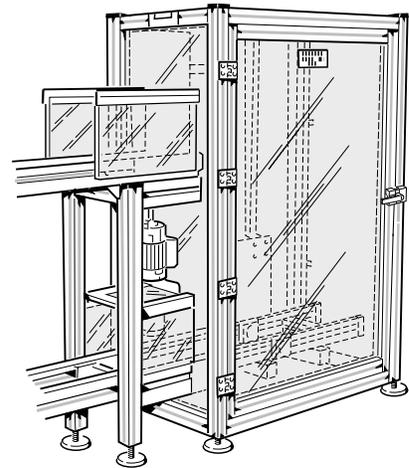
• = Unit has one pneumatic lift cylinder  
• = Unit has two pneumatic lift cylinders

Transverse conveyor width (B) must match pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ), depending on orientation.

Tandem Lift-transfer Units and VT2

# Vertical Transfer

## Model VT2



The vertical transfer is designed to transfer workpiece pallets between the upper and lower conveyor sections of a TSplus conveyor.

It is capable of delivering or receiving a pallet at both the upper and lower conveyor levels, and consists of a transverse conveyor mounted to a pneumatic lift slide. An aluminum profile frame serves as both the unit's frame and as a safety enclosure. A door on the unit provides easy operator access and maintenance.

A Size 1 VT2 contains a 785 mm long transverse conveyor and has an overall length of 825 mm. A Size 2 VT2 contains a 1060 mm transverse conveyor and has an overall length of 1100 mm. Both sizes use transverse conveyors equipped with non-antistatic toothed belts.

The pneumatic lift (line height) for the Size 1 and 2 Underline Return configuration is adjustable between 250mm (min.) and 1100 mm (max.) with a cylinder stroke of 850 mm.

The Size 1 and 2 Overhead Returns have a maximum upper line height range between 2250 mm and 2700 mm. Since the maximum cylinder stroke in this

configuration is 2000 mm, the resulting minimum lower line height range is 250 mm to 700 mm.

The VT2 is available in all standard pallet widths up to 800 mm and has a total permissible load up to 100 kg in both forward and reverse. A few applications are:

- Pass-through systems. Where pallet travel direction remains the same, but transport level changes.
- Reversing systems. The pallet enters the unit on one level and exits at another on the same side.
- Combination systems. Where both the pass-through and reversing configurations are used.

The VT2 can transfer more than one workpiece pallet at a time. The maximum number depends on the workpiece pallet length, total payload, the system configuration, and on desired cycle time. See Table 12-6 for maximum pallet capacity based on both size configuration (1 or 2) and pallet size.

Three different stop gates are available (see Table 12-7). For additional stop gate information refer to Section 15 in this catalog.

**NOTE:** Dimensional information for the VT2 is shown on page 12-10 and 12-11. All necessary safety guarding is supplied with the VT2. Because your tooling and workpiece heights vary, you must cut the guarding openings as described in the Operation Assembly and Installation Manual supplied with the unit. If pallet and tooling height exceeds 235mm, contact the Bosch Rexroth Applications Engineering department for proper conveyor line guarding (tunnel guarding) information. Also, please contact our Applications Engineering department for non-standard length, width, speed, voltage or special strokes.

### Ordering Information for Vertical Transfer VT2

12

Specify part number, then select from the options below.	Your Choices are:	Part Number 8981 999 244
		Your selection:
Vertical Transfer Size & Pallet width in mm (Bwt)	Size 1U - Underline Return: 160, 240, 320, 400, 480 Size 1O - Overhead Return: 160, 240, 320, 400, 480, Size 2U - Underline Return: 160, 240, 320, 400, 480, 640, 800 Size 2O - Overhead Return: 160, 240, 320, 400, 480, 640, 800	Size: _____ , Bwt: _____ mm
Upper Line Height (Size 1 & 2 Overhead Return configurations only)	2,250 mm (min) - 2,700 mm (max.) (in 5mm increments)	_____ mm
Stop Gate	VE2 - Standard Stop Gate VE2/D60 - Cushioned Stop Gate VE2/D200 - Cushioned Stop Gate	_____
Nominal belt speed (m/min.)*	6, 9, 12, 15, 18	_____ m/min.
Motor/Voltage Frequency	see Table 12-5	_____ V _____ Hz

\* Full load conveyor speeds vary depending on motor frequency. See table 12-5.

Tandem Lift-transfer Units and VT2

**Technical Data for VT2**

Workpiece pallet size	= 800 mm wide (max.)
Total permissible belt load	= 100 kg (forward & reverse)
Nominal belt speed	= See Table 12-5
Motor RPM @ 50 Hz	= 1400
Motor RPM @ 60 Hz	= 1700
Motor electrical specifications	= See Table 12-5
Cylinder diameter	= 80 mm
Cylinder stroke, max.	= 850 mm (Underline) = 2000 mm (Overhead)
Operating pressure	= 58-116 psi (4-8 bar); max. 116 psi
Air connection	= G 3/8", 10mm tube

**NOTE: The VT2 vertical transfer does not include a door safety switch, but does include a universal mounting bracket.**

**Electrical data for VT2**

Nom. M/min	Actual Speed		HP	Full Load Amps @					
	50 Hz	60 Hz		208/60	240/60	380/50	415/50	480/60	575/60
9	9.1	8.8	.25	1.30	1.60	.72	.86	.78	.55
12	12.1	11.1	.25	1.30	1.60	.72	.86	.78	.55
15	15.2	14.7	.25	1.30	1.60	.72	.86	.78	.55
18	18.2	18.4	.25	1.30	1.60	.72	.86	.78	.55

Note: Electrical Data for reference only. Refer to motor name plate for actual amperage ratings.  
Table 12-5

**Transverse Conveyor Pallet Capacity for VT2**

Size 1: Vertical Transfer (L) = 825 mm Transverse Conveyor (L) = 785 mm		Size 2: Vertical Transfer (L) = 1100 mm Transverse Conveyor (L) = 1060 mm	
Qty	Size	Qty	Size
		1	L = 800 WT2
		1	L = 640 WT2
1	L = 480 WT2	2	L = 480 WT2
1	L = 400 WT2	2	L = 400 WT2
2	L = 320 WT2	3	L = 320 WT2
2	L = 240 WT2	4	L = 240 WT2
4	L = 160 WT2	6	L = 160 WT2

Table 12-6

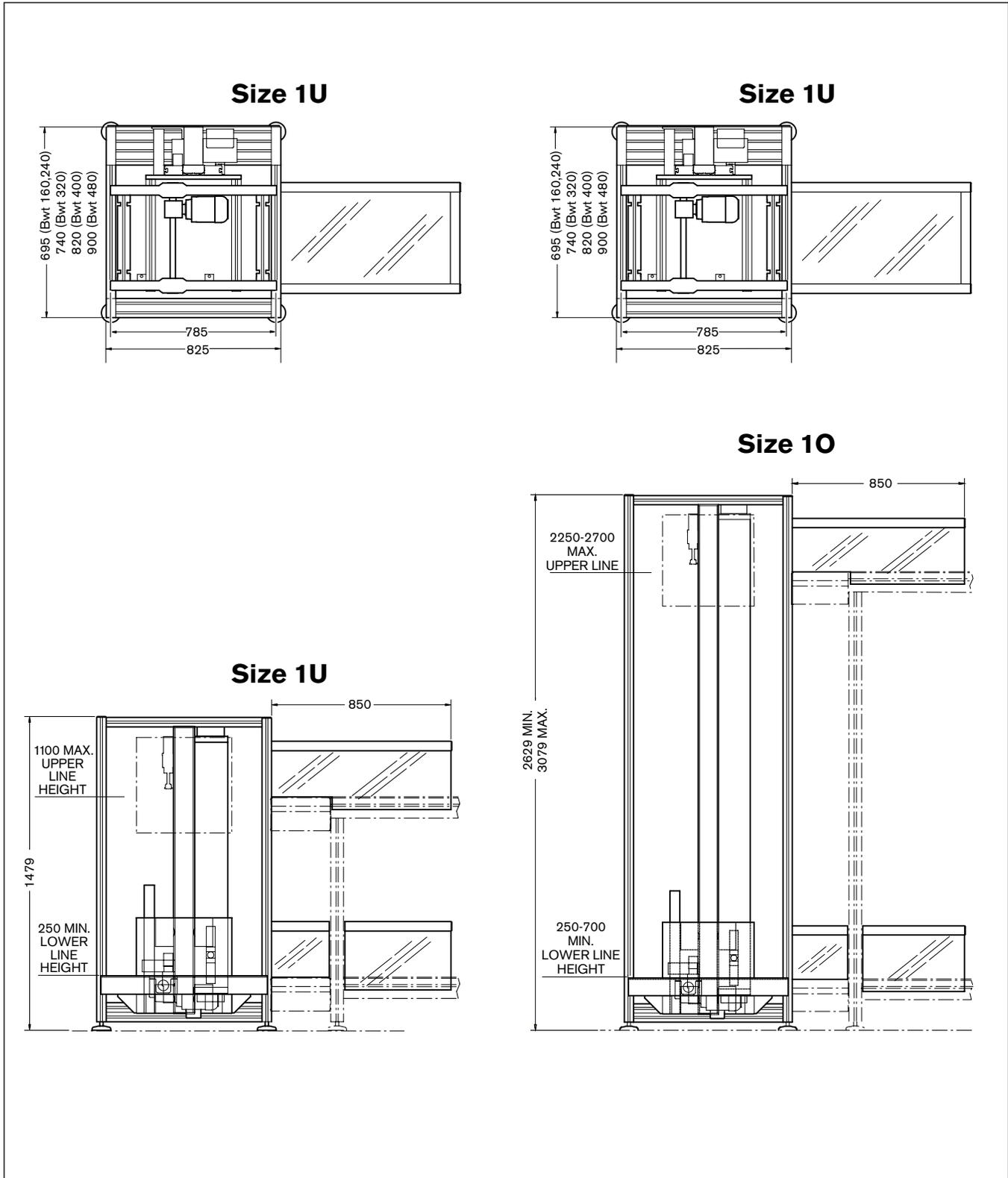
**Stop Gate Que Load for VT2 (in kg)**

Part Number	Description	Nominal Line Speed (m/min.)			
		9	12	15	18
0842 900 300	VE2 - Standard Stop Gate	140	100	70	50
3842 547 785	VE2/D60 Cushioned Stop Gate, 1 - 60 Kg	50	30	30	30
3842 524 895	VE2/D200 - Cushioned Stop Gate, 50 - 200 Kg	140	100	70	50

Table 12-7

Tandem Lift-transfer Units and VT2

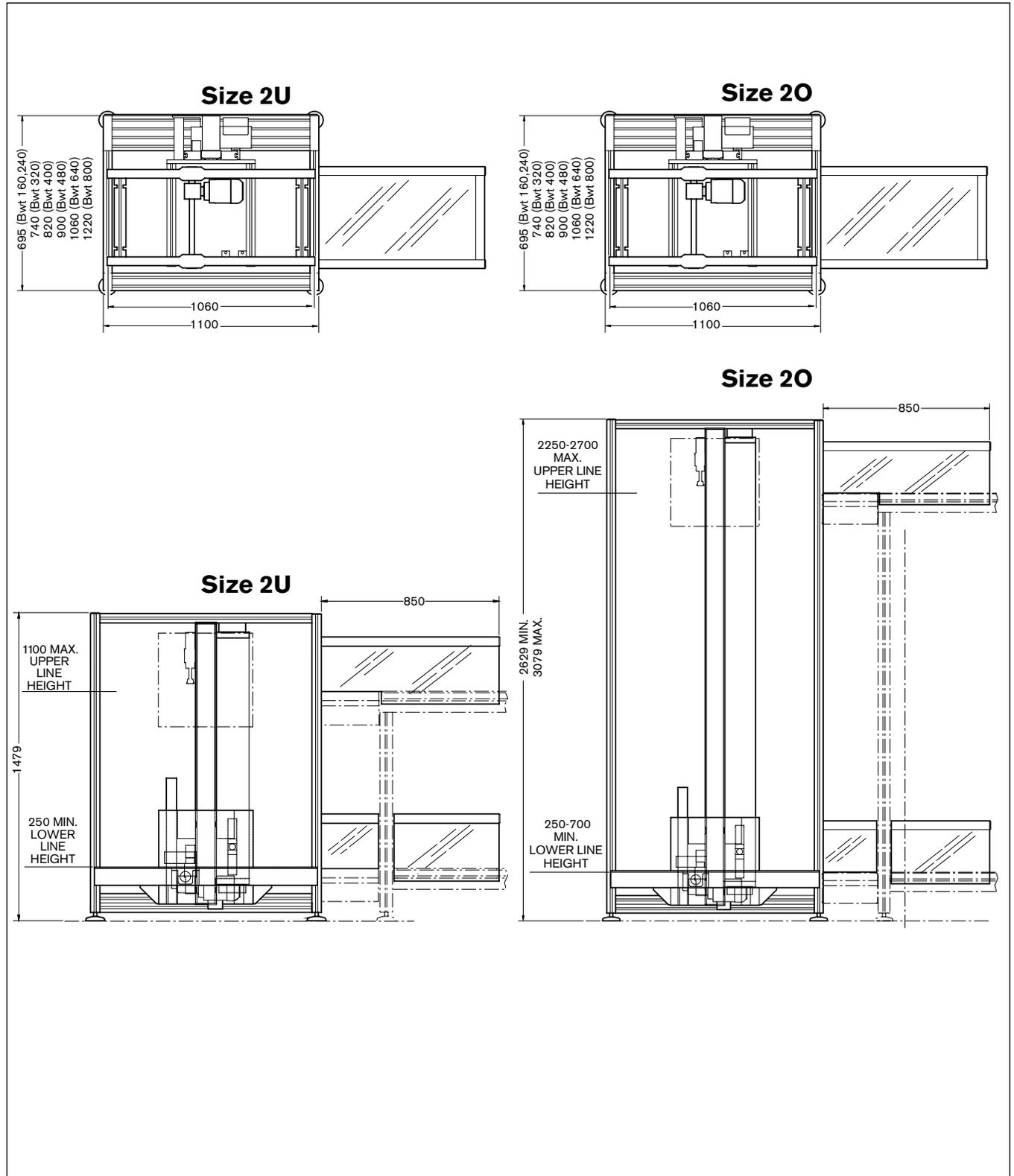
Dimensional data for Size 1 VT2



Transverse conveyor width (B) must match pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ), depending on orientation.

Tandem Lift-transfer Units and VT2

Dimensional data for Size 2 VT2



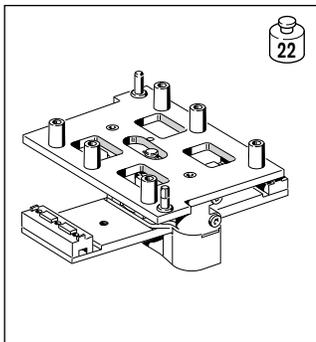
Transverse conveyor width (B) must match pallet length ( $L_{WT}$ ) or width ( $B_{WT}$ ), depending on orientation.

Lift-Position Units

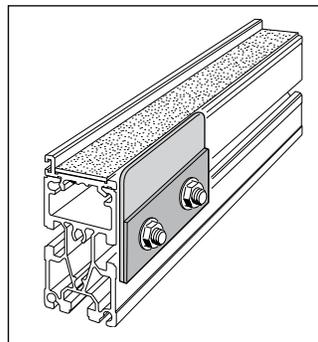
## Section 13 – Lift-Position Units

HP2 Units (Lift-Position Units) are used at workstations when workpiece pallets have to be accurately positioned. Lift-position units lift the workpiece pallet from the conveying media so that downward force can be applied to the pallet. Depending on the model, Lift-position units can withstand up to 100 kN (22,480 lbs.) of force.

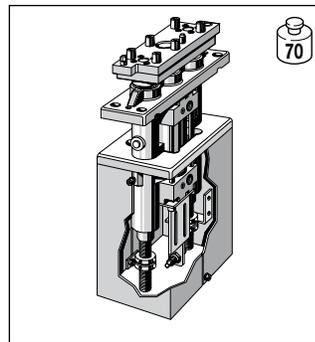
NOTE: See pages 18-8 for pneumatic diagrams of the HP2 modules.



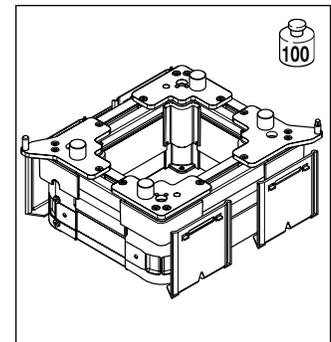
**HP2\E**  
Pallet Lift Unit  
13-1



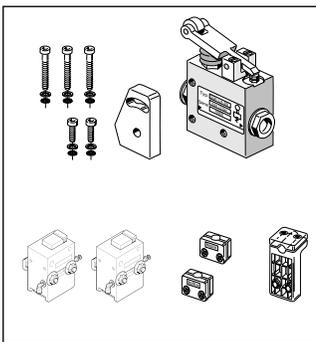
**PG2**  
Pallet Guide  
13-3



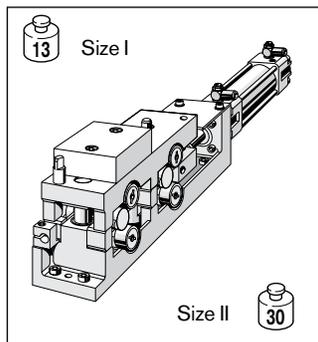
**HP2**  
Lift-position Unit  
13-4 to 13-5



**PE2/X**  
Lift-Position Unit  
13-6 to 13-7



Damping Kit and  
Traffic Control  
13-8 to 13-9



**HP2/K** Lift-position Unit  
for force absorption  
13-10 to 13-14

Lift-Position Units

# Pallet Lift Unit

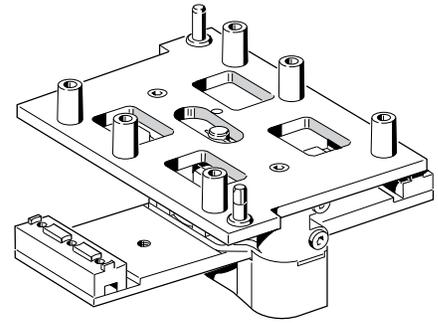


Model HP2/E

Pallet lift units are used for positioning workpiece pallets at workstations (usually automated). They are an economical alternative to the standard lift-position unit. The HP2/E lifts the workpiece pallet approximately 2.5 mm above the belt and has a positioning accuracy of  $\pm 0.1$  mm.

A spacer block is included and required for mounting to 100 mm conveyor profiles. Also a proximity switch mounting kit is included for position sensing.

Please contact our applications engineering department for non-standard widths or lengths.



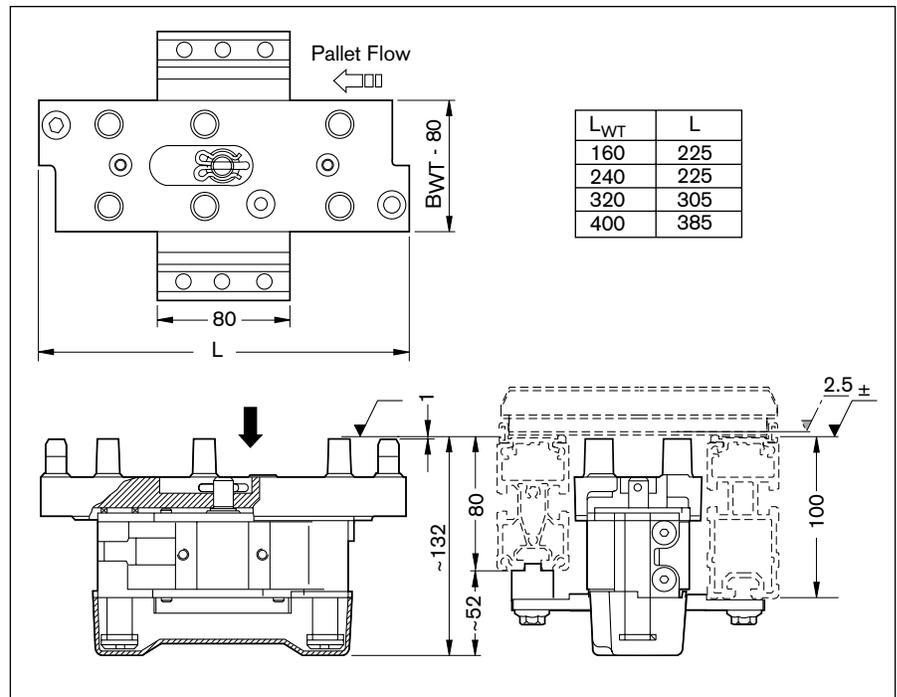
## Ordering Information for Pallet Lift Unit HP2/E

Pallet Width (B <sub>wt</sub> )	Pallet Length (L <sub>wt</sub> )	Part Number
160	160	3842 504 706
	240	3842 504 707
	320	3842 504 708
	400	3842 504 709
240	160	3842 504 710
	240	3842 504 711
	320	3842 504 712
	400	3842 504 713
320	160	3842 504 714
	240	3842 504 715
	320	3842 504 716
	400	3842 504 717
400	320	3842 504 718
	400	3842 504 719

### Technical data for HP2/E

Cylinder stroke	= 23.5 mm
Cylinder diameter	= 50 mm
Max. stroke above belt	= 2.5 mm
Positioning accuracy	= $\pm 0.1$ mm
Load capacity	= 22 kg (48 lbs)
Air pressure	= 4-6 bar
Air fitting	= 8 mm

### Dimensional data for HP2/E

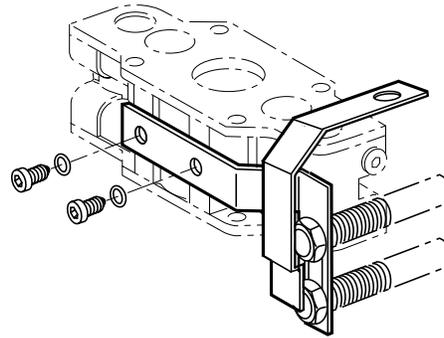


Lift-Position Units

## HP2/E Proximity Sensor Mounting Kit

**The proximity sensor mounting kit is included with the HP2/E.** However, the kit is available as a separate part number to add position sensing capability to existing modules that may not have the sensor mounting kit.

Order proximity switches separately on page 17-4.



### Ordering Information for Proximity Sensor Mounting Kits

Description	Part Number
HP2/E Proximity Sensor Mounting Kit	R980 025 166

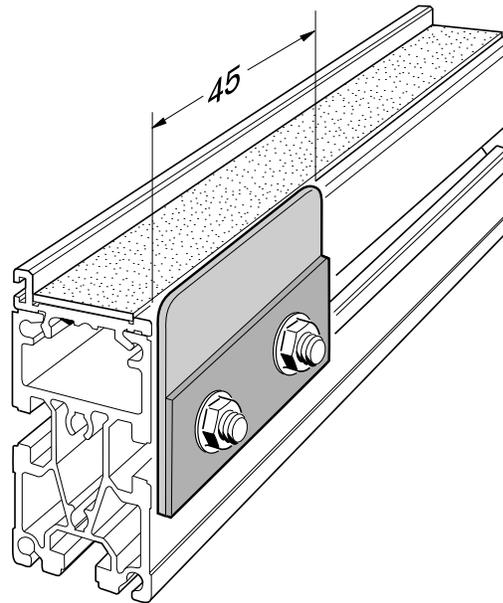
Lift-Position Units

# Pallet Guide

Model PG2

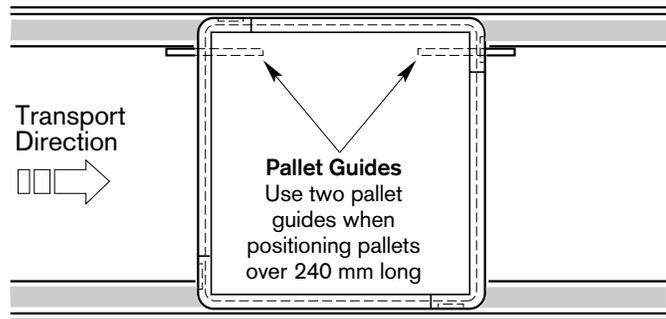
The pallet guide is used to position work-piece pallets on the conveyor to within  $\pm 0.5$  mm. It is most often used with code setters and readers (pages 17-5 to 17-11) where close tolerance positioning is not crucial. Guide slots on the underside of the pallet frame provide positioning without lifting the pallet off the conveyor.

Order two pallet guides for proper pallet positioning. Location of the guides will depend upon pallet size, but one guide should be located at the leading and the other guide should be on the trailing edge of the pallet.



### Ordering Information for Pallet Guide PG2

Description	(L) in mm	Part Number
Pallet Guide Length	45	3842 525 634



Lift-Position Units

# Lift-Position Unit

## Model HP2



The HP2 Lift-Position Units are used for precision positioning of workpiece pallets at workstations (usually automated). Positioning pins on the HP2 engage positioning bushings in the support plate of the pallet to lift it up off the conveyor. The resulting positioning repeatability is ±0.05 mm in the X and Y axes for lifts up to 204 mm.

**NOTE: Positioning repeatability is not guaranteed for lift ranges between 205 and 404 mm. For any lift range >204 mm, please consult our applications department for tooling considerations. Also note that side loading is not allowed for lift ranges between 205 mm and 404 mm.**

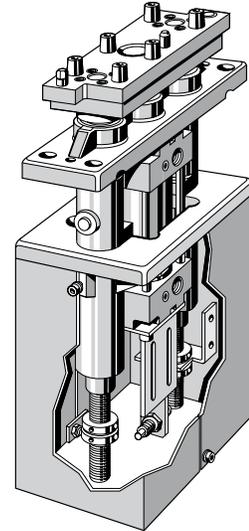
When ordering please specify if the HP2 will be line mounted to the conveyor section or station mounted to a machine frame at the workstation. Station mounting is generally preferred because it provides greater rigidity, repeatability, and allows optimal workstation operations to be performed while being isolated from the conveyor system.

The LPU lifts and lowers pallets with a double-acting pneumatic cylinder. There are eight lift ranges available and, within each range, the lift is infinitely adjustable (see stroke range in ordering chart). The upper and lower position of the LPU are sensed by proximity switches, not included. The lift-position unit used is determined by the workpiece pallet's length and width.

LPU's are shipped with all required mounting hardware including pneumatic fittings, positioning pins, and flow control valves. LPU covers, if required, are ordered separately. For sensitive assembly operations, a lift-position damping kit that cushions the lowering back to the conveying media can be ordered on page 13-8. Also, conversion kits to change from station or line mount are available on page 13-8.

**NOTE:** Non-oiled air, 58-116 PSI (4-8 bar) connection through 8 mm (5/16") push-lock plastic tubing is required.

Please contact our applications engineering department for non-standard length, width and stroke.



### Ordering Information for Lift-Position Unit HP2

Specify part number, then select from the options below.	Your Choices are:	Part Number 3842 999 678
		Your selection:
Lift Range (in mm)	0-59      205-254 60-104    255-304 105-154   305-354 155-204   355-404	_____ mm
Mounting Type (AO)	Without Mounting (O) Side Mounting (AT) Line Mounting (UB)	_____
Positioning Plate Width B	0*, 160, 240, 320, 400, 480	_____ mm
Positioning Plate Length L	0*, 160, 240, 320, 400, 480, 640, 800	_____ mm

\* If B and L are specified as 0 mm, the HP2 will be equipped with a lift plate instead of a positioning plate.

### Ordering Information for HP2 Positioning Pins

Round Replacement Pin	<b>3842 242 392</b>
Diamond Replacement Pin	<b>3842 242 397</b>

### Ordering Information for HP2 Cover Kits

Lift above chain in mm	h <sub>1</sub> in mm	h <sub>2</sub> in mm	Total cylinder lift in mm	Part Number
0-59	334	435	80	<b>8981 003 782</b>
60-104	379	480	125	<b>8981 003 783</b>
105-154	429	530	175	<b>8981 003 784</b>
155-204	479	580	225	<b>8981 003 785</b>
205-254	529	630	275	<b>3842 532 409</b>
255-304	579	680	325	<b>3842 532 410</b>
305-354	629	730	375	<b>3842 532 411</b>
355-404	679	780	425	<b>3842 532 412</b>

Lift-Position Units

**Technical Data for HP2**

Max Payload	=	70 kg including pallet & fixture
Max allowable applied force	=	110 kg minus maximum payload
Positioning Accuracy	=	±0.05 mm both x and y axis (for lift ranges up to 204mm)
Permitted turning moment	=	Up to 100 Nm allowed
Air pressure	=	4-8 bar
Stroke $h_G$ (in mm)	=	0 to 80      226 to 275 81 to 125      276 to 325 126 to 175      326 to 375 176 to 225      376 to 425
Stroke Length Adjustment	=	80 mm
Cylinder diameter	=	63 mm
Air fittings	=	8 mm (5/16") push-lock

**Size Ranges for HP2**

Pallet Width, B <sub>WT</sub>	Pallet Length, L <sub>WT</sub>						
	160	240	320	400	480	640	800
160	•	•	•	•	•	N/A	N/A
240	•	•	•	•	•	N/A	N/A
320	•	•	•	•	•	N/A	N/A
400	N/A	N/A	•	•	•	•	•
480	N/A	N/A	•	•	•	•	•

**Dimensional Data for HP2**

**Line Mounted**

Dimensions: B<sub>WT</sub>, B-80, Positioner Plate, 80, 100, 23, 20, 20, 50, 160, h<sub>1</sub>, h<sub>2</sub>. Force: max. 1100 N (110 Kg).

**Station Mounted**

Dimensions: L<sub>WT</sub>, 40, (L<sub>T</sub> 160), Positioner Plate, Pallet Flow, 49, 125, 25, 260, 300, 325, 360, 230, h<sub>G</sub>, Mounting Set, Optional Cover.

**Optional Lift Plate Dimensions**  
Part No. 3842 516 048

Dimensions: 164, 12, 80, 40, 20, 140, 180, 25, M6, ø25, ø8.

**Station Mount Cut-out Dimensions**

Dimensions: 165 ± 0.02, 15, 150, 115, 70, 300, 325 ± 0.4, M8, ø8 (4 x). Notes: Allowable 10 mm radius, Minimum cut-out required, Optional for valve clearance.

\*Dimensions are for reference. Contact Bosch for detailed machining drawings.  
Print # 8981 021 844

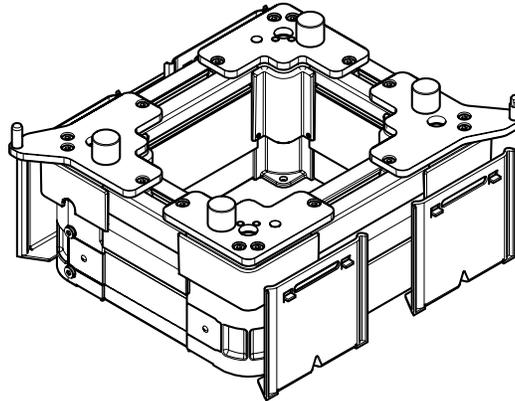
**Note:** Upper end-position damping is only effective when the cylinder's full lift height is reached. Proper guarding must be installed to protect operators when the lift above the chain exceeds 3 mm.

Lift-Position Units

# Lift-Position Unit

Model PE2/X

The PE2/X Lift Position Units are used for precision positioning of large workpiece pallets (480mm x 480mm and larger). Positioning pins on the PE2/X engage positioning bushings in the support plate of the pallet to lift it up off the conveyor. The resulting positioning repeatability is  $\pm 0.1$ mm in the X and Y axes when station mounted (attached to separate leg posts or a machine base) and anchored to the floor.



The PE2/X raises and lowers pallets with four double acting lift cylinders. Uniform lift is maintained through a series of rack and pinion gears between the lift cylinders. The PE2/X lifts the pallet 9mm above the transport level.

The PE2/X is shipped fully assembled and includes all pneumatic fittings, positioning pins, and mounting hardware. Two proximity switch brackets and one exciter element are also included for sensing the upper position of the PE2/X. Stop gates and proximity switches are not included but are available separately.

**NOTE:** The PE2/X unit uses standard 8mm push lock pneumatic connections and requires a minimum pressure of 4 bar (58 psi) of filtered, oiled or non-oiled, compressed air.

## Ordering Information for Lift-Position Unit PE2/X

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>3842 998 324</b>
		Your selection:
Positioning Plate Width B	480, 640, 800	_____ mm
Positioning Plate Length L	480, 640, 800, 1040	_____ mm

## PE2/X Available Sizes

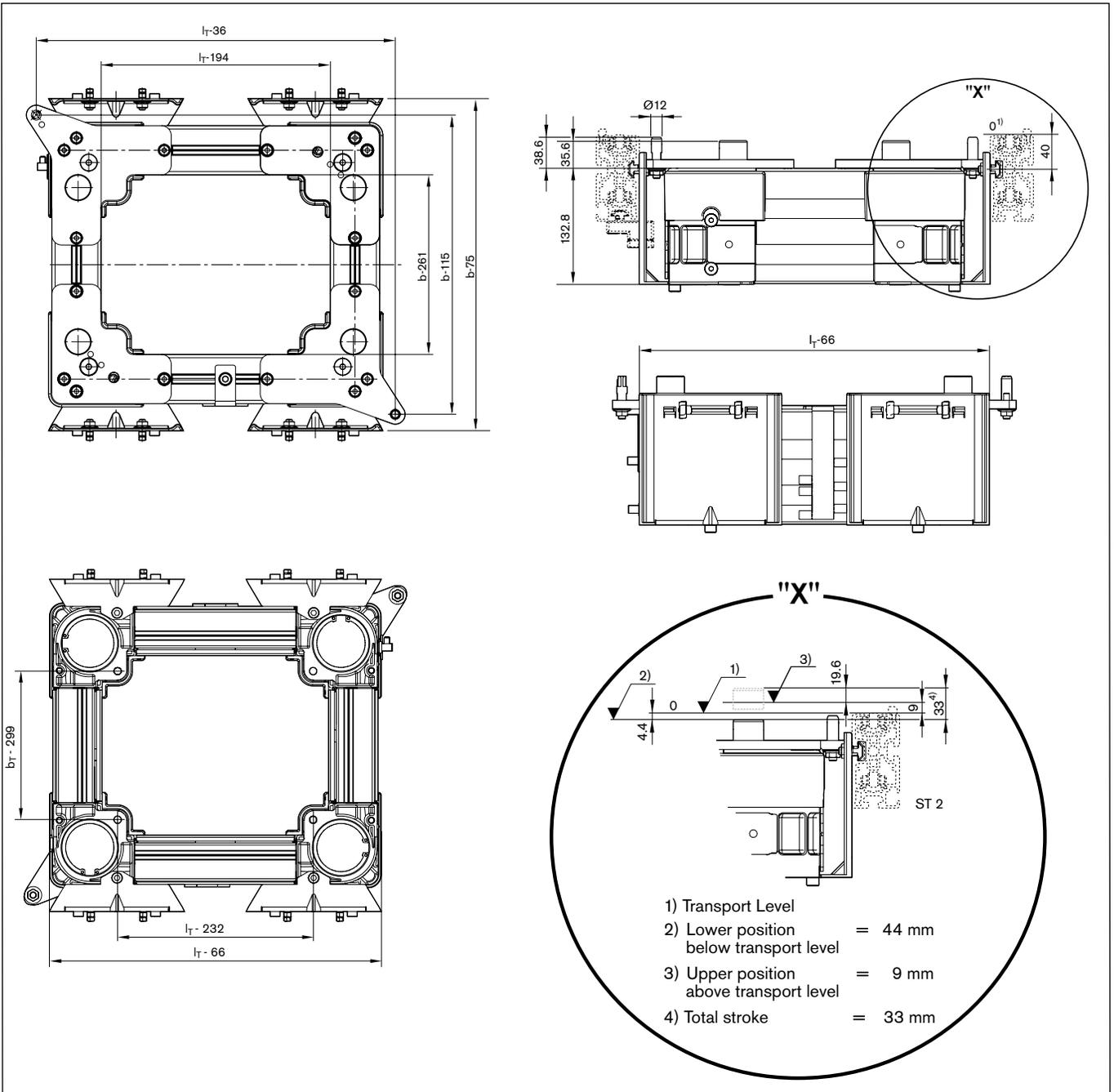
Pallet Width, B <sub>WT</sub>	Pallet Length, L <sub>WT</sub>			
	480	640	800	1040
480	•	•	•	N/A
640	•	•	•	•
800	•	•	•	•
1040	N/A	•	•	•

Lift-Position Units

Technical Data for PE2/X

Maximum Payload	= 100 kg
Max Allowable Applied Force	= 3500N (incl. WT2 payload)
Positioning Accuracy	= ±0.1 mm both x and y axis
Permitted Turning Moment	= 50 Nm
Air pressure	= 4-8 bar
Lift Above Transport Level	= 9 mm
Cylinder Stroke	= 33 mm
Cylinder Diameter	= 63 mm
Air fittings	= 8 mm (5/16") push-lock

Dimensional Data for PE2/X



- 1) Transport Level
- 2) Lower position = 44 mm below transport level
- 3) Upper position = 9 mm above transport level
- 4) Total stroke = 33 mm

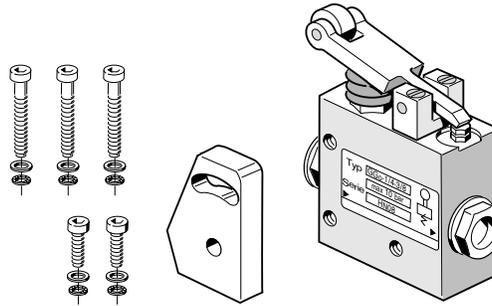
Lift-Position Units

# HP2 Lift-Position Damping Kit

This kit cushions the lowering of the LPU back to belt height for sensitive assembly operations. It consists of a switching cam and a one way throttling valve.

On the downward stroke of the HP2, a cam operating the roller lever throttles back the exhaust air, thereby damping the down stroke.

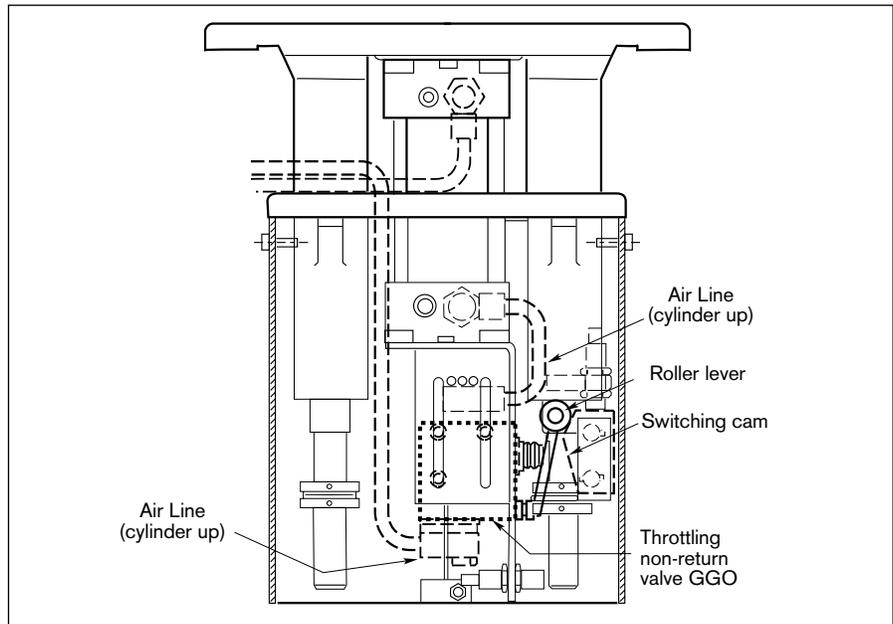
The control valve and cam attach to brackets in the HP2 with the included hardware.



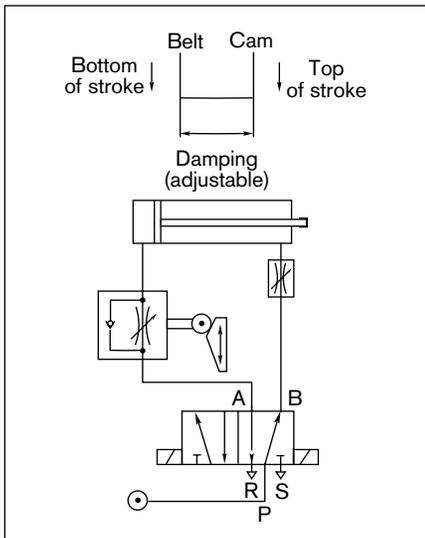
### Ordering Information for LPU Dampening Kit

Description	Part Number
Lift-Position Dampening Kit	3842 211 355

### Dimensional data for LPU Dampening Kit



### Pneumatic diagram of the lift-position damping kit



# HP2 Lift-Position Unit Conversion Kits

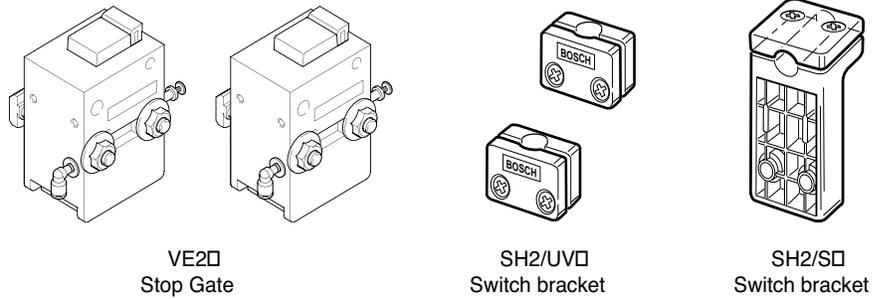
If lift position unit mounting requirements change, these kits allow the use of an existing station mounted LPU as a line mounted, or vice-versa. The station-mount to line-mount lift position unit conversion kits include the hardware needed to use a station mounted lift position unit as a line mounted unit, and should be selected for the appropriate line width. The line-mount to station-mount conversion kit will work with any size LPU.

### Ordering Information for HP2 Conversion Kits

To convert a:	Use Kit Part Number
Station mounted HP 2 to 160 wide line mount	3842 210 835
Station mounted HP 2 to 240 wide line mount	3842 210 836
Station mounted HP 2 to 320 wide line mount	3842 210 837
Station mounted HP 2 to 400 wide line mount	3842 210 842
Station mounted HP 2 to 480 wide line mount	3842 210 843
Any line mounted to station mount	3842 210 833

Lift-Position Units

# Traffic Control



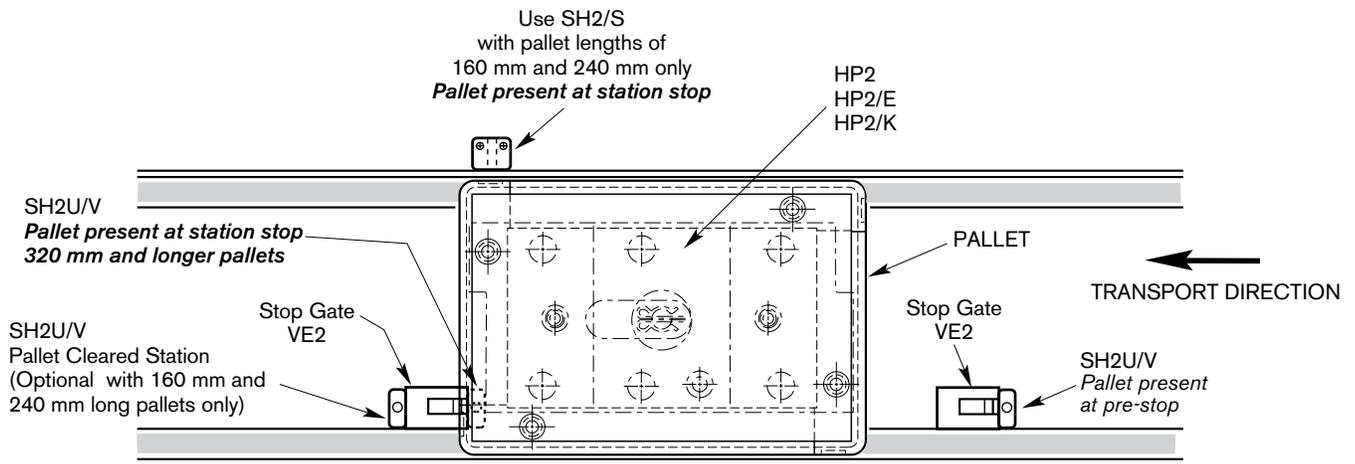
For workpiece pallet traffic control in and out of LPU's, we recommend the use of two stop gates, three switch holders, and three proximity switches for station pre-stop, pallet stop, and station clear. These parts may be ordered in convenient kits as shown below.

These kits include two VE2 stop gates with mounting hardware, two SH2/UV proximity switch brackets and one SH2/S proximity switch bracket. The control kits can be used on all TSpplus conveyors as shown below.

### Ordering Information for Traffic Control Kit

Description	Part Number
Control Kit	3842 211 354

Workpiece carrier control kits require three 24 VDC proximity switches which are ordered separately on page 17-6.



Lift-Position Units

# Lift-Position Unit for Force Absorption

Model HP2/K

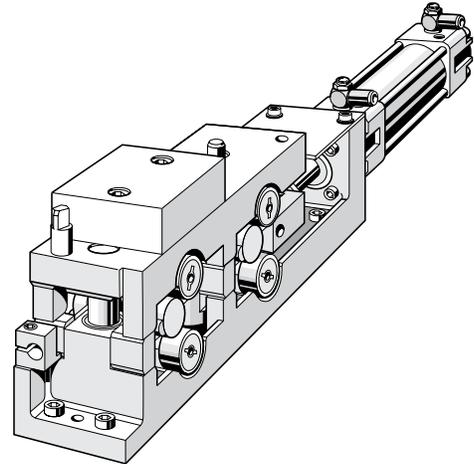
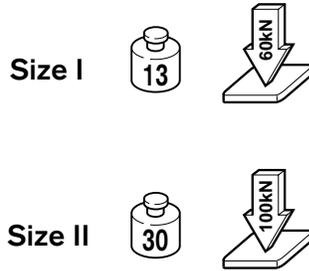
The lift position unit for force absorption positions the workpiece pallet in the X and Y axis to ±0.05 mm repeatability. The unit permits the application of forces up to 100 kN(22,480 lbf). It is most commonly used for pressing or riveting applications.

The lift-position unit cannot be mounted to the profiles of the conveyor section. It must be mounted to a station base which is capable of absorbing all the applied vertical forces.

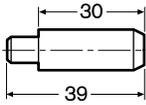
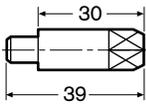
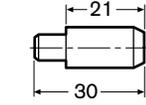
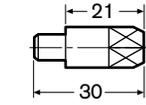
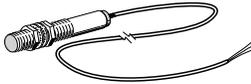
The lift height is fixed. The mounting surface of the station frame must be 125 mm below the transport height. This provides 1 mm of clearance for pallet transfer when the unit is in the retracted position.

The HP2/K is sold as a base unit only. For pallets up to 240 x 320 mm, an anvil block and 39 mm long positioning pins are needed. For larger pallets, a custom lift/anvil plate is required along with short round and short flat 30 mm long positioning pins.

All mounting hardware, pneumatic fittings, and flow control valves are included. Positioning pins, anvil plate and two proximity switches must be ordered separately. Use a horizontal proximity switch bracket to sense pallet in station.



## Ordering Information for LPU for Force Absorption HP2/K

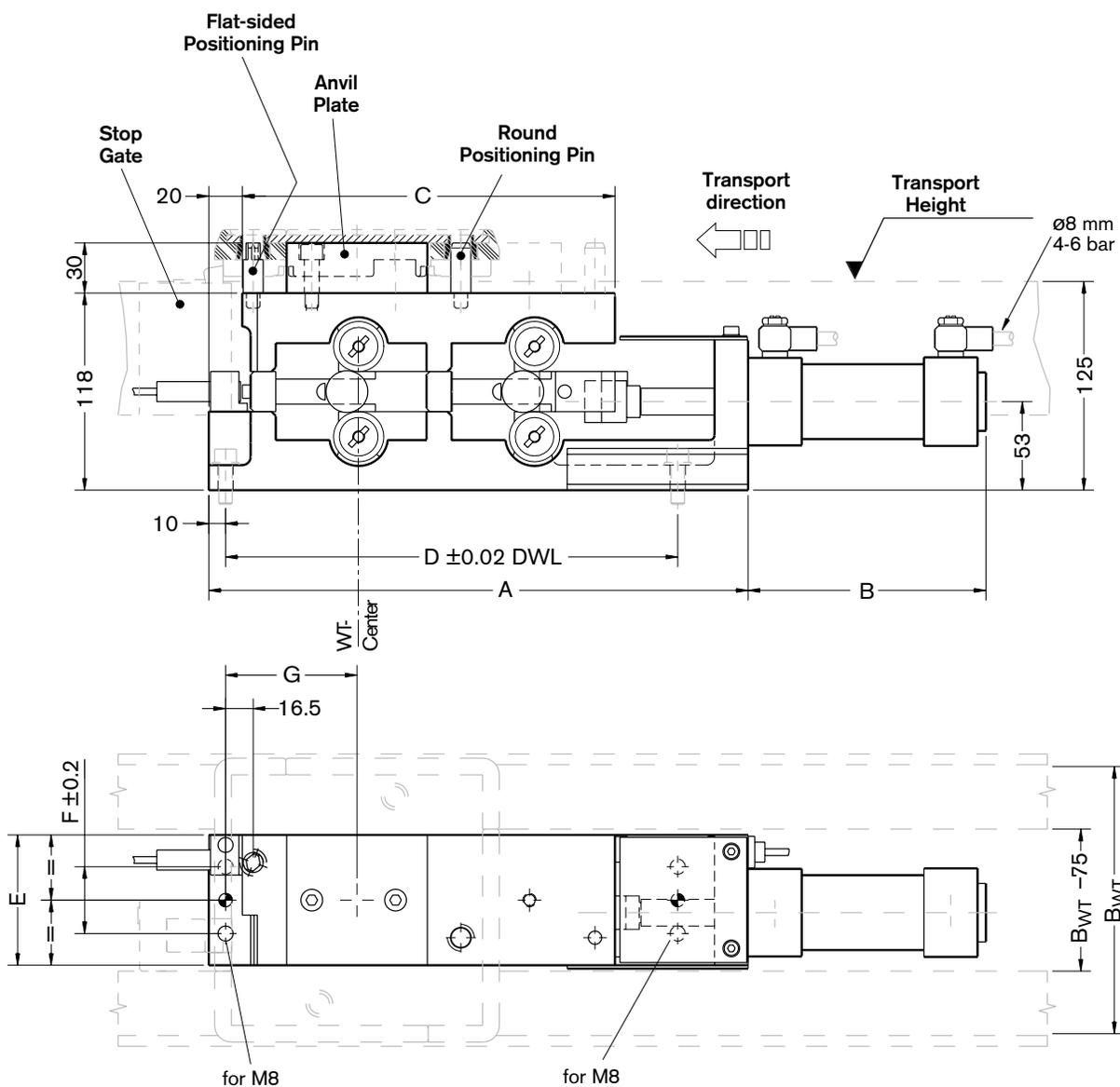
		HP2/K Size I Part Number 3 842 242 350	HP2/K Size II Part Number 3 842 242 351
B <sub>WT</sub>	Anvil plate Size	L <sub>WT</sub>	Anvil plate Part Numbers
160		160	3 842 242 375 ---
240		160	--- 3 842 242 376
160		240	3 842 242 376 ---
240		240	--- 3 842 242 377
240		320	--- 3 842 242 378
Positioning Pin Round			3 842 242 390
Positioning Pin Flat			3842 242 395
Positioning Pin Short Round*			3 842 242 391*
Positioning Pin Short Flat*			3842 242 396*
Proximity Switch			3842 502 863
		12mm, normally open, 24 VDC, PNP sourcing, 2mm sensing range ( <b>shielded</b> ), with 5m of 3-conductor cable	

\* Used for special version positioner plates only, see page 13-12

Lift-Position Units

Dimensional data for HP2/K

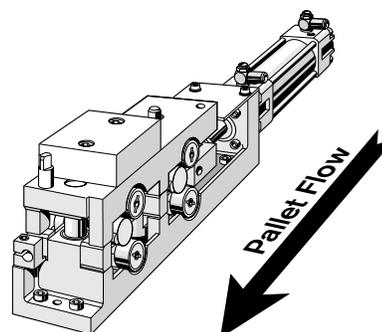
Size	Workpiece-pallet dimensions		Dimensions in mm						
	in conveying direction $L_{wt}$ in mm	crosswise to conveying direction $B_{wt}$ (track width) in mm	A	B	C	D	E	F	G
I	160	160	322	142	222.5	270	80	$40 \pm 0.2$	78.5
	240								
II	160	240	405	146	298	350	160	$100 \pm 0.3$	78.5
	240								118.5
	320								158.5



Lift-Position Units

**HP2/K Installation data**

When installing the HP2/K lift-position unit, its pneumatic cylinder must be oriented toward the pallet flow as illustrated at right. Otherwise, the pneumatic cylinder will interfere with the workstation stop gate. Also, refer to the minimum spacing "X" diagram below for the proper location of the pre-stop and main stop gates.



**HP2/K Minimum spacing dimension "X" for the workpiece pallet**

Workpiece-pallet dimension in conveying direction $L_{WT}^*$ in mm	Minimum spacing dimension "X" in mm	
	Size I	Size II
160	225	165
240	65	10
320	-	10

**Technical data for HP2/K**

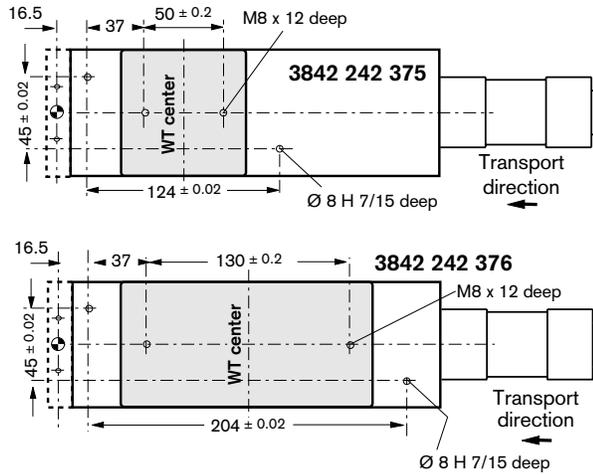
Designation	Size I	Size II
Max. force absorption in the fully extended position	approx. 60 kN	approx. 100 kN
Workpiece-pallet dimensions crosswise to conveying direction (track width) $B_{WT}$ in mm	160 mm	240 mm
Workpiece-pallet dimensions in conveying direction $L_{WT}$ in mm	160, 240 mm	160, 240, 320 mm
Workpiece pallet weight	approx. 13 kg	approx. 30 kg
Vertical stroke	24 mm	
Lift, workpiece pallet above conveyor section	3 mm	
Operating pressure	4 – 6 bar	
Compressed air connection of the cylinder	Steckfix pipe connection for 8 mm ( $5/16"$ ) plastic tubing	

Lift-Position Units

**Modular unit Lift and positioning Unit HP2/K for force absorption**

Shown here: The hole pattern of the support plate on the lift-position unit for mounting the anvil plate (shown as a shaded area) and the positioning pins.

**Size I**  
Dimensions of the top section  
80 x 222.5



In conveying direction  $L_{WT}$

crosswise to conveying direction  $B_{WT}$  (track width)\*

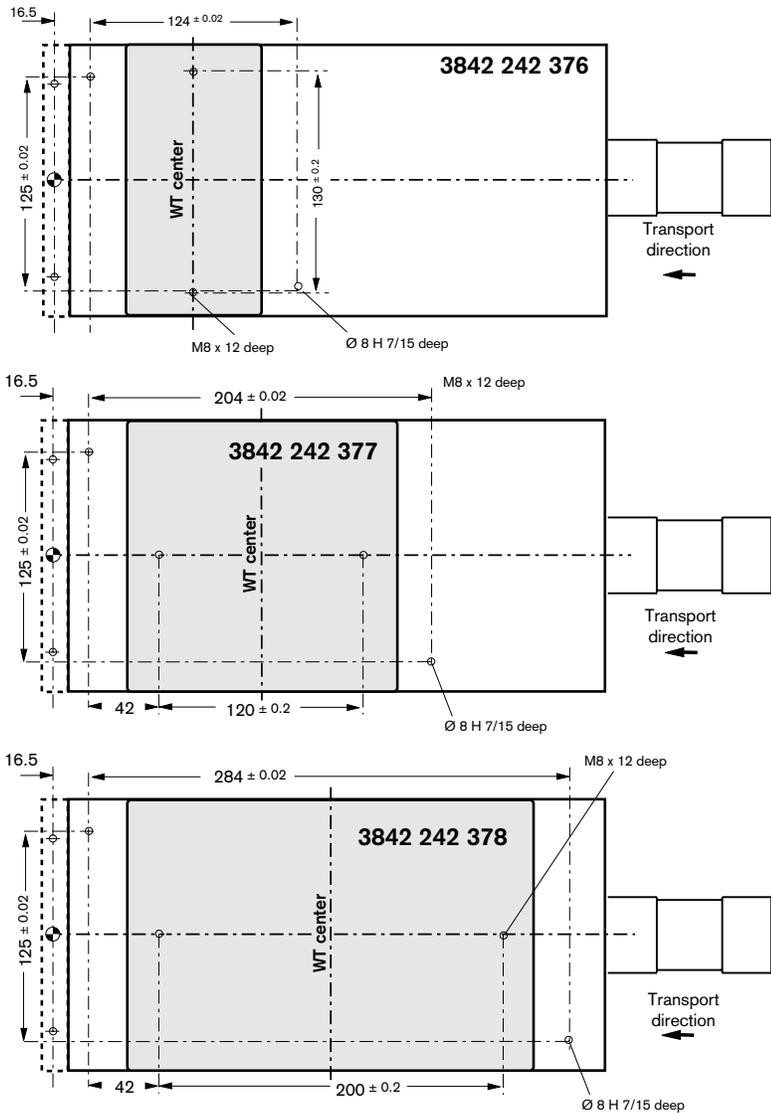
160

160

240

160

**Size II**



160

240

240

240

320

240

Lift-Position Units

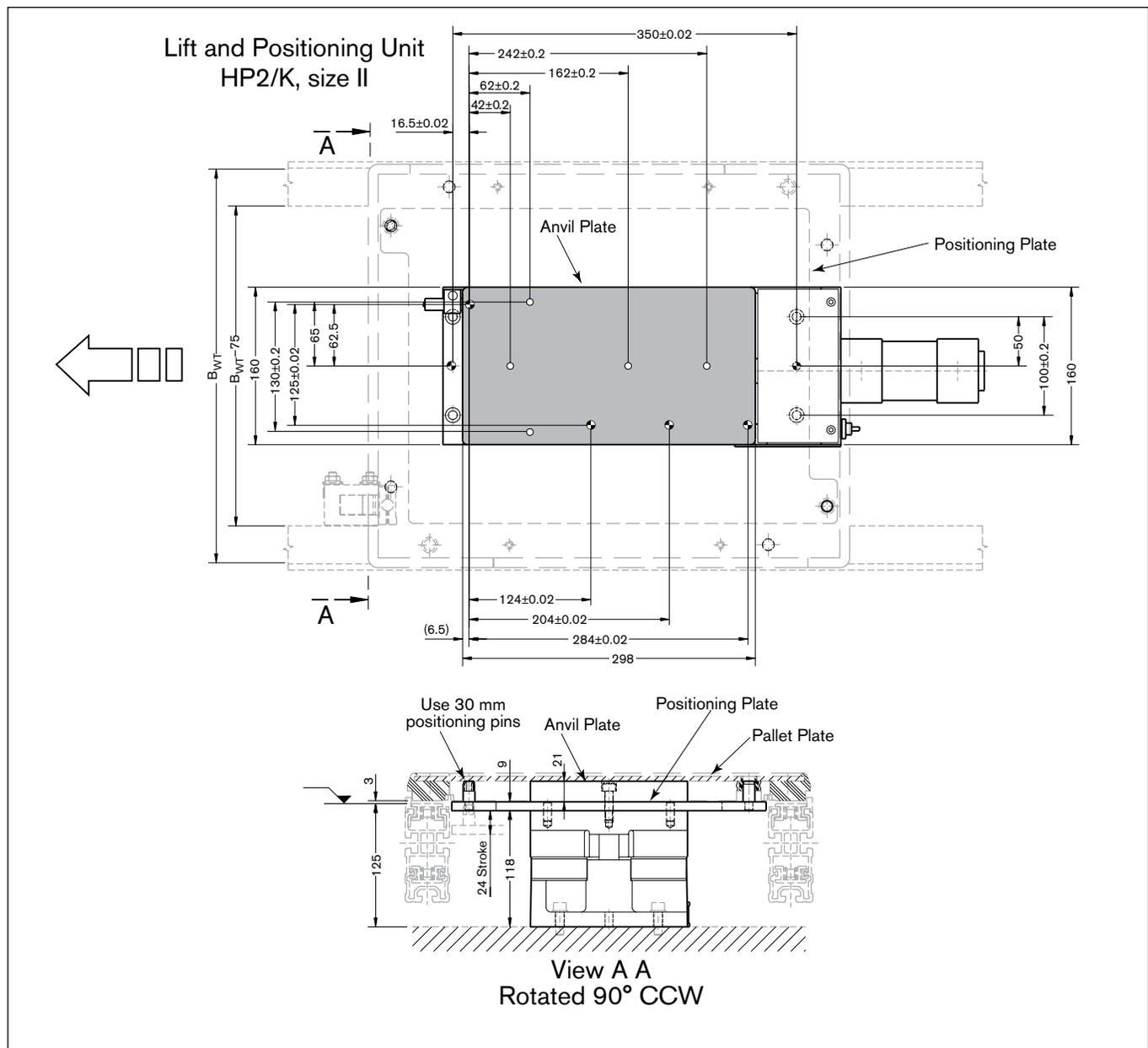
## Application of the HP2/K with larger than 320 x 240 workpiece pallets

If the processing forces are only applied at specific points, the lift-position unit for force absorption, HP2/K, can also be used with large workpiece pallets. These processing forces cannot be applied to areas on the workpiece- pallet support plate which are outside the surface area

of the HP2/K anvil plate envelope. The anvil plate can be identified in the illustrations by the dark grey shaded area.

**Design note:**

A special anvil and positioning plate must be manufactured when the HP2/K is used for large workpiece pallets. The anvil plate must be 21 mm thick and the positioning plate 9 mm thick. **Important: Total weight must not exceed 25 kg.**

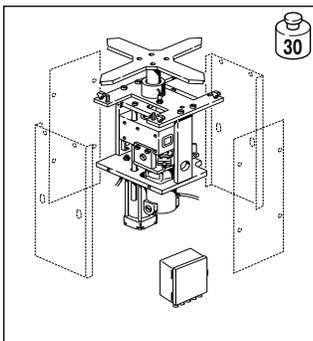


Lift-Rotate Unit

## Section 14 – Lift-Rotate Unit

HD2 Units (Lift-Rotate Units) are used to turn the orientation of the workpiece pallet 90° or 180°. The lift plate fits into the corners of the workpiece pallets frame and lifts the pallet 68 mm above the transport height.

The lift-rotate unit is designed for pallet orientation only and process equipment should not exert any external force on this module.



**HD2/E**  
Lift-rotate unit  
14-2 to 14-3

Lift-Rotate Unit

# Lift-Rotate Unit

Model HD2/E



The Lift-Rotate unit changes the orientation of the workpiece pallet. In some systems this may be done to ensure that the workpiece pallet's leading edge remains the same regardless of workpiece pallet transfers. In other instances, workpiece orientation may be changed to simplify assembly or handling processes.

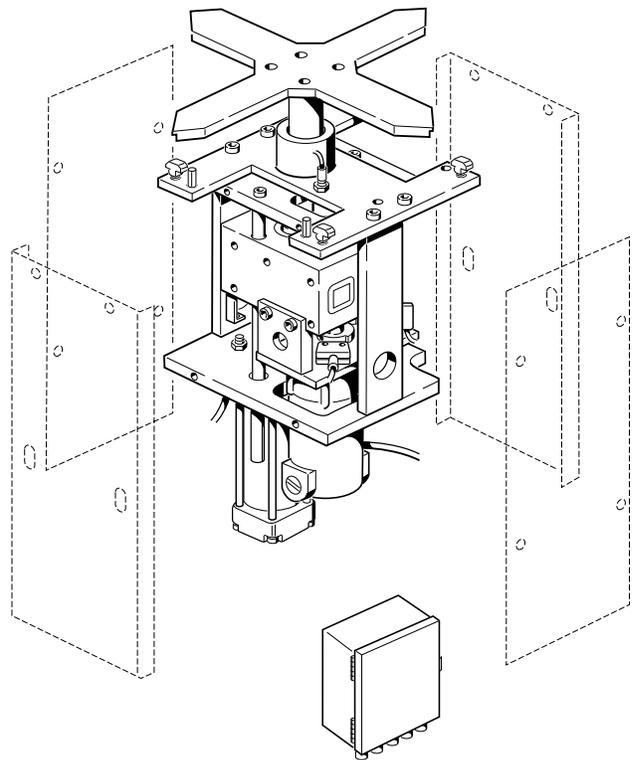
The Lift-Rotate unit is mounted to the underside T-slots of a conveyor section. The included controller enclosure, containing the motor drive package and terminal strip for all wiring connections, is mounted to the side T-slots of the conveyor section near the lift-rotate unit.

The lift plate on the lift-rotate unit contacts the workpiece pallet support plate and fits into the corners of the workpiece pallet's frame. Lift is provided by a pneumatic cylinder, with a payload of up to 30 kilograms. The lift-rotate unit lifts the workpiece pallet 68 mm above the belt height. Lift and lower speed can be set with adjustable pneumatic flow control valves. An electronic speed control permits adjustment of the Rotation speed. The controller contains logic to complete one 90° rotate cycle for each start pulse received from the system controller.

The unit is set up for clockwise rotation at delivery. Rotation can be reversed at installation, however the unit is not bi-directional.

The lift-rotate unit is designed for pallet orientation only. Processing equipment should not exert external forces on this module.

A rotate home limit switch, three 12 mm proximity switches, pneumatic fittings, and all mounting hardware are included.



### Ordering Information for Lift-Rotate Unit HD2/E

Specify part number, then select from the options below.	Your Choices are:	Part Number <b>8981 999 250</b>
		Your selection:
Conveyor section profile	80 mm high 100 mm high	_____ mm
Pallet Width $B_{WT}$	160, 240, 320, 400, 480	_____ mm
Pallet Length $L_{WT}$	160, 240, 320, 400, 480	_____ mm
Controller	None 110 v/ 60 Hz 230 v/ 50 Hz	_____

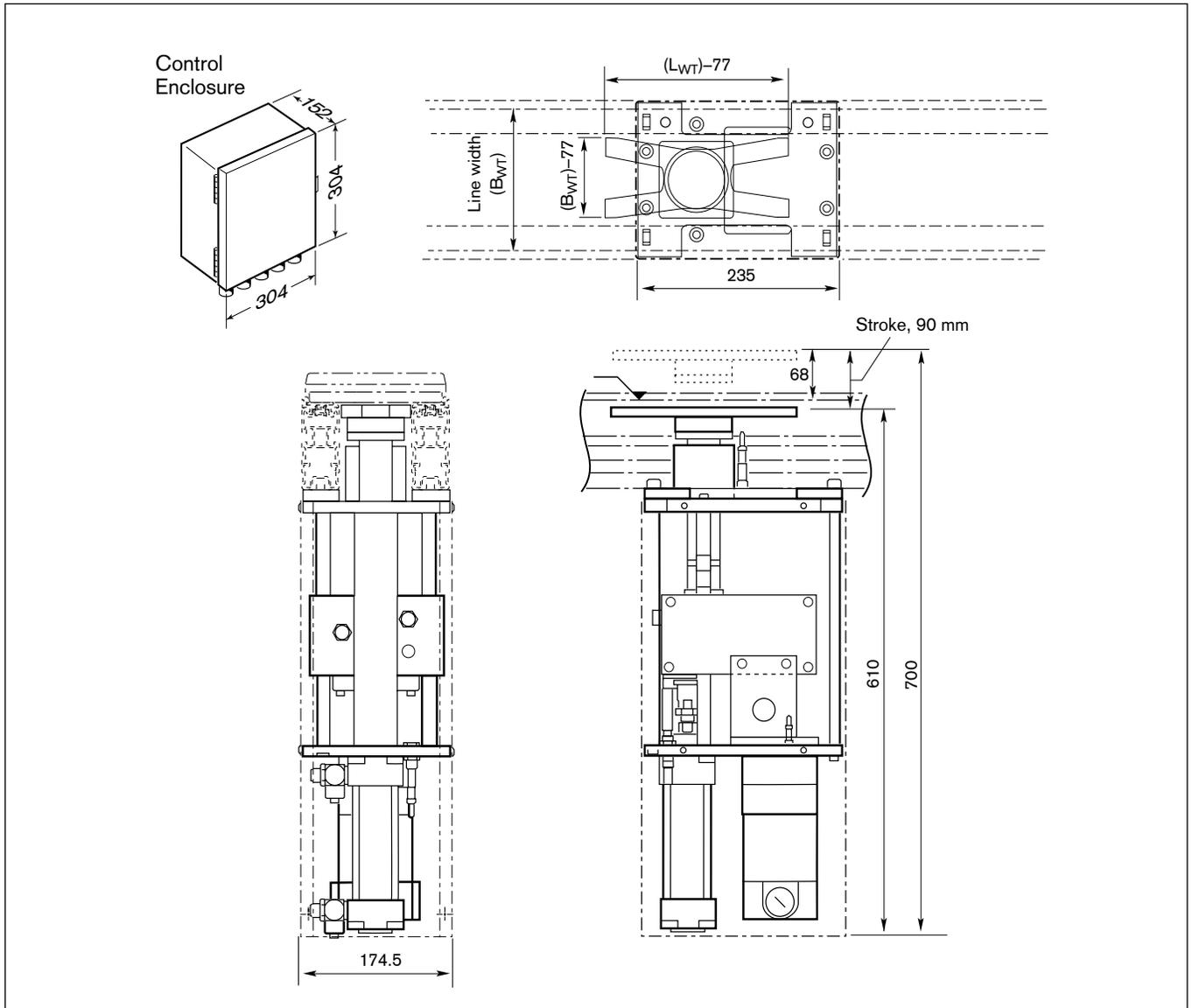
**Note:** Bosch Rexroth recommends guarding at Lift-Rotate Modules as the pallet will swing beyond the edge of the conveyor during rotation.

Lift-Rotate Unit

Technical data for HD2/E

Air	= Oiled and filtered
Operating pressure	= 4-8 bar (58 to 116 psi)
Operating voltage	= 110 V, single phase
Direction of rotation	= clockwise as delivered
Rotation angle	= 90° increments, infinite
Cycle time	= Approx. 3 secs. (load-dependent)
Lift above belt	= 68 mm
Max. weight capacity	= 30 kilograms (66 lbs.)
Air connections	= 8 mm (5/16") dia. push-lock type plastic tubing
Host I/O requirements	= (1) output for Rotate Start = (1) output for Pallet Lift = (1) output for Pallet Lower = (1) input for Lift Raised = (1) input for Lift Lowered = (1) input for Rotate Complete = (1) input for Rotate Home
Air fitting	= 8 mm

Dimensional data for HD2/E



Stop Gates

# Section 15 – Stop Gates

TSplus stop gates are used to stop workpiece pallets. Most are pneumatically operated and mount between the conveyor section guide rails. There are two basic pneumatic stops available, standard or cushioned.

Stop gates can halt workpiece pallet travel on the leading edge or trailing edge depending upon the application. Stop gates also have mounting areas for

proximity switch brackets which are used to monitor workpiece pallet traffic.

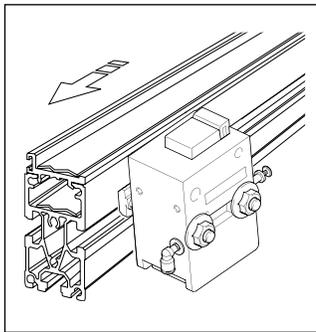
Cushioned stops are recommended where sensitive material is being conveyed at higher conveyor speeds. The cushioning is adjustable and can be varied for the weight of the workpiece pallet.

A fixed stop is available to halt pallet travel at the end of a BS2 conveyor, a spur line

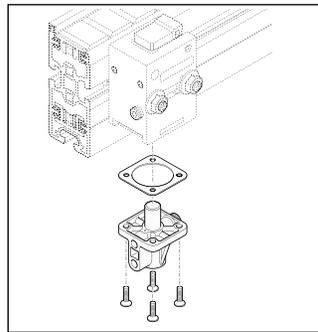
or anywhere a positive pallet stop is required.

Accumulation control kits are used to prevent excessive pressure on a stop gate when multiple workpiece pallets must be stopped by a single stop.

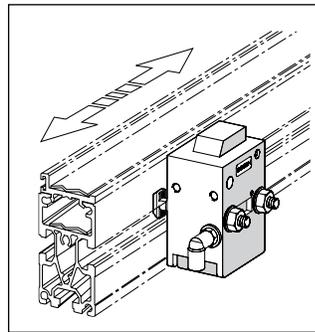
**NOTE:** Pneumatic diagrams of the stops in this section are shown in the Technical Data section on page 18-8 to 18-9.



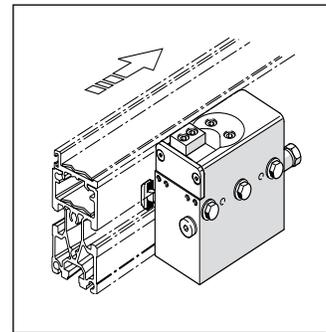
**VE2, VE2/L, VE2/M**  
Standard Stop Gates  
15-1



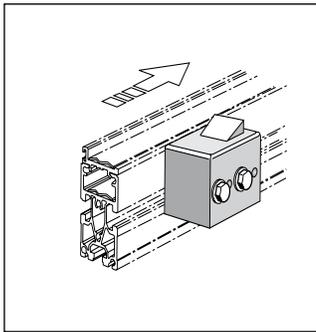
**VE2**  
Positioning Sensor Kit  
15-2



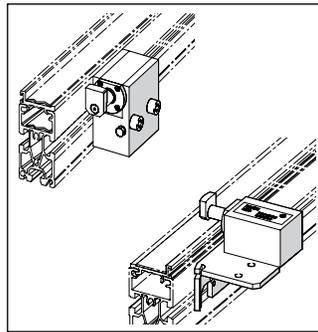
**VE2/S**  
Bi-Directional Stops  
15-3



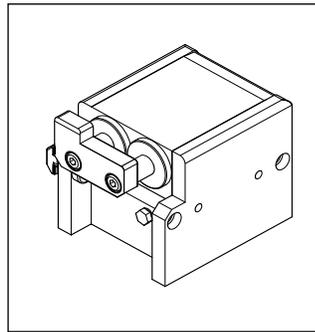
**VE2/H**  
Heavy Duty Stops  
15-4



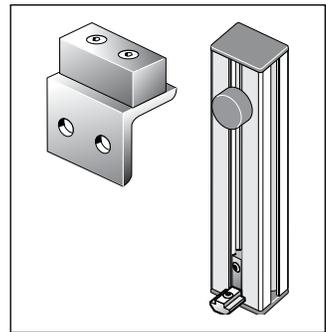
**VE2/RS**  
Rebound Stop  
15-5



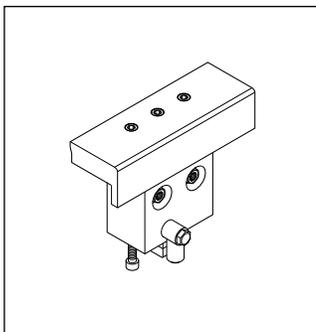
**VE2/...**  
Cushioned Stops  
15-6 to 15-7



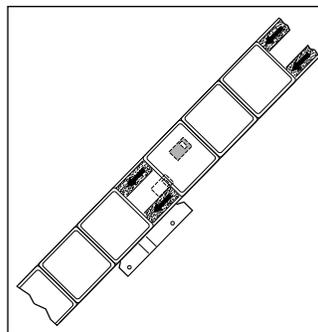
**VE2/D-150**  
Cushioned Stop  
15-8 to 15-9



**VE2/ES, VE2/MS**  
Fixed Stops  
15-10 to 15-11



**VE2/VA**  
Pop-Up Stops  
15-12 to 15-13

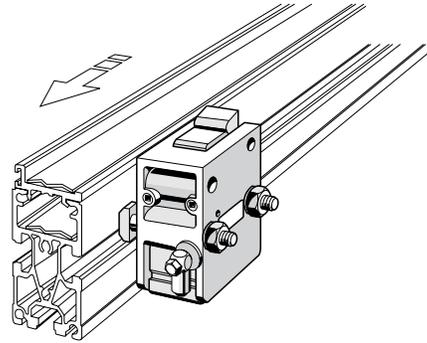


**VE2/WI**  
Accumulation Control Kits  
15-14

Stop Gates

# Standard Stop Gate

Model VE2, VE2/L, VE2/M



Stop gates halt and separate workpiece pallets on the conveyor. They are pneumatically powered and mount between conveyor sections. Standard stop gates use pneumatic power to lower the stop and a return spring to raise the stop back up.

All stop gates halt workpiece pallets on the leading or trailing edge and have a maximum queue loading capacity as shown below.

The **VE2/L** stopgate has the same performance characteristics as the VE2, but is designed for use in quiet(er) environments. The VE2/L emits less than 60dB of noise during opening and closing actuations.

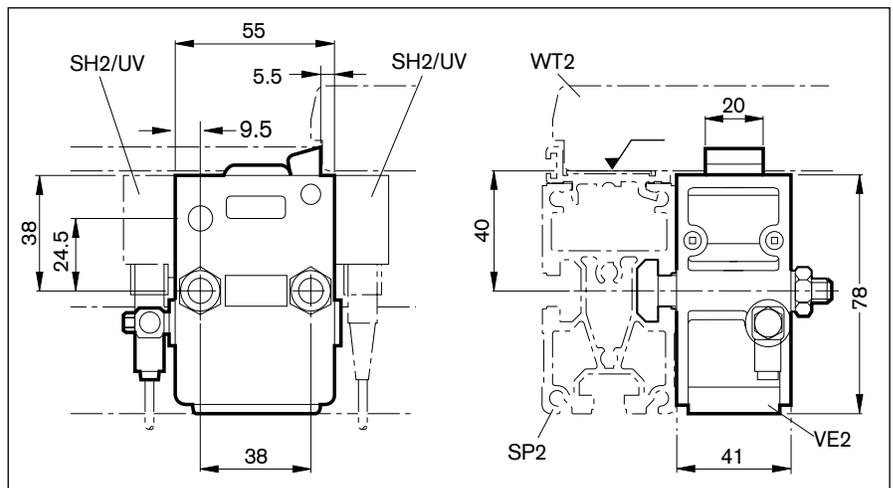
The **VE2/M** stopgate has the same performance characteristics as the VE2, but is resistant to water, mineral oil, grease, and detergents.

Mounting hardware and a pneumatic fitting is included in the delivery. Stop gates may also be dowel pinned to the conveyor using the 7.9 mm dowel hole.

## Ordering Information, VE2, VE2/L, VE2/M

Description	Part Number
VE2 Standard Stop Gate	0842 900 300
VE2/L Quiet Stop Gate	3842 530 630
VE2/M Chemical Resistant Stop Gate	3842 531 610

## Dimensional Information for VE2, VE2L, VE2/M



## Queue Load, VE2, VE2/L, VE2/M, VE2/D

Stop Gate Description	Nominal Line Speed (m/min)				
	6	9	12	15	18
VE2,VE2/L, VE2/M Queue Load (kg) ➡	200	140	100	70	50
VE2/D Queue Load (kg) ➡	200	140	100	70	50

# Double Acting Stop Gate

Model VE2/D

A double acting stop gate utilizes a pneumatic return. This provides a double acting pneumatic stop. The VE2/D is the same as model VE2 but incorporates a second air fitting in the bottom of the stop.

## Ordering Information, VE2/D

<b>Double Acting Stop</b>
<b>Part Number</b>
<b>8981 020 279</b>

Stop Gates

# Positioning Sensor Kit

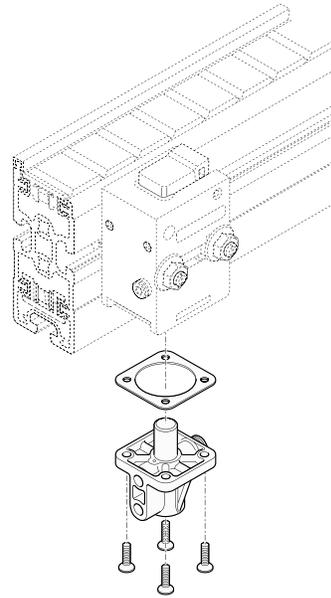
## Model VE2

The Positioning Sensor Kit mounts to the bottom of a VE2, VE2/L, VE2/M, or VE2/S stop gate and senses the upper and lower position of the pneumatic cylinder using two 8mm proximity switches.

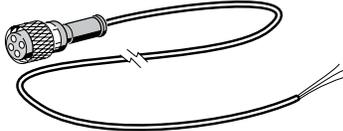
An additional feature of the Positioning Sensor Kit is the 4 mm push-lock air fitting which allows a stop gate to be converted into a double acting pneumatic stop. A double acting stopgate uses pneumatic power to both lower and raise the slide block.

**NOTE:** 8 mm quick disconnect proximity switches with a 4 mm sensing range and quick disconnect plugs must be ordered separately. (see chart: Ordering Information, VE2, Positioning Sensor Kit).

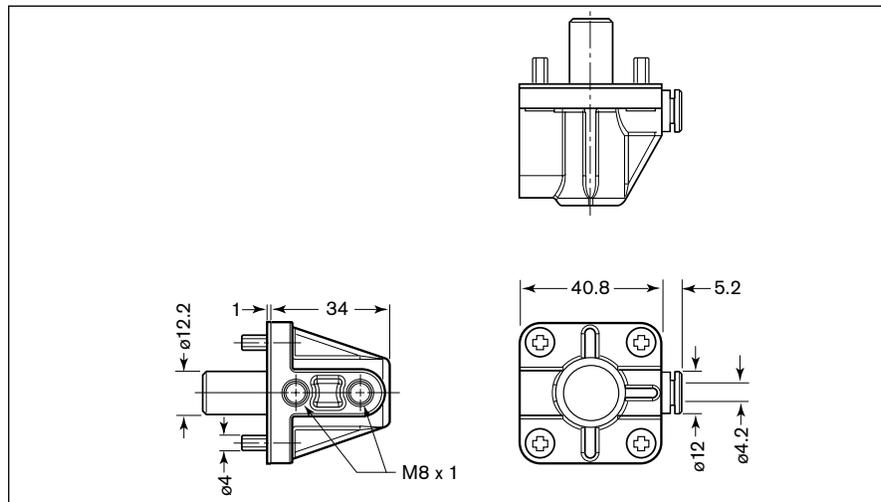
Mounting hardware is included in the scope of delivery.



### Ordering Information, VE2, Position Sensing Kit

Description	Part Number
Positioning Sensor Kit	<b>3842 528 817</b>
Quick Disconnect Proximity Switch  8mm, 10-30 VDC, normally open, PNP sourcing, 4mm sensing range (unshielded)	<b>R980 023 241</b>
Quick Disconnect Plug  Includes 5 m of 3-conductor cable	<b>R980 023 242</b>

### Dimensional Information for VE2, Position Sensing Kit



Stop Gates

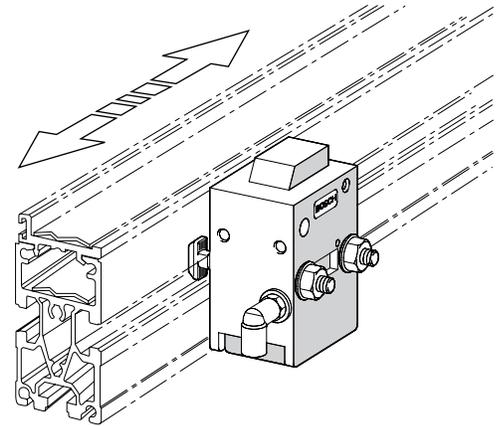
# Bi-Directional Stop Gates

Model VE2/S

Bi-directional stop gates are used on conveyor sections that are cycled in both forward and reverse. A typical example would be a cycle independent workstation or inspection spur using a BS2 transverse conveyor in which the pallet needs to be reversed back onto the main line.

The bi-directional stop will halt pallet travel in the forward direction but allows pallet pass through in reverse operation. The stop must be actuated down to allow pallet pass through in both forward and reverse operation. It can be mounted on the right or left inner side of a conveyor section and engages the leading or trailing edge of a workpiece pallet.

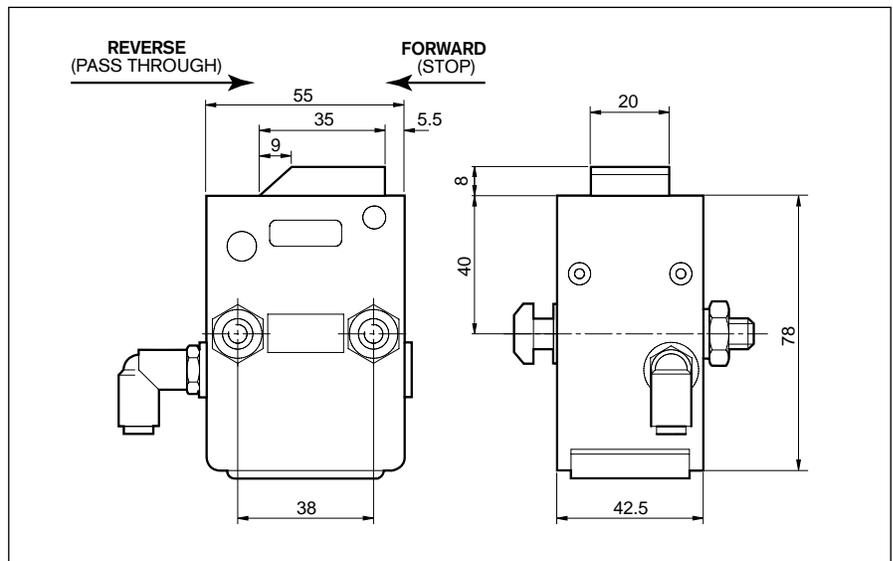
Bi-directional stop gates have mounting areas for proximity switches, which are used to monitor workpiece pallet position, either present or clear.



### Ordering Information Bi-Directional Stop, VE2/S

Description	Part Number
Bi-directional Stop Gate	3842 515 844

### Dimensional data, VE2/S



### Queue load, VE2/S

Stop Gate Description	Nominal Line Speed (m/min)				
	6	9	12	15	18
VE2/S Queue Load (kg) ➡	140	90	70	50	30

Stop Gates

# Heavy-Duty Stop Gate

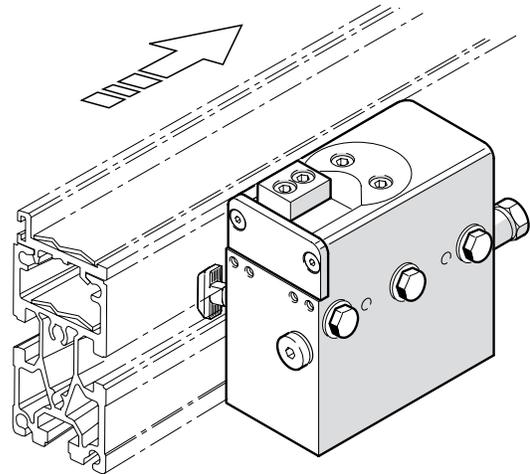
Model VE2/H

Heavy-duty stop gates are used to stop workpiece pallets carrying heavier payloads.

Heavy-duty stop gates halt workpiece pallets on the leading or trailing edge and have a maximum loading capacity as shown below.

Mounting hardware and pneumatic fitting is included in delivery.

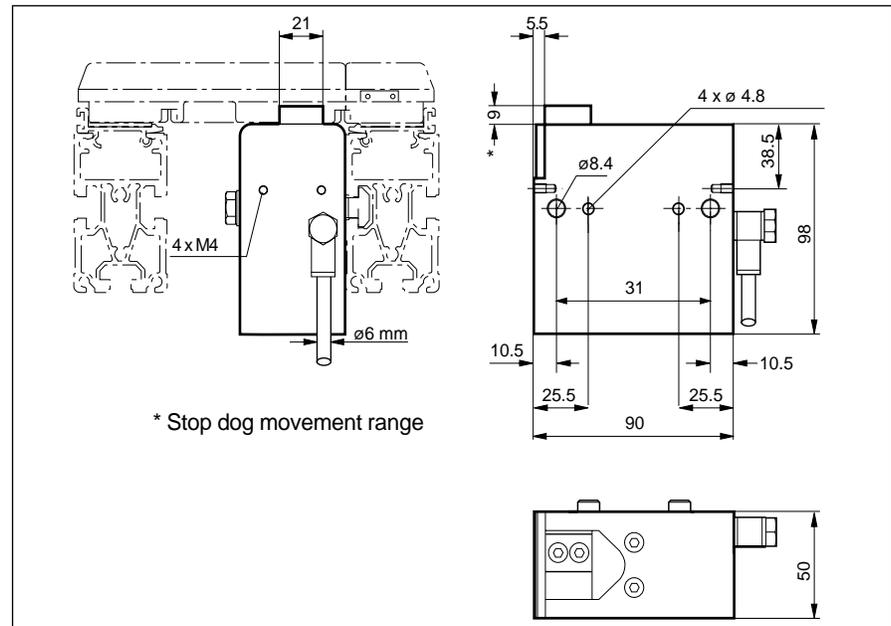
**NOTE:** The SH2/UV proximity switch holder on page 17-3 can be used in conjunction with the VE2/H stop.



### Ordering Information for Heavy-Duty Stop, VE2/H

Description	Part Number
Heavy Duty Stop Gate	3842 547 770

### Dimensional data, VE2/H



### Queue load, VE2/H

Stop Gate Description	Nominal Line Speed (m/min)				
	6	9	12	15	18
VE2/H Queue Load (kg) →	450	300	220	140	100

Stop Gates

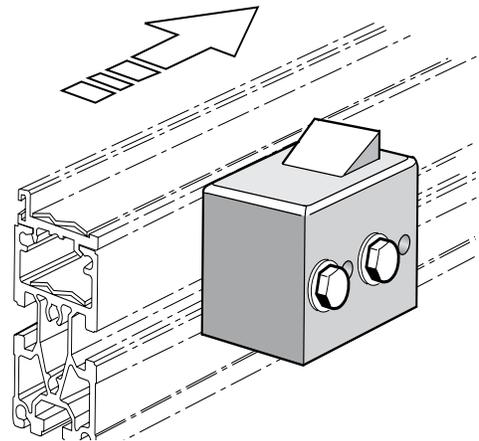
# Rebound Stop

Model VE2/RS



The VE2/RS rebound stop is used to prevent workpiece pallets from rebounding backwards after contacting a stop gate. The VE2/RS stop dog retracts when a pallet passes over it, then returns to its extended position, capturing the pallet between it and the stop gate. The VE2/RS is used primarily for roller chain applications.

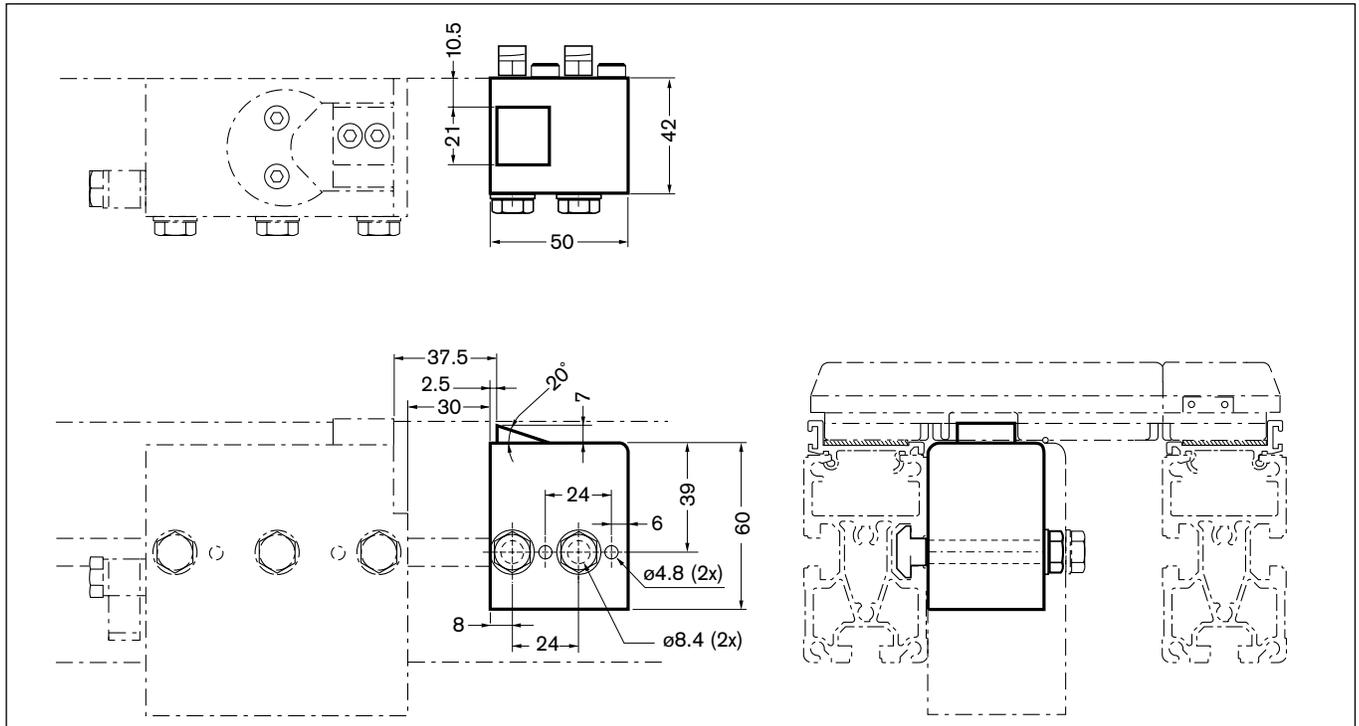
The rebound stop is mounted to the conveyor rail upstream of the stop gate. It can be used with any stop gate and includes mounting hardware.



## Ordering Information for Rebound Stop VE2/RS

Description	Part Number
Rebound Stop	3842 525 109

## Dimensional data, VE2/RS



Stop Gates

# Cushioned Stop Gates

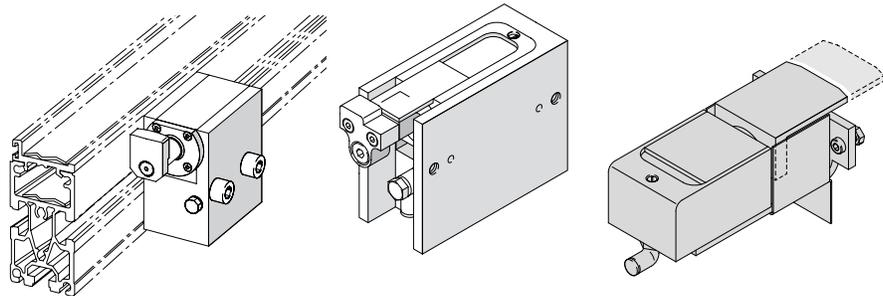
## Model VE2/...

Cushioned stop gates are used when handling fragile or shock-sensitive components. They reduce impact force by up to 80% over traditional stop gates.

Eight different cushioned stop gates are available for use with TSplus conveyors. The in-line and transverse models handle loads up to 100 kg. Both models catch the workpiece pallet on the leading or trailing edge. All are infinitely adjustable so you can tailor cushioned stop resistance to the weight of your product.

All models work at line speeds up to 18 m/min and include all required mounting hardware. The VE2/DA10 and VE2/DA30 include a reversible mounting bracket with two stop dogs that allow transverse to main or main to transverse mounting as shown on page 15-7.

Cushioned stops are not effective in workpiece pallet accumulation conditions.



VE2/D60

VE2/D200

VE2/DA100

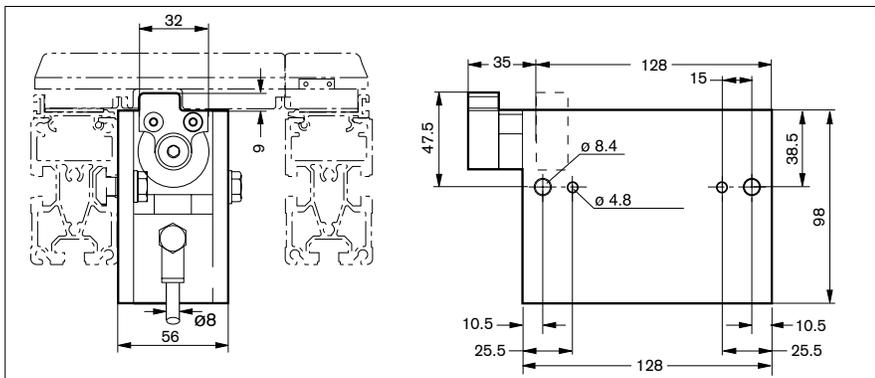
### Ordering Information for Cushioned Stops

Model	Description	Part Number	Mounting
VE2/D60	In-Line, 1-60 Kg	<b>3842 547 785</b>	Along Conveyor Rail
VE2/D200	In-Line, 50-200 Kg	<b>R980 024 832</b>	Along Conveyor Rail
VE2/SS4	Short Stroke, 4 Kg	<b>8981 022 965</b>	Along Conveyor Rail
VE2/SS6	Short Stroke, 6 Kg	<b>8981 022 966</b>	Along Conveyor Rail
VE2/DA10	Junction, 1-10 Kg	<b>3842 515 349</b>	LTU - B <sub>L</sub> ≤ 480 or Rail
VE2/DA30	Junction, 3-35 Kg	<b>3842 515 351</b>	LTU - B <sub>L</sub> ≤ 480 or Rail
VE2/DA100	Junction, 5-100 Kg	<b>3842 525 733</b>	LTU - B <sub>L</sub> = 400 to 1040

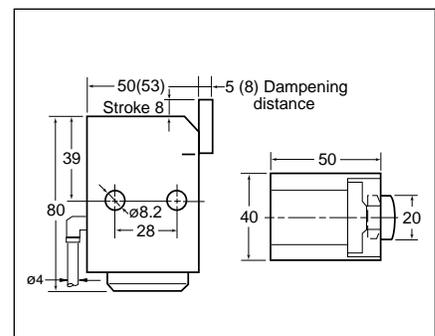
### Queue Load, VE2/D...

Stop Gate Description	Nominal Line Speed (m/min)						
	6	9	12	15	18	24	30
VE2/D20 Queue Load (kg) →	20	15	10	10	10	N/A	N/A
VE2/D60 Queue Load (kg) →	60	50	30	30	30	N/A	N/A
VE2/D200 Queue Load (kg) →	200	140	100	70	50	N/A	N/A
VE2/DA10 Queue Load (kg) →	20	15	10	10	10	N/A	N/A
VE2/DA30 Queue Load (kg) →	60	50	30	30	30	24	N/A
VE2/DA100 Queue Load (kg) →	100	100	100	100	100	55	35

### Dimensional data, VE2/D200

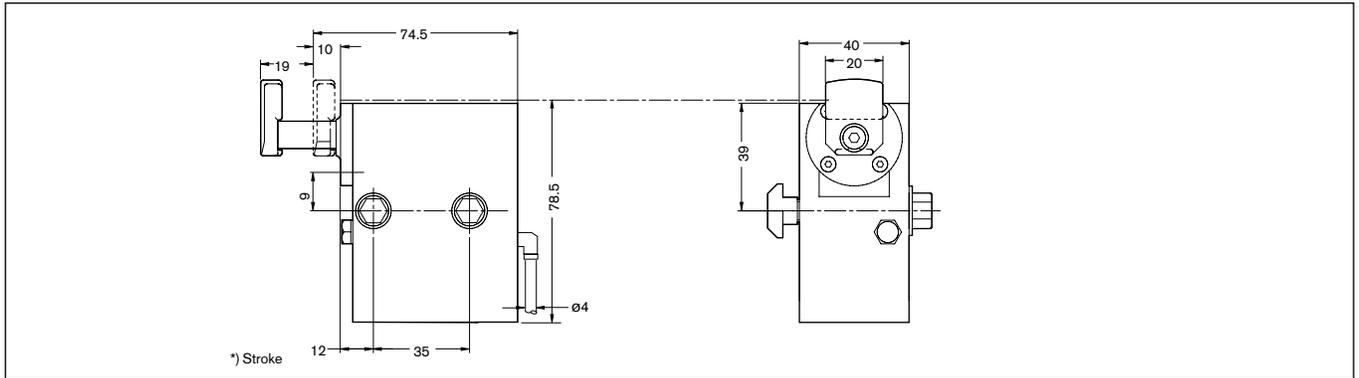


### Dimension data, VE2/SS4, VE2/SS6

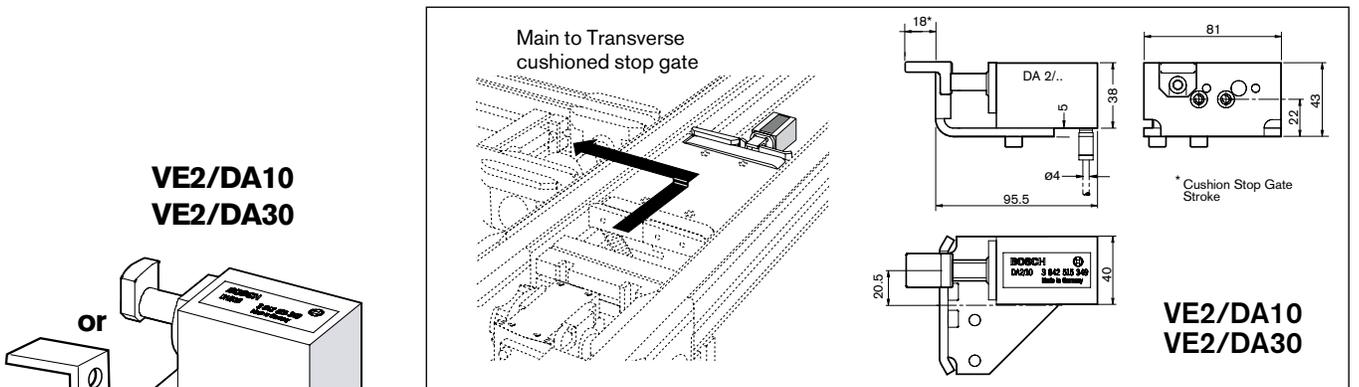


Stop Gates

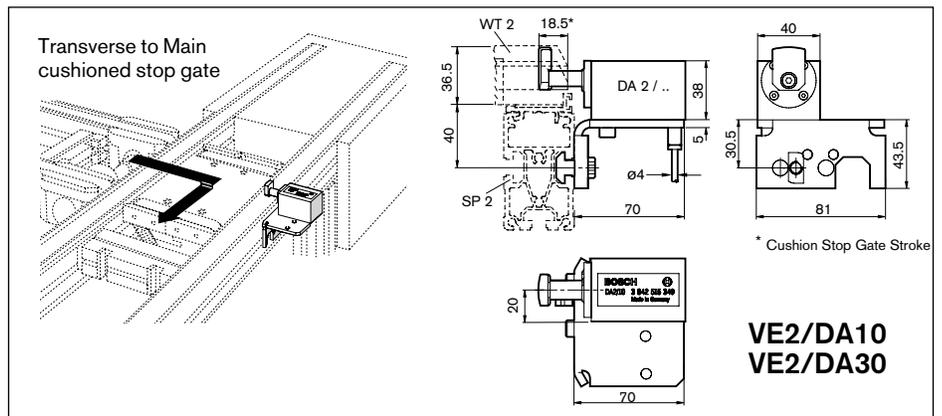
Dimensional data for VE2/D20, VE2/D60



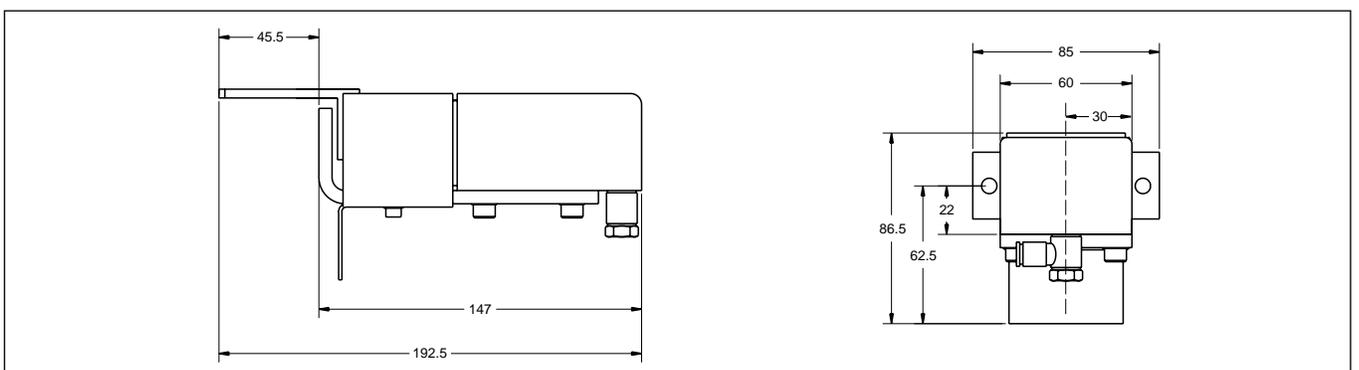
Dimensional data, VE2/DA10, VE2/DA30, Main to Transverse



Dimensional data, VE2/DA10, VE2/DA30, Transverse to Main



Dimensional data, VE2/DA100



Stop Gates

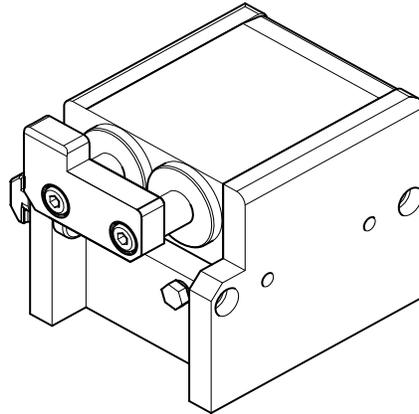
# VE2/D-150 Stop Gate

Model VE2/D-150

The VE2/D-150 stop gate provides pneumatic dampened stopping of one or more pallets at specific locations in the conveyor systems. The rugged all steel design has a double piston damper and compact footprint. Its attaches to the side T-slots in an ST2/... conveyor section or BS 2 belt section.

The pneumatic damping is infinitely adjustable and has a short cushioning path of 20 mm. It's designed to work with pallet payloads between 5 and 150kg.

The VE2/D-150 stop is fully assembled and includes all mounting hardware. It can also be used with the VE2/RS Rebound Stop if required to absorb rebound force.



### Ordering Information for VE 2/D-150 Stop Gate

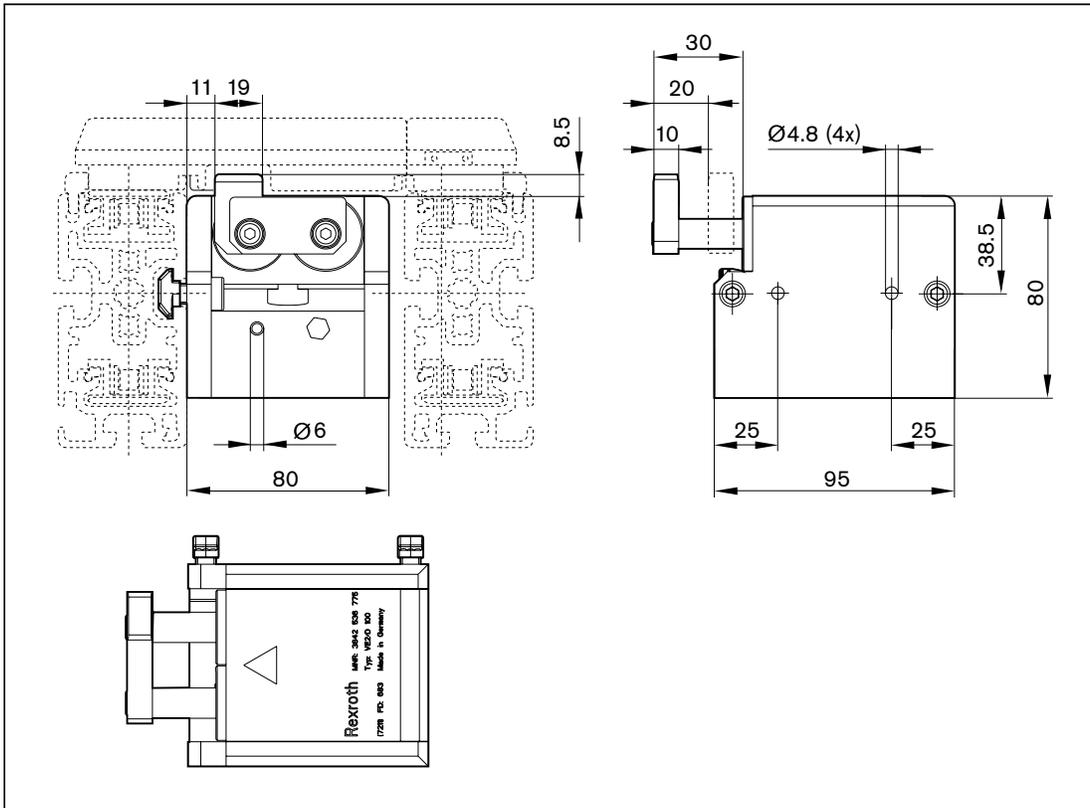
Description	Part Number
VE 2/D-150 Dampened Stop Gate	<b>3842 536 775</b>

### Queue Load for VE2/D-150

Pallet Payload (kg)	Transport Speed (m/min)
150	6
120	9
110	12
100	15
100	18
55	24
35	30

Stop Gates

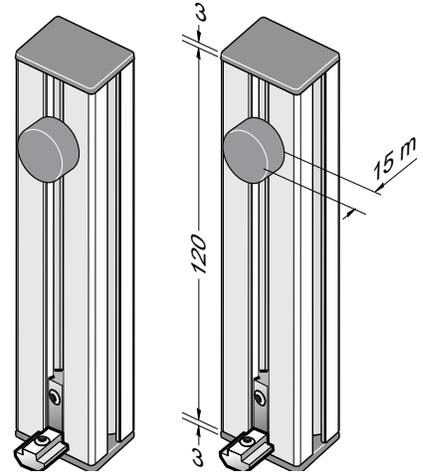
Dimensional data, VE2/D-150 Stop Gate



Stop Gates

# Fixed Stop, End Mount

Model VE2/ES



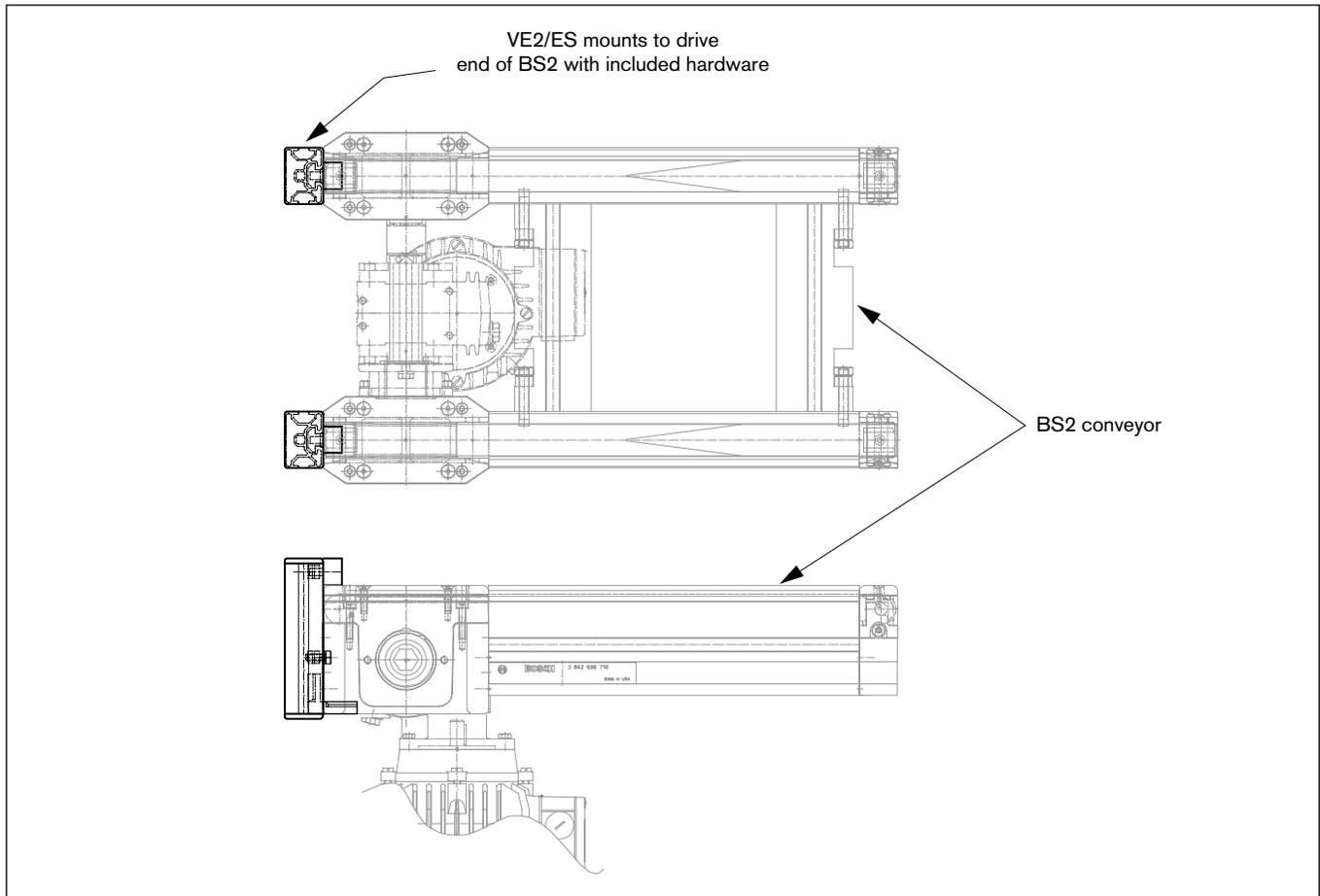
The VE2/ES End Stop Kit is used to provide a "hard" stop at the end of a BS2 conveyor. This is especially useful when the BS2 conveyor is used as a reversing lane (e.g. for rejects/repairs).

**The VE2/ES can only be mounted to the drive end of a BS2 transverse conveyor.** (See illustration below.) All mounting hardware is included.

### Ordering Information for Fixed Stop, End Mount VE2/ES

Description	Part Number
Fixed Stop, End Mount, Qty 2	8981 019 512

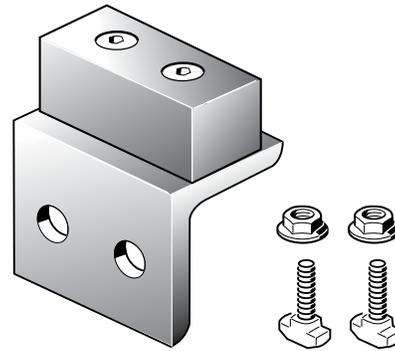
### Dimensional data, VE2/ES



Stop Gates

# Fixed Stop, Mid-Mount

Model VE2/MS



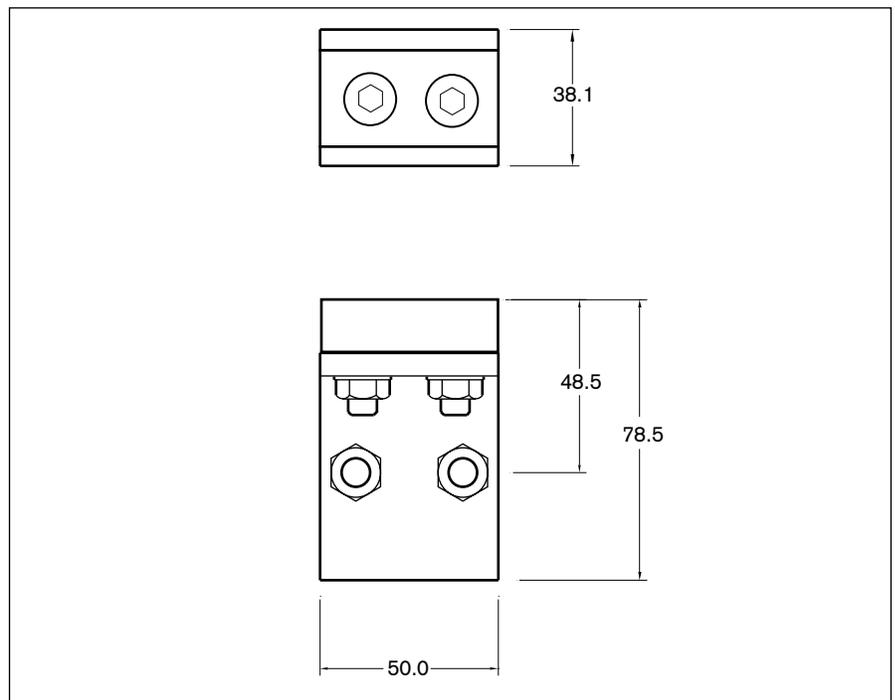
The Positive Stop Kit is used to provide a "hard" stop anywhere along a conveyor section. It provides an economical means of stopping pallet travel, such as at the end of a spur line or when a pallet enters a vertical pallet transfer unit.

The Positive Stop Kit includes all needed hardware to mount the unit on any conveyor section or transverse conveyor where a 10 mm T-slot is available. (See illustration below.)

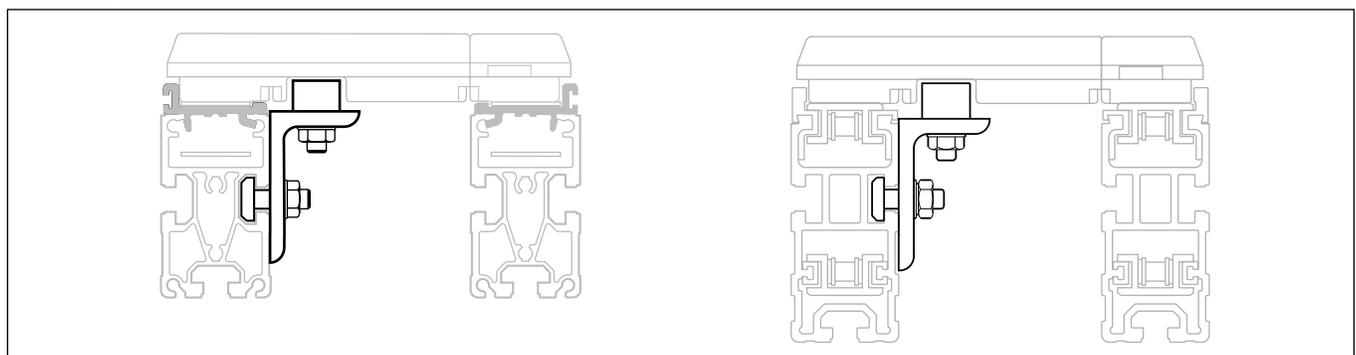
### Ordering Information for Fixed Stop, Mid-Mount VE2/MS

Description	Part Number
Fixed Stop, Mid-Mount	8981 019 434

### Dimensional data, VE2/MS



### Mounting data, VE2/MS



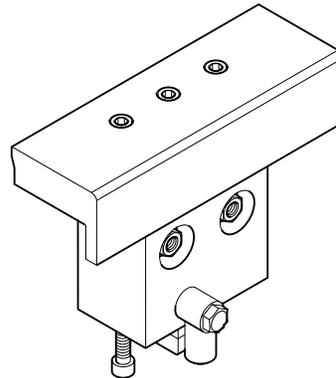
Stop Gates

# Pop-Up Stop Gates

## Model VE2/VA

The pop-up stop, is used to stop a work-piece pallet on a lift-transverse unit when the standard rocker cannot be used. Due to special considerations regarding pallet sensing, consult Bosch Rexroth for specific applications.

The pop-up stop is pneumatically operated. It is powered in the up direction and returns to the down position with an internal spring. A proximity switch senses the up position. There is no adjustment for the stroke length or the end positions. The stroke length is approximately 17 mm. The pop-up stop is shipped complete with an air fitting and mounting T-bolts. The proximity switch is not included.

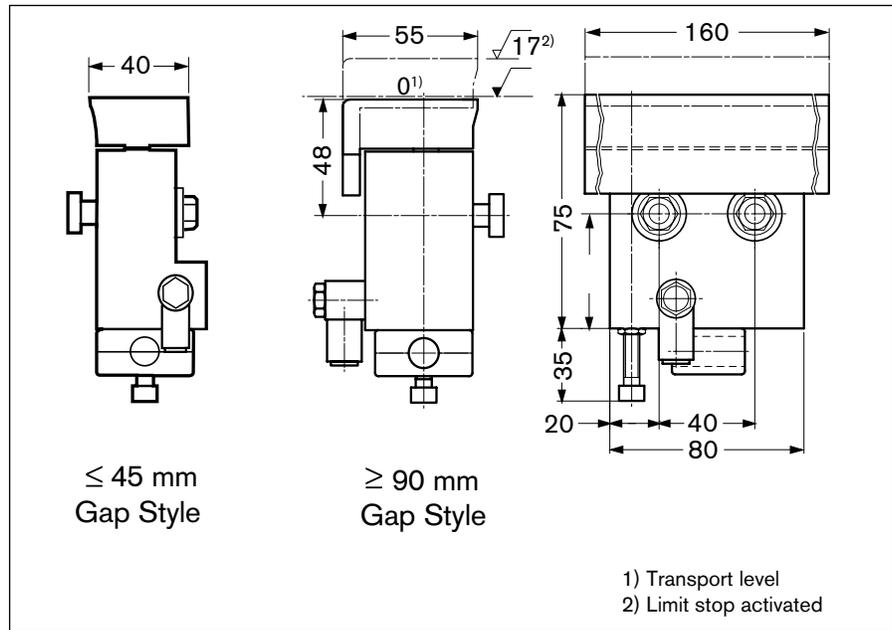


### Ordering Information for Pop-Up Stops VE2/VA

Stop Length	Conveyor Width	Fits Gap	Part Number
80	≥ 160	≤ 45 mm	<b>8981 526 028</b>
160	≥ 240	≥ 90 mm	<b>3842 191 721</b>

\* Cannot be used if a BS2 with large drive head is used

### Dimensional data, VE2/VA



### Queue load, VE2/VA

Stop Gate Description	Nominal Line Speed (m/min)				
	6	9	12	15	18
VE2/VA Queue Load (kg) →	50	50	35	25	20

## Stop Gates

**VE2/VA Application**

Figure 2 shows an intersection or node where the Pop-up stop is used. The pallet traffic flow can be:

- A. The pallet leaves a transverse conveyor and a decision is made whether to transfer the pallet to the main line or continue onto another transverse conveyor.
- B. Pallets enter the main line conveyor from either of two opposing transverse conveyors.

**NOTE:** There is currently no way to sense the pallet present on the lift-transverse unit if pallets can pass through the intersection of the main conveyor. The pallet present is sensed on the LTU by a proximity switch mounted to the main line belt section when the intersection is a T-line configuration.

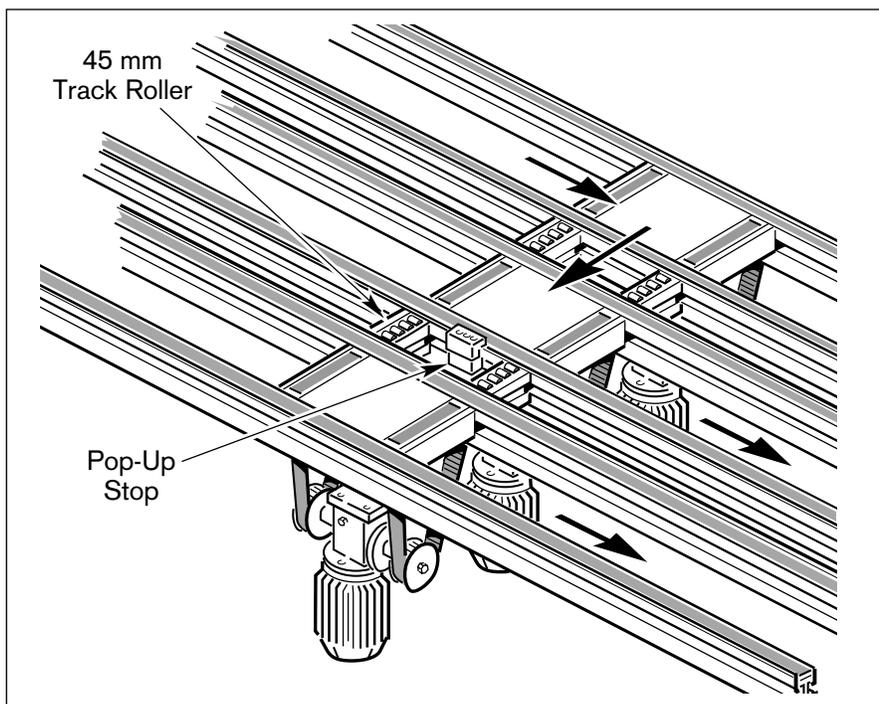


Figure 2: Application

Stop Gates

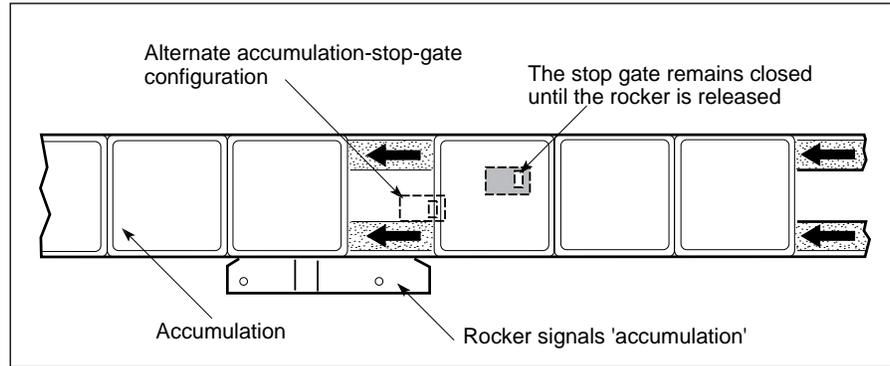
# Accumulation Control Kit

Model VE2 /WI

Accumulation control kits are used to control pallet flow without intervention of the control system. They are typically used in areas where large numbers of accumulated pallets would exceed the rating of a single stop gate. In this case, subsequent stop gates (ordered separately) are used with the accumulation control kit and provide a gap between the two accumulation zones.

The accumulation control kit consists of a rocker and a pneumatic valve. When the rocker is in the rest position, air is directed to a stop gate and pallets pass through freely. When the rocker is energized by a pallet, the air is disabled and the stop gate begins queuing pallets.

**NOTE:** The pneumatic valve included in this kit is 4 mm in diameter. Not all stop gates use 4 mm tubing. Please see the pneumatics summary on page 18-4 to verify your stop is compatible with this kit. (Stop gates that use 8 mm tubing will require a 4 mm to 8 mm adapter when being used with the VE2/WI.)



## Ordering Information for Accumulation Control Kit VE2/WI

Description	Part Number
Accumulation Control Kit	<b>R980 555 750</b>

## Queue Load Chart

Stop Gate Description	Nominal Line Speed (m/min)				
	6	9	12	15	18
VE2 Queue Load (kg) ➡	200	140	100	70	50
VE2/H Queue Load (kg) ➡	450	300	220	140	100

Rocker Stops

# Section 16 – Rocker Stops

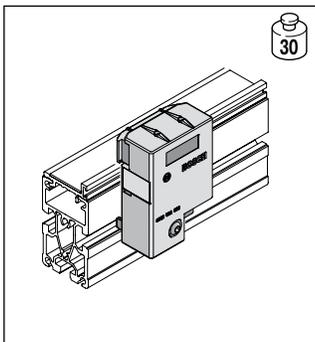
Rocker stops are used for area monitoring, workpiece pallet detection and as a stop when transporting a pallet transversely to an adjacent conveyor line.

When using a lift transfer unit a rocker also serves as a stop for the workpiece pallet and together with a proximity switch, signals the presence of the pallet.

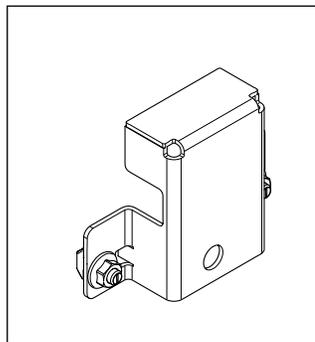
Area monitoring is accomplished with the rocker stop bar and a proximity switch. As long as the pallet is in contact with the rocker bar, the proximity switch detects the presence of the pallet. The area monitored will be the length of the rocker stop bar.

All rocker stops are shipped with the necessary mounting hardware and proximity switch mounting brackets. Proximity switches must be ordered separately on page 17-6.

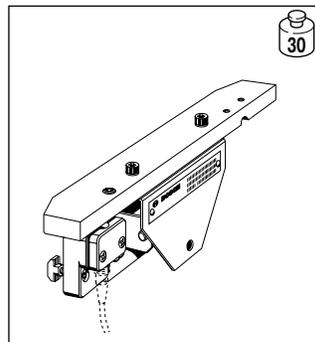
Fitting a rocker stop with a second proximity switch allows monitoring of the area and, the position of a workpiece pallet can be detected. As an example, this would be a requirement if using a rocker stop in conjunction with a reversible lift transfer unit.



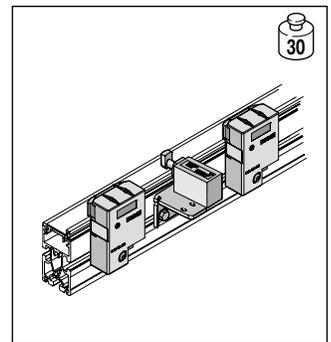
**WI/M**  
Rocker Stop  
16-2



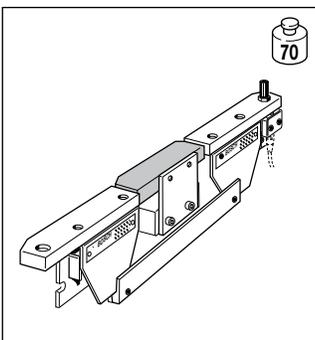
**WI/M**  
Protective Cover  
16-3



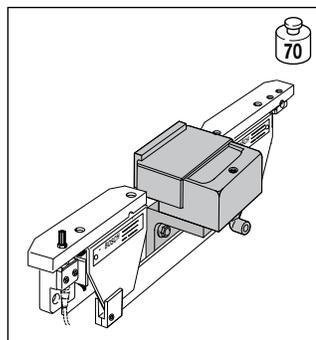
**WI2**  
Rocker Stop  
16-4 to 16-5



Cushioned Rocker Stop Kit  
16-6



**WI2/H**  
Heavy Duty Rocker Stop  
16-7



**WI2/D** Heavy Duty  
Cushioned Rocker Stop  
16-8

Rocker Stops

# Rocker Stop

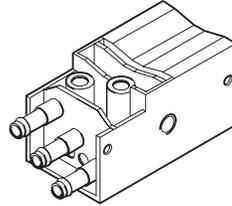
Model WI/M



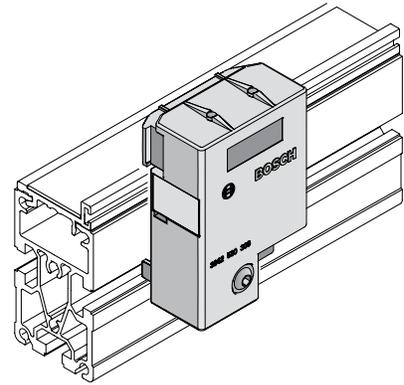
The WI/M mini rocker stop provides an economical method of workpiece pallet detection and can be used (in conjunction with other components) to create an accumulation control kit.

When used for pallet detection, a 12 mm body proximity switch is required (ordered separately on pg. 17-6). The switch is activated when a workpiece pallet passes in front of the rocker. In this configuration, the WI/M has a monitoring area of 44 mm.

The WI/M can also be combined with an optional Pneumatic Cylinder Switch. In this configuration, the actuation, which is caused by a pallet passing by a WI/M, is converted into a pneumatic signal. A pneumatic accumulation control kit is created by combining a WI/M with pneumatic cylinder switch and a VE2 stop gate.



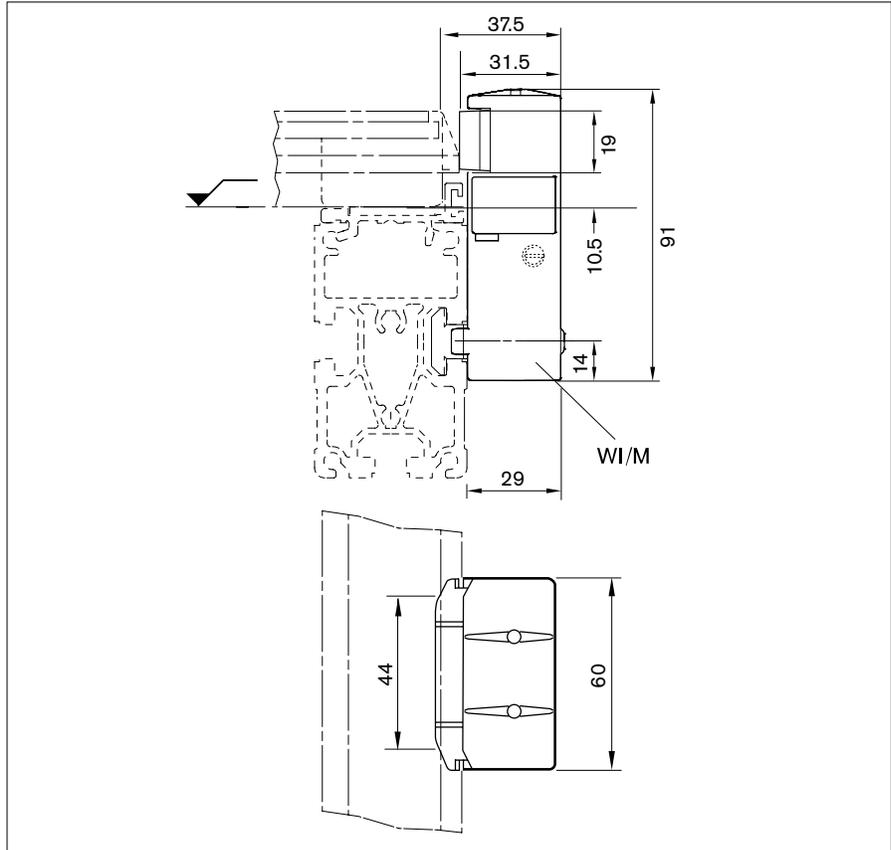
Pneumatic Cylinder Switch



### Ordering Information for Rocker Stop WI/M

Description	Part Number
WI/M Rocker Module (Fastening Hardware Included)	3842 530 797
Pneumatic Cylinder Switch	3842 532 151

### Dimensional data, WI/M



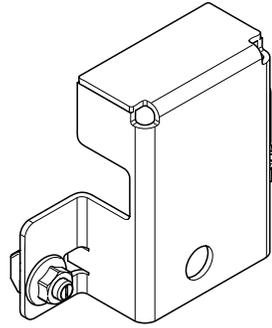
Rocker Stops

# WI/M Protective Cover

Model WI/M

WI/M protective covers are designed to be used with WI/M mini rocker stops. Made of corrosion-resistant sheet steel, they provide a protective enclosure to help prevent damage to the rocker stop in harsh industrial environments.

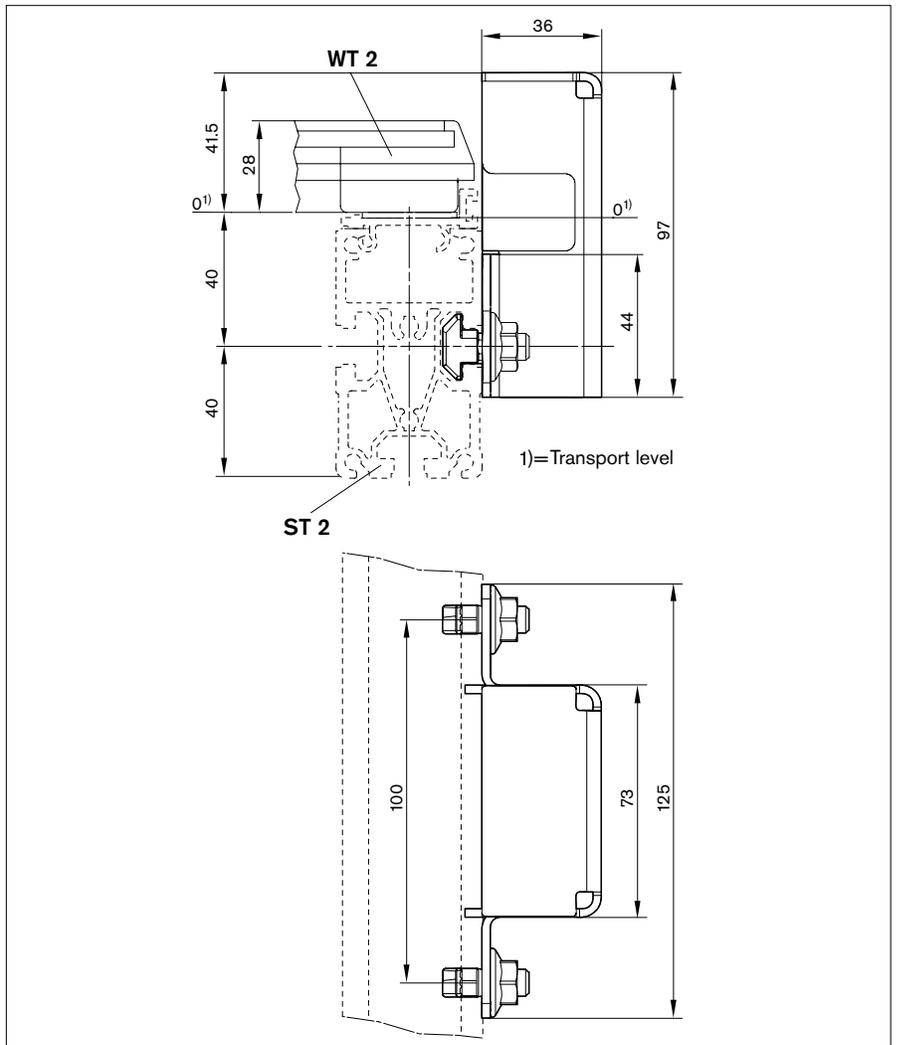
The protective cover attaches to the T-slot in the conveyor side rail and includes all required mounting hardware. Order rocker stops separately.



### Ordering Information for WI/M Protective Covers

Description	Part number
WI/M Protective Cover	<b>3842 537 855</b>

### Dimensional data, WI/M



Rocker Stops

# Rocker Stop

Model WI2 ( $B_Q \leq 480$  mm)

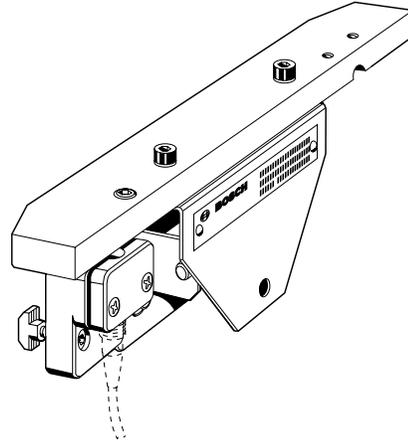


The WI2 rocker stop is used for area monitoring, workpiece pallet detection, and as a stop for transverse transfer of pallets. This model is used for pallet lengths of 480 mm and under. For total pallet and payload weights exceeding 30 kg, cushioned rockers WI2/D are recommended.

The stop rail protrudes slightly into the transport path, and when a workpiece pallet makes contact with the stop rail it pushes the rail outward, deactivating a proximity switch (not included, see pg. 17-6). The length of the area monitored depends on the length of the stop rail.

If the WI2 rocker stop is fitted with a second proximity switch, the position of the workpiece pallet can also be recognized. This is necessary if rockers are used together with reversible lift transverse units EQ2.

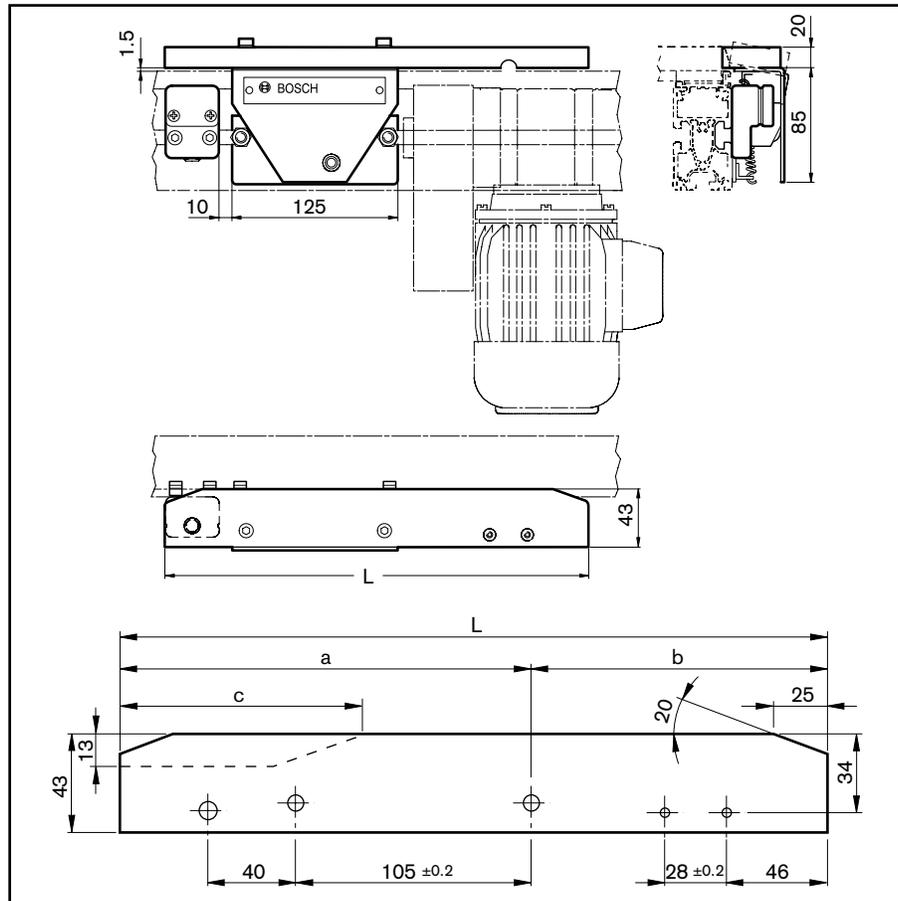
The WI2 rocker stop is only for use with total pallet & payload weights of 30 kg or less. The unit is shipped with an unmounted stop rail, necessary fastening hardware, switch brackets. Proximity switches must be ordered separately.



### Ordering Information for Rocker Stops WI2 ( $B_Q \leq 480$ mm)

$B_Q$	a (mm)	b (mm)	c (mm)	L(mm)	WI2 ( $B_Q \leq 480$ mm) Part Number
160	165	155	105	320	3 842 348 780
240	165	155	25	320	3 842 348 781
320	245	155	25	400	3 842 348 782
400	292	188	25	480	3 842 348 783
480	332	228	25	560	3 842 348 784

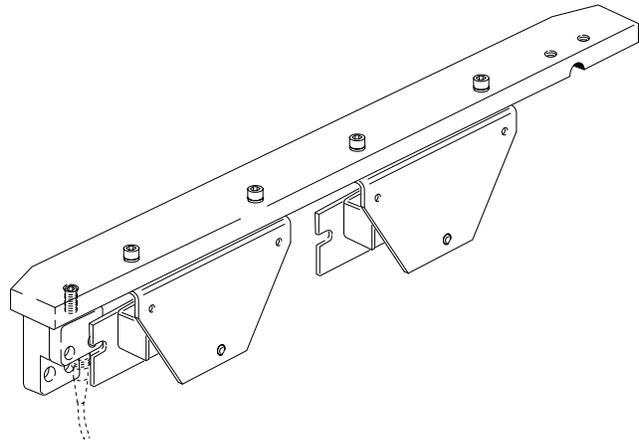
### Dimensional data, WI2 ( $B_Q \leq 480$ mm)



Rocker Stops

# Rocker Stop

Model WI2 ( $B_Q \geq 640$  mm)



The WI2 rocker stop is used for area monitoring, workpiece pallet detection, and as a stop for transverse transfer of pallets. This model is used for pallet lengths of 640 mm or greater. The WI2 rocker stop is only for use with total pallet & payload weights of 30 kg or less. For total pallet and payload weights exceeding 30 kg, cushioned rockers WI2/D are recommended.

The stop rail protrudes slightly into the transport path, and when a workpiece pallet makes contact with the stop rail it pushes the rail outward, Deactivating the a proximity switch (not included, see pg. 17-6). The length of the area monitored depends on the length of the stop rail.

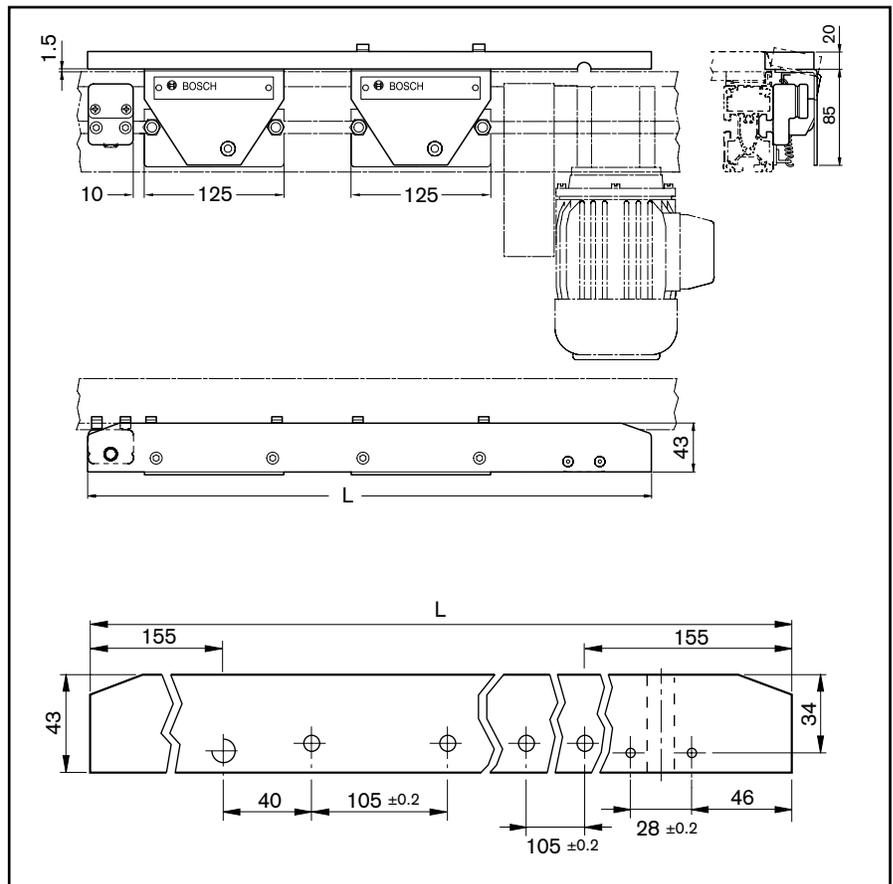
If the WI2 rocker stop is fitted with a second proximity switch, the position of the workpiece pallet can also be recognized. This is necessary if rockers are used together with reversible lift transverse units EQ2.

The unit is shipped with an unmounted stop rail, necessary fastening hardware, switch brackets. Proximity switches must be ordered separately.

### Ordering Information for Rocker Stops WI2 ( $B_Q \geq 640$ mm)

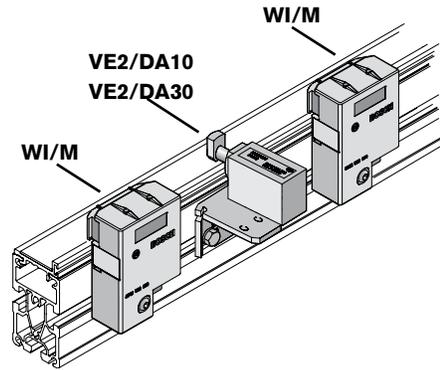
$B_Q$	L (mm)	WI2 ( $B_Q \leq 640$ mm) Part Number
640	720	3842 348 786
800	880	3842 348 788

### Dimensional data, WI2 ( $B_Q \geq 640$ mm)



Rocker Stops

# Cushioned Rocker Stop Kit



The cushioned rocker stop kit is used as an economical means of softly stopping pallets traveling along a transverse conveyor section.

The cushioned rocker stop kit combines two standard WI/M rockers (see page 16-2) with a VE2/DA10 (for pallet loads up to 10 kg) or a VE2/DA30 (for pallet loads from 10 - 30 kg). See page 15-6 for more information about VE2/DA10 and VE2/DA30 stop gates.

**NOTE:** All components must be ordered separately.

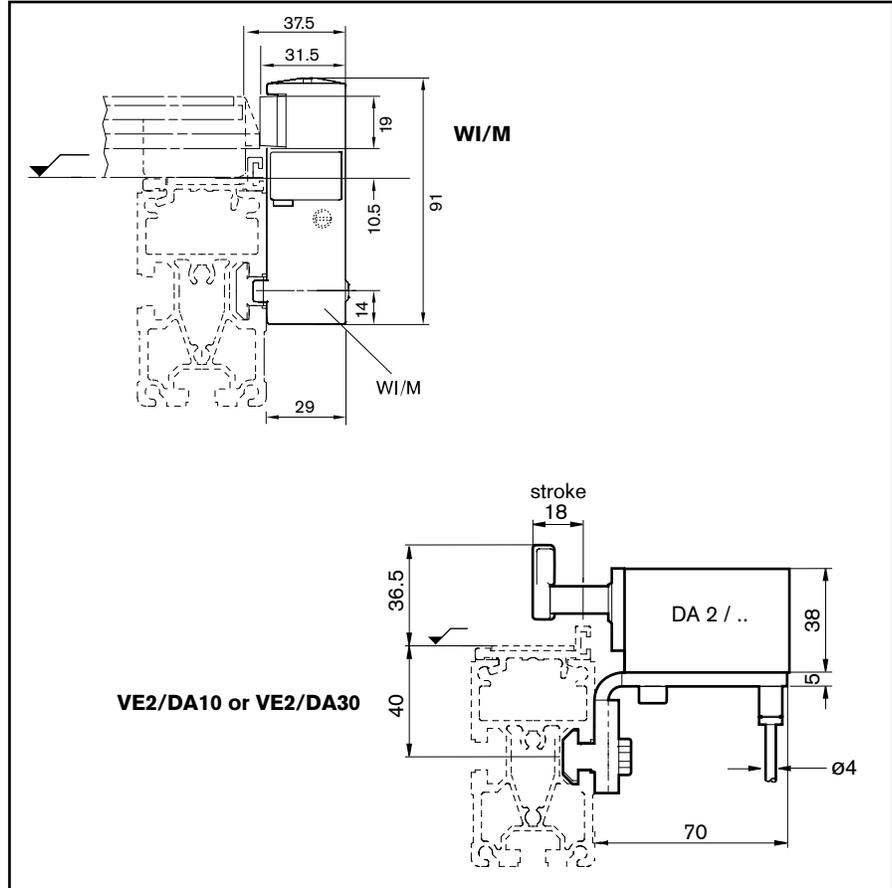
The VE2/DA10 or VE2/DA30 stops the pallet gradually, minimizing impact on the workpiece, before allowing it to contact the WI/M rocker. The damping effect is pneumatic, and the degree of damping is adjustable. Two WI/M modules must be used.

The WI/M cushioned rocker stop is only for use with total pallet & payload weights of 30 kg or less. The unit is shipped with necessary fastening hardware, and proximity switches must be ordered separately.

### Ordering Information for Rocker Stop WI/M

		Qty Req'd.	Part Number
WI/M		2	3842 530 797
VE2/DA10 	Choose one	1	3842 515 349
VE2/DA30 		1	3842 515 351

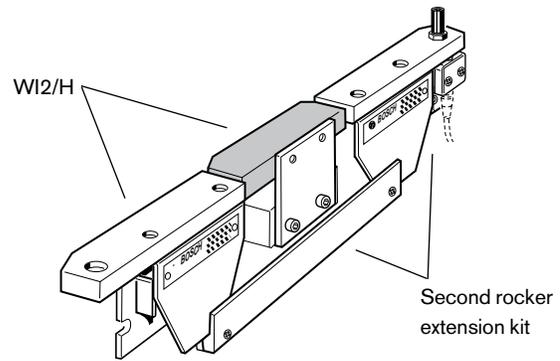
### Dimensional data, WI/M



Rocker Stops

# Heavy Duty Rocker Stop

Model WI2/H



The WI2/H rocker stop is used for area monitoring, workpiece pallet detection, and as a stop for transfer of pallets. This model is used for pallet payloads of 30 kg or greater. For a cushioned stop of this capacity, the WI2/D cushioned rocker stop can be used.

The stop rail protrudes slightly into the transport path, and when a workpiece pallet makes contact with the stop rail it pushes the rail outward, activating a proximity switch (not included, see pg. 17-6).

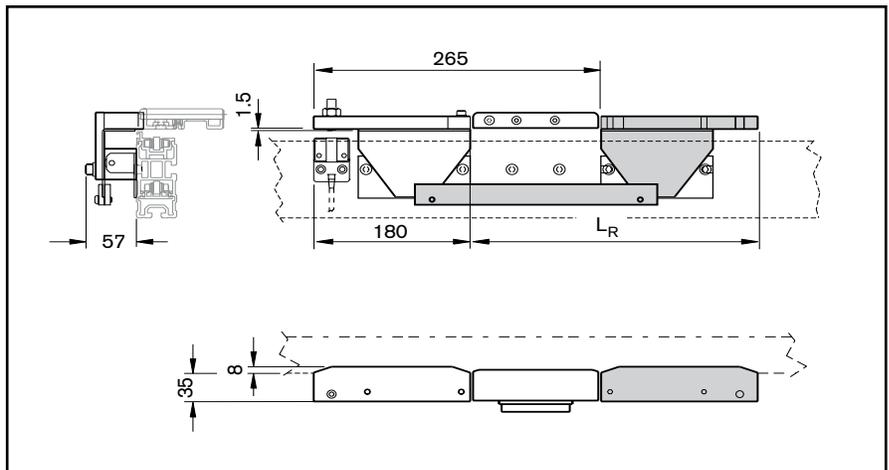
The WI2/H rocker stop can be fitted with a second rocker bar and proximity switch by using the second rocker extension kit. This kit consists of a second rocker and an extension bar (see illustration). This method allows the position of the workpiece pallet to be recognized along the entire length of the rocker.

The unit is shipped with necessary fastening hardware and switch brackets. Proximity switches must be ordered separately.

### Ordering Information for Rocker Stop WI2/H and second rocker extension kit

L <sub>WT</sub>		Part Number
All	WI2/H	 <b>3 842 524 447</b>
WI2/H second rocker extension kit		
L <sub>WT</sub>	L <sub>R</sub>	
400	265	<b>3 842 524 449</b>
480	345	<b>3 842 524 450</b>
640	505	<b>3 842 524 451</b>
800	665	<b>3 842 524 452</b>
1040	905	<b>3 842 524 453</b>

### Dimensional data, WI2/H



Rocker Stops

# Heavy Duty Cushioned Rocker Stop

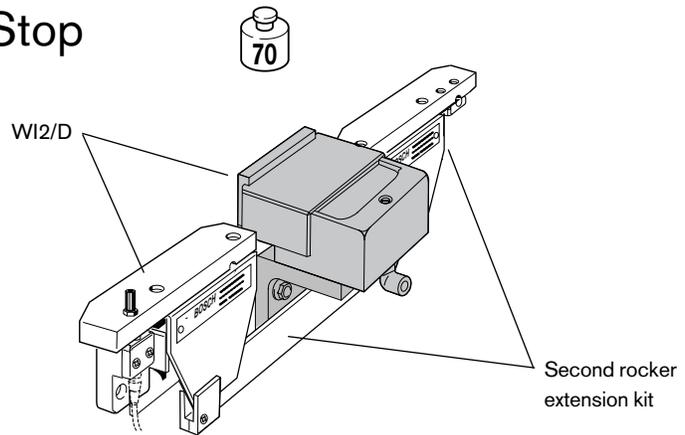
## Model WI2/D

The WI2/D cushioned rocker stop is used for area monitoring, workpiece pallet detection, and as a cushioned stop for transfer of pallets. This model is used for pallet payloads of 30 kg or greater.

The stop rail protrudes slightly into the transport path, and when a workpiece pallet makes contact with the stop rail it pushes the rail outward, activating a proximity switch (not included, see pg. 17-6).

The WI2/D cushioned rocker stop can be fitted with a second rocker bar and proximity switch by using the second rocker extension kit. This kit consists of a second rocker and an extension bar (see illustration). This method allows the position of the workpiece pallet to be recognized along the entire length of the rocker.

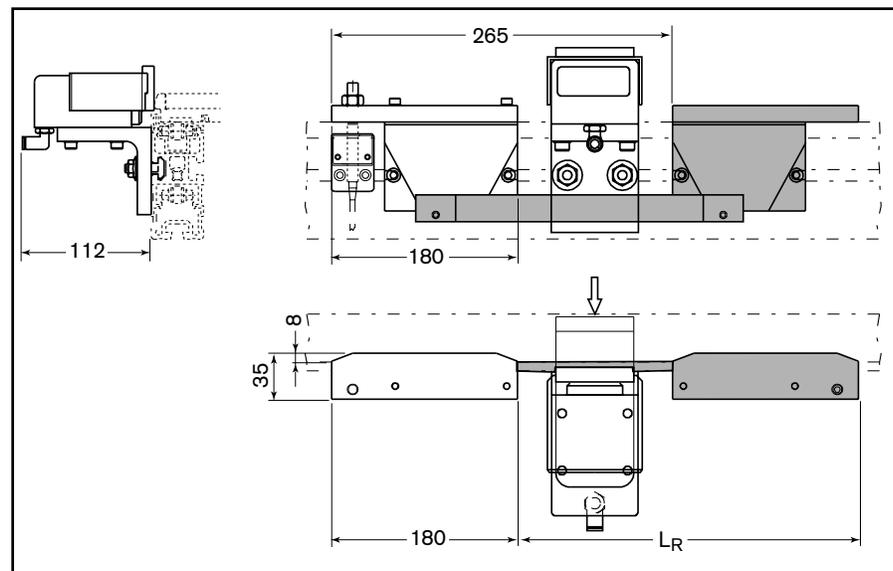
The unit is shipped with necessary fastening hardware and switch brackets. Proximity switches must be ordered separately.



### Ordering Information for Rocker Stop WI2/D and Second Rocker Extension Kit

$L_{WT}$		Part Number
All	WI2/D	<b>3 842 524 448</b>
WI2/D second rocker extension kit		
$L_{WT}$	$L_R$	
400	265	<b>3 842 524 449</b>
480	345	<b>3 842 524 450</b>
640	505	<b>3 842 524 451</b>
800	665	<b>3 842 524 452</b>
1040	905	<b>3 842 524 453</b>

### Dimensional data, WI2/D

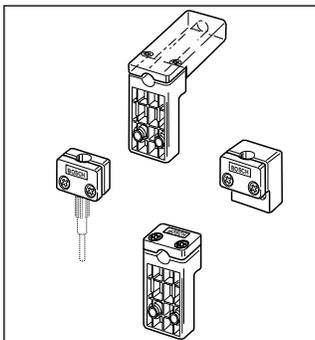


Proximity Switches, Brackets, and Coding Systems

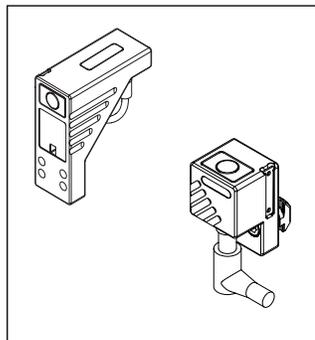
## Section 17 – Proximity Switches, Brackets, and Coding Systems

Eight types of proximity switch mounting brackets are available. They all use proximity switches with a diameter of 12 mm. Proximity switches must have an 8 mm sensing range to ensure proper operation.

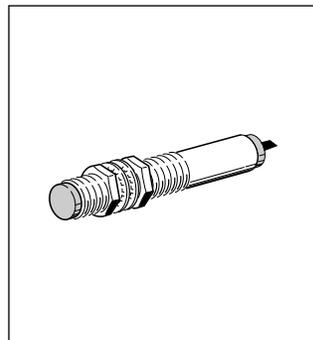
The ID10 Coding system is a mechanical set, electrical read information transfer system. The system consists of work-piece pallet mounted code memory blocks and conveyor mounted code setters and readers.



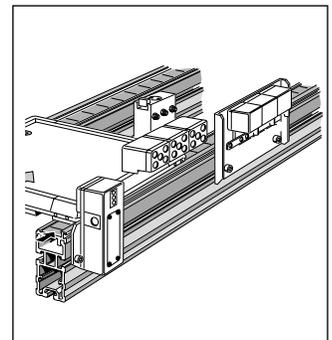
Proximity Switch Brackets  
17-2 to 17-4



Heavy Duty Proximity Switch  
Brackets  
17-5



Proximity Switches  
17-6



ID10 Coding Systems  
17-7 to 17-13

Proximity Switches, Brackets, and Coding Systems

# Proximity Switch Brackets

Models SH2/U, SH2/UV, SH2/S, SH2/ST, SH2/SF, SH2/EP

Stop gate proximity mounting kits are used to position proximity switches at a stop gate. Usually the switch provides a *pallet present at stop signal* and optionally may provide a *pallet exit* signal.

Six basic proximity switch brackets are available for use with TSplus conveyors. They include:

Model SH2/U - For sensing pallet position from below.

Model SH2/UV - For sensing pallet position from below when attached to a stop gate.

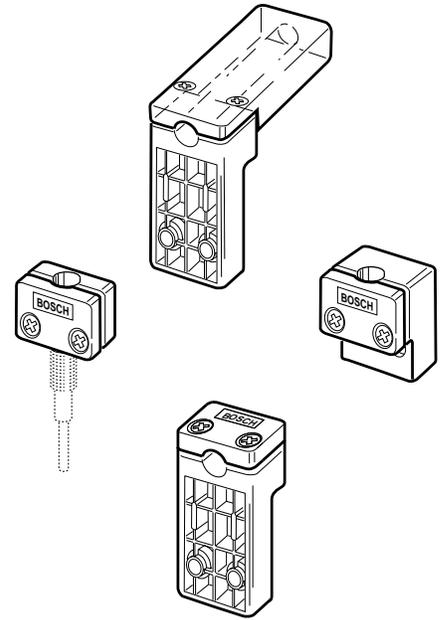
Model SH2/S - For sensing pallet position from the side.

Model SH2/ST - For sensing pallet position from the side, with a protective transparent switch cover.

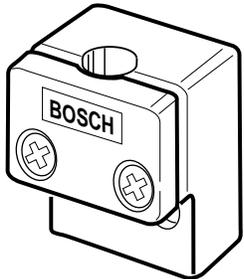
Model SH2/SF - For sensing the pallet position from the side, using a low profile flat proximity switch.

Model SH2/EP - For sensing pallet position parallel to line flow. This bracket can be mounted either on the inside or outside of the belt section, and will not allow pallets to pass through.

All switch brackets are constructed of polyamide and include connection hardware.



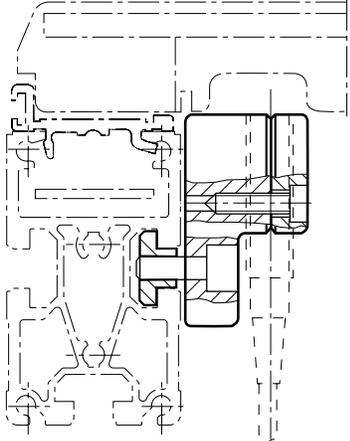
## Ordering Information for Proximity Switch Bracket SH2/U

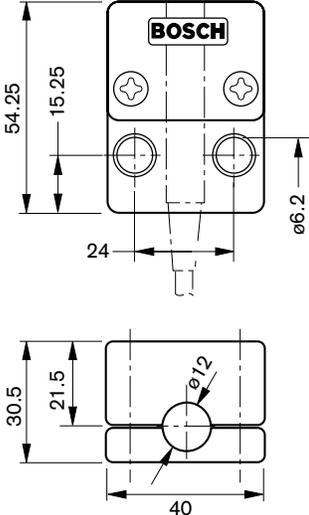


**Part Number SH2/U**

---

**3842 168 820**





Proximity Switches, Brackets, and Coding Systems

Ordering Information for Proximity Switch Bracket SH2/UV

Part Number SH2/UV  
3842 168 600

Technical drawing showing a perspective view of the Bosch SH2/UV bracket, a cross-section view, and two orthographic views with dimensions: 40, 28, 30, 22, 18, 9, and  $\phi 12$ .

Ordering Information for Proximity Switch Bracket SH2/S

Part Number SH2/S  
3842 168 830

Technical drawing showing a perspective view of the Bosch SH2/S bracket, a cross-section view, and two orthographic views with dimensions: 40,  $\phi 12$ , 55.3, 65.3, 79.9, 24, 30, and BOSCH.

Ordering Information for Proximity Switch Bracket SH2/ST

Part Number SH2/ST  
3842 168 850

Technical drawing showing a perspective view of the Bosch SH2/ST bracket, a cross-section view, and two orthographic views with dimensions: 90, 30, 18, 40, 55, 79, 15, 24, and  $\phi 6.6$ .

Proximity Switches, Brackets, and Coding Systems

Ordering Information for Proximity Switch Bracket SH2/SF

Part Number SH2/SF  
3842 168 840

Uses proximity switch 3842 168 698

Dimensions: 53, 14, 2, 40, 25, 50, 82, 14, 24, 10, 15,  $\phi 6.6$

Ordering Information for Proximity Switch Bracket SH2/EP

Part Number SH2/EP  
8981 022 903

Dimensions:  $\phi 12$ , 19.05, 12.4, 24, 40.4, 52, 60, 4x M5 thru, 80, 15, 9.8, 28.3, 38.1, 9.5 x 15.5 slot, 45, 25, 5, 4.83

Proximity Switches, Brackets, and Coding Systems

# Heavy Duty Switch Brackets

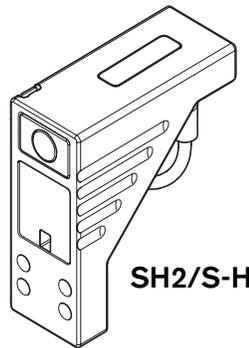
Model SH2/S-H  
SH2/U-H

Heavy duty proximity switch brackets are available in two styles. The SH2/S-H is used to detect workpiece pallet presence from the side, while the SH2/U-H bracket is used to detect workpiece pallet presence from below the pallet.

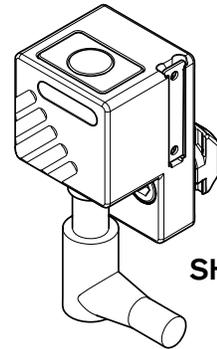
The die-cast aluminum brackets are especially sturdy and shock-proof up to 100 kg. Integrated centering lugs make it easy to position and install the bracket in the T-slots on the conveyor side rail. The brackets also feature an integrated stop for 12 mm proximity switches and integrated cable duct.

**NOTE:** both heavy duty proximity switch brackets can only be used with proximity sensors that have a 7 to 8 mm sensing range. Reference Quick Disconnect Prox. R980 024 978 on pg. 17-6.

All required Mounting hardware is included with the switch bracket. Order 12 mm proximity switches separately.



SH2/S-H

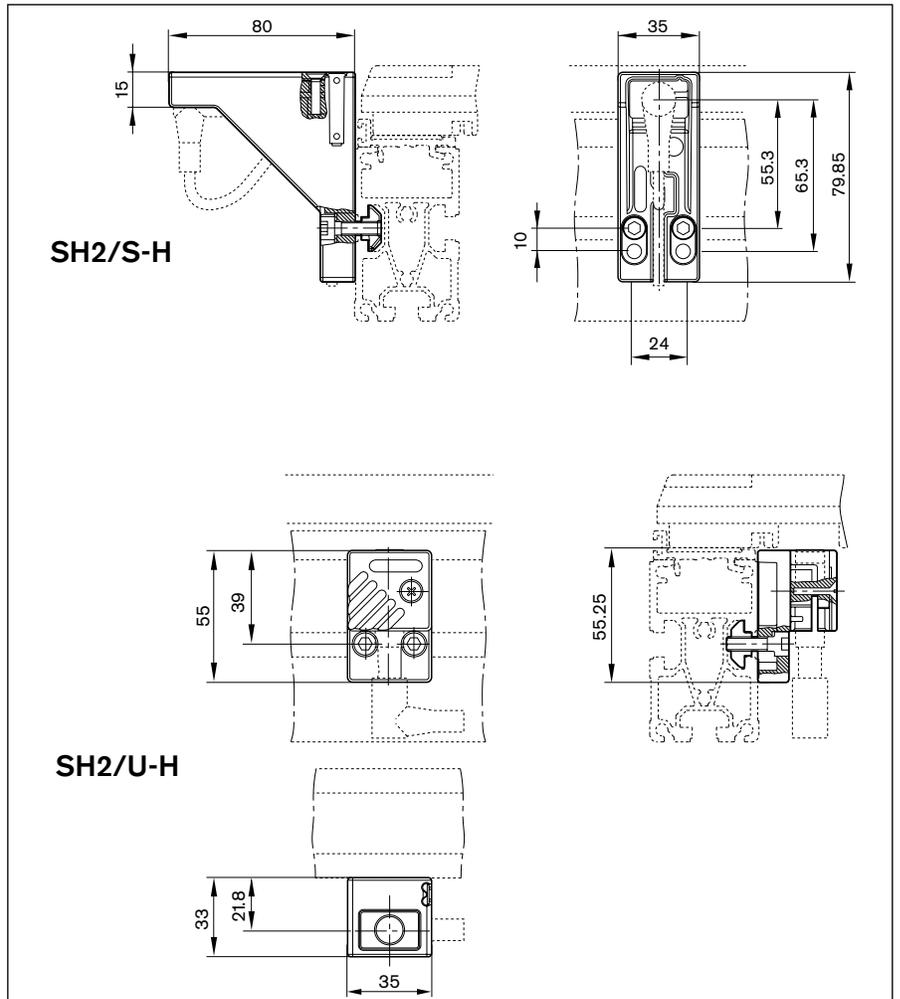


SH2/U-H

## Ordering Information for SH2/S-H, SH2/U-H Switch Bracket

Description	Part number
SH 2/S-H Switch Bracket	3842 537 280
SH 2/U-H Switch Bracket	3842 537 289

## Dimensional data for SH2/S-H, SH2/U-H



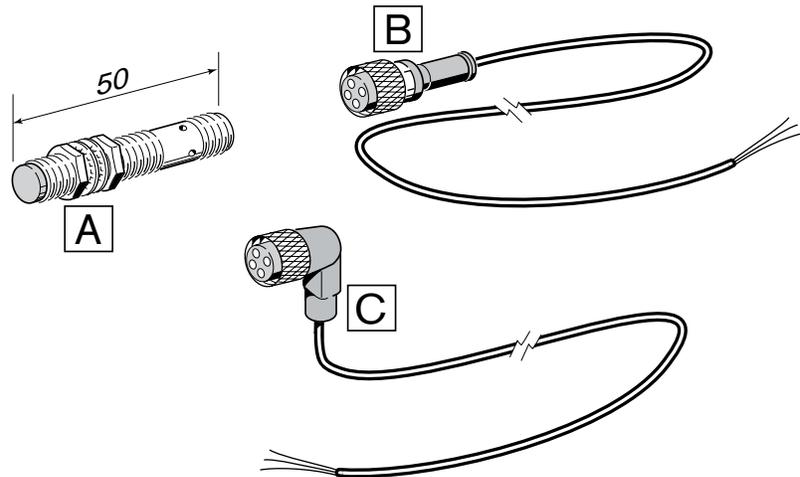
Proximity Switches, Brackets, and Coding Systems

## Proximity Switches

A proximity switch indicates workpiece pallet presence by detecting the exciter plates on the sides and bottom of workpiece pallets. This normally open, 24 VDC, short circuit protected switch is PNP (sourcing) and has a 12 mm threaded body. This proximity switch operates at an 8mm sensing range (unshielded) and has an LED indicator.

This proximity switch is compatible with all TSplus proximity switch holders (plastic body and die-cast aluminum body).

**NOTE:** The HP2/K Lift-Position Unit requires a shielded proximity switch. Please refer to page 13-10 when ordering proximity switches for this module.



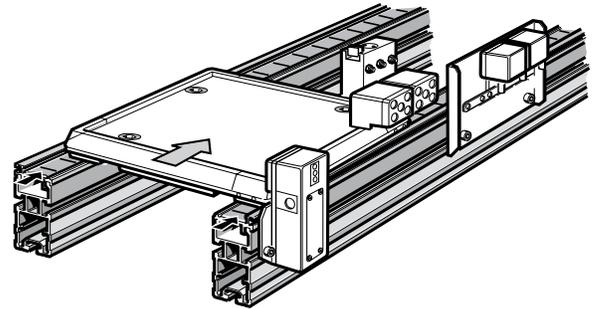
### Ordering Information for Proximity Switches

	Description	Part Number
A	Quick disconnect proximity switch, 12mm 24VDC PNP 8mm	R980 024 978
B	Quick disconnect plug with 5 m of 3-conductor cable	8981 008 498
C	90 degree quick disconnect plug with 5 m of 3-conductor cable	8981 013 317

Proximity Switches, Brackets, and Coding Systems

# ID10 Coding System

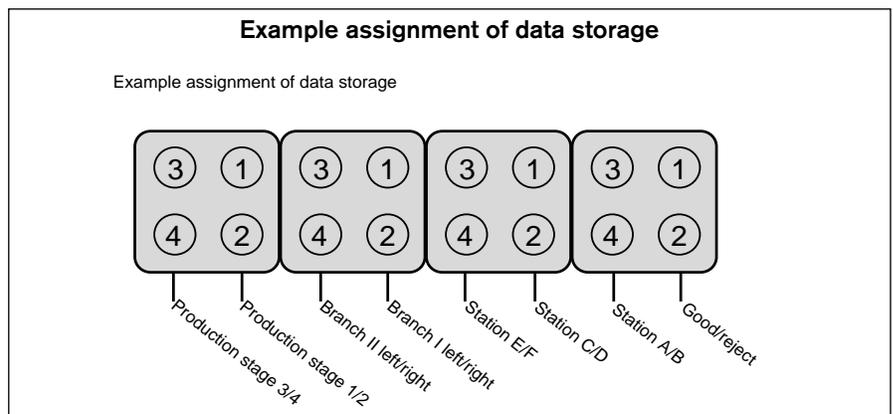
The ID10 coding system is a mechanical set, electrical read information transfer system. The system consists of code memory blocks mounted on the work-piece pallets, pneumatic code setters and electric readers—all of which can be ordered on the following pages. Pins in the code memory block are programmed so that each of the two vertically coupled pairs is set to hold one bit of data.



Data accumulated and read typically includes:

- Accept or Reject
- Model A or Model B
- Operation Performed or Not Performed
- Straight Ahead or Cross Transfer
- Discrete Pallet numbering

The ID10 coding system has a maximum capacity of 4 bits. Alternatively each pin may be combined to represent a binary coded decimal.



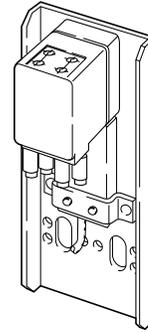
### Storage capacity and space required on the workpiece pallet by the ID10 coding system

Number of code memory blocks	Storage capacity (bits)	Number of possible codings	Space required on pallet in mm (l x w)
1	2	$2^2 = 4$	32 x 27
2	4	$2^4 = 16$	64 x 27

Proximity Switches, Brackets, and Coding Systems

# Code Setter

## Model ID10/S



The code setter “writes” information to the code memory block. The pins in the code memory block are set by write pistons which are actuated by single-acting pneumatic cylinders with spring returns.

If multiple code blocks are to be set within the same station, the same number of code setters and code memory blocks must be used on each pallet.

To “write” information into the code memory block, the workpiece pallet must be stopped directly in front of the code setter. Code setters are available with or without a proximity switch to sense pallet presence.

The code setter is automatically aligned when mounted to the conveyor section. A pallet guide (page 13-3) should be used in conjunction with the code setter to properly position the workpiece pallet.

The code setter includes a mounting plate and hardware. Pneumatic connections are made via included push-lock fittings that accept 4 mm OD plastic tubing.

**NOTE:** If two non-adjacent code memories are to be “set”, an ID10/S code setter must be ordered individually together with mounting hardware and a low-profile proximity switch. Rexroth part number for the appropriate low-profile proximity switch is: 3842 168 698.

### Ordering Information for Individual Code Setters, ID10/S

Description	Part Number
Code Setter, module only	3842 168 610

### Ordering Information for Code Setter Mounting Kits

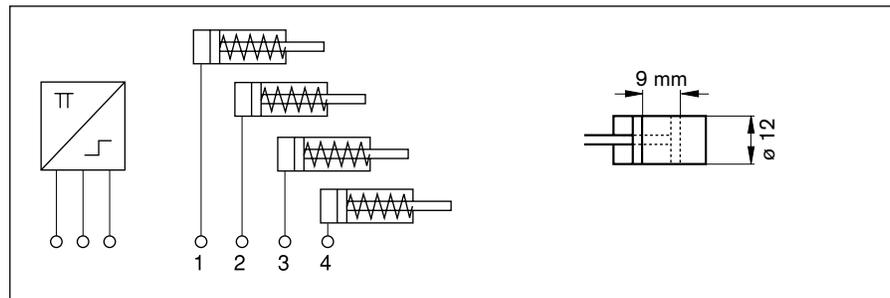
Description	Part Number
Mounting Kit * for use with 1 Code Setter	3842 525 241
Mounting Kit * for use with 2 Code Setters	3842 525 242

\* Mounting kit includes mounting plate and hardware.

### Ordering Information for Code Setters with Mounting Plates

Number of Code Setters	Part Number	
	ID10/SA, with proximity switch	ID10/SB, without proximity switch
1	3842 525 245	3842 525 249
2	3842 525 246	3842 525 250

### Pneumatic diagram, ID10/S

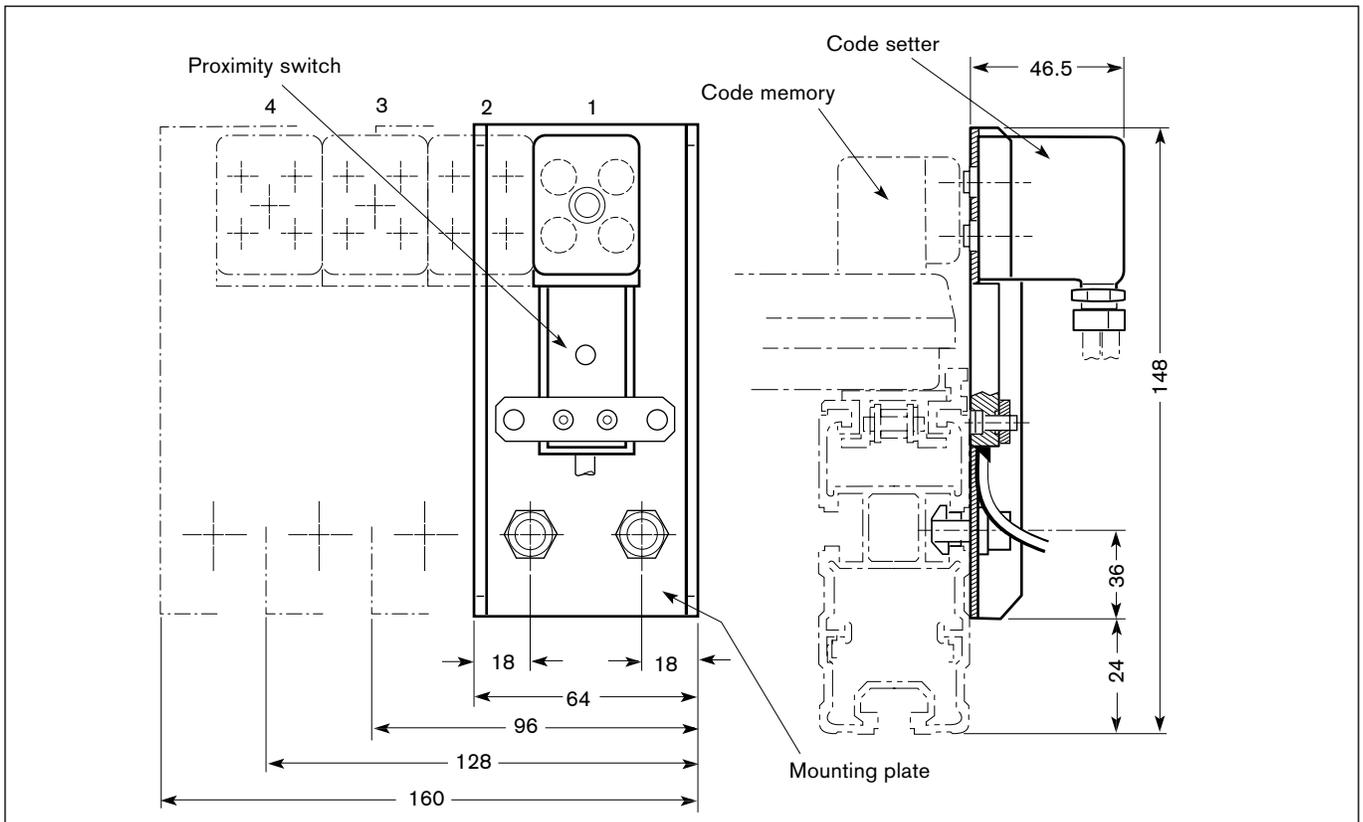


Proximity Switches, Brackets, and Coding Systems

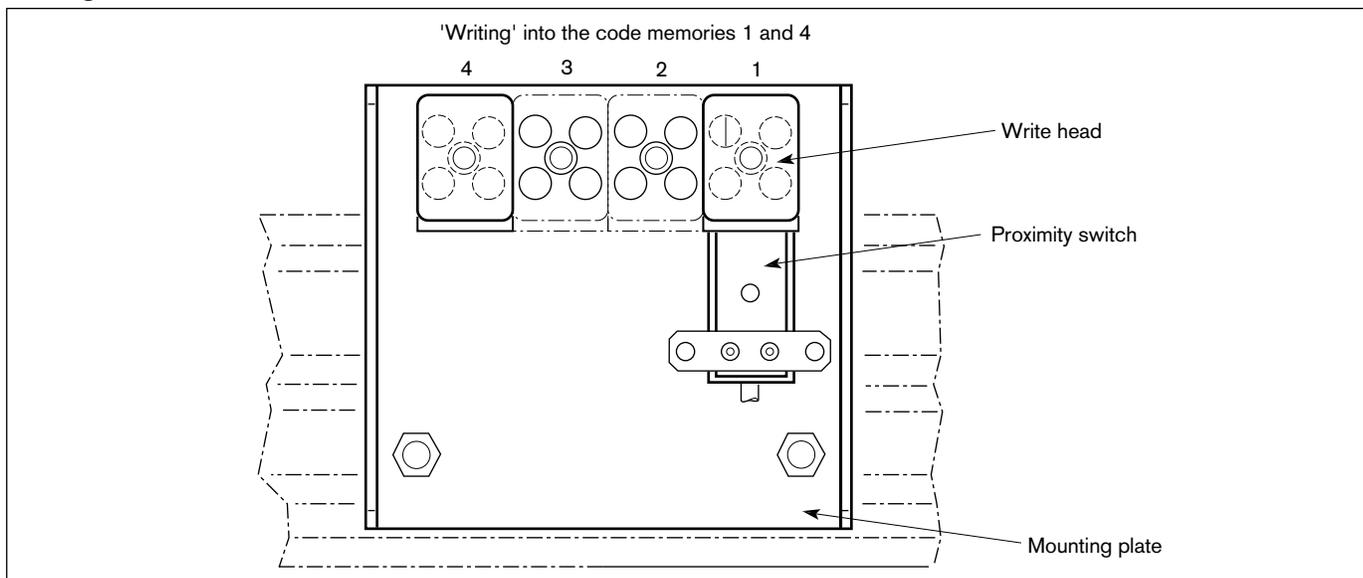
**Technical data, ID10/S**

Air pressure	= 4 bar max.
Cylinder diameter	= 12 mm
Cylinder stroke	= 9 mm
Air fittings	= 4 mm push-lock

**Dimensional data, ID10/S**



**Writing into code memories, ID10/S**



Proximity Switches, Brackets, and Coding Systems

# Code Reader

Model ID10/L

The code reader has four proximity switches which sense the position of the pins in the code memory block. A workpiece pallet guide (page 13-3) must be used to ensure correct operating distance between the code readers and code memory blocks.

There are two types of code readers. Type A is used when only one code reader is needed or as the first in line when more than one is used. This code reader has two additional proximity switches in series for sensing workpiece pallet presence. It also acts as the power supply for up to three subsequent Type B code readers (which can't sense pallet presence). Non adjacent Type A and Type B units are connected via a cable plug.

LED indicators on the back of the code reader housing indicate correct pallet positioning and if a read operation is taking place.

Code readers can be ordered separately or with mounting hardware.

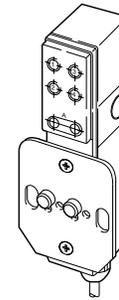
## Operating modes

### 1. Read information

Each proximity switch in the code reader head can be connected through an output (1 to 4) to the control system. Type A read heads contain a proximity switch which indicates that the workpiece pallet is in the correct position for a read operation (output 6). This switch indicates when information is available for evaluation.

### 2. Compare information

The code reader has an internal DIP switch which can be used to set up one of two operation modes. This allows you to read only certain data from the code memory block. In effect, you will get an output only if certain pins are set on the code memory block.



### Ordering Information for Individual Code Readers ID10/L

Code Readers	Part Number
Type A, module only	3842 174 350
Type B, module only	3842 174 360

### Ordering Information for Code Reader Kits

Number of Code Readers		Part Number
Type A	Type B	
1	N/A	3842 525 253
1	1	3842 525 254

### Ordering Information for Code Reader Mounting Kits

Description	Part Number
Mounting Kit * for use with 1 Code Reader	3842 525 261
Mounting Kit * for use with 2 Code Reader	3842 525 262

\* Mounting kit includes mounting plate and hardware.

\*\* If two non-adjacent code memory blocks are to be read, two single code readers and a cable plug to connect them must be used (see Reading into code memories, ID10/L page 17-11).

### Total current consumption for Type A and Type B code readers

	Read operating mode		Compare information operating mode	
	Type A	Type B	Type A	Type B
Own consumption	50 mA	50 mA	50 mA	50 mA
Output 1 to 4	400 mA	400 mA	N/A	N/A
Output 5 max.	N/A	N/A	200 mA	N/A
Output 6 max.	200 mA	N/A	200 mA	N/A
Total consumption max.	650 mA	450 mA	450 mA	50 mA

NOTE: N/A = Not applicable.

In mode II, determined through DIP switch settings and based on specific input, you can use the code reader to control a junction in the TSplus system. In mode I, the code reader reads all of the

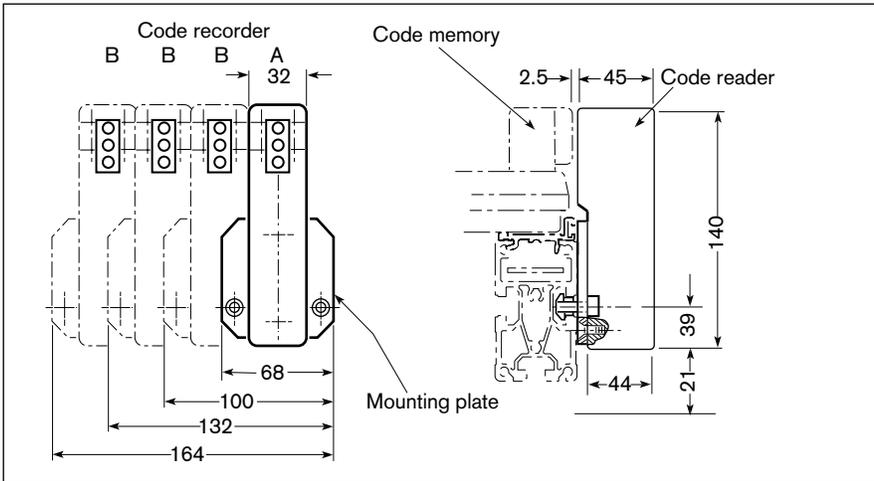
information from a code memory block. This information is then supplied to the system control which determines what to do with a workpiece pallet.

Proximity Switches, Brackets, and Coding Systems

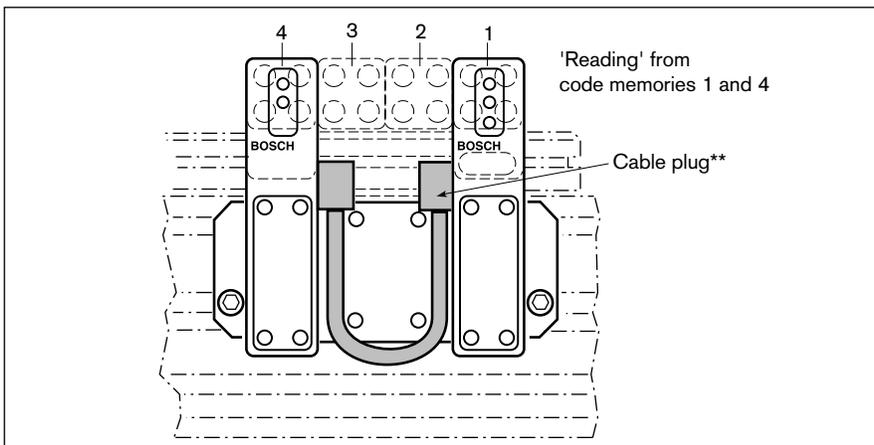
**Technical Data, ID10/L**

Supply voltage	= 24 VDC ± 20%
Residual ripple	= 5%
Degree of protection	= IP 54
Maximum operating frequency	= 1.5 kHz
Temperature range	
Operating	= -20°C to 70°C
Storage	= -25°C to 80°C

**Dimensional Data, ID10/L**

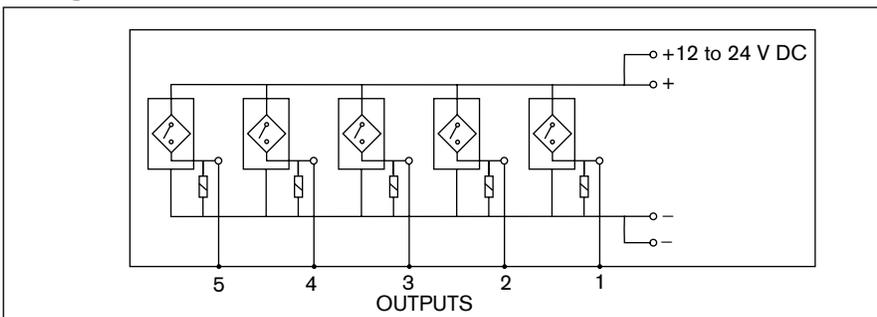


**Reading into code memories, ID10/L**



\*\* If two non-adjacent code memory blocks are to be read, two single code readers and a cable plug must be used.

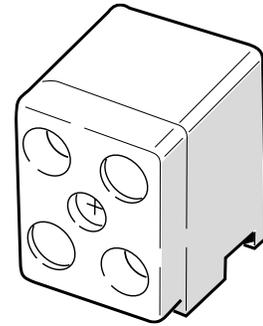
**Wiring Schematic, ID10/L**



Proximity Switches, Brackets, and Coding Systems

# Code Memory Block

Model ID10/D



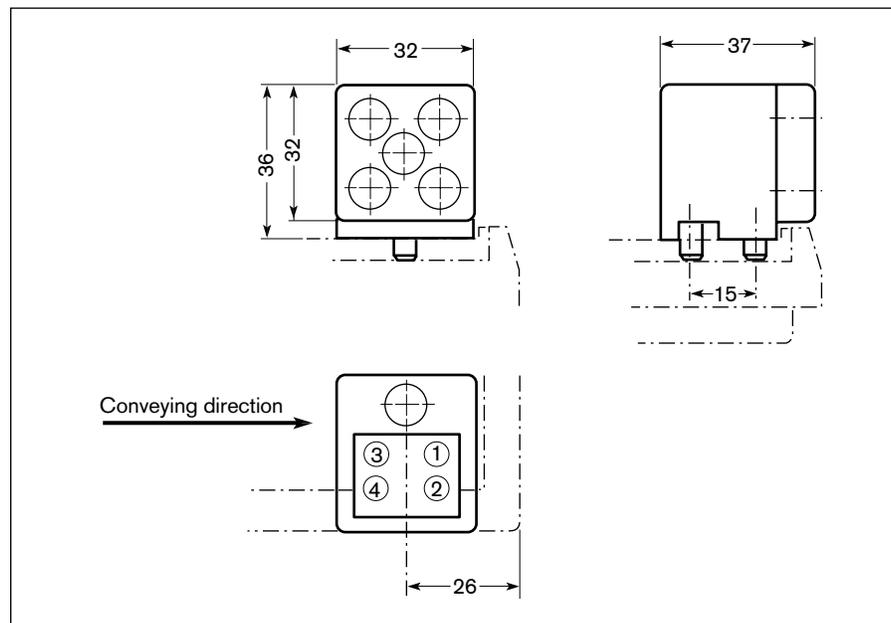
The ID10/D code memory block carries information about the workpiece, workpiece pallet, or process. It can carry information on the production sequence and processing status from station to station or through the complete system. Each code memory block has four coding pins connected in vertical pairs. When the top pin of a pair is pushed in, the bottom pin is pushed out. Read and write operations occur from the same side of the code memory block. A positive reading is always possible, since one pin is always extended.

If four code memory blocks are to be mounted on a workpiece pallet having a width of 160 mm, the fourth code memory block must be mounted on a special bridge because it is positioned above the positioning bushing of the workpiece pallet.

## Ordering Information for Code Memory Block ID10/D

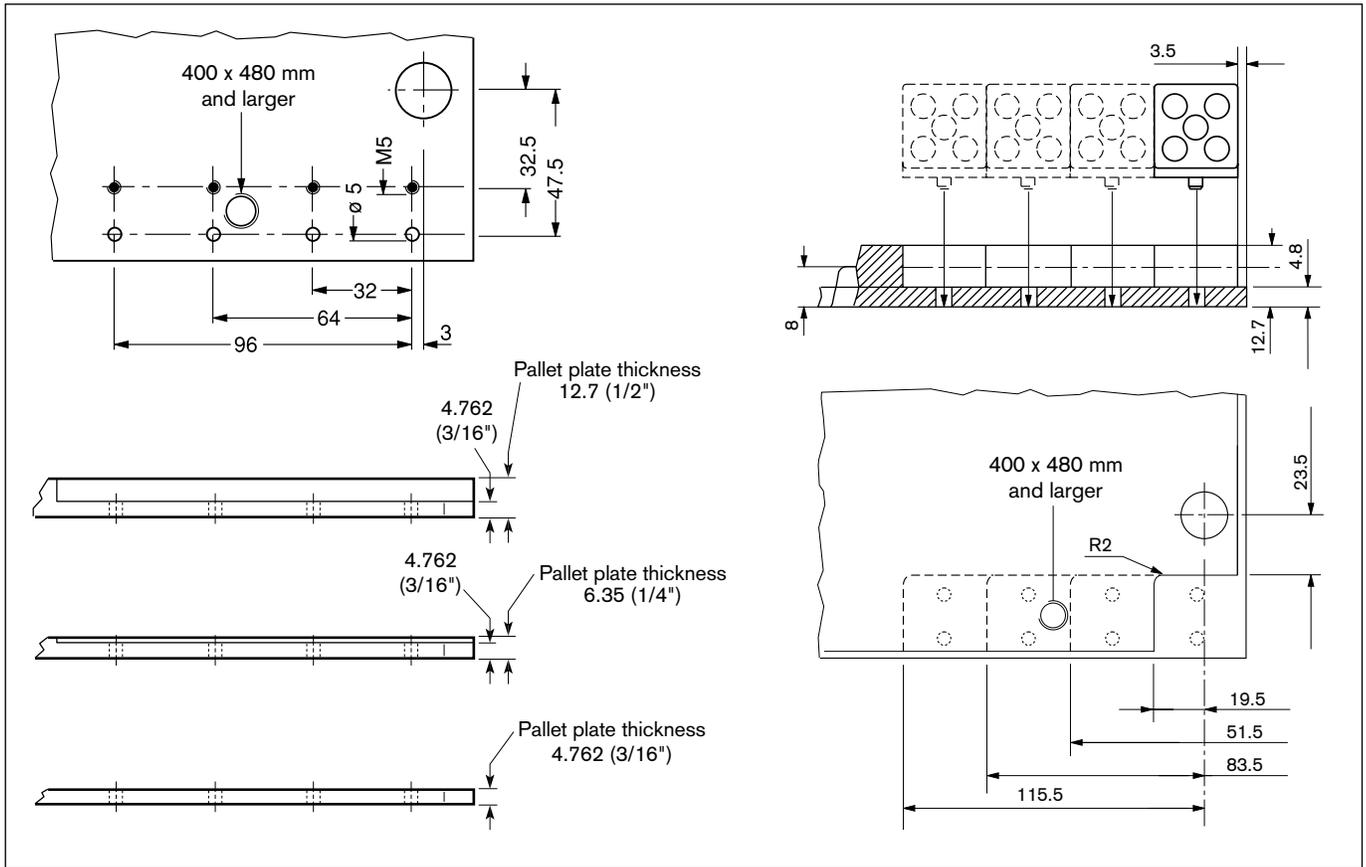
Description	Part Number
Code Memory Block	3842 508 038
Bridge	3842 168 577

## Dimensional data, ID10/D



Proximity Switches, Brackets, and Coding Systems

**Code memory block mounting hole location**



**NOTE:** Dimensions are for reference only. Contact Bosch Rexroth for a detailed machining drawing.

## Fixed Code Pins

Fixed code pins are available for the code memory blocks. You may want to use this type of pin for applications involving workpiece pallet numbering. Fixed coding pins increase possible pin combinations on a single code block to 16. Steel pins (to be read) and plastic pins (not to be read) can be ordered individually.

### Ordering Information for Fixed Code Pins

Description	Part Number
Steel Pin, Qty 1	8981 011 495
Plastic Pin, Qty 1	8981 011 496

TSplus Technical Data

## Section 18 – TSplus Technical Data

### Conveyor width

Conveyor width is determined by the size of the workpiece pallet. Maximum payload depends on the length of the load-bearing edge ( $L_{WT}$  or  $B_{WT}$ ) of the workpiece pallet. Since workpiece pallet orientation changes at junctions in a rectangular or parallel configuration, maximum permissible loading also changes as shown in Figure 18-1.

Maximum permissible workpiece pallet payload (includes pallet, fixturing, workpiece and coding system) depends on the supported length of the pallet as shown in Figure 18-2.

Never exceed the maximum load per pallet or per drive unit. The load is maximum when pallets are in queue as shown in Figure 18-3.

### Transportation speed

Preferred speed is 12 m/min on conveyor sections and transfers. Performance data for individual modules is based on these speeds, although different speeds can be selected. Transportation speed is selected based on system cycle time, time required by the workpiece pallet to enter a workstation, total weight of the pallet, and stability of the workpiece on the pallet.

### Conveying direction

Workpiece pallets should be conveyed toward a drive unit. Reversible operation is only possible when explicitly stated.

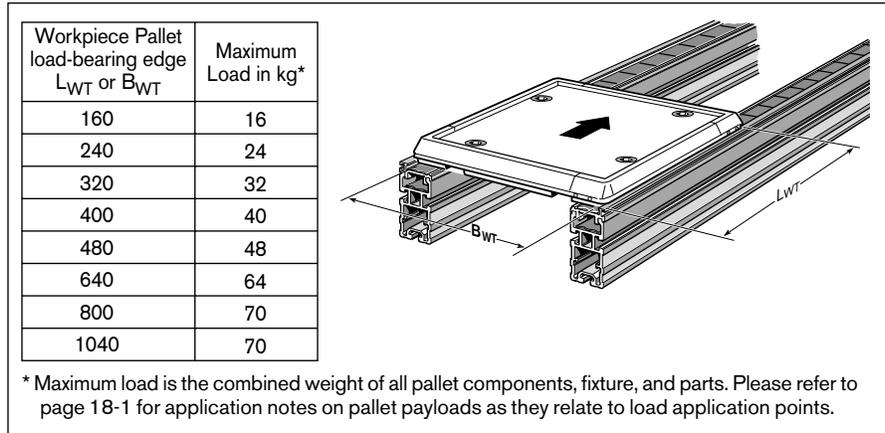


Figure 18-1

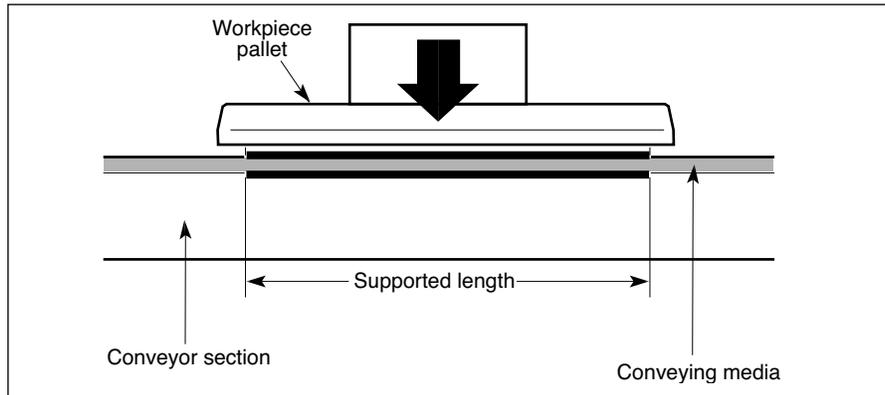


Figure 18-2

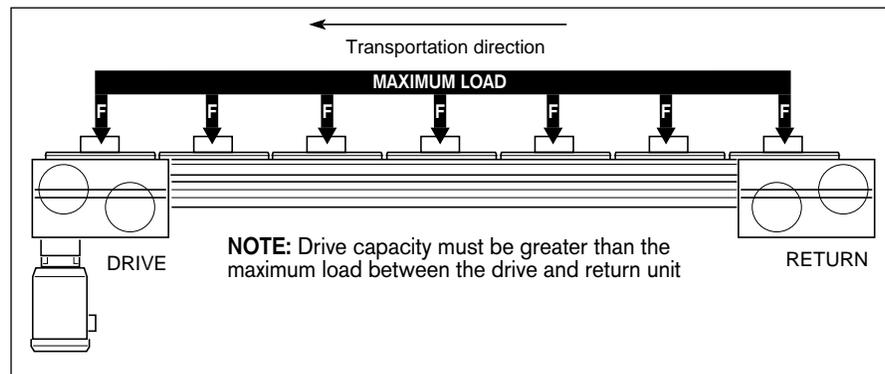
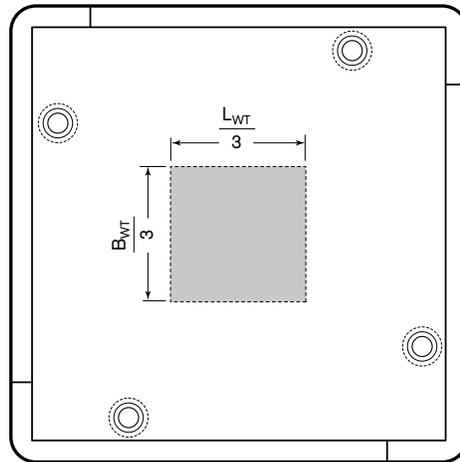


Figure 18-3

## TSplus Technical Data

**Application Example: Pallet Deflection**

The Maximum payload of certain size pallets is subject to reduction due to excessive deflection of the pallet plate. Deflection must be limited to 1.5 mm maximum as measured at the center point of the pallet plate. This deflection value increases as the payload footprint decreases. The following information is offered as a guideline for proper application of payload considerations. The calculated values are based on a payload footprint equal to  $B_{WT}/3 \times L_{WT}/3$  (see diagram at right). Your application may be different.

**Pallet Loading**

In normal applications, fixtures mounted to the pallet plate support the part being transported. The design of the fixture, method of attachment to the pallet, and the geometry of the part all contribute to the design load limit. It is important to design the fixture/pallet assembly so that it will not deflect more than 1.5 mm at its center under the applied load.

The worst case situation would be when a 240 x 480 rectangular pallet is transferred at 90° across a transfer conveyor or track rollers. In this case when the pallet is travelling down the conveyor and it is supported along its 480 mm side, the rated load of the pallet is 48

kg. When the pallet is lifted by a transfer and sent 90° in the other direction, it is now supported by its 240 mm side and the rated load is reduced to 24 kg. For larger pallet sizes, even this reduced load applied at the center of the plate would be enough to deflect the pallet more than 1.5 mm. This deflection could cause interference with transfer and traffic control modules and should be avoided in all cases.

Each application is different and the fixture design should account for the specific load requirements for each pallet style. As a design guide, the Tables on

the next two pages list the maximum load allowed by pallet size and plate type, based on a load applied in a rectangle of length/3 x width/3, and the pallet supported along the short dimension. Please contact our applications engineering department for assistance with your particular loading example.

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4.8 mm Steel

Width mm	Length mm							
	160	240	320	400	480	640	800	1040
160	16	24	32	40	48			
240	16	24	32	40	48			
320	16	24	32	40	48	64		
400	16	24	32	40	48	64	70	
480	16	24	32	40	48	64	70	
640			20	25	31	41	51	
800				12	15	20	25	
1040								

In the tables on this page, width and length refer to the size of the pallet.

If the pallet is being transported as shown in the upper right illustration in these charts, find the width in the left hand column and length along the top.

If the pallet is being transported as shown in the lower left illustration in the charts, find the width along the top row and length down the column.

Charts are provided for the three different pallet plates that Bosch Rexroth offers.

Data on this page is payload in kg including weight of pallet.

6.35 mm Aluminum

Width mm	Length mm							
	160	240	320	400	480	640	800	1040
160	16	24	32	40	48			
240	16	24	32	40	48			
320	16	24	32	40	48	64		
400	16	24	32	40	48	64		
480	16	24	32	40	48	64	70	
640			16	40	24	32		
800								
1040								

12.7 mm Aluminum

Width mm	Length mm							
	160	240	320	400	480	640	800	1040
160	16	24	32	40	48			
240	16	24	32	40	48			
320	16	24	32	40	48	64	70	
400	16	24	32	40	48	64	70	
480	16	24	32	40	48	64	70	
640			32	40	48	64	70	70
800			32	40	48	64	70	70
1040						57	70	70

*TSplus* Technical Data

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TSplus Technical Data

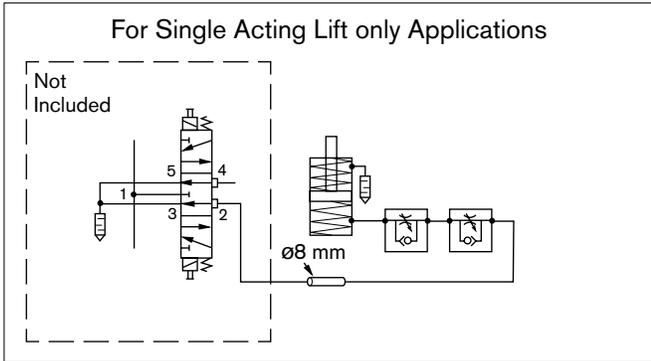
## Pneumatic Summary

Module	Bore	Stroke	Volume per stroke (liters)	Tube Size	Port
HQ2/U	50	21	0.04	8mm	G1/8"
HQ2/U2	50	21	0.04	8mm	G1/8"
HQ2/U3	50	21	0.04	8mm	G1/8"
HD2/E	50	90	0.18	8mm	G1/4"
HP2	63	80	0.25	8mm	G1/4"
HP2	63	125	0.39	8mm	G1/4"
HP2	63	175	0.55	8mm	G1/4"
HP2	63	225	0.70	8mm	G1/4"
HP2/E	50	23.5	0.05	8mm	G1/8"
HP2/K Size 1	40	34	0.04	8mm	G1/8"
HP2/K Size 2	50	34	0.07	8mm	G1/8"
PE2/X	63	33	0.41	8mm	G1/8"
VT2 ( <u>underline</u> )	80	850	4.27	4mm & 10mm	G3/8"
VT2 (Overhead)	80	2000	10.05	4mm & 10mm	G3/8"
VE2	35	20	0.02	4mm	M5
VE2/D	35	20	0.02	4mm	M5
VE2/S	35	20	0.02	4mm	M5
VE2/H	50	10	0.02	8mm	G1/8"
VE2/D60	35	10	0.01	4mm	M5
VE2/D150	38	20	0.16	6 mm	M5
VE2/D200	50	10	0.02	8mm	G1/8"
VE2/VA	35	20	0.02	8mm	G1/8"
WI2/D	40	35	0.04	8mm	G1/8"
ID10/S	12	9	0.00	4mm	M5

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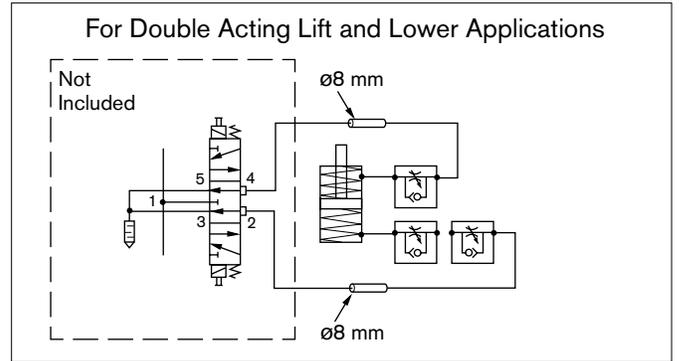
# Lift-Transfer Unit Pneumatic Diagrams

**Pneumatic diagram for HQ2/E, HQ2/U, EQ2/T\*, EQ2/TE\***



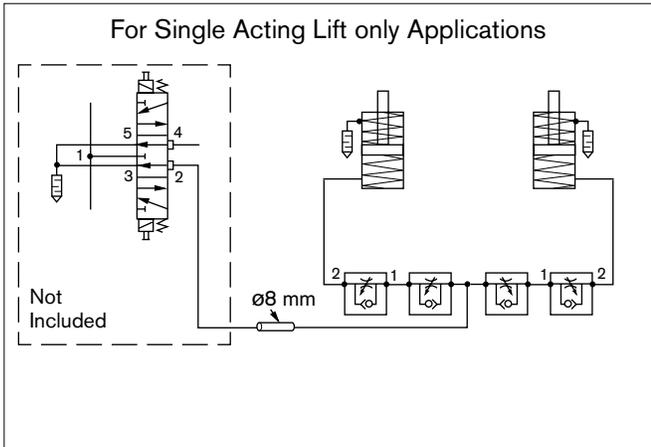
\* Up to 400 x 480 with each lift controlled separately

**Pneumatic diagram for HQ2/E, HQ2/U, EQ2/T\*, EQ2/TE\***



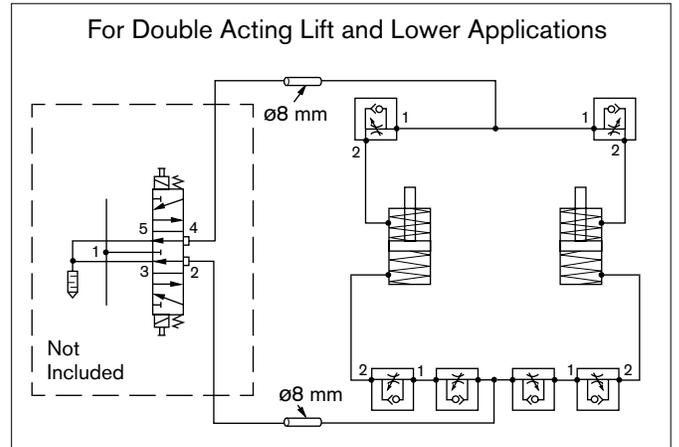
\* Up to 400 x 480 with each lift controlled separately

**Pneumatic diagram for EQ2/TR\*, EQ2/T\*, EQ2/TE\***



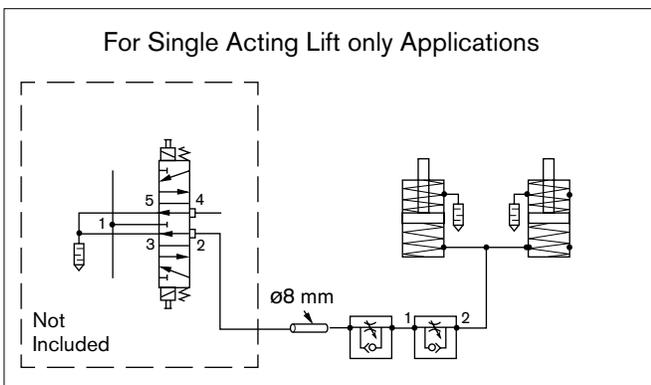
\* Up to 400 x 480

**Pneumatic diagram for EQ2/TR\*, EQ2/T\*, EQ2/TE\***

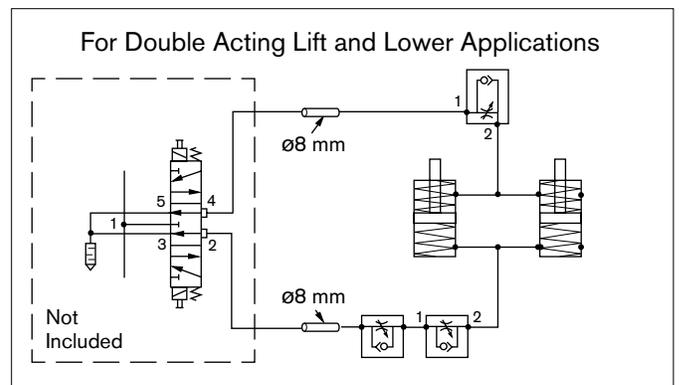


\* Up to 400 x 480

**Pneumatic diagram for HQ2/U2**



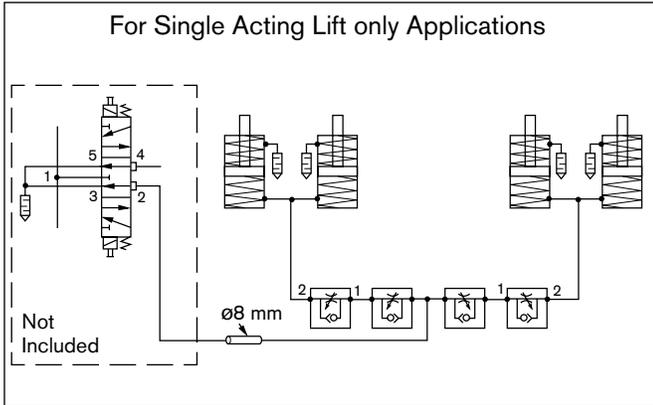
**Pneumatic diagram for HQ2/U2**



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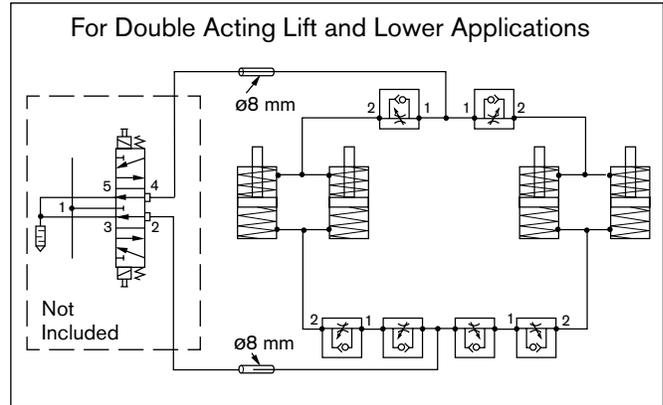
# Lift-Transfer Unit Pneumatic Diagrams (cont'd)

**Pneumatic diagram for EQ2/TR\*, EQ2/T\*, EQ2/TE\***

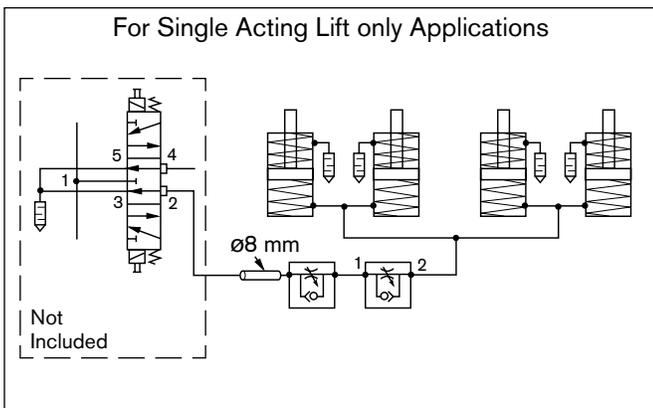


\* Larger than 400 x 480

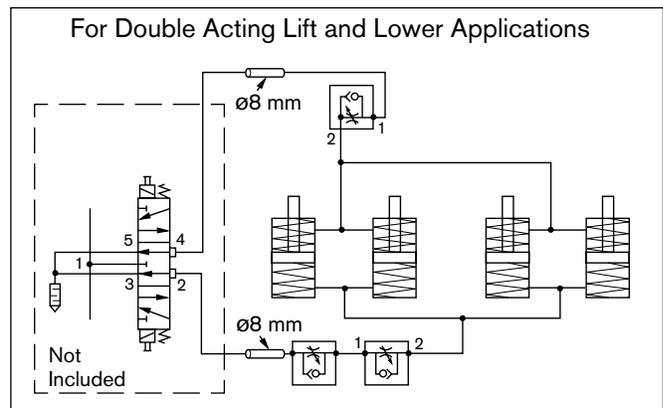
**Pneumatic diagram for EQ2/TR\*, EQ2/T\*, EQ2/TE\***



**Pneumatic diagram for HQ2/U3**



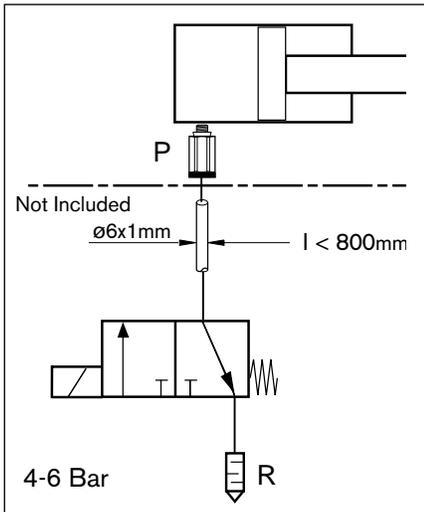
**Pneumatic diagram for HQ2/U3**



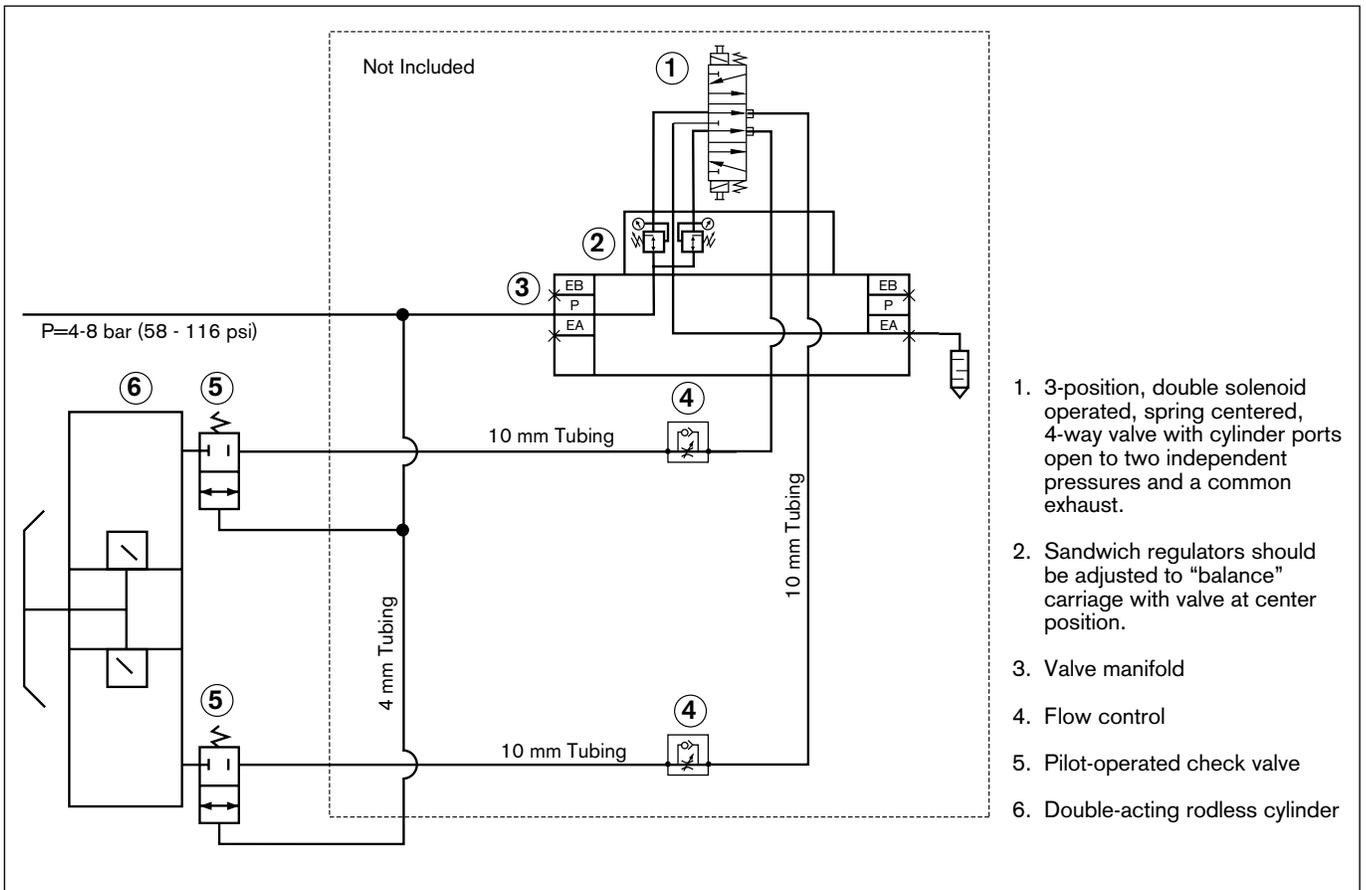
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# Lift-Transfer Unit Pneumatic Diagrams (cont'd)

## Pneumatic diagram for VE2/DA100

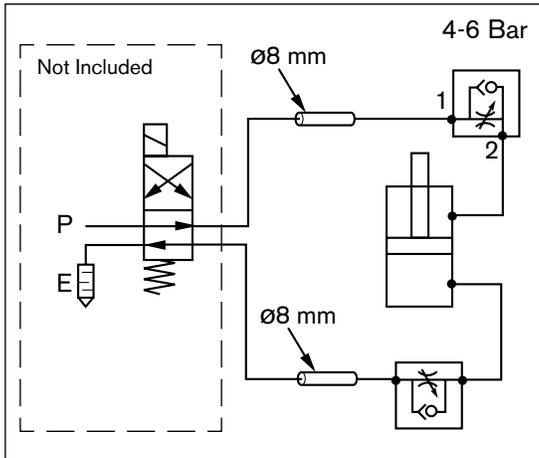


## VT2 Pneumatic Diagram

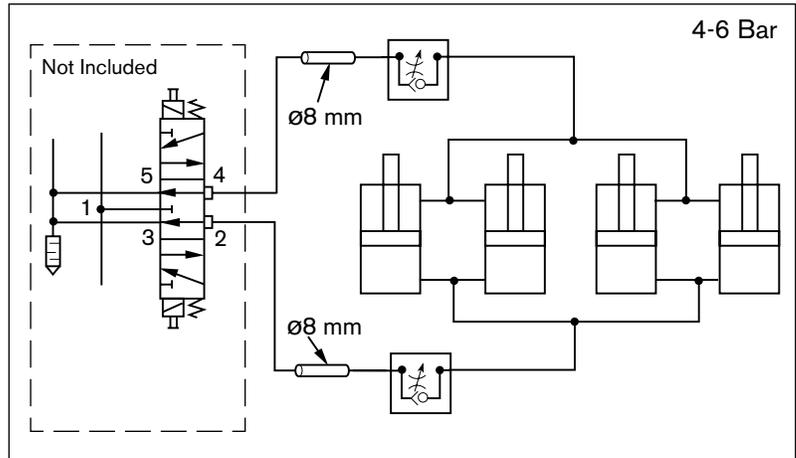


## Lift-position/Lift-rotate Unit Pneumatic Diagrams

**Pneumatic diagram for  
HP2, HP2/E, HP2/K, HD2/E**

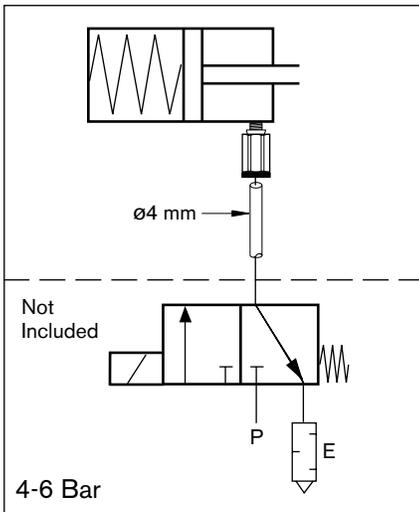


**Pneumatic diagram for  
PE2/X**

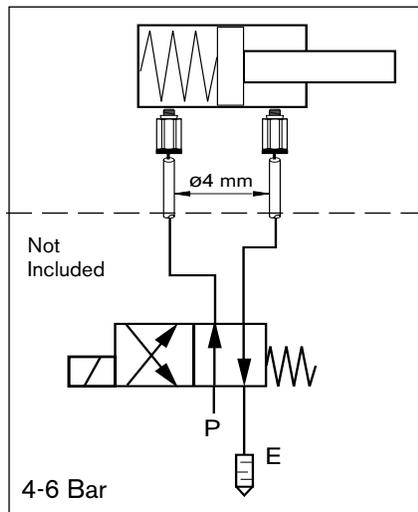


## Stop Gate Pneumatic Diagrams

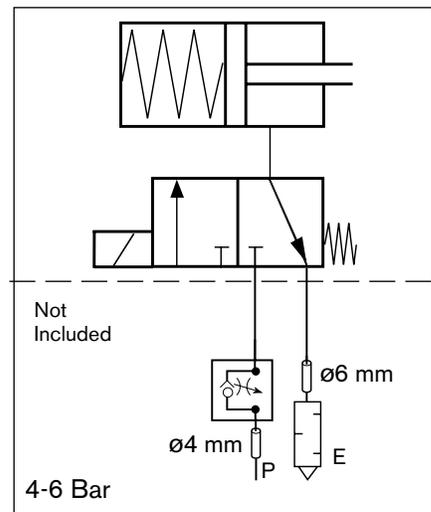
**Pneumatic diagram,  
VE2, VE2/L, VE2/M, VE2/S**



**Pneumatic diagram,  
VE2/D**



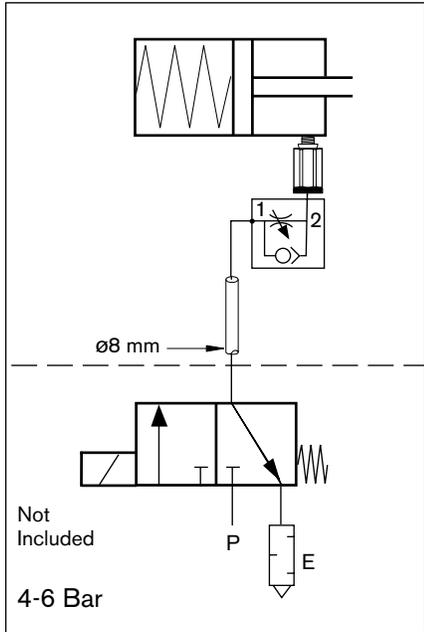
**Pneumatic diagram,  
VE2/MP**



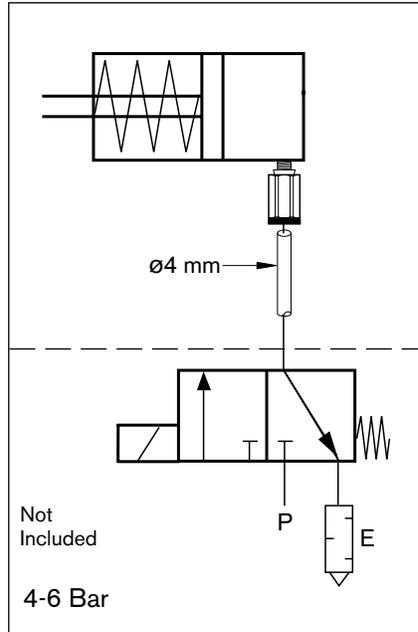
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# Stop Gate Pneumatic Diagrams (cont'd)

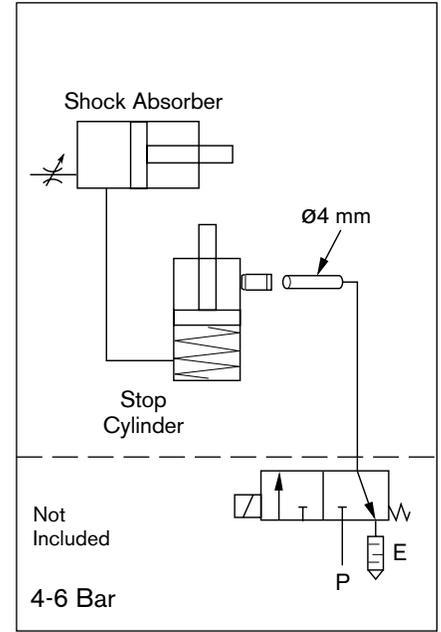
**Pneumatic diagram, VE2/H**



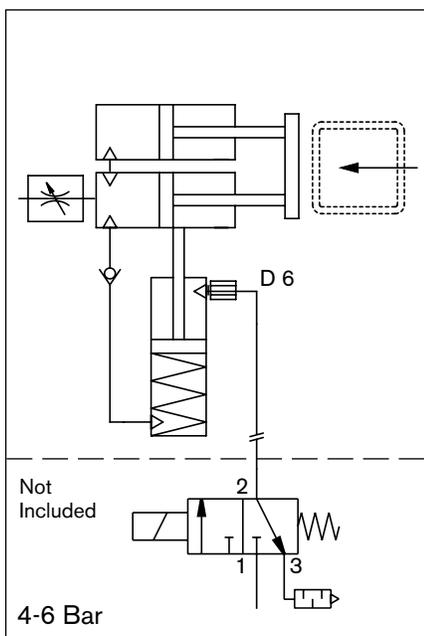
**Pneumatic diagram, VE2/VA**



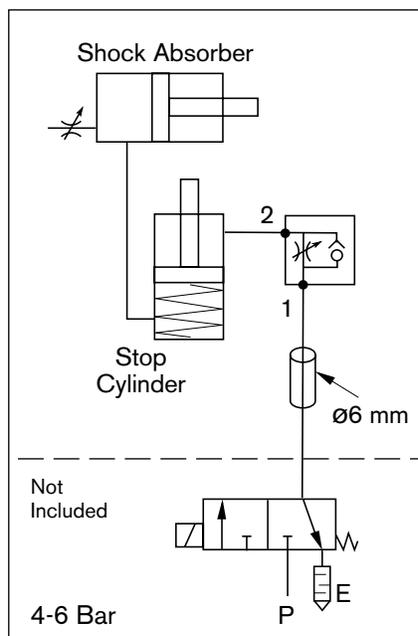
**Pneumatic diagram, VE2/D20, VE2/D60**



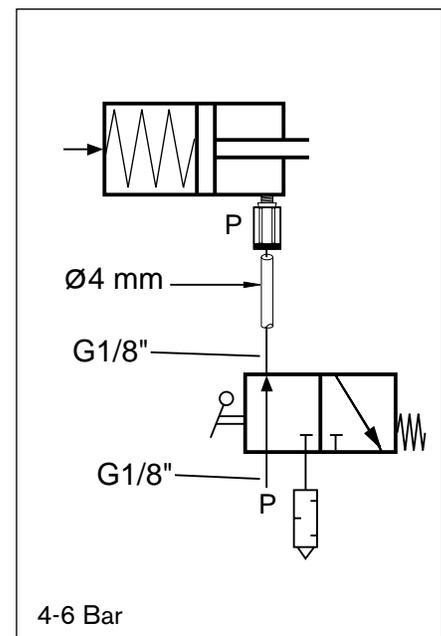
**Pneumatic diagram, VE2/D150**



**Pneumatic diagram, VE2/D200**



**Pneumatic diagram, VE2/WI**



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# Conversion Factors

## Metric/English Conversion Chart

Measurement	Multiply	by	to get:
Linear	millimeters (mm)	0.03937	inches
	inches	25.4	millimeters (mm)
	kilometers (km)	0.6214	miles
	miles	1.6093	kilometers (km)
Area	millimeters <sup>2</sup> (mm <sup>2</sup> )	0.00155	inches <sup>2</sup>
	inches <sup>2</sup>	645.16	millimeters <sup>2</sup> (mm <sup>2</sup> )
Volume	centimeters <sup>3</sup> (cm <sup>3</sup> )	0.06102	inches <sup>3</sup>
	inches <sup>3</sup>	16.387	centimeters <sup>3</sup> (cm <sup>3</sup> )
	1 Liter	61.025	inches <sup>3</sup>
Acceleration	meter/second <sup>2</sup> (m/s <sup>2</sup> )	39.37	inch/second <sup>2</sup>
	inch/second <sup>2</sup>	0.0254	meter/second <sup>2</sup> (m/s <sup>2</sup> )
Velocity	meter/second (m/s)	3.281	feet/second
	feet/second	0.3048	meter/second (m/s)
Mass	kilogram (kg)	2.2046	pounds
	pounds	0.4536	kilogram (kg)
Force	kilograms-f (kgf)	9.807	Newtons (N)
	Newtons (N)	0.10194	kilograms-f (kgf)
	pounds-f	4.448	Newtons (N)
Pressure	Newtons (N)	0.2248	pounds-f
	bar	14.5	PSI
	PSI	0.069	bar
Torque	Newton-Meters (Nm)	8.851	pound-inches
	pound-inches	0.11298	Newton-Meters (Nm)
Moment of Inertia	centimeters <sup>4</sup> (cm <sup>4</sup> )	0.02403	inches <sup>4</sup>
	inches <sup>4</sup>	41.623	centimeters <sup>4</sup> (cm <sup>4</sup> )
Power	kilowatts (Kw)	1.34	horsepower (HP)
	horsepower (HP)	0.746	kilowatts (Kw)
Energy	Joules (J)	0.7376	foot/pounds (ft/lbs)
	foot/pounds (ft/lbs)	1.3558	Joules (J)

### Metric Tap/Drill Specifications

Tap	Tap	Drill Size
M4	M4 x .7	3.3 mm
M5	M5 x .8	4.2 mm
M6	M6 x 1	5.0 mm
M8	M8 x 1.25	6.8 mm
M12	M12 x 1.75	10.2 mm
M16	M16 x 2	14.0 mm

### Temperature

Degrees Celsius	$\frac{5 \times (\text{degrees F} - 32)}{9}$
Degrees Fahrenheit	$\frac{(9 \times \text{degrees C})}{5} + 32$

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**Temperature Ranges for Plastics**

Material	Abrv.	Temperature Range in C	
		Low	High
Polycarbonate	PC	-40C	115C
Polyethylene	PE		100C
Polyvinyl Chloride	PVC	-5C	60C
Polyoxymethylene	POM	-40C	100C
Polypropylene	PP		100C
Buna N Nitrile	NBR	-40C	120C*
Polyurethane	PU		92C
Ultra-high molecular weight polyethelene	UHMW-PE		100C*
Polyurethane Elastomer	PUR	-25C	80C
Delrin 100®	Delrin 100	NA	90C
Polyamide 6	PA6	-40C	80C
Polyamide 12	PA12	-40C	80C
Polyamide 66	PA66	-40C	90C
Thermoplastic Elastomer	TPE		60C
ABS	ABS	-40C	70C

\* Dry air only

**Conveyor Temperature Ranges**

	Temperature Range	
	Min.	Max.
<b>Conveyor Section Only (conveyor profile and guide profile)</b>	-2° C (28° F)	80° C (176° F)
<b>Conveyor Section with Drive (gearbox and motor) and Return</b>	5° C (41° F)	40° C (104° F)
<b>Conveyor Section with Drive (gearbox and motor) and return, with 20% less load</b>	-2° C (28° F)	60° C (140° F)

NOTE: These temperature ranges are for straight mainline conveyor sections only. If you are operating in the upper or lower ends of these ranges, please consult our applications engineering department for other considerations that may effect temperature.



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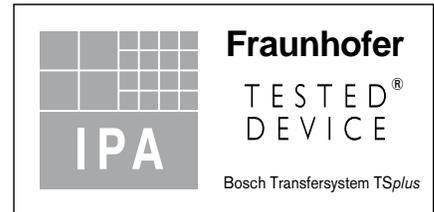
## Using TSplus Components in Cleanrooms

Today's assembly and handling requirements are incredibly demanding, and cleanroom conditions raise the bar even higher. For Bosch Rexroth customers, that's no problem. We help them manufacture everything from PCBs and PDAs to pacemakers and electric toothbrushes.

Almost all the components in the TSplus product line have been tested and certi-

fied by the renowned Fraunhofer Institute for Manufacturing, Engineering and Automation, (IPA).

Please contact your Bosch Rexroth representative if you're planning an assembly operation within a cleanroom environment. We'll help you get the most out of your manufacturing investment.



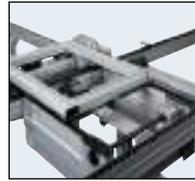
# Bosch Rexroth has a conveyor to fit any application

TS 1 is ideal for assembling or testing small products or subassemblies. This makes it a popular choice for electronic component and



automotive parts assembly where plant floor space is a premium. Steel, aluminum, and economical plastic pallets are available. All pallets have a locating detent for precise positioning.

TS4*plus* is widely used in the appliance and automotive industries because of its ability to handle large and heavy products like automotive drivetrain components, ranges or even refrigerators. In precision assembly, TS4*plus* can achieve a repeatability factor of  $\pm 0.125$  mm. The power and free roller design allows accumulation with minimum queuing pressure.



TS5 modular assembly conveyors can be used for the precision assembly of large heavy components. This maintenance-free king shaft driven roller conveyor provides noise-free operation and is energy efficient due to low drive force requirements. Roller friction is easily adjusted without the use of tools for transport on a workpiece pallet or directly on the conveyor.



**Workpiece Pallet Size Range:**

80 x 80 mm, 120 x 120 mm and 160 x 160 mm

**Workpiece Pallet Load Capacity:**

Up to 3.0 kg (6.6 lbs)

**Transport Media:**

Double Belt

**Transport Rate:**

9, 12 or 18 m/min

**Workpiece Pallet Size Range:**

443 x 443 mm to 1243 x 1243 mm in 200 mm increments

**Workpiece Pallet Load Capacity:**

Up to 250 kg (550 lbs)

**Transport Media:**

Roller Chain

**Transport Rate:**

6, 9, 12, 15 or 18 m/min

**Workpiece Pallet Size Range:**

455 x 455 mm to 1040 x 1250 mm

**Workpiece Pallet Load Capacity:**

Up to 300 kg (660 lbs)

**Transport Media:**

60mm dia. Powered Rollers

**Transport Rate:**

2–18m/min

## Bosch Rexroth integrators solve tough assembly problems



From lean manufacturing cells to fully automated systems, no one helps you get more out of your assembly operation than a Bosch Rexroth Integrator. Our integrators are experts at integrating modular conveyors from Bosch Rexroth into flexible, productive systems, tailored to your needs. Count on them for:

- diverse application experience
- expertise with Bosch Rexroth conveyors, framing and guarding
- standard-setting quality – in people and components

When you have an assembly challenge, your conveniently-located Bosch Rexroth Integrator can provide a turnkey automation solution along with the training and support to assure its success.

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Practically anything for your plant—like machine bases, guarding and workstations—can be made faster and more economically with aluminum structural framing from Bosch Rexroth. Our authorized distributors make it happen in a hurry with:

- local inventory of kits and components
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- expert application advice and certified service

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