

Tollobelt
TBT125, TBT160A, TBT295B and TBT295W
Installation and service manual

Table of Contents

Section 1 Introduction	2
Section 2 Type designation system	3
Section 3 Installation	4
3.1 Installation instructions.....	4
3.2 Connection of divided Tollobelt.....	5
3.3 Connection to drive shaft	5
3.4 Connection of load to trolley with flexible bolt connection type BUB p/n D105 710	6
3.5 Installation of trolley safety cable p/n D190 600.....	6
3.6 Suspension with T-slot bolt type TBM 12.....	7
3.7 Installation of universal safety cable p/n D190 604.....	7
Section 4 Service and maintenance	8
4.1 General maintenance instructions	8
4.2 Control and adjustment of belt tension.....	8
4.3 Control and adjustment of belt position.....	9
4.4 Replacement of belt.....	10
Section 5 Technical data	11

Section 1 Introduction

Tollobelt is a series of linear drive units, which consist of four different models – TBR1, TBR2, TBR3 and TBR4.

Tollobelt is built around an extruded aluminium profile with a tension station in one of the ends and a drive station in the other. In the profile there is one or several trolleys. A belt runs through the profile and both of the stations. The belt is driven by a motor that is installed to the drive shaft of the drive station. Tollobelt units can be delivered in a number of configurations, which are described in the type designation key on the next page.

Feel free to contact Tollo Linear if there are any doubts as to the type or if you have any other questions. When you do so please state the manufacturing number and the type designation of the Tollobelt, see figure 1.

Important!

- Read through this manual before beginning the installation or servicing and follow all applicable directions in order to ensure a safe and proper job.
- In order to ensure a long life expectancy and reliable functionality, Tollobelt must be serviced according to the directions found in this manual. Spare parts should be by the same manufacturer and of the same type as the original or be among those approved in writing by Tollo Linear. Never use parts which work improperly or seems damaged.
- The system or machine part of which Tollobelt is a component must not be used before it is in compliance with the EU's Machinery Directive in those instances where it is to be used within the EEC area.
- If possible, never work with power, compressed air or hydraulics turned on. If the work must be performed with some of these turned on, another person must be positioned so that the power, compressed air or hydraulics can be turned off in the event of any mishap.

Section 2 Type designation system

TB	R	1	B	240	C
Tollobelt.....TB							
Roller guides.....R							
Profile height / type.....125 mm.....1160 mm.....2295mm bolted.....3295 mm welded...4							
Belt drive..B							
Linear move / drive shaft revolution.....240 mm.....240							
One trolley.....A							
Two trolleys.....C							
Three trolleys.....D							
Four trolleys.....E							
Standard at one trolley.....000							
Lc distance between multiple trolleys (c/c distance between trolleys in cm).....000 – 999							
Order length (see measure L in figure 1) in cm.....0000 – 9999 or Sequential number at custom design, M + sequential number.....M000 – M999							

Table 1: Type designations

Section 3 Installation

3.1 Installation instructions

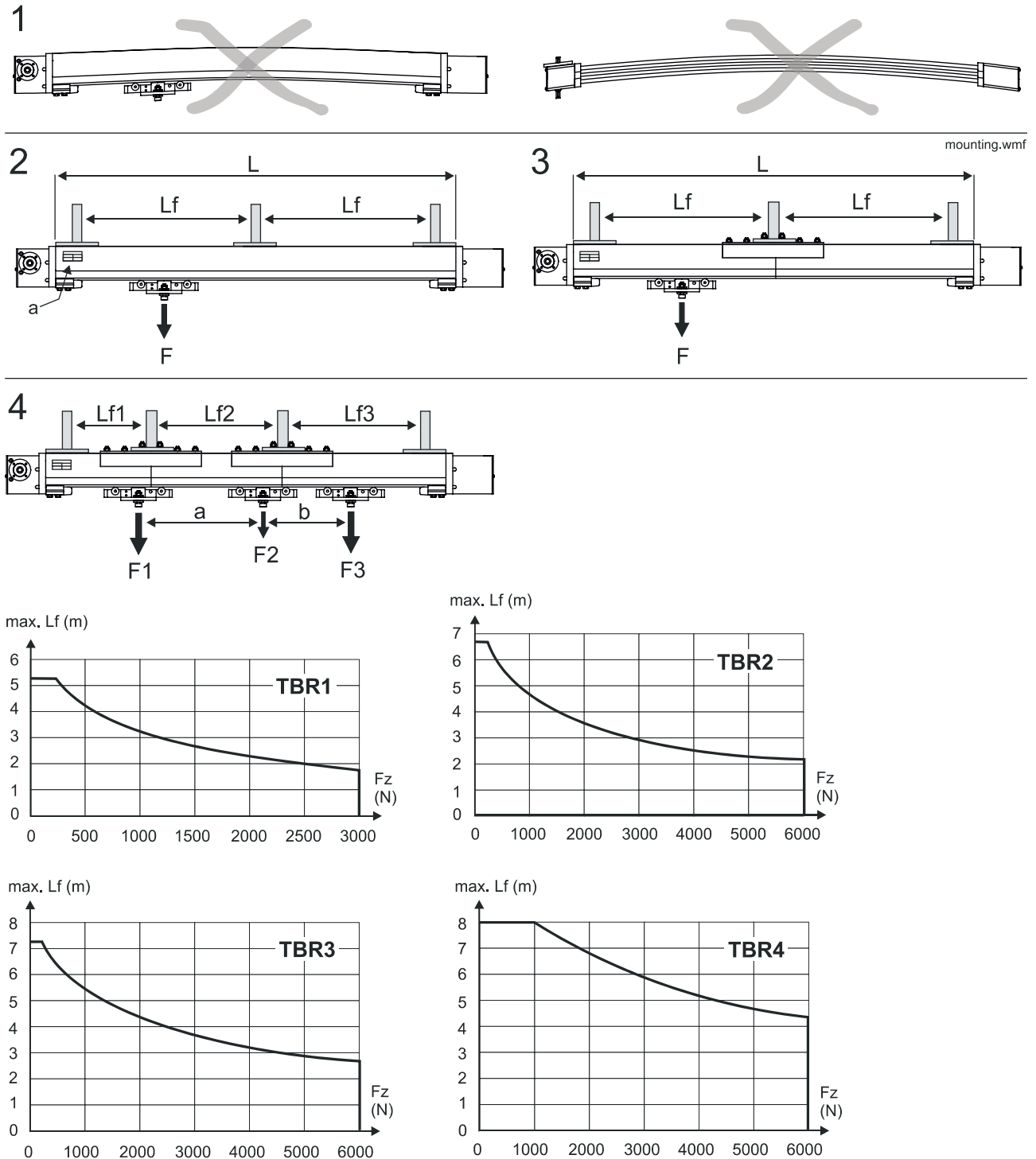


Figure 1: Installation of Tollobelt

1. Tollobelt may only be installed horizontally with the trolley(s) pointing down and so that it is not bent or twisted in any direction or can move during operation.
2. Suspensions must, as a minimum, be installed in both ends of Tollobelt. Position of the type sign (a).
3. If a Tollobelt is equipped with connections then every connection must be supported by a suspension.
4. The maximum permissible support distance (L_f) is dimensioned for the highest load and the smallest trolley distance.

3.2 Connection of divided Tollobelt

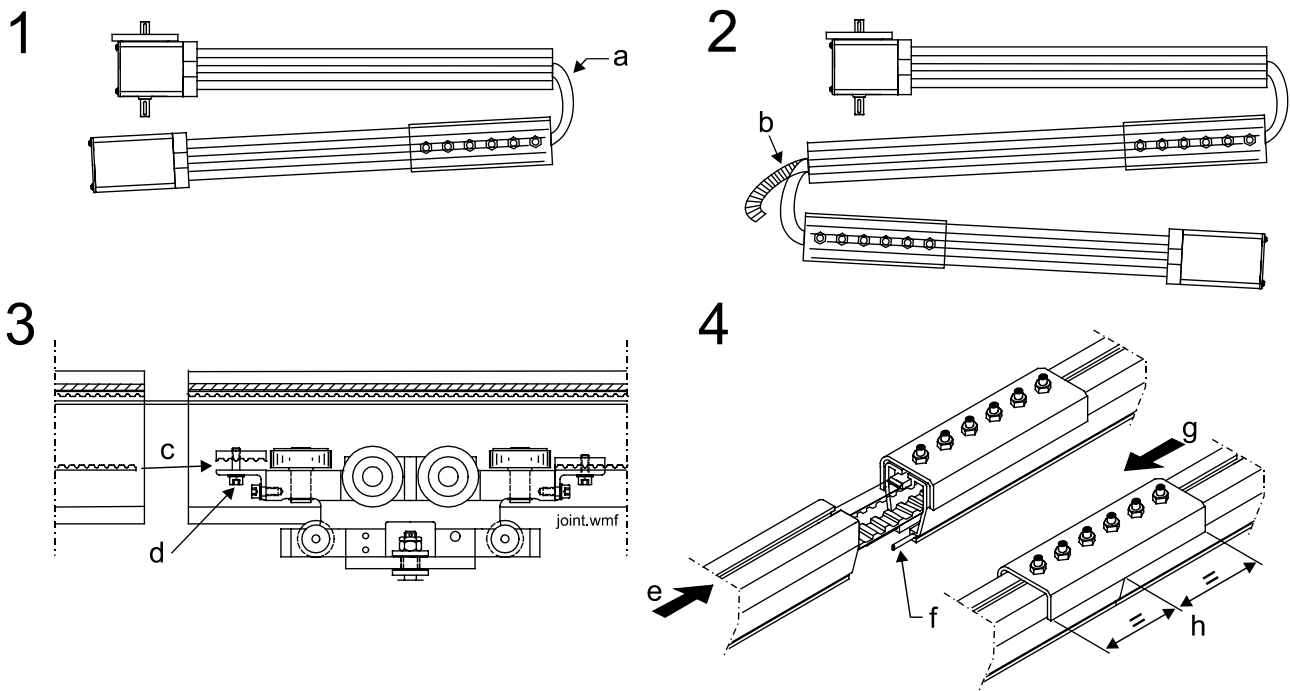


Figure 2: Connection of divided Tollobelt

Long Tollobelts are divided at delivery. After the connection the belt tension (see point 4.2) and the belt position (see point 4.3) must be checked.

1. When a Tollobelt is divided without having the belt (a) disconnected from the trolley, the profiles are connected as per e, f, g and h in point 4.
2. When the belt (b) is disconnected from the trolley, the belt are connected as per (c) and (d) in point 3 before the profiles are connected as per (e), (f), (g) and (h) in point 4.
3. The belt (c) is inserted in to the belt holder (d) and secured with the two screws in the holder.
4. Push the profile (e) on to the other profiles guiding pins (f). Then push the connection (g) over the joint so that it rests on equally distance on both profiles (h). At last, tighten all bolts on the top of the connection. Correct tightening torque is 78 Nm.

3.3 Connection to drive shaft

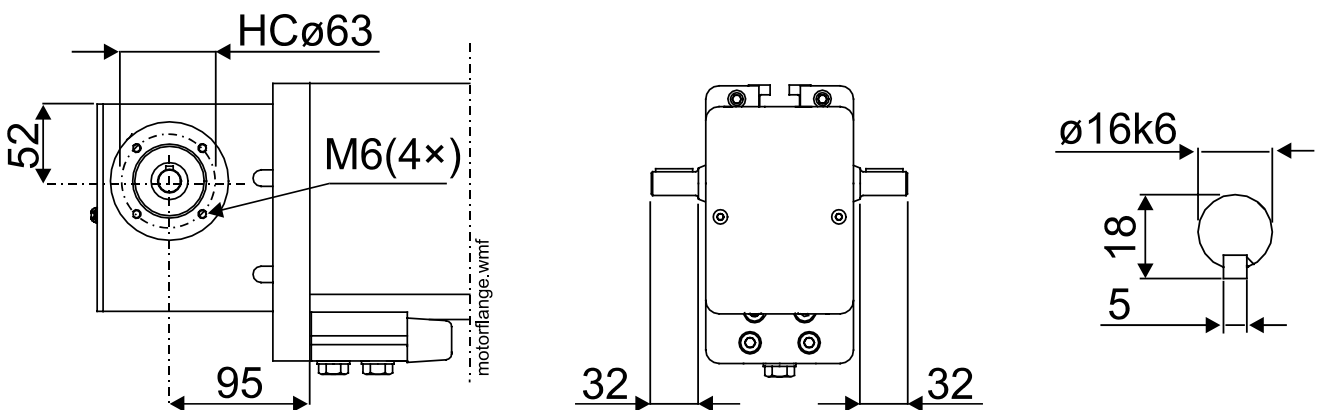


Figure 3: Connection to drive shaft

3.4 Connection of load to trolley with flexible bolt connection type BUB p/n D105 710

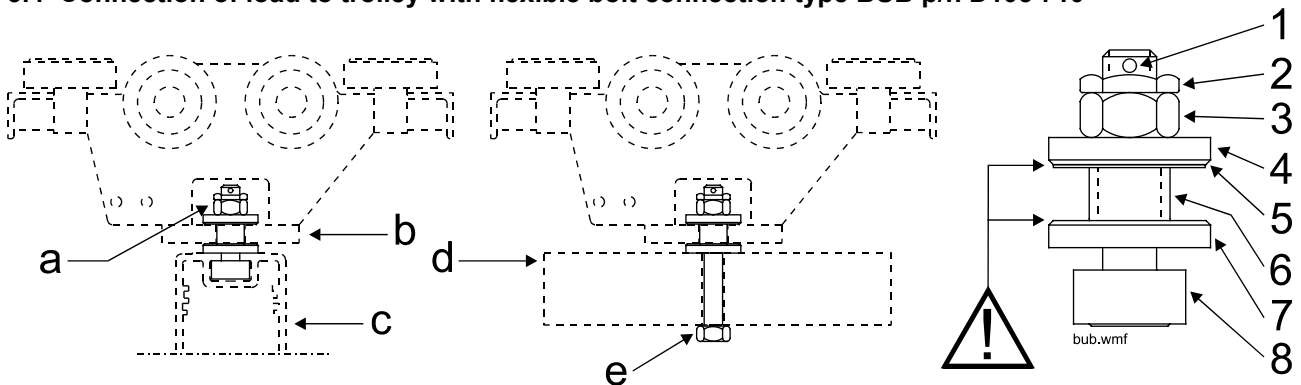


Figure 4: Connection of load to trolley with flexible bolt connection

- | | | | |
|------------------------------|-----------------|--------------------|-----------------|
| 1. Hole for split cotter pin | 3. Nut | 5. Plastic washer | 7. Lower washer |
| 2. Lock nut | 4. Upper washer | 6. Distance sleeve | 8. BUB bolt |

Loads can be connected to the Tollobelt by means of the bolt connection type BUB. The BUB (a) is placed in the hole in the trolley attachment plate (b). The BUB can be connected to a transversal rail (c). In those cases another load (d) shall be connected the BUB bolt is replaced by a bolt of quality 8.8 with suitable length (e) which has a hole for a split cotter pin. Check especially that the plastic washer is not stuck between the upper washer and the distance sleeve. Tightening torque for dry connections are 77,8 Nm and for oiled 69,7 Nm. Retighten the bolts.

3.5 Installation of trolley safety cable p/n D190 600

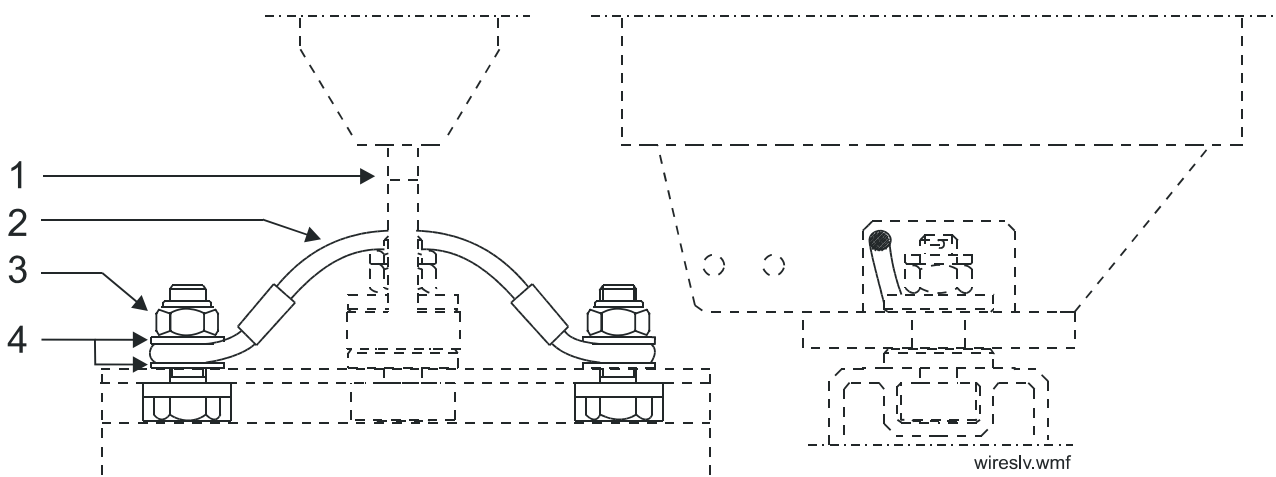


Figure 5: Installation of trolley safety cable

Trolley safety cables are used to give extra safety between a trolley (1) and a rail. The cable can also be used to secure other objects than Tollobelts to trolleys by replacing the T-track bolt with an ordinary bolt that is attached to the object. Installation is done by inserting the cable (2) through the trolley hole (1) and then fixing it with the two T-slot bolts (3). Two washers (4) shall be placed on both sides of the cable. Tightening torque for dry connections is 77,8 Nm and for an oiled 69,7 Nm. Retighten the bolts.

3.6 Suspension with T-slot bolt type TBM 12

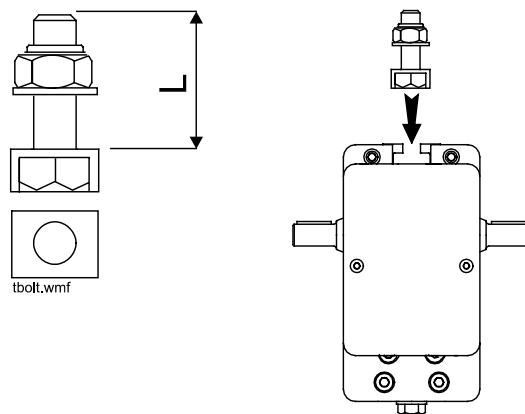


Figure 6: T-slot bolt

Designation	Size	L (mm)	Quality	P / n
TBM 12-32	M12	32	8.8	D102 510
TBM 12-45	M12	45	8.8	D102 525
TBM 12-95	M12	95	8.8	D102 515

Table 2: T-slot bolts

All Tollobelt sizes can be suspended with the aid of T-slot bolts of type TBM 12. Tightening torque for dry connections is 77,8 Nm and for an oiled 69,7 Nm. Retighten the bolts.

3.7 Installation of universal safety cable p/n D190 604

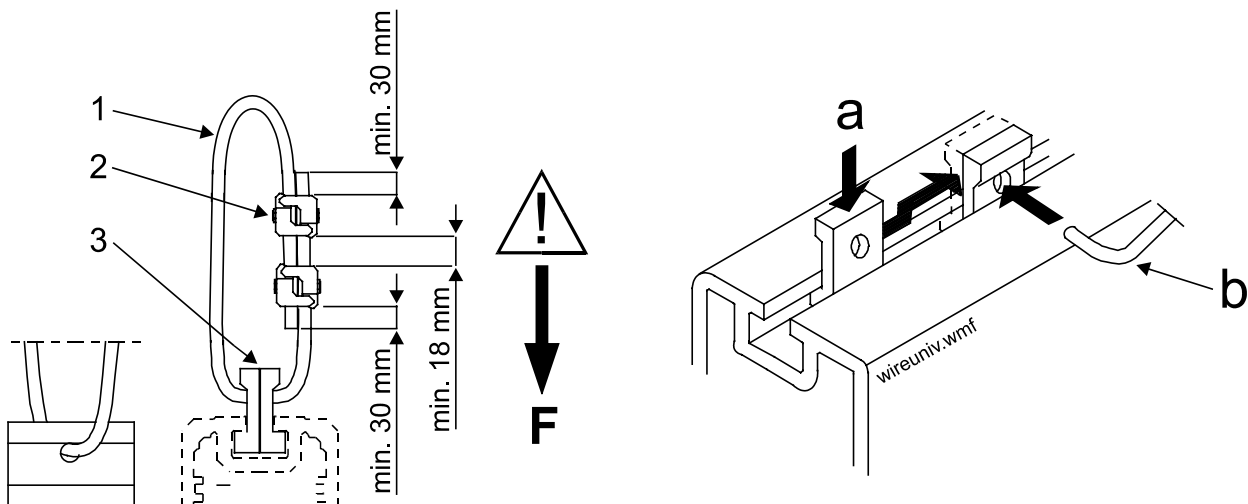


Figure 7: Installation of universal safety cable

1. Cable diameter 6 mm
2. Cable lock (min. 2 st.)
3. L-profile

The safety cable is put around a secure point (e.g. a beam, a roof beam or similar) which can hold the system up if the suspension should fail. Install the cable with a minimum of slack to minimise the falling height. At installation the two L-profiles (a) are inserted in to the Tollobelt T-slot. Then the cable is (b) put trough the holes in the L-profiles and around the secure point. Lock the cable with the aid of the wire locks. The length of the cable ends must be minimum 30 mm while the distance between he locks must be minimum 18 mm. Check so that the pulling force (F) is acting vertically on the wire locks.

Section 4 Service and maintenance

4.1 General maintenance instructions

- The customer can perform the service and maintenance described in this manual. Other service ought to be performed by service personnel from Tollo Linear, either on-site or at a Tollo Linear Service Centre.
- Follow the recommended service intervals. Replace defective parts immediately. Only use parts of the same make and type as original. Ordering data can be found in the spare part lists supplied with the unit. Also state the manufacturing number of the unit (see figure 1).
- Tollobelt is not self-braking. This means that the load can move if the drive force is disconnected or if brake, gearbox or motor is removed in connection to service. Ensure therefore that the load is secured before service is carried out.
- Check the unit every 6 months. Particularly check for wear and damages on the belt, suspensions and the connection of the load. Also be attentive towards a changed level of noise. Replace, repair or adjust.
- Keep the unit clean. Particularly the rolling surfaces of the trolleys.

4.2 Control and adjustment of belt tension

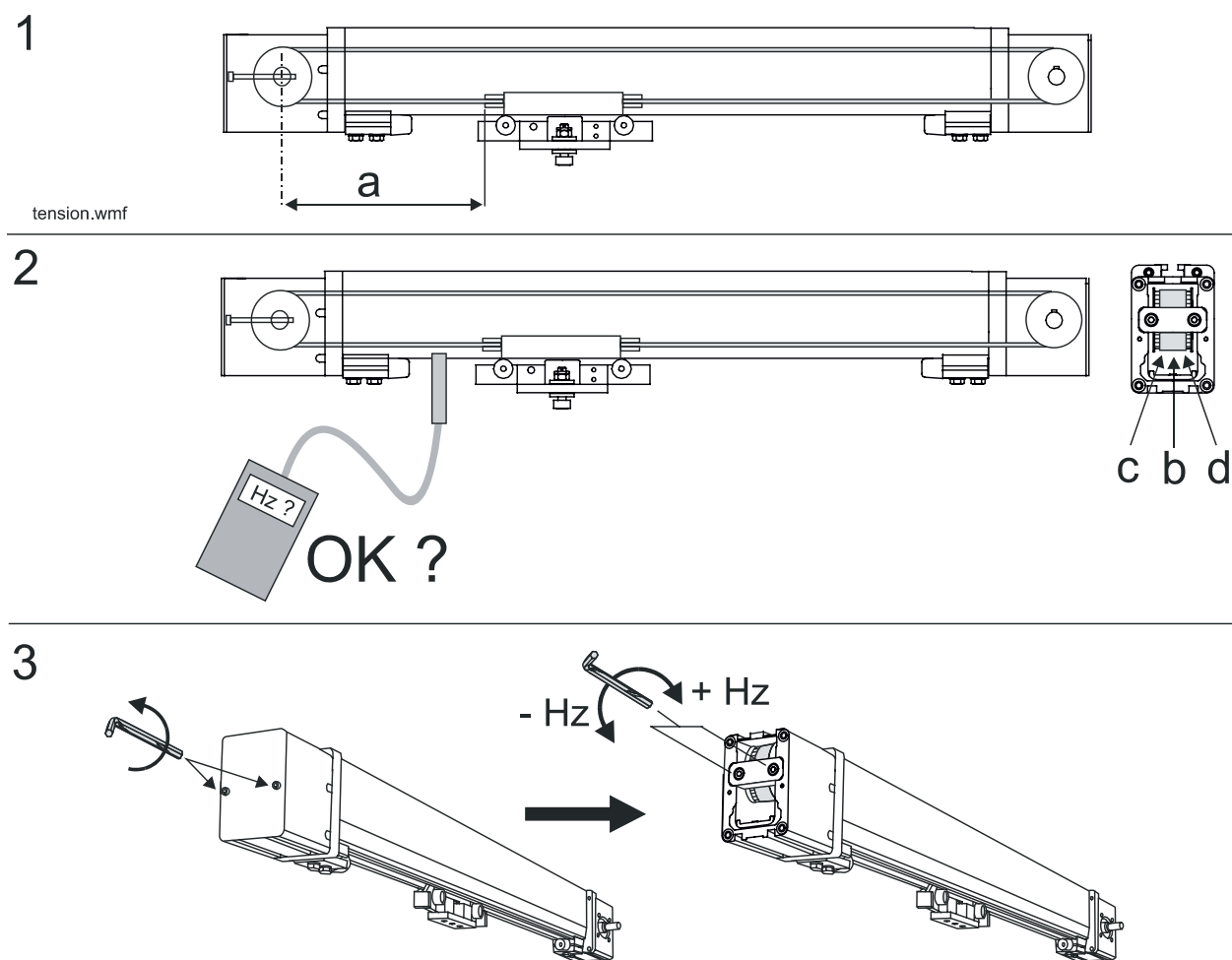


Figure 8: Adjustment of belt tension

1. Place the saddle so that $a = 500$ mm from the tension station.
2. Measure the belt frequency with a frequency meter. Correct frequency is 57,4 Hz for TBR1 and 71,7 Hz for TBR2, TBR3 and TBR3. Measure so that the frequency is correct both in the middle (b) and at the sides of the belt (c and d).
3. If the frequency is not correct, remove the end cover and turn the adjustment screws until the correct frequency is set. After completion of the belt tension adjustment, check so that the belt position is correct. See point 4.3.

4.3 Control and adjustment of belt position

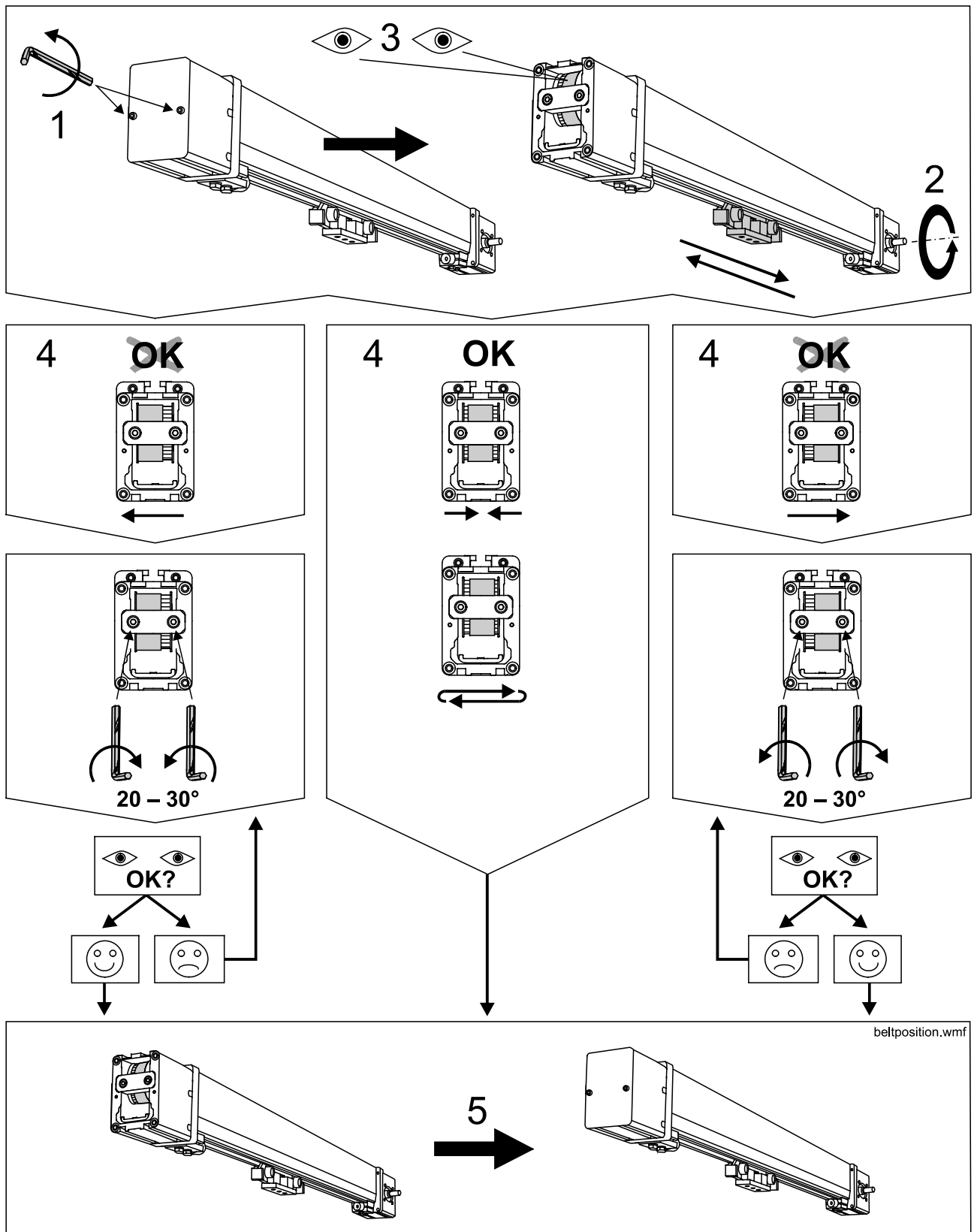


Figure 9: Adjustment of belt position

Check the belt position after installation or a belt replacement. The belt shall during operation lie in the centre or wander from side to side of the tension pulley, otherwise adjust. Check the belt tension before any adjustment, see point 4.2. Keep in mind that the saddle must move back and forth during the check. Turn the adjustment screws max. 20 – 30° and check, repeat until position is correct.

4.4 Replacement of belt

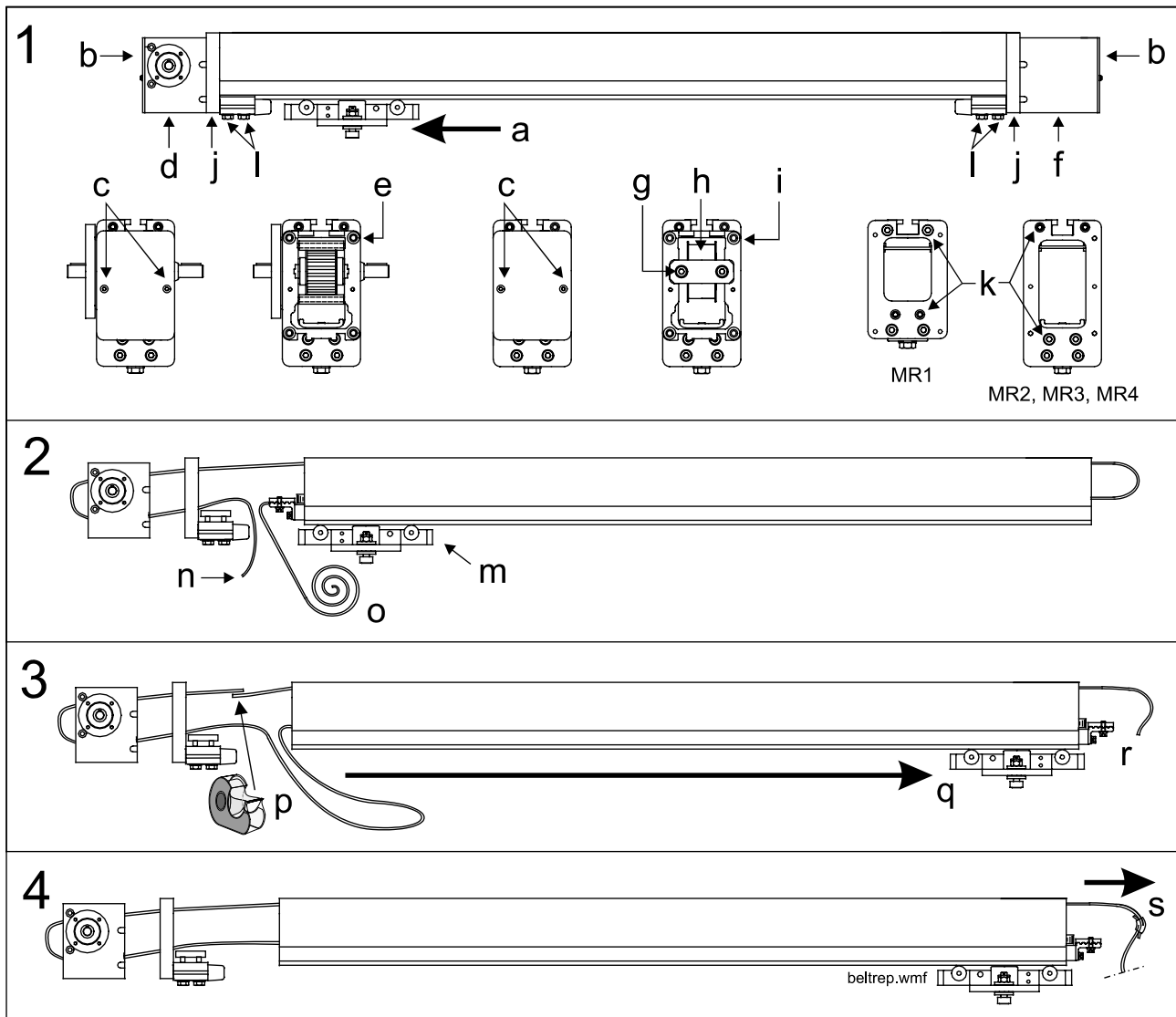


Figure 10: Replacement of belt

1. Place the trolley(s) (a) in the drive end. Remove the cover plates (b) in the ends by removing the screws (c). Then loosen the drive station (d) by removing the four bolts (e). Next loosen the tension station (f) by removing the bolts (g) and (i). Then pull out the tension station and remove the tension wheel. When both the drive and tension station are removed the mounting plates (j) can be removed by the removal of the four bolts (k) and the end stop bolts (l).
2. Pull out the trolley (m) from the drive end so that the old belt (n) can be removed from the belt holder. Attach the new belt (o) to the trolley.
3. Pull the new and the old belt trough the drive station and then attach the belt ends (p) to each other with tape. The pull the trolley to the tension end (q) and remove the old belt (r) from the belt holder on the other side of the trolley.
4. Pull the new belt trough the profile with the help of the old so that it comes out to the belt holder (s) of the trolley. If the old belt can not be used as help a separate pulling wire must be used. Attach the end of the new belt to the belt holder on the trolley. Then assemble the unit in reverse order. When the belt replacement is done the belt tension (see point 4.2) and the belt position (see point 4.3) must be checked.

Section 5 Technical data

Technical data

		TBR1	TBR2	TBR3	TBR4
Max. speed	(m/s)	5	5	5	5
Max. belt force (Fx)	(N)	800	1250	1250	1250
Repeatability	(mm)	± 0,5	± 0,5	± 0,5	± 0,5
Ambient temperature	(°C)	-20 – +70	-20 – +70	-20 – +70	-20 – +70
Linear move / shaft rev.	(mm)	240	240	240	240
Max. input speed	(rpm)	1250	1250	1250	1250
Weight / meter, one trolley	(kg)	11,5 + 6,3 x L ^A	13,5 + 9,1 x L ^A	13,5 + 16,3 x L ^A	13,5 + 16,3 x L ^A
Weight per extra trolley	(kg)	3,5	3,5	3,5	3,5

^A L in meters, see figure 1

Table 3: Technical data

www.LinearActuators.com

OFFICES

France

Danaher Motion S.A.S.
C.P. 80018
12, Rue Antoine Becquerel - Z.I. Sud
Bâtiment Paul Tiger 2
F-72026 Le Mans Cedex 2
Tel. +33 (02) 43 50 03 30
Fax. +33 (02) 43 50 03 39

Germany

Danaher Motion
Postfach 2008
D-72610 Nürtingen
Tel. 0180 5 24 67 90
Fax. 0180 5 24 40 85

Spain

Danaher Motion
Badal, 29–31 7th, 1st
08014 Barcelona
Tel./Fax. +34 (0) 9329 80278

Sweden

Tollo Linear AB
Box 9053
SE-291 09 Kristianstad
Tel. +46 (0)44 24 67 00
Fax. +46 (0)44 24 40 85

United Kingdom

Danaher Motion
Fishleigh Road
Roundswell Business Park
Barnstaple, Devon
EX31 3UD
Tel. +44 (0) 1271 334500
Fax +44 (0) 1271 334502

PUBLISHER

Tollo Linear AB

Box 9053
SE-291 09 Kristianstad, Sweden
Internet www.tollo.com
E-mail helpdesk@tollo.com

BRANDS

**Thomson
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