





mk Timing Belt Conveyor



Contents mk Timing Belt Conveyor

	ZRF-P 2010	152
	ZRF-P 2040.02	164
	Properties of Timing Belts	171
	Timing Belt Conveyor Application Examples	172

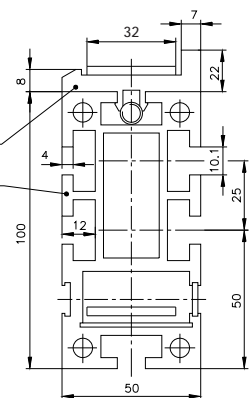
Timing Belt Conveyor ZRF-P 2010

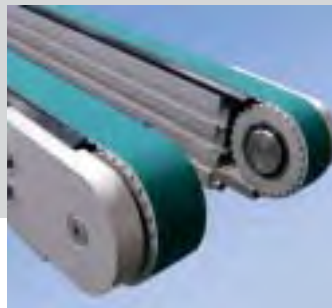


Conveyor frame
cross-section

Wear Strip mk 1041

Profile for conveyor frame 2010





Timing Belt Conveyor System ZRF-P 2010 is designed for the transport of heavy pallets or structurally rigid products. Due to the positive engagement of the belt teeth and the sprockets, the belts are synchronized and the conveyors are ideal for indexing applications. A notable feature of this conveyor system is the UHMW wear strips, which prevent contact between the product and the frame profiles.

The wear strips have a low coefficient of friction, and provide good wear resistance over a broad temperature range (continuous to 65° C, or 149° F).

A further design feature is the belt return, which occurs within the frame profile itself. This is a safety benefit, and also serves to protect the belt. In addition, T-slots are accessible on three sides on the profile frame for the

attachment of stands, side rails, sensors and stops (10 mm opening). A variety of belt coatings are available, providing further options for specific product and project related handling applications. In combination with the wide and varied drive options, System ZRF-P 2010 serves as a key element for the manufacture of larger automation and material handling systems.

Timing Belt Conveyor ZRF-P 2010

Drive Version AA



Drive Version AC



Drive Version AF



Drive Version AS



Drive Version BC



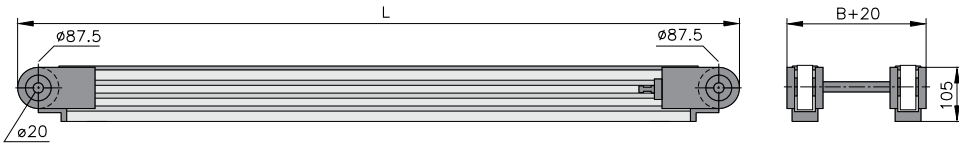
Contents ZRF-P 2010

ZRF-P 2010 AA – Head Drive without Motor – ex. for multiple lanes	156
ZRF-P 2010 AC – Head Drive –	157
ZRF-P 2010 AF – Head Drive direct –	158
ZRF-P 2010 AS – Outside Head Drive –	159
ZRF-P 2010 BC – Center Drive –	160
ZRF-P 2010 Motor Information	161
ZRF-P 2010 Wear Strips	162
ZRF-P 2010 Pallets	163

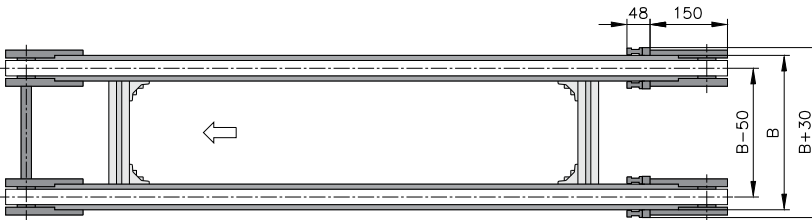
ZRF-P 2010 AA

Timing Belt Conveyor with Head Drive without Motor

B20.10.350



Wear Strip Options see page 162



Features:

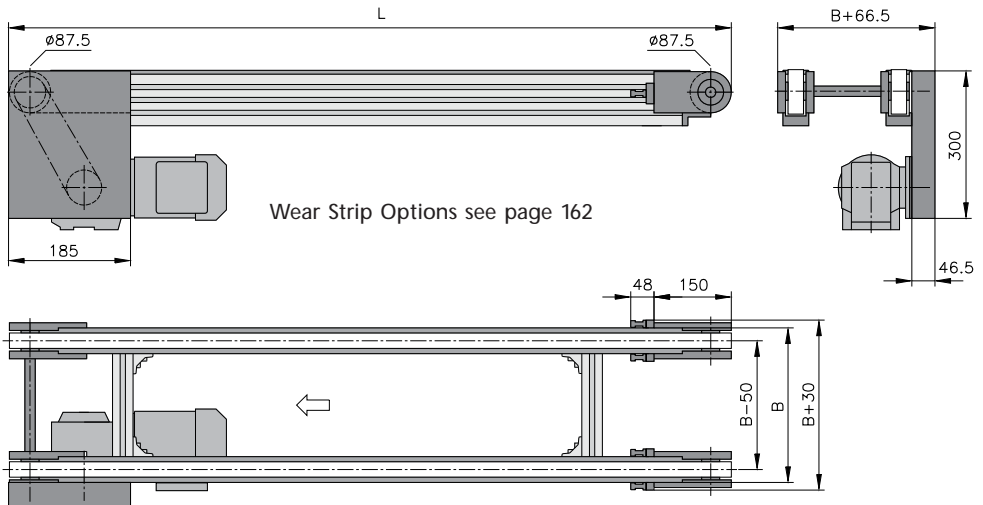
Drive Version AA is primarily used where multiple lanes are to be slave driven, either parallel or in-line, using a single drive motor. Frames are our rigid mk 2010 profile, and these conveyors are ideal for both integrated and stand-alone applications. The drive sprockets feature a hollow bore, and power transmission is accomplished by installing a $\varnothing 20$ mm shaft with 6 mm shaft key (DIN 6885). Use of fixtured timing belts is not possible with this drive version.

	Dimensions – Technical Information	Notes
Conveyor length L	between 500 - 6000 mm	any increment possible
Conveyor width B	200 to 1000 mm	
Timing Belt Width	32 mm	see page 171
Drive and Speed	to 30 m/min (100 ft/min)	see page 161
Stands and Side Rails		see page 262
Load Capacity max.	100 kg (220 lbs)	higher on request

ZRF-P 2010 AC

Timing Belt Conveyor with Head Drive

B20.10.351



Features:

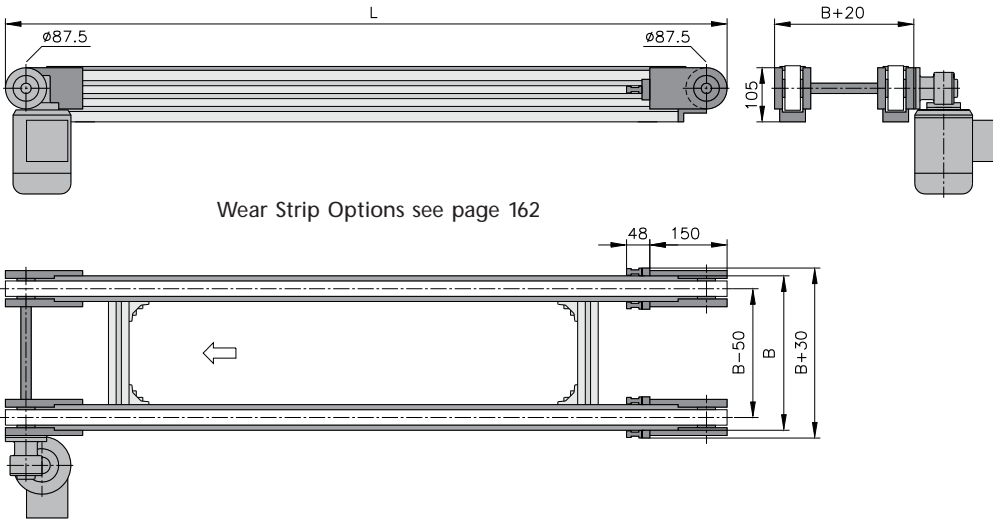
mk offers a variety of motor options for Drive Version AC which are sized and selected for each application's specific speed and load requirements. Use of high torque motors is possible due to positive drive system. Use of fixtured timing belts is not possible with this drive version.

	Dimensions – Technical Information	Notes
Conveyor length L	between 500 - 6000 mm	any increment possible
Conveyor width B	200 to 1000 mm	
Timing Belt Width	32 mm	see page 171
Drive Location	head right, head left	
Drive and Speed	to 30 m/min (100 ft/min)	see page 161
Stands and Side Rails		see page 262
Load Capacity max.	100 kg (220 lbs)	higher on request

ZRF-P 2010 AF

Timing Belt Conveyor with Head Drive direct

B20.10.357



Features:

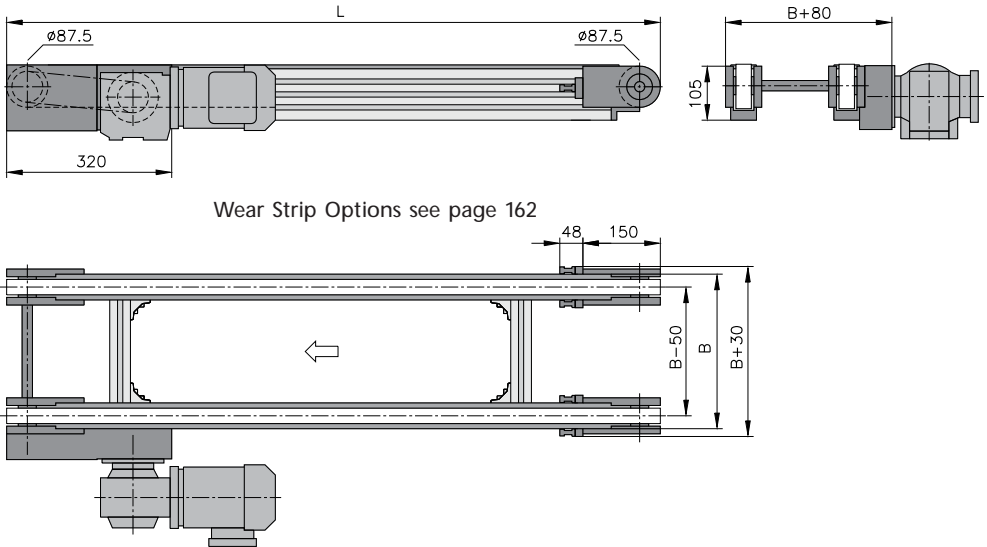
By placing the motor directly onto the drive shaft, this drive version minimizes not only the space required at the drive yet also the number of moving parts and maintenance requirements. Use of fixtured timing belts is not possible with this drive version.

	Dimensions – Technical Information	Notes
Conveyor length L	between 500 - 6000 mm	any increment possible
Conveyor width B	200 to 1000 mm	
Timing Belt Width	32 mm	see page 171
Drive Location	head right, head left	
Drive and Speed	to 30 m/min (100 ft/min)	see page 161
Stands and Side Rails		see page 262
Load Capacity max.	100 kg (220 lbs)	higher on request

ZRF-P 2010 AS

Timing Belt Conveyor with Outside Head Drive

B20.10.355



Wear Strip Options see page 162

Features:

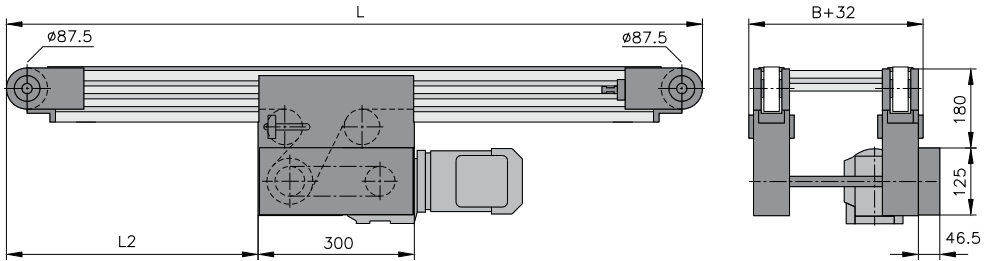
Drive Version AS features motor placement on the outside of the conveyor frame. This is often used in situations where the conveyor frame must be as unobstructed as possible, or where the motor must remain clean. The overall height of the drive assembly is held to an absolute minimum. Use of fixtured timing belts is not possible with this drive version.

	Dimensions – Technical Information	Notes
Conveyor length L	between 700 - 6000 mm	any increment possible
Conveyor width B	200 to 1000 mm	
Timing Belt Width	32 mm	see page 171
Drive Location	head right, head left	
Drive and Speed	to 30 m/min (100 ft/min)	see page 161
Stands and Side Rails		see page 262
Load Capacity max.	100 kg (220 lbs)	higher on request

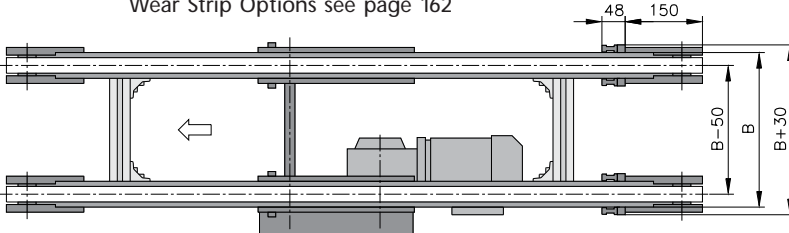
ZRF-P 2010 BC

Timing Belt Conveyor with Center Drive

B20.10.356



Wear Strip Options see page 162



Features:

mk offers a variety of motor options for Drive Version BC, which are sized and selected for each application's individual speed and load requirements. The compact design, and the ability to place the drive location anywhere along the conveyor frame (during manufacture), simplifies the integration of this conveyor into new or existing equipment. Use of timing belts with fixtures is not possible with this drive version. Use of fixtured timing belts is not possible with this drive version.

	Dimensions – Technical Information	Notes
Conveyor length L	between 700 - 6000 mm	any increment possible
Conveyor width B	200 to 1000 mm	
Timing Belt Width	32 mm	see page 171
Drive Location	right, left	
Drive and Speed	to 30 m/min (100 ft/min)	see page 161
Stands and Side Rails		see page 262
Load Capacity max.	100 kg (220 lbs)	higher on request

Motor selection

As a standard, mk offers a variety of motors. Although the selection varies by country with respect to local voltage standards and safety regulations, international availability is a key requirement. Typically, we supply inverter-duty right-angle gearmotors for heavy-duty requirements and parallel shaft gearmotors for lower speed and load applications. All motors are readily available from mk.

Motor voltage

As a standard, mk provides motors which comply with the normal, expected electrical requirements of the country where they are manufactured. International motors are also available for conveyors designed for export.

Motor power

Motors are sized to each individual conveyor style, size and performance requirements. The typical range is between 0.09 KW and 0.37 KW (1/8 hp and 1/2 hp).

Speeds

The maximum belt speed for ZRF-P 2010 conveyors is approximately 30m/min (100 ft/min). This is dependant on the total load, the type of transport with respect to indexing or accumulation, and the conveyor length.

Speed Control

Frequency inverters with a variable speed range of 1:7 are available for AC motors.

Rating

All standard motors are built to IP 54 (IP = International Protection) standards, whereby higher standards are available on request.

Additional notes

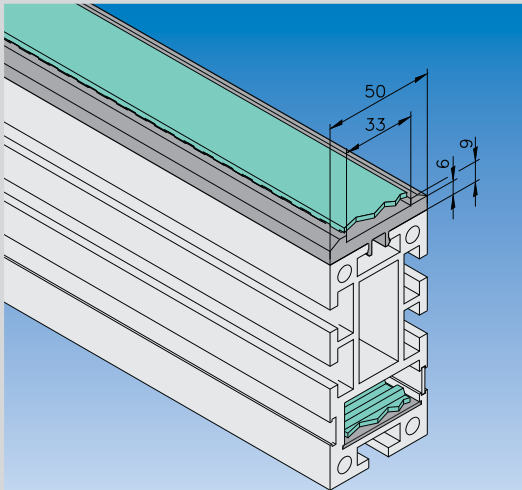
The motors are primarily designed for continuous duty. Operating motors at very low frequency (below 70% of normal) may require additional cooling. Motors with encoders, clutches, brakes, thermal overload protection or indexing capabilities are also available.

ZRF-P 2010

Wear Strips

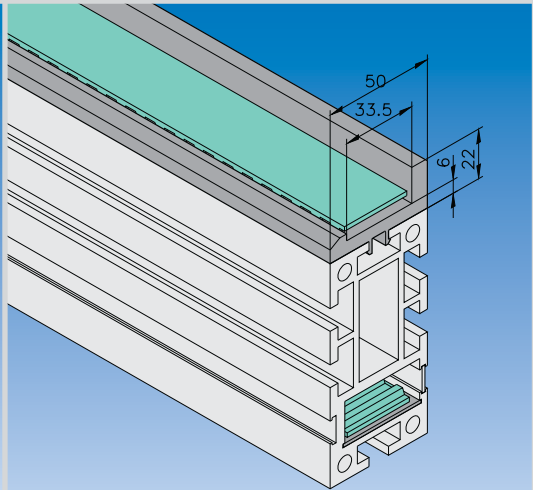
mk Guide- and Wear Strips feature low friction and high wear resistance. The wear strips are made of PE-UHMW (PE-1000). Temperature max. 65° C (149° F).

Option A



Wear Strip mk 1042, 22.42.2000

Option B



Wear Strip mk 1041, 22.41.2000

ZRF-P 2010

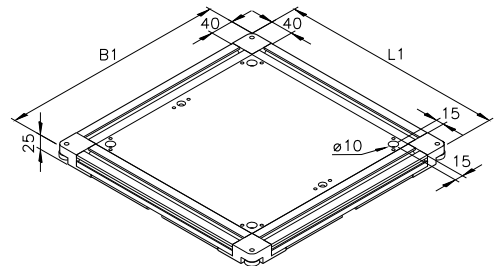
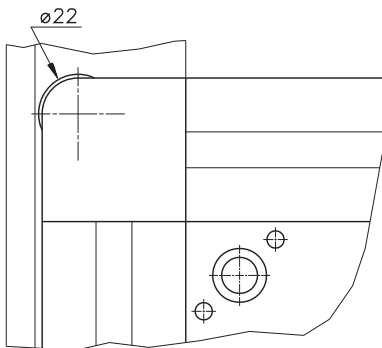
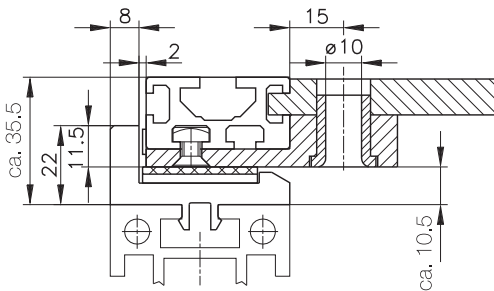
Pallets



mk offers individually customized pallets. They serve primarily to accept a workpiece, whereby they often travel by various stations on the way from A to B. They can also be the repository of information as to the identity of the product or the processes performed.

By using a standard mk structural profile around the perimeter of the actual support plate, pallet WT2025.41 is perfect for attaching accessories such as metal strips for proximity sensors, or for fixed or bumper stops. The actual pallet dimensions are variable.

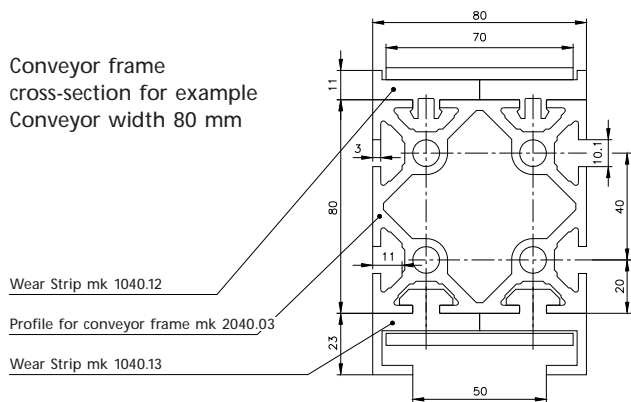
Wear strips are attached to the underside of the pallet to minimize friction during accumulation. The surface is made using 10 mm thick aluminum and provides plenty of room for product-specific fixtures. The corners of the pallet are manufactured with ball bearings which ensure smooth transfer of the pallet between conveyor systems. Precise location and/or lifting of the pallet for certain operations is accomplished using bushings at the corners.



Rework

Upon request we can rework the pallet for your particular application. We can also provide pallets per your drawings.

Timing Belt Conveyor ZRF-P 2040.02





Timing Belt Conveyor System ZRF-P 2040.02 is designed especially for product indexing applications where a cleated, or fixtured belt is required, or for wider timing belt applications. Timing belts are available with a variety of backing materials, or with welded fixtures. Many cleats are available. Plain cleats, as shown

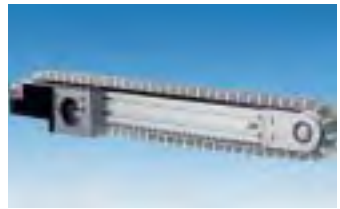
at left, are used for product separation. Others are available with threaded inserts for customer installed fixtures. This conveyor is ideal for special conveying requiring positioning or loading of products. Depending on the product and the application, custom fixtures and other belt widths are available.

Timing Belt Conveyor ZRF-P 2040.02

Drive Version AC



Drive Version AS



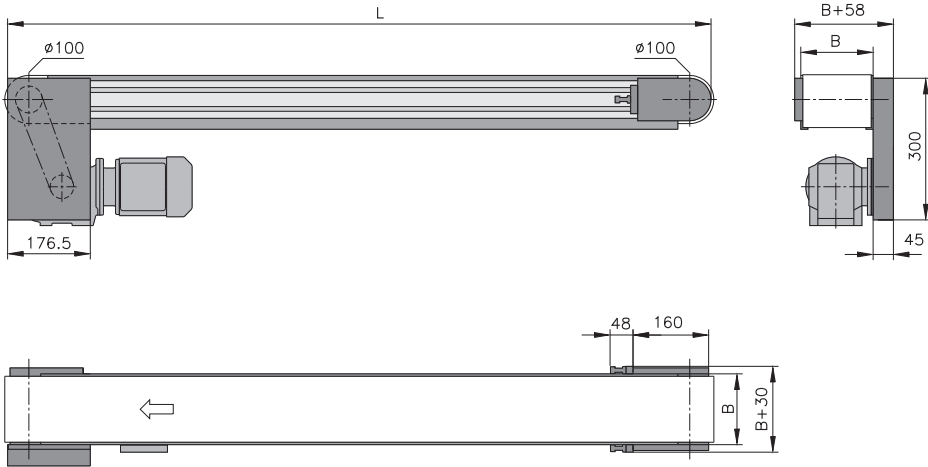
Contents ZRF-P 2040.02

ZRF-P 2040.02 AC – Head Drive –	168
ZRF-P 2040.02 AS – Outside Head Drive –	169
ZRF-P 2040.02 Motor Information	170

ZRF-P 2040.02 AC

Timing Belt Conveyor with Head Drive

B20.40.301



Features:

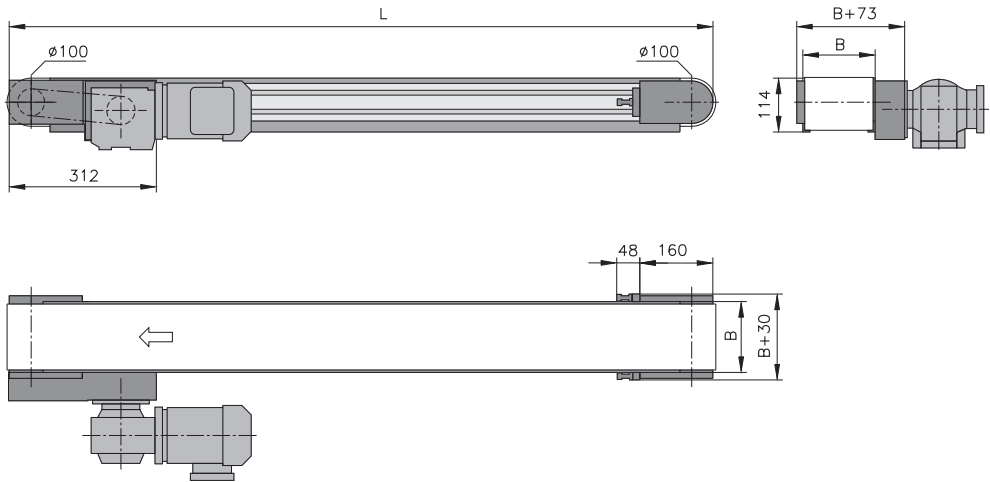
mk offers a variety of motor options for Drive Version AC which are sized and selected for each application's specific speed and load requirements. Use of timing belts with fixtures possible with this drive version.

	Dimensions – Technical Information	Notes
Conveyor length L	between 650 - 6000 mm	any increment possible
Conveyor width B	40/80/120/160 mm	others on request
Timing Belt Width	32/70/110/150 mm	
Timing Belt Type		see page 171
Drive Location	head right, head left	
Drive and Speed	to 30 m/min (100 ft/min)	see page 170
Stands and Side Rails		see page 262
Load Capacity max.	to 200 kg (440 lbs)	higher on request

ZRF-P 2040.02 AS

Timing Belt Conveyor with Outside Head Drive

B20.40.302



Features:

Drive Version AS features motor placement on the outside of the conveyor frame. This is often used in situations where the conveyor frame must be as unobstructed as possible, or where the motor must remain clean. The overall height of the drive assembly is held to an absolute minimum. Use of timing belts with fixtures is possible with this drive version.

	Dimensions – Technical Information	Notes
Conveyor length L	between 650 - 6000 mm	any increment possible
Conveyor width B	40/80/120/160 mm	others on request
Timing Belt Width	32/70/110/150 mm	
Timing Belt Type		see page 171
Drive Location	head right, head left	
Drive and Speed	to 30 m/min (100 ft/min)	see page 170
Stands and Side Rails		see page 262
Load Capacity max.	to 200 kg (440 lbs)	higher on request

ZRF-P 2040.02

Motor Information

Motor selection

As a standard, mk offers a variety of motors. Although the selection varies by country with respect to local voltage standards and safety regulations, international availability is a key requirement. Typically, we supply inverter-duty right-angle gearmotors for heavy-duty requirements and parallel shaft gearmotors for lower speed and load applications. All motors are readily available from mk.

Motor voltage

As a standard, mk provides motors which comply with the normal, expected electrical requirements of the country where they are manufactured. International motors are also available for conveyors designed for export.

Motor power

Motors are sized to each individual conveyor style, size and performance requirements. The typical range is between 0.18 KW and 0.37 KW (1/4 hp and 1/2 hp).

Speeds

The maximum belt speed for ZRF-P 2040.02 conveyors is approximately 30m/min (100 ft/min). This is dependant on the total load, the type of transport with respect to indexing or accumulation, and the conveyor length.

Speed Control

Frequency inverters with a variable speed range of 1:7 are available for AC motors.

Rating

All standard motors are built to IP 54 (IP = International Protection) standards, whereby higher standards are available on request.

Additional notes

The motors are primarily designed for continuous duty. Operating motors at very low frequency (below 70% of normal) may require additional cooling. Motors with encoders, clutches, brakes, thermal overload protection or indexing capabilities are also available.

Timing Belt Conveyor

Properties of Timing Belts



The standard toothed belts are made of two materials and have a high-strength steel cord reinforced belt. The belts have a T10 pitch and a width of 32 mm (others available on request). Different backings can be used to ensure optimum transport.

++ = excellent, + = good, +- = fair, - = poor

Properties of belts/backings	Polyurethane	Polyamide PAR/PAZ	PVC white FDA	Rubber, coarse structure (supergrip)*	Linatex
Moisture resistance	+				+
Resistant against oil and grease	+		+-	+	+-
Suitable for food (FDA-conformity)			+		
Abrasion resistance	+				+-
Tear resistant					++
Wear resistance				+	
Adhesion property (continuous/inclined conveying)				+	++
Anti-frictional property (accumulated conveying)	-	+			-
Cut-resistance	+				
Low noise		+ (PAZ)			
Color	diverse	green	white	petrol	red
Temperature resistance	up to 60°C	up to 60°C	-40/+100°C	-10/+90°C	-40/+70°C
Hardness	60° Shore A		65° Shore A	40° Shore A	40° Shore A
Typical applications	General transport, wood, metal, glass	Accumulated operation	Food (unpackaged)	Wood, paper, packaging, inclined conveyor	Wood, paper, textile, faster transport

*not suitable for use in the ZRF-P 2010 except with conveyor frame rework.

Timing Belt Conveyor

Application Examples



Timing Belt Conveyor
ZRF-P 2004 with fixtures



Timing Belt Conveyor
with supergrip backing



Timing Belt Conveyor with
bolted on fixtures



Adjustable width dual-lane timing belt conveyor with cleats



Timing Belt Conveyor with telescoping frame and drip pan



Timing Belt with threaded inserts

Timing Belt Conveyor

Application Examples



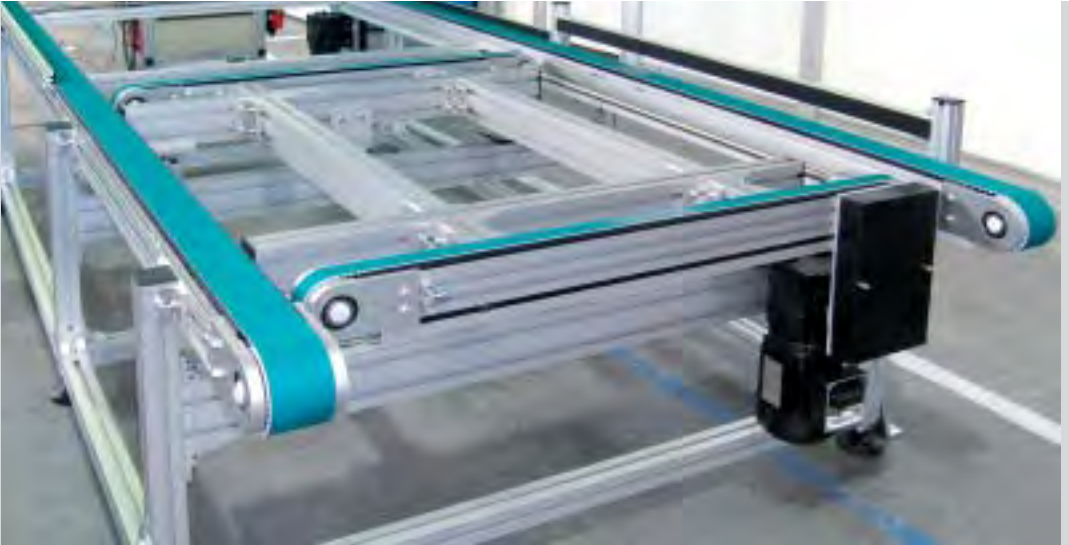
ZRF-P 2010 with drive version BC and side rails



ZRF-P 2010 with shaft guard



ZRF-P 2010 with cantilevered tail



ZRF-P 2010 as right-angle transfer



ZRF-P 2010 with cleats



ZRF-P 2010 with customer-specific painting of the drive motor

Timing Belt Conveyor

Application Examples



ZRF-P 2040.02 with threaded bushings recessed in the timing belt and installed, customer-specific cleats



ZRF-P 2040.02 with customer-specific side rail for parallel conveying of two workpieces



ZRF-P 2040.02 with drive version AC



ZRF-P 2040.02 with drive version AC
and with prismatic cleats



Tail ZRF-P 2040.02 with prismatic cleats



Customer-specific ZRF with partial
lateral cleat sections