

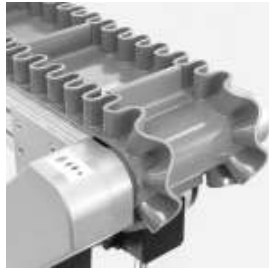
CONVEYOR TB40



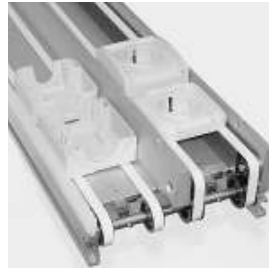
CUSTOMIZED SOLUTIONS



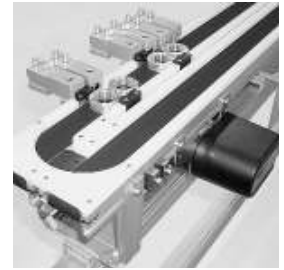
Assembly



Watch industry



Electronics industry



Construction industry



Mechanical engineering



Plastics industry



Printing industry



Automotive suppliers



Automotive



Medical industry



Automotive suppliers



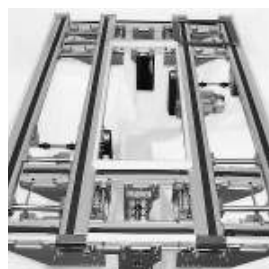
Solar industry



Medical industry



Automotive suppliers



Mechanical engineering



Airport industry



Airport industry



Automotive



Electronics industry



CONVEYOR TB40



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Conveyors TB40 are used to carry parts to or from the various manufacturing stations, or combined to form complete transport systems. The modular construction of the system permits simple adaptation to specific customer requirements.

The conveyor is driven by a 24 V motor. This permits transportation of up to 80 kg in the conveying mode. Conveyor products are complemented by our full range of accessories. This includes various belt types for different applications, lateral guides and stands. The warranty is 36 months from date of delivery.

Modifications may be made without notice.

PRODUCT DESCRIPTION TB40



With the drive integrated into the drive roller, the conveyor belt is very compact in design.

The following chassis widths are available: 300, 400, 500, 600, 700 and 800 mm. The possible band length is between 1 and 6 m.

The diameter of the deflection rollers is 60 mm (the drive roller is 73 mm) and allows the use of cleated belts. The compact construction delivers huge benefits especially for climbing conveyors provided with cleat spacing with ribs.

Accessories can be included in the future easily, quickly and without mechanical processing.

TECHNICAL DATA CONVEYOR TB40

Ambient temperature	+10 to +40 °C
Rel. Humidity	< 95% (without condensation)
Air purity	normal workshop atmosphere
Noise level	< 60 dBA
Protection category of components	IP65
Drive	integrated into the drive roller
Belt speed	0–30 m/min (± 10%)
On-time	100%
Rated voltage	24 V DC
Permitted supply voltage	20 ... 28 V DC
Nominal current	12.3 A
Maximum current	25 A
Nominal power output	251 W
Setpoint setting	digital (PWM-frequency) / analog 0–10 V
Digital inputs	4×NPN 24 V
Digital outputs	3×PNP 24 V
Analog input	0–10 V
Anti-blocking function	thermal
Overload protection	yes
Belt width	300/400/500/600/700/800 mm
Belt length	min. 1 m / max. 6 m (belts under 1 m and over 6 m long on request)
Load in conveying mode	80 kg (friction belt–chassis 0.25)
Material	Profile lateral Deflecting rollers Drive roller Gliding plate Connecting support Tabs
	aluminum, anodized natural steel stainless steel nickel-plated/option stainless steel aluminum, anodized natural, plastic aluminum, anodized natural

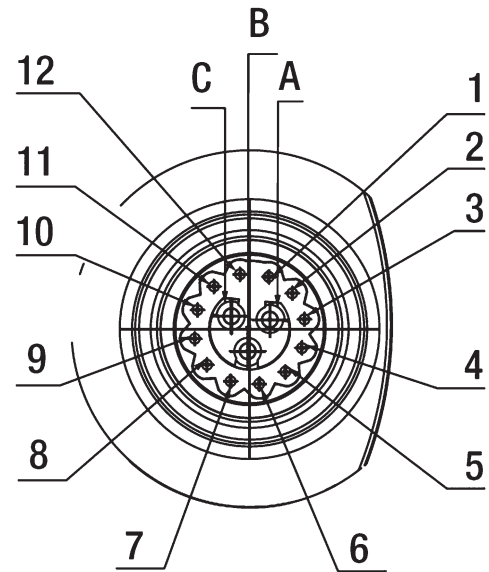
Weight (basis L = 1000 mm)		Drive	Extension per meter
		[kg]	[kg]
Type	TB40-300	18.3	8.4
	TB40-400	21.5	9.9
	TB40-500	24.7	11.4
	TB40-600	27.8	12.8
	TB40-700	31.0	14.3
	TB40-800	34.2	15.8

TECHNICAL DATA CONVEYOR TB40

Functions electronics TB40	<ul style="list-style-type: none">● Start / stop through digital input● Direction selection through digital input● Stepless speed modification through analog input● 3 stored speeds to choose through digital input● Overtemperature message through the digital output● Ready message through the digital output
General description	<ul style="list-style-type: none">● BLDC Motor● Drive with fully integrated 4Q operating and control electronics with sinus commutation● Possibility for smooth acceleration and deceleration● Operating in speed control mode (positioning or torque mode available upon request)

DESCRIPTION OF MOTOR CONNECTIONS CONVEYOR TB40

15-pin connector (M16)			
Pin 1	white	DIN A	digital input A (+24 V)
Pin 2	brown	DIN B	digital input B (+24 V)
Pin 3	green	DIN 1	digital input 1 (+24 V)
Pin 4	yellow	DIN 2	digital input 2 (+24 V)
Pin 5	grey	DOUT 1	digital output 1 (+24 V)
Pin 6	pink	DOUT 2	digital output 2 (+24 V)
Pin 7	-	n.c.	-
Pin 8	red	AIN 1	analog input 1 (0 – 10 V) ¹⁾
Pin 9	black	AGND	GND for analog IN 1 ¹⁾
Pin 10	-	n.c.	-
Pin 11	-	n.c.	-
Pin 12	red/blue	Ue	logic supply (+24 V)
Pin A	-	n.c.	-
Pin B	brown	Up	power supply (+24 V)
Pin C	black	GND	power/signal GND



The speed setpoint can be preset through the analog input (potentiometer) and/or the predefined constant speeds are used. With the corresponding bit pattern, the direction, the rotational speed and the driving state (start / stop) can be selected.

¹⁾ The analog input is connected to a potentiometer R = 10 kΩ.

Input function						
DIN A	DIN B	DIN 1	DIN 2	rotation direc.	who	function
0	0	x	x	-	0	drive not powered
1	0	0	0	positive	A1	speed setpoint through analog input AIN 1
1	0	1	0	positive	N1	variable speed 1 (default: 10 m/min)
1	0	0	1	positive	N2	variable speed 2 (default: 20 m/min)
1	0	1	1	positive	N3	variable speed 3 (default: 30 m/min)
0	1	0	0	negative	A1	speed setpoint through analog input AIN 1
0	1	1	0	negative	N1	variable speed 1 (default: 10 m/min)
0	1	0	1	negative	N2	variable speed 2 (default: 20 m/min)
0	1	1	1	negative	N3	variable speed 3 (default: 30 m/min)
1	1	0	0	-	0	deceleration and stop
1	1	1	0	-	0	deceleration and stop
1	1	0	1	-	0	deceleration and stop
1	1	1	1	-	0	deceleration and stop

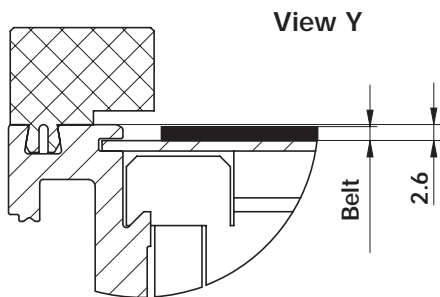
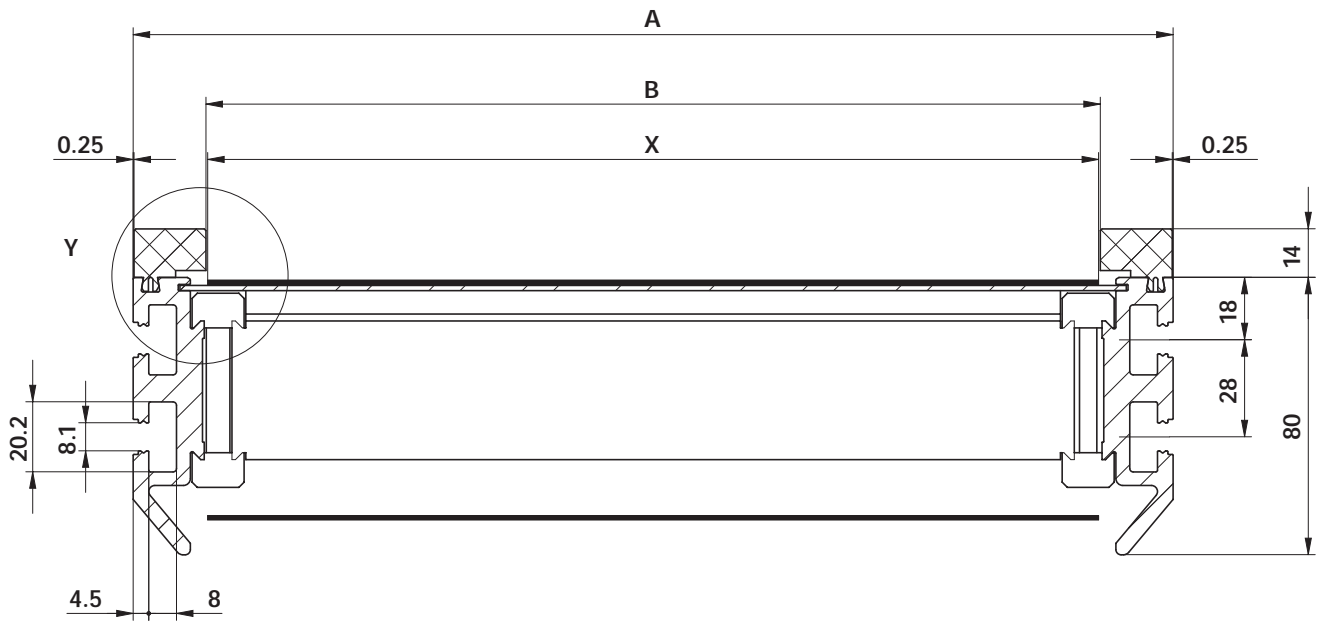
x any value

N1, N2, N3 variable speed can be defined by customers (0.0 – 30.0 m/min)

Output function		
Digital outputs	value	function
DOUT 1	1	run message
DOUT 2	1	overtemperature message

On request other operating modes can be defined.

CONSTRUCTION / CROSS-SECTION CONVEYOR TB40



Type	TB40-300	TB40-400	TB40-500	TB40-600	TB40-700	TB40-800
A width of chassis [mm]	300	400	500	600	700	800
B conveyor width ± 0.5 mm [mm]	228-266	328-366	428-466	528-566	628-666	728-766
X belt width [mm]	257	357	457	557	657	757

Manufacturer's designation		FNB-5E	FAB-2E	FNI-5E	ENI-5EE	HNB-5E	HAT-5E	NAB-8EEDV11	NHB-5EKBV
Thickness	[mm]	1.3	0.7	0.9	1.2	1.3	1.5	2	1.0
Dimensions	[kg/m ²]	1.5	0.7	0.9	1.2	1.5	1.8	2.3	1.2
Min. drum diameter	[mm]	15	15	15	20	15	25	32	30
Edge radius	[mm]	R4	R4	R4	R4	R4	R3	-	-
k _{1%} after relaxation	[N/mm]	4.6	2.4	4.4	4.2	4.6	4.8	6.0	3.2
k _{perm.}	[N/mm]	8	6	8	8	8	8	9	5
Operating temp., cont.	[°C]	-15/80	-30/80	-30/80	-30/80	-15/80	0/80	-10/70	-10/70
Operating temp., briefly	[°C]	-20/110	-30/110	-30/110	-30/100	-20/110	-10/110	-20/80	-20/80
Field of use		L, Ch, Ph	L, Ch, Ph	L, Ch, Ph	Mo, El	L, Ch, Ph,	Ho	L, Ch, Ph	Mo, El
Method of transport horizontal		X	X	X	X	X	X	X	X
buffering		X	X	X	X	X			X
rejection of goods		X	X	X	X	X		X	X
inclined			X				X	X	
Surface of conveying side		smooth	smooth	fabric	structured	smooth	structured	smooth	smooth
Cleats		yes	no	no	no	yes	no	yes	yes
Color of conveying side		white	white	white	black	green	gren	dark green	black
Antistatic		yes	yes	yes	yes	yes	yes	yes	yes
Suitable for food		yes	yes	yes	no	yes	no	no	no

Conveying mode coefficient of friction μ_G at 50% relative humidity

Deflection roller	[μ_G]	0.2	0.2	0.2	0.15	0.2	0.2	0.25	0.25
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Buffering mode coefficient of friction μ_G at 50% relative humidity

Deflection roller	[μ_G]	0.6	1	0.4	0.4	0.7	-	-	0.6
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Legend

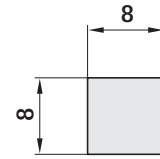
k_{1%} Required force for 1% elongation
k_{perm.} Maximum permissible force
L Food
Ch Chemistry
Ph Pharmaceuticals

Mo Mounting systems, genera
El Electronics industry (electrically conductive)
Oe Effect of oil and grease
HT For high operating temperatures

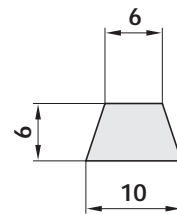
Dr Printing industry
Ho High-performance belt, heat-resistant, high mechanical and chemical resistance

CLEATS FOR CONVEYOR TB40¹⁾

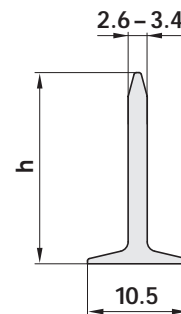
Manufacturer's designation	POS-8	PQF-8
Suitable for belt type	NAB-8EEDV11 NHB-5EKBV	FNB-5E HNB-5E
Field of application ²⁾	St	L, Ch, Ph
Min. cleat spacing A [mm]	40	40
Color	dark-gray	white



Manufacturer's designation	PVS-10	PVF-10
Suitable for belt type	NAB-8EEDV11 NHB-5EKBV	FNB-5E HNB-5E
Field of application ²⁾	St	L, Ch, Ph
Min. cleat spacing A [mm]	40	40
Color	dark-gray	white



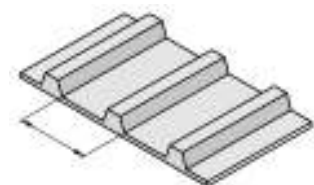
Manufacturer's designation	PNF	PNH
Suitable for belt type	FNB-5E, HNB-5E	
Field of application ²⁾	L, Ch, Ph	L, Ch, Ph
Min. cleat spacing A [mm]	25	25
Color	white	green
Cleat height h [mm]	20 (PNF-20) 30 (PNF-30) 40 (PNF-40)	20 (PNH-20) 30 (PNH-30) 40 (PNH-40)



Cleat spacing

$$\text{Cleat spacing } A = \frac{2 \times \text{length } L \text{ [mm]}^4 + 66.5}{\text{number of cleats}}$$

$$\text{Number of cleats} = \frac{2 \times \text{length } L \text{ [mm]}^4 + 66.5}{\text{cleat spacing } A}$$



A³⁾

- 1) Cleated belts require at least two weeks delivery time
- 2) For legend, see page 10
- 3) The tolerance of the cleat spacing A is ± 2 mm
- 4) Length L see page 14

LOADING LIMITS CONVEYOR TB40

End- drive in conveying mode

Belt speed	Belt width	FNB-5E	FAB-2E	FNI-5E	ENI-5EE	HRVT-101 TF-NRN	HNB-5E	HAT-5E	NAB- 8EEDV11	NHB-5EKBV
[m/min]	[mm]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]
0-30	357-757	80	80	80	80	80	80	80	80	80

End drive in buffering mode

Belt speed	Belt width	FNB-5E	FAB-2E	FNI-5E	ENI-5EE	HRVT-101 TF-NRN	HNB-5E	HAT-5E	NAB- 8EEDV11	NHB-5EKBV
[m/min]	[mm]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]
0-30	357-757	40	40	40	40	40	40	40	40	40

BELT FABRICATION CONVEYOR TB40

Version 1

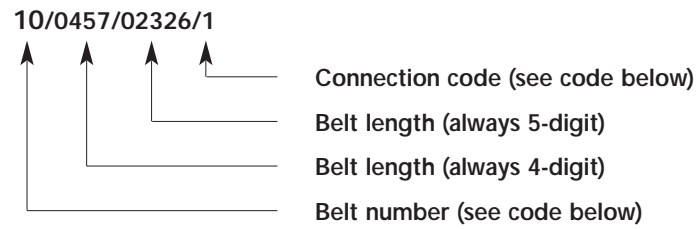
You order the belt yourself from the manufacturer in the table below.
You can determine the belt length using the file Gurtlänge TB40.xls.

Version 2

Montech procures the belt for you according to the list of belt codes below.

LIST OF BELT CODES

Structure of our code:



No.	Belt designation	Connection code	Supplier
10	FNB-5E	1 / 2 / 3 / 4	Habasit
11	FAB-2E	1 / 2 / 3 / 4	Habasit
12	FNI-5E	1 / 2 / 3 / 4	Habasit
15	ENI-5EE	1 / 3 / 4	Habasit
20	HNB-5E	1 / 3 / 4	Habasit
21	HAT-5E	1 / 3 / 4	Habasit
54	NHB-5EKBV	1 / 3 / 4	Habasit
59	NAB-8EEDV11	1 / 3 / 4	Habasit

Connection code 1 = endless flexproof
 Connection code 2 = endless thermofix
 Connection code 3 = open beveled
 Connection code 4 = cut square

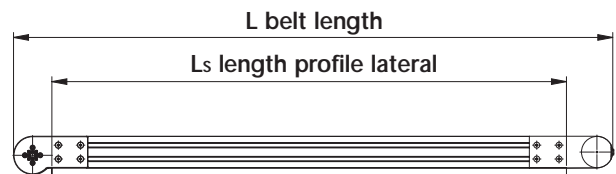
Connection code 1 is preferable!

CALCULATION FORMULAS CONVEYOR TB40

Calculation of belt length

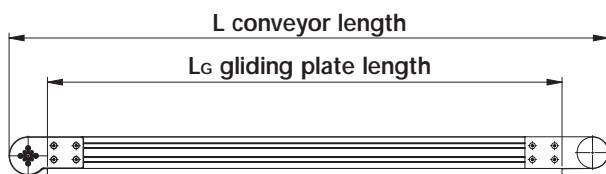
An Excel table is used for calculating the belt length. It can be downloaded from our website at (www.montech.com) You can find the file «Gurtlänge TB40xls» under Support ⇒ Service forms.

Calculation of profile lateral

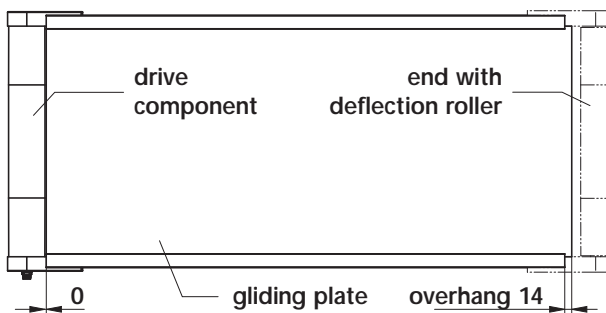


Lateral formula profile:
 $L_s = L - 173 \text{ mm}$

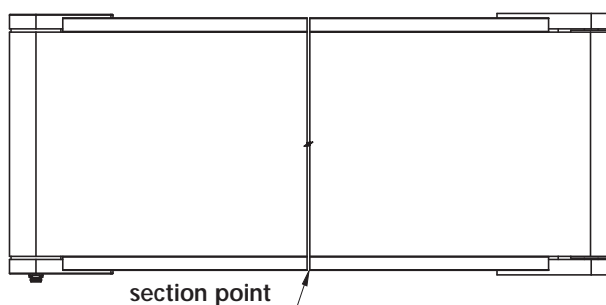
Calculation of gliding plate



Formula gliding plate length:
 $L_g = L - 159 \text{ mm}$

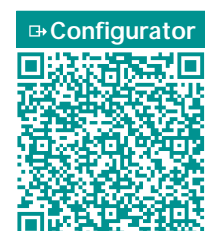
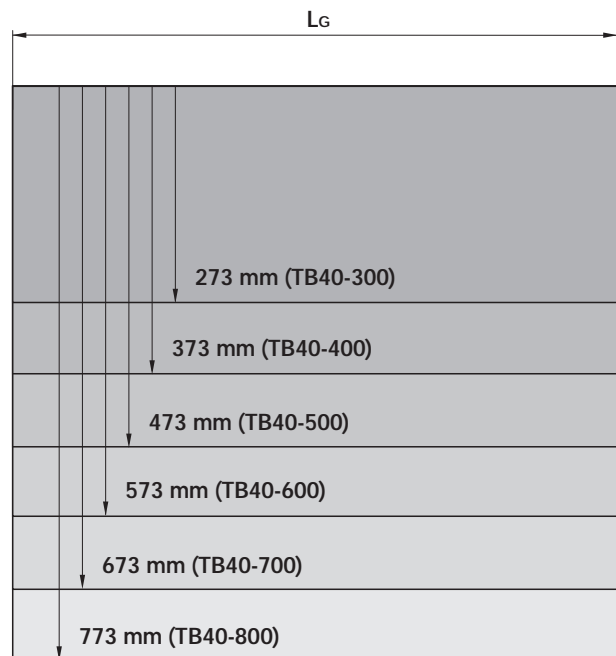


On the end side with deflection roller the gliding plate always needs an overhang of 14 mm.

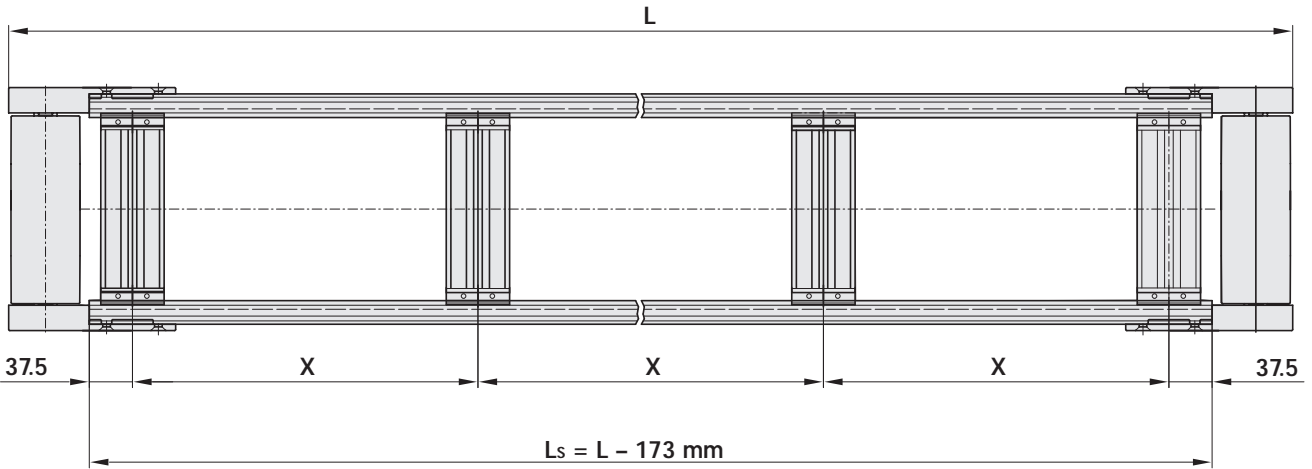


At a total length more than 3000 mm for assembly reasons the section point must have no offset from the gliding plate to the lateral guide.

Gliding plate width

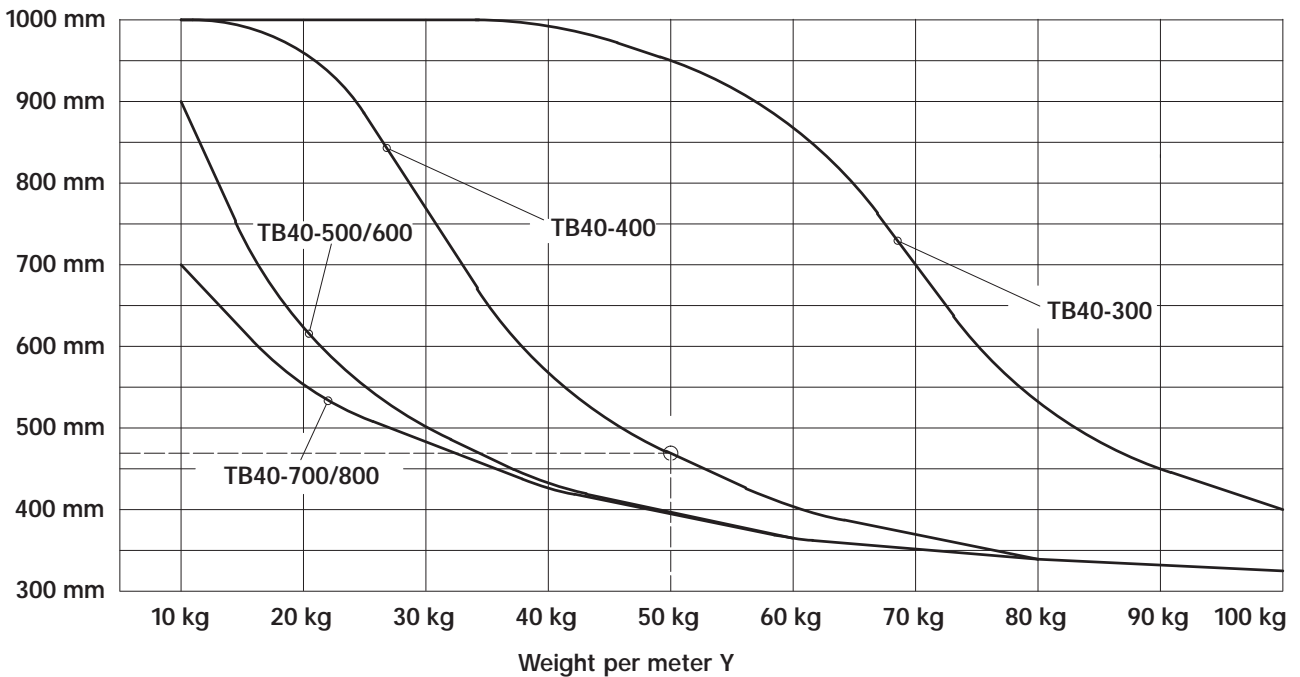


SUPPORT SPACING CALCULATION FOR CONVEYOR TB40



L in mm	Length of conveyor
Ls in mm	Length of profile lateral
Dimension X in mm	Spacing between supports
Weight Y in kilograms	Loading of belt per 1000 mm. The total loading over the entire length of the conveyor must not exceed 80 kg maximum in conveying mode, refer also to table of loading limits, page 12.

Dimension X



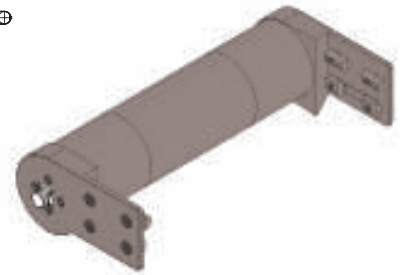
Due to high surface loading, additional supports are necessary to increase the stability of the gliding plate. The optimum number of supports is calculated from the above diagram.

Determination of dimension X

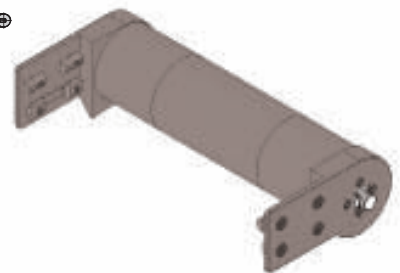
1. Determine belt load per meter (e.g. 50 kg).
2. Choose the curve of conveyor belt selected (e.g. TB40-400).
3. Determine point of intersection of curve and weight per meter Y and read dimension X from table (gives a dimension of 470 mm).

COMPONENTS CONVEYOR TB40

Drive unit TB40, connection right	Ref. No.
TB40-300	63529
TB40-400	63569
TB40-500	63577
TB40-600	63581
TB40-700	63585
TB40-800	63590



Drive unit TB40, connection left	Ref. No.
TB40-300	64352
TB40-400	64353
TB40-500	64354
TB40-600	64355
TB40-700	64356
TB40-800	64357



Motor cable CF-C11Y, screened	Ref. No.
Length 3 m	521881
Length 10 m	521882

Cable: CF-C11Y ((3x1.5)+12x0.34)
Total shielding



Cable connector
M16 for cable
Ø 8-11 mm

Crimp stake
serie M16
15-pin (12+3)
diagram
see page 7

End with deflection roller Ø 60	Ref. No.
TB40-300	58042
TB40-400	58043
TB40-500	58044
TB40-600	58045
TB40-700	58046
TB40-800	58047



COMPONENTS CONVEYOR TB40

Profile lateral TB40	Ref. No.
	49405/...*

* customer-specific in mm, max. 3000 mm

Gliding plate TB40 sendzimir galvanised	Ref. No..
TB40-300 B=273 L=...*	54869/0273/...*
TB40-400 B=373 L=...*	54869/0373/...*
TB40-500 B=473 L=...*	54869/0473/...*
TB40-600 B=573 L=...*	54869/0573/...*
TB40-700 B=673 L=...*	54869/0673/...*
TB40-800 B=773 L=...*	54869/0773/...*

* customer-specific in mm, max. 3000 mm

Gliding plate TB40 stainless	Ref. No.
TB40-300 B=273 L=...*	54868/0273/...*
TB40-400 B=373 L=...*	54868/0373/...*
TB40-500 B=473 L=...*	54868/0473/...*
TB40-600 B=573 L=...*	54868/0573/...*
TB40-700 B=673 L=...*	54868/0673/...*
TB40-800 B=773 L=...*	54868/0773/...*

* customer-specific in mm, max. 3000 mm



Connecting support TB40*	Ref. No.
TB40-300	49586
TB40-400	49587
TB40-500	49588
TB40-600	49589
TB40-700	49590
TB40-800	49591

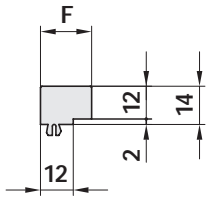


* at least two pieces

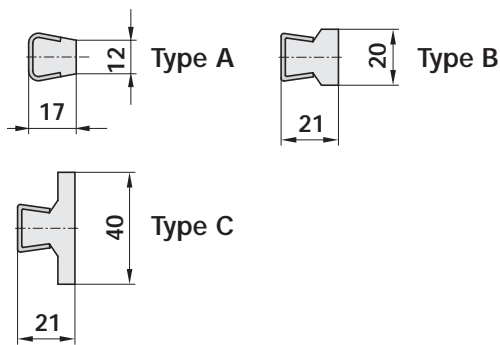
ACCESSORIES CONVEYOR TB40

Lateral guide fixed L = 2000 mm		Ref. No.	
		white	black (antistatic)
F = 20.75	28186	28186S	
F = 26.75	32071	32071S	
F = 35.75	28188	28188S	

In addition to the standard widths, project-specific lateral guides are also available



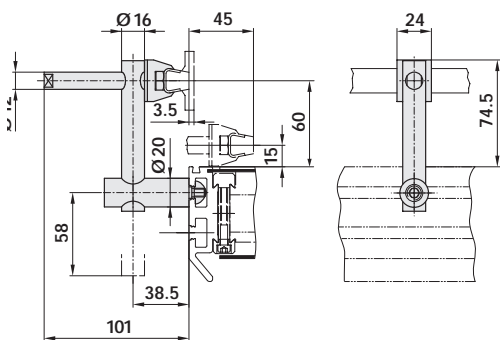
Lateral guide adjustable L = 3000 mm		Ref. No.	
Type A	504985		
Type B	504986		
Type C	504987		



Note: Adjustable lateral guides are available for conveyors with a minimum length of at least 500 mm.



Holder for lateral guide, adjustable		Ref. No.	
		50094	

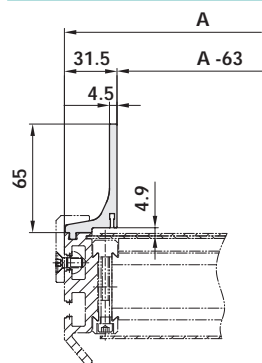


For Type A, B and C:
 0-1400 mm = 2 holder
 1400-2400 mm = 3 holder
 2400-3000 mm = 4 holder

Special lateral guides on request.



Lateral guide, aluminium L = 2000 mm		Ref. No.	
		55106	

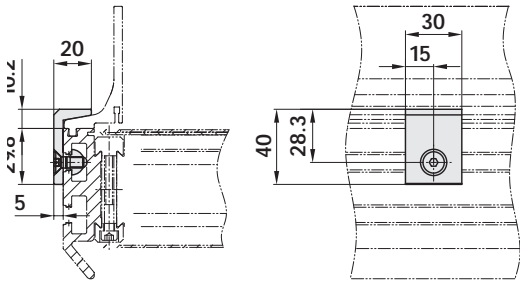


Note: Aluminium lateral guides are available for conveyors with a minimum length of at least 400 mm.



ACCESSORIES CONVEYOR TB40

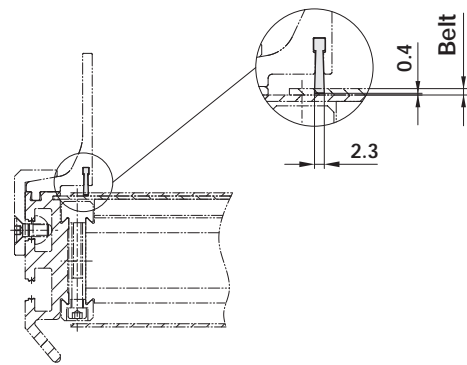
Holder for lateral guide	Ref. No.
	54864



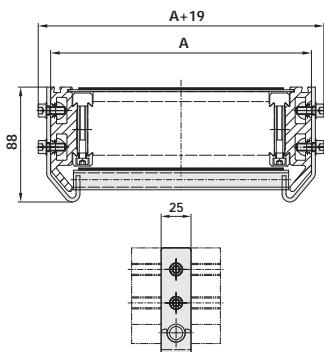
For Type A, B and C:
 0-1400 mm = 2 holder
 1400-2400 mm = 3 holder
 2400-3000 mm = 4 holder



Contact brush for lateral guide L = 2000 mm	Ref. No.
	508390



Belt support	A [mm]	Ref. No.
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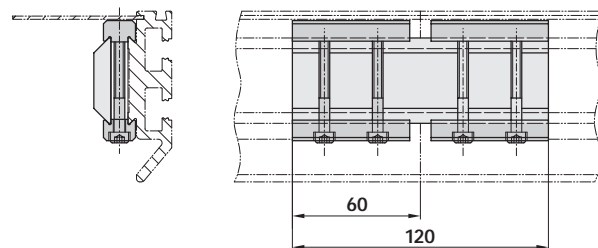


TB40-300	300	50085
TB40-400	400	50086
TB40-500	500	50087
TB40-600	600	50088
TB40-700	700	50089
TB40-800	800	50090

(option for long conveyor belts)



Lateral guide connector	Ref. No.
	49597 (pair)

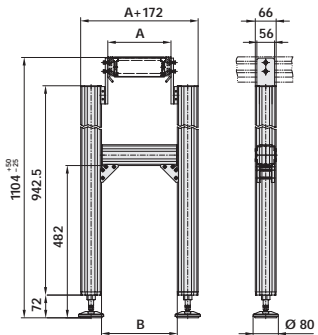


The TB40 is shipped in units of max. 3 m length.
 A pair of side profile connectors should be provided per joint.



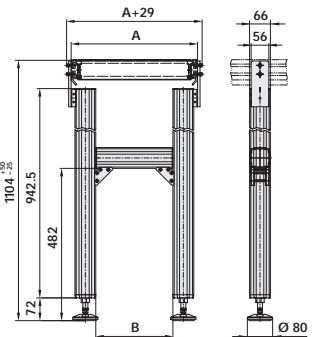
ACCESSORIES CONVEYOR TB40

Floor stand, wide	A [mm]	B [mm]	Ref. No.
TB40-300	300	340	50095
TB40-400	400	440	50096
TB40-500	500	540	50097

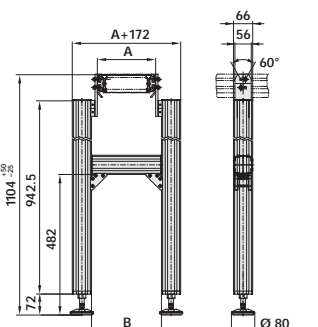



Floor stand, narrow	A [mm]	B [mm]	Ref. No.
TB40-400	400	244	50026
TB40-500	500	344	50098
TB40-600	600	444	50099
TB40-700	700	544	50100
TB40-800	800	644	50101

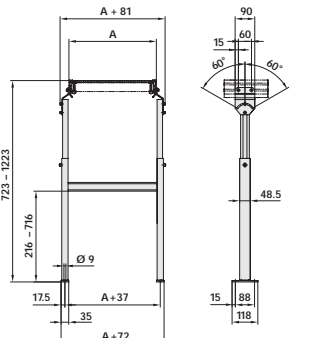
Not for use with cleated belts!




Floor stands, tilting 0-60°	A [mm]	B [mm]	Ref. No.
TB40-300	300	340	50102
TB40-400	400	440	50103
TB40-500	500	540	50104
TB40-600	600	640	50105
TB40-700	700	740	50106
TB40-800	800	840	50107



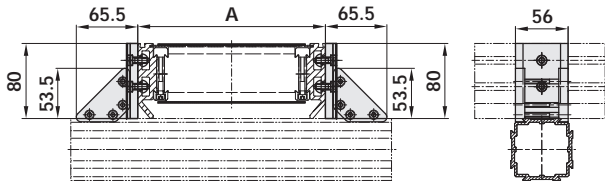

Floor stands, tilting ±60°, height adjustable	A [mm]	Ref. No.
TB40-300	300	55094
TB40-400	400	55095
TB40-500	500	55096
TB40-600	600	55097
TB40-700	700	55098
TB40-800	800	55099




ACCESSORIES CONVEYOR TB40

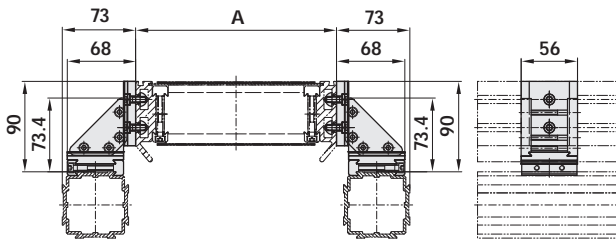
OS-table stand TB40

Ref. No.
49594 (pair)



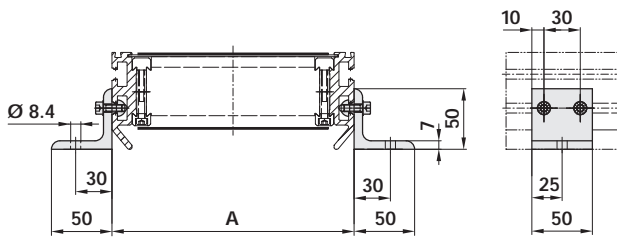
OS-table stand TB40 90°

Ref. No.
49595 (pair)



Fixing bracket TB40

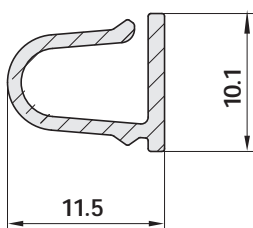
Ref. No.
49596 (pair)



Cover for T-slots TB40 (aluminium)

per meter

Ref. No.
49505

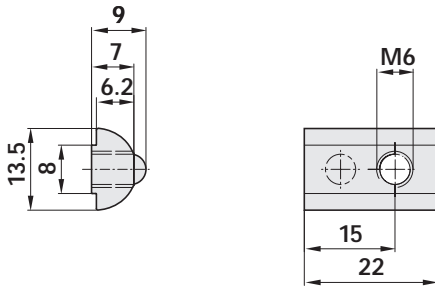


ACCESSORIES CONVEYOR TB40

T-slot insert nut pivotable M6

Ref. No.

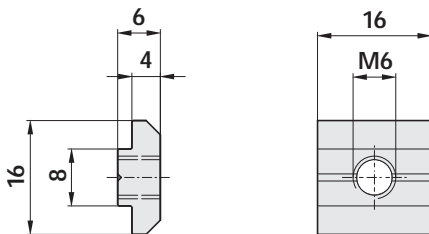
506969



T-slot insert nut M6

Ref. No..

506959





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