



MECHANICAL DRIVE ELEMENTS

16

- Linear Units
- Timing-Belt Drives
- Chain Drive
- Rack Drive
- Ball Screw Units
- Bevel Gearbox
- Accessories for Mechanical Drive Elements

Mechanical drive elements
Products in this section



Linear Unit KLE

- High-precision Linear Unit with compact dimensions – fully assembled
- Functional elements covered for safe, clean operation

510



Linear Unit KRF

- High-strength steel tracks integrated into the guide profile
- Criss-crossed Rollers for high load-to-size ratio

518



Timing-Belt Reverse Units

- For driving and reversing Timing Belt R25 T10
- With multi-spline hub or hub processed to customer specifications

522



Timing-Belt Counter-Reverse Units

- Movable axes for mobile applications
- Drive with Timing-Belt Reverse Unit on the slide

531



Timing Belt

- Quiet running, rigid traction device
- Highly flexible steel cables with polyurethane sheathing for long service life

533



Chain drive

- Chain drive for Linear Slides
- Ideal for simple drive solutions

537



Rack drive

- The rack sits entirely in the profile groove
- High drive rigidity with minimum space requirements

539



Ball Screw Unit KGT

- For Linear Units with the ultimate positioning accuracy
- Low-wear spindle for long-term precision

542



Bevel Gearbox WG

- For connecting drives in virtually any position
- Five connection variants from 90° to 360°

544



Couplings

- Compensation for alignment errors
- Cushioning of drive influences

547



Coupling Housing

- Stable connection between motor and linear drive
- Can be modified to suit the size of the coupling and the drive casing

548



Multi-Spline Shafts

- For building drive shafts and Synchroniser Shafts
- Simple power transmission through plug connection

552



Synchronising Shaft Profiles

- For easily constructing Synchroniser Shafts between drive elements
- Torsion angle can be modified using an equaliser coupling

554



Proximity Switch

- Inductive proximity switch for added safety in linear drives
- Can be fitted to a Line 8 groove or on a Timing-Belt Reverse Unit

559



Note:

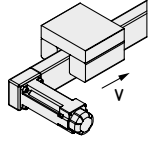
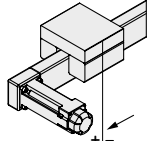
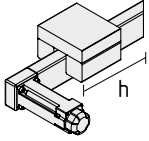
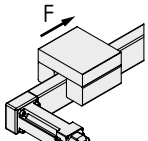






Technical data on the couplings can be found in Section 19.

Overview – the quickest route to the ideal drive element

Drive elements are the perfect complement to the linear slides available from item. They deliver reliable and precise power transmission for automated processes. A range of solutions are available to suit a number of tasks, ensuring that the ideal combination of linear slide and drive element can be found whatever the requirements.

Two turnkey solutions (KLE, KRF) make it easier to build typical Linear Units. They contain coordinated individual components that are supplied ready for installation and therefore cut planning and installation costs.

- Linear Unit KLE combines a roller guide and a timing-belt drive in one very compact design. All drive and guide elements are enclosed and protected within the housing. Two sizes are available.
- Linear Unit KRF provides an exceptional load-to-size ratio in an extremely space-saving system. The criss-crossed roller guide with timing-belt drive is sturdy and torsion resistant. The solid aluminium slide also enhances the system's impressive features.

Drive elements – a comparison	Speed (max.)	Repeat accuracy	Stroke length (max.)	Motive power (max.)
				
Linear Unit KLE  510 <ul style="list-style-type: none"> ▪ Compact turnkey solution with timing-belt drive ▪ Preassembled ready to install 	10 m/s	0.1 mm	5,700 mm	1,500 N
Linear Unit KRF  518 <ul style="list-style-type: none"> ▪ Extremely torsion resistant and strong ▪ Preassembled turnkey solution with timing-belt drive 	10 m/s	0.1 mm	5,700 mm	1,000 N
Timing-belt drive  522 <ul style="list-style-type: none"> ▪ Universal solution for high speeds ▪ Ideal for long stroke lengths 	5 m/s	0.15 mm	11,700 mm	2,100 N
Chain drive  537 <ul style="list-style-type: none"> ▪ Robust for contaminated environments ▪ Consistently high power transmission 	2 m/s	0.5 mm	5,700 mm	1,400 N
Rack drive  538 <ul style="list-style-type: none"> ▪ Ideal for vertical movements ▪ Extremely rigid and precise 	3 m/s	0.1 mm	5,700 mm	1,000 N
Ball Screw Unit  540 <ul style="list-style-type: none"> ▪ Highest precision of all item drives ▪ Low wear and outstanding rigidity 	1 m/s	0.05 mm	2,700 mm	2,000 N



Note:

Drive elements from item can be operated with a whole range of motors. item enables users to choose the drive motor that best suits their requirements. Flexible couplings are available for integrating the motor of choice and even synchronised drives are possible. Information on couplings can be found in this section.



Linear Units KLE

Big performance in a small space

- High-precision Linear Unit with compact dimensions – fully assembled
- Functional elements covered for safe, clean operation
- Durable, low-maintenance timing-belt drive
- Flexible drive set allows connection to virtually any motor



Linear Units KLE are available in two designs. The item profile grooves in the Housing Profile support a variety of KLE installation and fastening options.

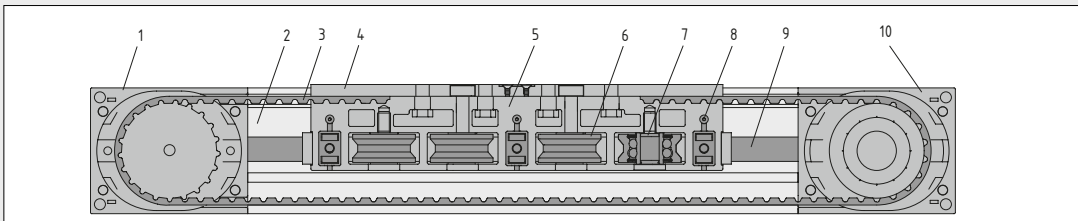
All guide and drive elements are protected inside the sturdy Housing Profile. This integrated construction reduces possible malfunctions caused by soiling and cuts the risks posed by moving parts.

KLEs can be built in housings of any length up to 6000 mm thanks to the modular design principle. KLEs of type LR are provided with roller-bearing Slides on guiding shafts and are driven by Timing Belts. Covered by the Timing Belt, the roller guide runs protected inside the housing.

The motor drive of a KLE is provided by the drive unit prepared in advance for this purpose via Drive Sets with coupling elements.

This modular drive concept using the drive units means that virtually any motor can be adapted. It is also possible to link two KLEs using Synchronising Sets.

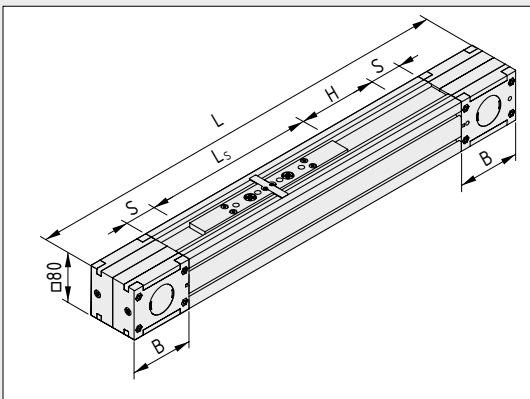
KLEs are supplied by your item partner fully assembled and ready for use. The modular design, with no need for complex machining, results in short delivery times and facilitates installation and maintenance.



- 1 Drive Unit KLE with connection facility for drive motor and synchronisation
- 2 Profile KLE
- 3 Timing Belt AT with PA fabric backing
- 4 Cover Plate for Slide KLE
- 5 Slide KLE with belt clamping

- 6 Rollers, adjustable
- 7 Rollers, fixed
- 8 Lubricating Systems
- 9 Shaft
- 10 Reverse Unit KLE with integrated Timing Belt tensioning device

Determination of the Stroke Length



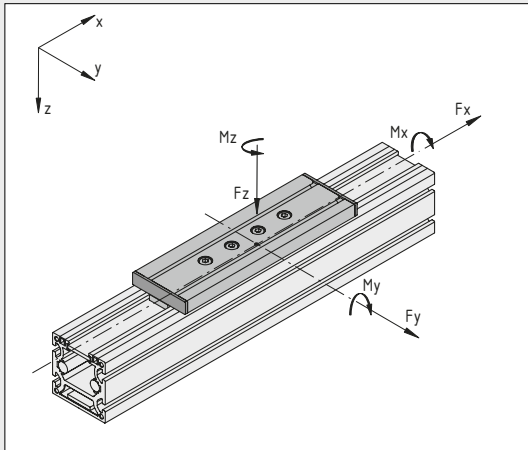
To obtain a specific working stroke H, the total length L of a KLE can be derived from the following diagram:

$$L = 2 \times B + 2 \times S + L_s + H$$

[mm]	KLE 6 60x60	KLE 8 80x80
Housing length B	75.0	100.0
Safety distance S	26.0	63.5
Slide length L _s	198.0	273.0

Note: The stated safety distances S apply for average operating conditions. Depending on the application (speed, load), other safety distances may be required.

KLE Load Specifications

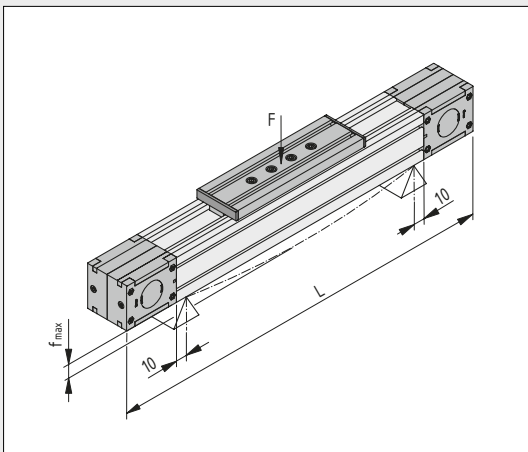


Simplified method for determining the maximum permissible load for the Roller Guides of a KLE:

KLE	$M_{x\max}$ [Nm]	$M_{y\max}$ [Nm]	$M_{z\max}$ [Nm]	$F_{y\max}$ [N]	$F_{z\max}$ [N]
6 60x60	25	50	100	750	500
8 80x80	50	100	150	1,500	1,000

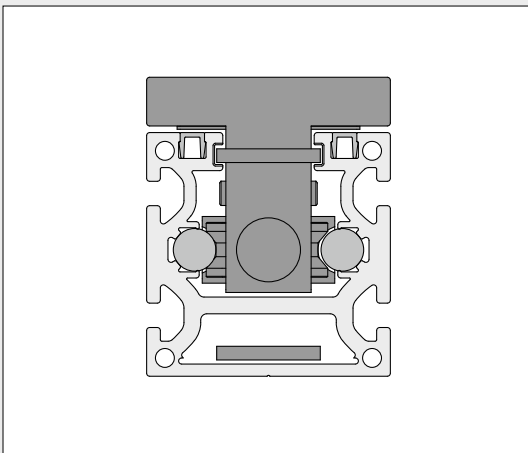
$$\frac{|M_x|}{M_{x\max}} + \frac{|M_y|}{M_{y\max}} + \frac{|M_z|}{M_{z\max}} + \frac{|F_y|}{F_{y\max}} + \frac{|F_z|}{F_{z\max}} \leq 1$$

Deflection KLE



The maximum deflection f_{\max} of the system is governed by the dimension of the profile cross-section, the free profile length and the force applied. It should not exceed 1mm/m.

The KLE profile must be given appropriate support if the linearity of movement has to be very precise.



The moments of inertia of the profiles provide the basis for calculating the deflection:

$\begin{matrix} y \\ z \end{matrix}$	Profile KLE 6 60x60	Profile KLE 8 80x80
I_y	44.32 cm ⁴	135.59 cm ⁴
I_z	57.46 cm ⁴	179.77 cm ⁴
I_t	7.23 cm ⁴	20.31 cm ⁴
W_y	13.08 cm ³	29.88 cm ³
W_z	19.15 cm ³	44.94 cm ³

The formula for the calculation depends on the load scenario.

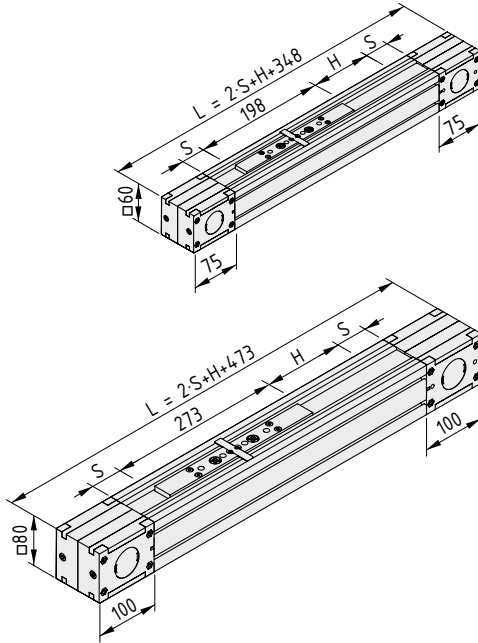
Complete Linear Units with variable stroke length (H), Drive Unit and Reverse Unit, Housing Profile with integrated roller guide on hardened guiding shafts, preset to be free of play. The Timing Belt in its guide grooves acts as a labyrinth seal, the Timing-Belt tensioning device is integrated into the Reverse Unit along with the ball-bearing mounted pulleys.

Guide slide with four-piece roller-bearing mounting, oil-lubricated roller contact (re-lubrication every 6 months or every 2500 km)

The KLEs boast exceptional precision and low-vibration linear movement. Repeat accuracy is ± 0.1 mm.

The mass of a KLE can be determined from the overall length of the KLE Housing Profile (without payload):
 $m = m_1 + H \times m_2$

Acceleration: max. 10 m/s²
 Stroke velocity: max. 10 m/s



Linear Unit KLE 6 60x60 LR



$L_{min} = 400$ mm
 $S_{min} = 26$ mm
 $H_{max} = 5750$ mm
 $m_1 = 4.8$ kg
 $m_2 = 5$ g/mm
 Installation guide
 $m = 4.8$ kg

1 pce. 0.0.605.07

Linear Unit KLE 8 80x80 LR



$L_{min} = 600$ mm
 $S_{min} = 63.5$ mm
 $H_{max} = 5600$ mm
 $m_1 = 11.6$ kg
 $m_2 = 8.8$ g/mm
 Installation guide
 $m = 11.6$ kg

1 pce. 0.0.605.02



Carriage Plate KLE

- Compatible with Linear Units KLE
- Profile grooves provide universal fastening options
- Fastening for cross members and grippers



Carriage Plate KLE 6 60x60



Profile X 6 60x12, Al natural
 2 Caps X 6 60x12, PA-GF, grey
 4 Hexagon Socket Head Cap Screws DIN 912-M6x25, St, bright zinc-plated
 4 Washers DIN 433-6.4, St, bright zinc-plated
 $m = 275.0$ g

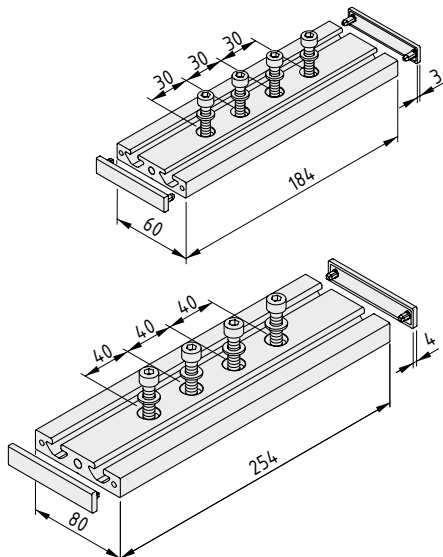
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Carriage Plate KLE 8 80x80



Profile X 8 80x16, Al natural
 2 Caps 8 80x16, PA-GF, grey
 4 Hexagon Socket Head Cap Screws DIN 912-M8x30, St, bright zinc-plated
 4 Washers DIN 433-8.4, St, bright zinc-plated
 $m = 675.0$ g

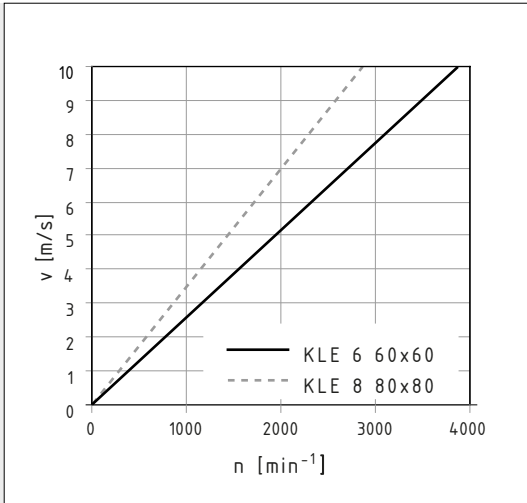
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Drive Sets KLE

- For connecting virtually any motor or drive
- Compatible with Linear Units KLE
- Versatile coupling connects motor and Linear Unit
- Drive torque transmitted free of play



The relevant Drive Set is attached to the Drive Unit for driving a KLE. This Drive Set consists of a Coupling Half for connection to the pulley, a Coupling Half for connection to the motor shaft, a Coupling Housing with Adapter Plate for connecting the motor to the housing of the Drive Unit, a Centring Piece and fasteners.

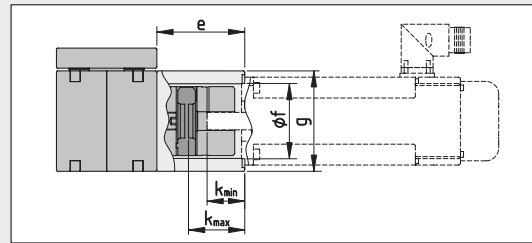
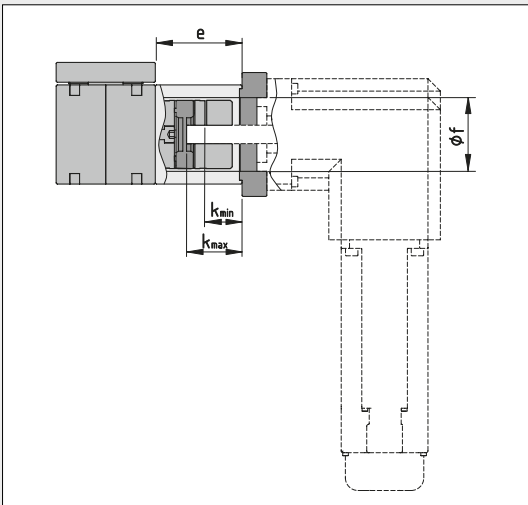
The prepared Coupling Half and the hub of the pulley are connected with positive locking and bolted together. The elastic Coupling Insert transmits the drive torque free of play.

Transmission ratios of Drive Units KLE

The effective radius of the pulleys is

KLE 6 60x60: $r_w = 24.5$ mm

KLE 8 80x80: $r_w = 33.5$ mm



[mm]	KLE 6 60x60	KLE 8 80x80
e	62	70
$\varnothing f_{\min}$	47	59.5
g	60	80
k_{\min}	34	30
k_{\max}	38	44

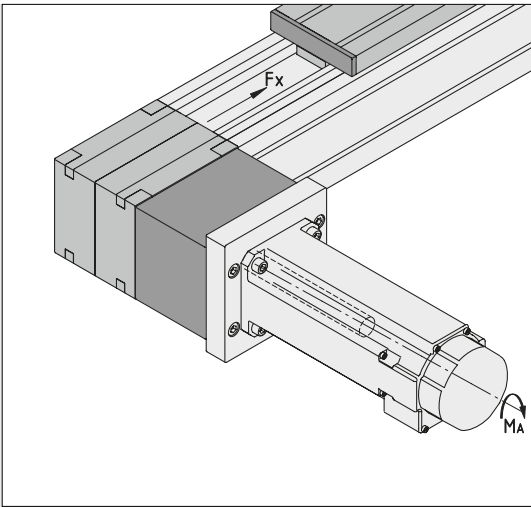
The Drive Set is designed so that the interface may be easily machined to suit the motor being attached:

- The universal Coupling Half bore is easily machined to accommodate the motor shafts. Parallel keyways or similar can be added if necessary.
- The Adapter Plate can be machined to suit the motor plate. Consequently, virtually any motor can be used for driving a KLE.

The Centring Piece supplied must always be fitted between the housing parts to prevent alignment errors during assembly.

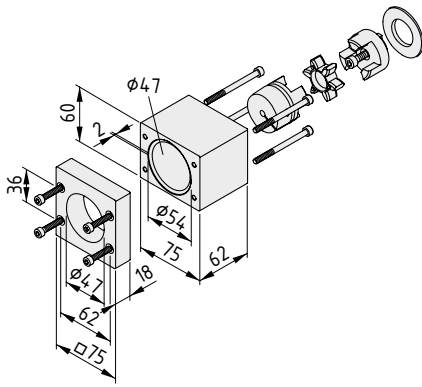
The permissible drive torques for the Drive Units and coupling must be taken into account when specifying the motor. To increase the rigidity of the drive connection, it may be necessary to use a profile construction to support the motor.

The hubs of the Couplings Halves can be bored up to the diameter of the motor/gearbox shafts. For higher drive torques, a key to DIN 6885 T1 is recommended.



Simplified method for determining the maximum permissible load for the drive elements of a KLE:

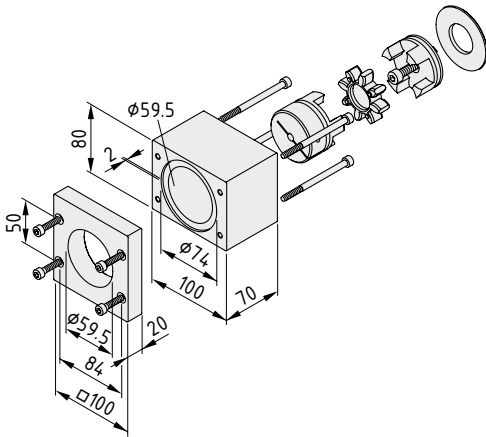
Clamping connection of motor shaft to coupling	KLE 6 60x60	KLE 8 80x80
Clamping Screw	M6	M6
Tightening torque [Nm]	10.5	10.5
Hole diameter D[mm] of motor shaft	D6-D20	D8-D28
Transferrable drive torque $M_{A,max}$ [Nm]	12	30
Rigid connection of motor shaft to coupling (e.g. with key)	KLE 6 60x60	KLE 8 80x80
Transferrable drive torque $M_{A,max}$ [Nm]	12	50
Permissible operating load of Drive Unit for $v_{mean} = 1.5$ m/s	KLE 6 60x60	KLE 8 80x80
$F_{x,max}$ [N]	500	1,500



Drive Set KLE 6 60x60



- Coupling Housing, KLE 6 60x60, Al
- Coupling Half D40 KLE 6 60x60, Al
- Coupling Half D40/D5, Al
- Coupling Insert D40, PU 64 Sh D, green
- Centring Piece D40 KLE 6 60x60
- Adapter Plate KLE 6 60x60
- 4 Hexagon Socket Head Cap Screws DIN 912-M5x25, St, bright zinc-plated
- 4 Hexagon Socket Head Cap Screws DIN 912-M5x65, St, bright zinc-plated
- Hexagon Socket Head Cap Screw DIN 912-M6x20, St, bright zinc-plated
- $m = 911.0$ g



Drive Set KLE 8 80x80



- Coupling Housing, KLE 8 80x80, Al
- Coupling Half D55 KLE 8 80x80, Al
- Coupling Half D55/D8, Al
- Coupling Insert D55, PU 64 Sh D, green
- Centring Piece D55 KLE 8 80x80
- Adapter Plate KLE 8 80x80
- 4 Hexagon Socket Head Cap Screws DIN 912-M6x25, St, bright zinc-plated
- 4 Hexagon Socket Head Cap Screws DIN 912-M6x85, St, bright zinc-plated
- Hexagon Socket Head Cap Screw DIN 912-M8x25, St, bright zinc-plated
- $m = 1750.0$ g

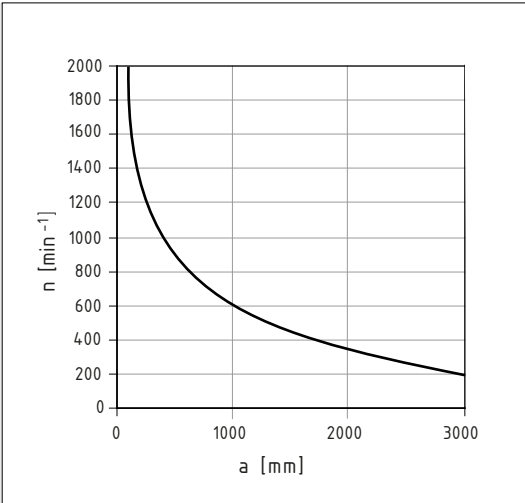
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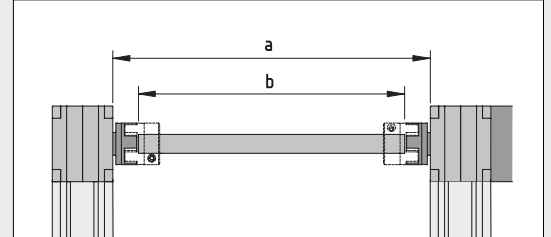
Synchronising Sets KLE

- For connecting two Linear Units KLE via a common shaft
- Two couplings create a flexible connection



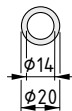
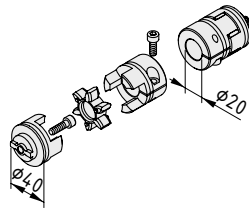
The permissible speed of the Synchroniser Shaft depends on its length.

n = Rotational speed of the Synchroniser Shaft
 a = Distance between Linear Units



A suitable Tube St (sawn to length) turns the Synchronising Set into a complete Synchroniser Shaft.

	KLE 6 60x60	KLE 8 80x80
Tube	D20x3 St	D25x3 St
b	a - 65 mm	a - 70 mm
a	Distance between Linear Units	



Synchronising Set KLE 6 60x60

2 Coupling Halves D40 KLE 6 60x60, Al
 2 Coupling Halves D40/D20, Al
 2 Coupling Inserts D40, PU 64 Sh D, green
 2 Hexagon Socket Head Cap Screws DIN 912-M6x20, St, bright zinc-plated
 m = 285.0 g

1 set 0.0.609.81

Tube D20x3 St

St

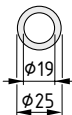
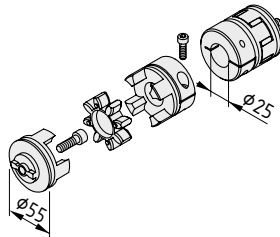
m [kg/m]	I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]
1.26	1.19	1.19	1.19	1.19

bright zinc-plated, cut-off max. 6000 mm

0.0.609.86

bright zinc-plated, 1 pce., length 6000 mm

0.0.609.85



Synchronising Set KLE 8 80x80

2 Coupling Halves D55 KLE 8 80x80, Al
 2 Coupling Halves D55/D25, Al
 2 Coupling Inserts D55, PU 64 Sh D, green
 2 Hexagon Socket Head Cap Screws DIN 912-M8x25, St, bright zinc-plated
 m = 715.0 g

1 set 0.0.609.78

Tube D25x3 St

St

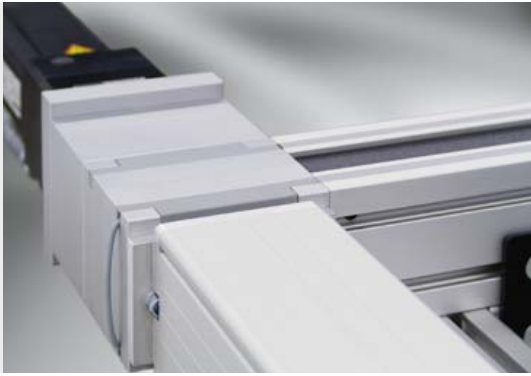
m [kg/m]	I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]
1.63	2.55	2.55	2.04	2.04

bright zinc-plated, cut-off max. 6000 mm

0.0.609.83

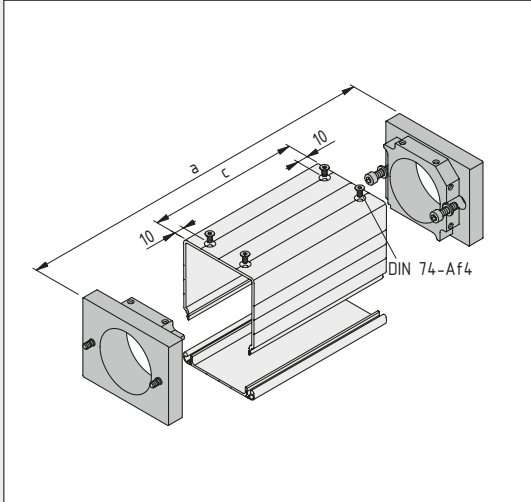
bright zinc-plated, 1 pce., length 6000 mm

0.0.609.82



Synchroniser Shaft Cover Set KLE

- Shaft covered for added safety
- Prevents soiling



The components contained in the Synchroniser Shaft Cover Set are used to secure the conduit elements between the Drive Units of the KLEs.

KLE 6 60x60:
 Conduit Profile U 60x60 E and Lid Profile D60 E
 $c = a - 24$ mm (Adapter Plate thickness = 12 mm)

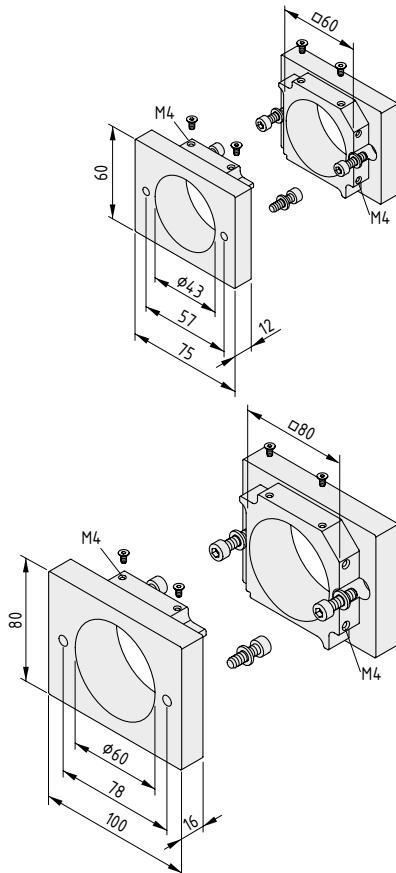
KLE 8 80x80:
 Conduit Profile U 80x80 E and Lid Profile D80 E
 $c = a - 32$ mm (Adapter Plate thickness = 16 mm)

a = Distance between Linear Units
 c = Length of conduit elements

The Conduit Profiles must be provided with countersink DIN 74-Af4 to secure them.

Conduit Profiles E 431

Lid Profiles (for Installation Conduits) 436



Synchroniser Shaft Cover Set KLE 6 60x60

- 2 Synchroniser Adapter Plates KLE 6 60x60, Al
- 4 Hexagon Socket Head Cap Screws DIN 912-M5x16, St, bright zinc-plated
- 4 Washers DIN 433-5,3, St, bright zinc-plated
- 4 Countersunk Screws DIN 7991-M4x8, St, bright zinc-plated
- $m = 300.0$ g

1 set

0.0.612.46

Synchroniser Shaft Cover Set KLE 8 80x80

- 2 Synchroniser Adapter Plates KLE 8 80x80, Al
- 4 Hexagon Socket Head Cap Screws DIN 912-M6x20, St, bright zinc-plated
- 4 Washers DIN 433-6,4, St, bright zinc-plated
- 4 Countersunk Screws DIN 7991-M4x8, St, bright zinc-plated
- $m = 625.0$ g

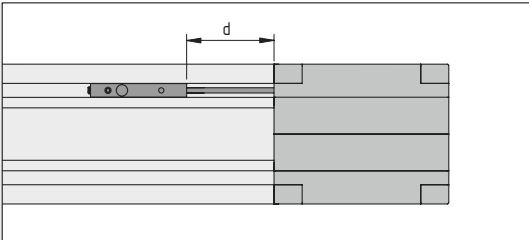
1 set

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Proximity Switch KLE

- Linear Unit KLE is prepared for the direct integration of switches and cables
- Proximity Switch KLE can be integrated into the profile groove of the casing
- Inductive actuation via switching lug on slide

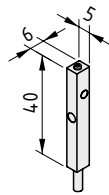


KLE 6 60x60: $d_{\min} = 80 \text{ mm} + S$
 KLE 8 80x80: $d_{\min} = 100 \text{ mm} + S$

Note: The Cover Profiles must be interrupted at the locations of Proximity Switches.

The following applies to all the products below:

Inductive proximity switch, positive switching
 Housing Al, anodized, natural
 Fixing mechanism, fixing screws
 Voltage = 10...30 V DC
 Switching current $_{\max}$ = 150 mA
 Operating distance = 2 mm
 Cable, grey, l = 10 m; d = 3 mm



Proximity Switch KLE 6 60x60 - 1NO



m = 125.0 g

1 pce.

0.0.609.31

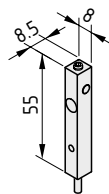
Proximity Switch KLE 6 60x60 - 1NC



m = 125.0 g

1 pce.

0.0.604.41



Proximity Switch KLE 8 80x80 - 1NO



m = 125.0 g

1 pce.

0.0.609.30

Proximity Switch KLE 8 80x80 - 1NC



m = 125.0 g

1 pce.

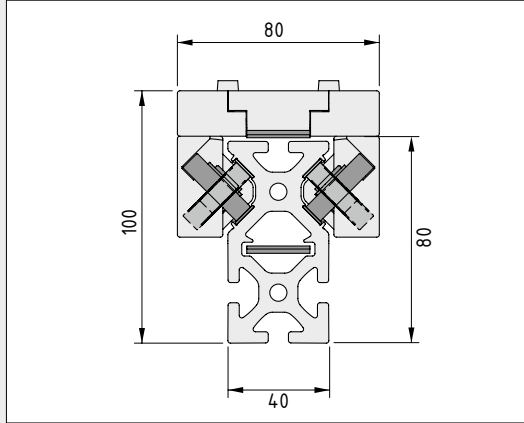
0.0.600.59



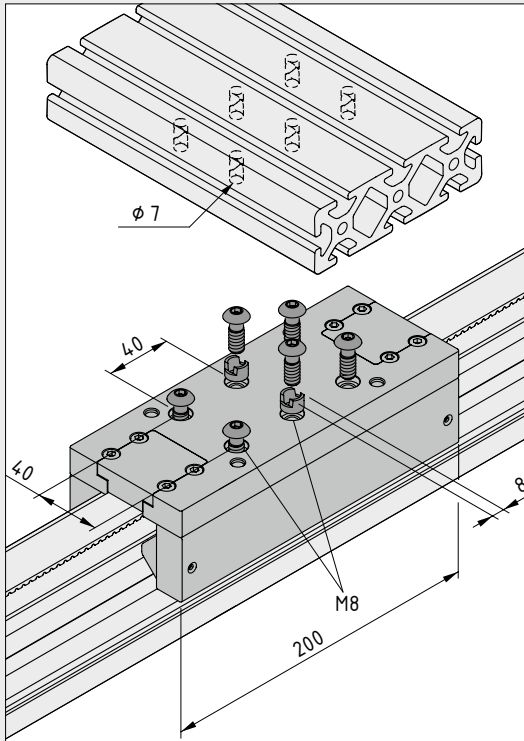
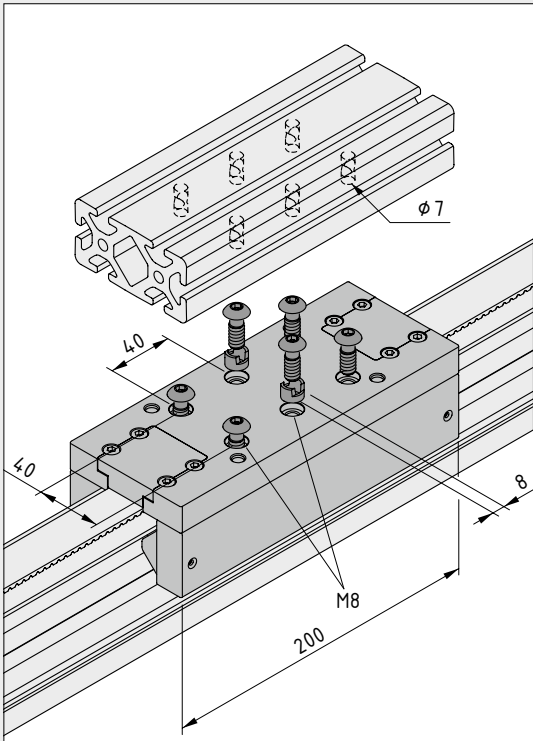
Linear Units KRF 8 80x40 ZR

Especially compact thanks to innovative criss-crossed roller guide

- High-strength steel tracks integrated into the guide profile
- Criss-crossed Rollers for high load-to-size ratio
- Versatile thanks to three Line 8 grooves for customised structures
- Internal Drive Unit for smooth movement



8 rollers arranged in a criss-cross pattern to eliminate play ensure maximum load-carrying capacity with compact size.



16

Complete Linear Units with variable stroke length (H), Drive Unit and Reverse Unit, support profile with integrated Roller Guide on guide tracks, preset free of play. Timing-belt tensioning device integrated into Reverse Unit, ball-bearing-mounted pulleys.

Guide slide with eight-piece roller-bearing mounting, oil-lubricated roller contact (re-lubrication every 6 months or every 2500 km)

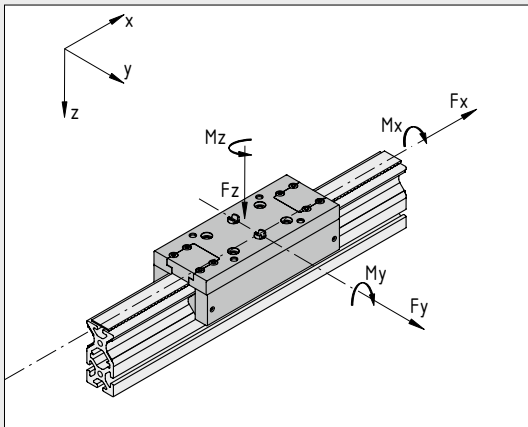
Acceleration: max. 10 m/s²
Stroke velocity: max. 10 m/s

Linear Unit KRF boasts exceptional precision and low-vibration linear movement. Repeat accuracy is ± 0.1 mm.

The mass of a Linear Unit KRF can be determined from the stroke length (without payload):

$$m = m_1 + H \times m_2$$

Load Specifications

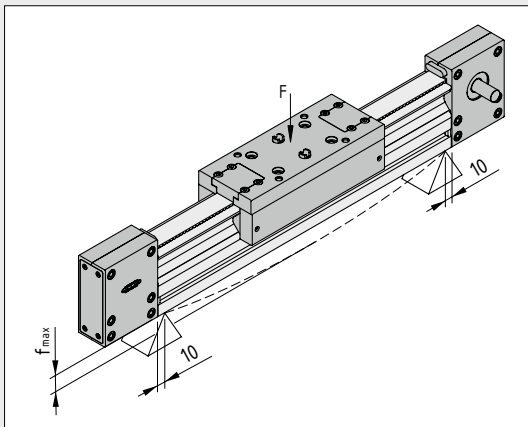


Simplified method for determining the maximum permissible load for the Roller Guides of a KRF:

KRF	$M_{x\max}$ [Nm]	$M_{y\max}$ [Nm]	$M_{z\max}$ [Nm]	$F_{y\max}$ [N]	$F_{z\max}$ [N]
	50	175	175	2,500	2,500

$$\frac{|M_x|}{M_{x\max}} + \frac{|M_y|}{M_{y\max}} + \frac{|M_z|}{M_{z\max}} + \frac{|F_y|}{F_{y\max}} + \frac{|F_z|}{F_{z\max}} \leq 1$$

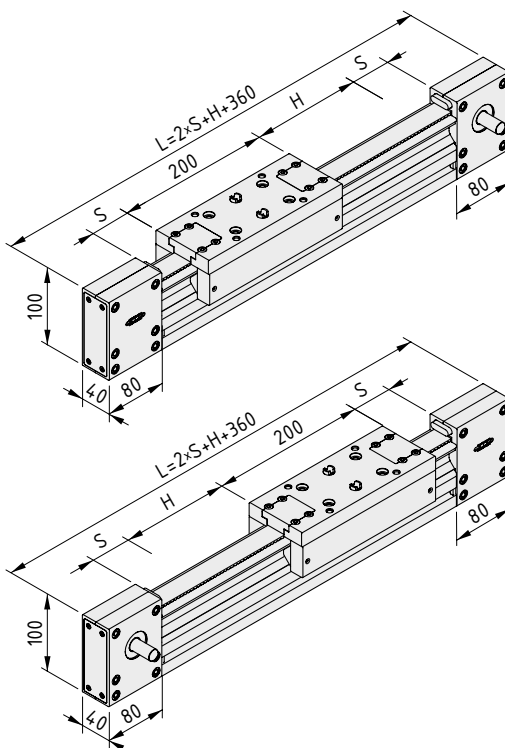
Deflection



The maximum deflection, f_{\max} of the system is governed by the dimension of the profile cross-section, the free profile length and the force applied. It should not exceed 1 mm/m. The KRF profile must be given appropriate support if the linearity of movement has to be very precise.

The mass moments of inertia of the profile provide the basis for calculating the deflection:

	Linear Unit KRF 8
I_y	95.66 cm ⁴
I_z	22.05 cm ⁴
I_t	20.06 cm ⁴
W_y	23.80 cm ³
W_z	11.02 cm ³



Linear Unit KRF 8 80x40 ZR, left-hand input shaft



$L_{\min} = 400$ mm
 $S_{\min} = 20$ mm
 $H_{\max} = 5760$ mm
 $m_1 = 6$ kg
 $m_2 = 4.3$ g/mm

1 pce.

0.0.641.21

Linear Unit KRF 8 80x40 ZR, right-hand input shaft



$L_{\min} = 400$ mm
 $S_{\min} = 20$ mm
 $H_{\max} = 5760$ mm
 $m_1 = 6$ kg
 $m_2 = 4.3$ g/mm

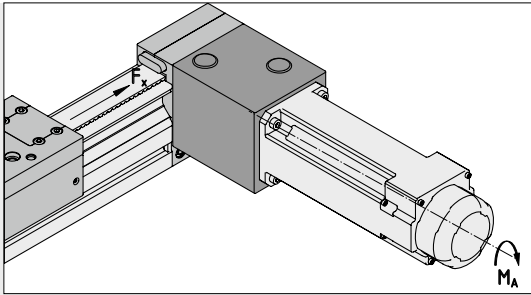
1 pce.

0.0.648.66



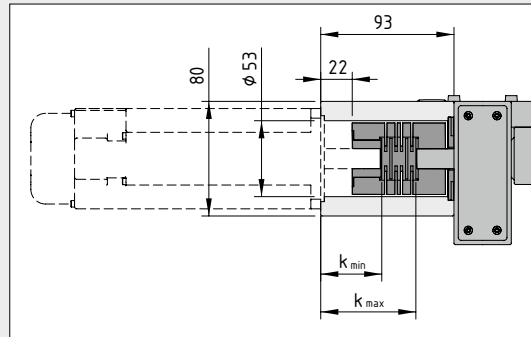
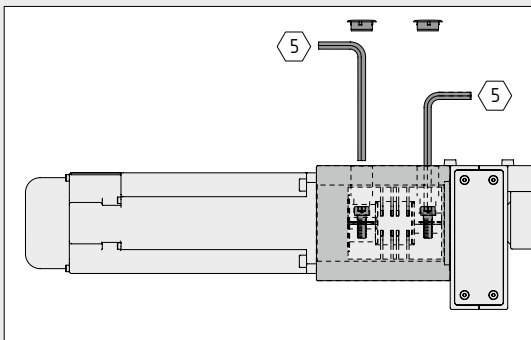
Drive Set KRF 8 ZR

- Flexible coupling allows connection to virtually any motor
- Compatible with Linear Unit KRF
- Rigid torque transmission



The connection on the motor side must be adapted to suit the specific motor selected. The relevant components must be processed accordingly:

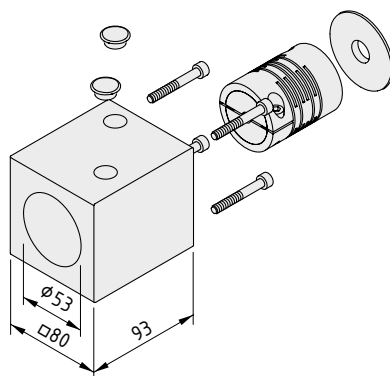
- The connection surface on the motor side can be bored out as necessary to accommodate motor shafts. Processing with a parallel keyway or similar is possible.
- The connection housing is processed as appropriate for attaching the motor. It is advisable to use Centring Pieces.



Simplified method for determining the maximum permissible load for the drive elements of a KRF:

Connection for clamping motor shaft to coupling	KRF 8
Hole diameter D[mm] for motor shaft	8 - 25
Transferable drive torque $M_{A \max}$ [Nm]	23
Permissible operating load of Timing Belt $F_{x \max}$ [N]	1,000
Effective radius of pulley r_w [mm]	23.1
Clamping screw	M6
Tightening torque [Nm]	14.5

[mm]	Length of drive shaft [mm]
k_{\min}	42
k_{\max}	62



Drive Set KRF 8 ZR



Connection housing, Al, white aluminium, similar to RAL 9006
 Equaliser coupling D50
 Centre ring D32/D48
 Fastening materials and caps
 $m = 1.9 \text{ kg}$

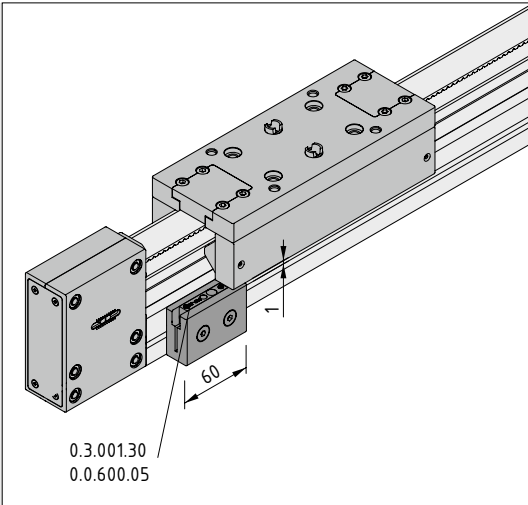
1 set

0.0.627.46



Limit-Switch Holder KRF 8

- For fastening inductive Proximity Switch 8 from item to a Line 8 groove
- Compatible with Linear Unit KRF and other linear slides



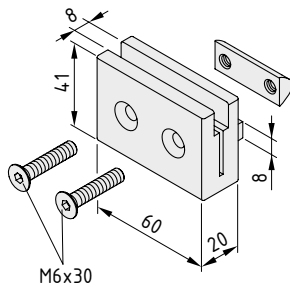
Limit-Switch Holder KRF 8 fastens Limit Switch 8 (0.0.600.05 or 0.3.001.30) directly to the Profile 8 groove of the KRF guide profile.

Proximity Switches 559



Tip

Limit-Switch Holder KRF 8 can also be used for position detection on other item linear slides.



Limit-Switch Holder KRF 8



Holder, Al, natural
2 Countersunk Screws DIN 7991 M6x30, St, bright zinc-plated
T-Slot Nut 8 St 2xM6-36
m = 120.0 g

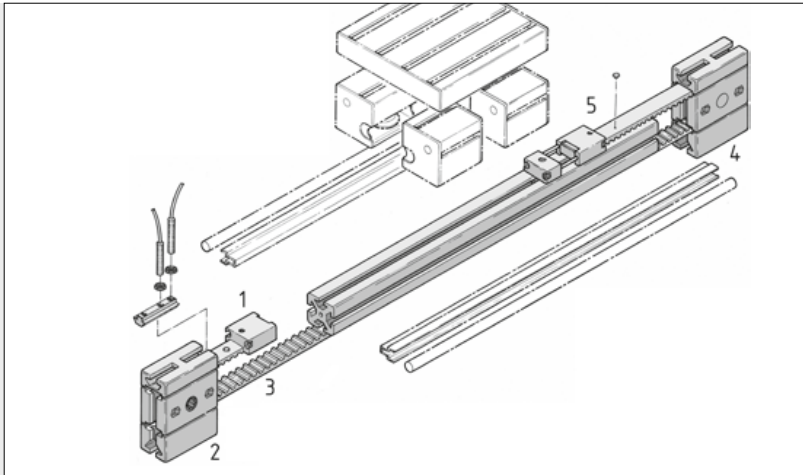
1 pce.

0.0.626.55



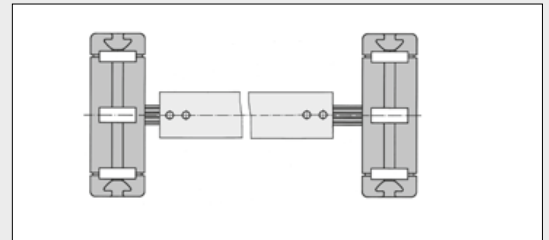
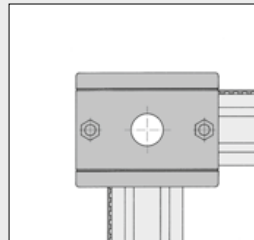
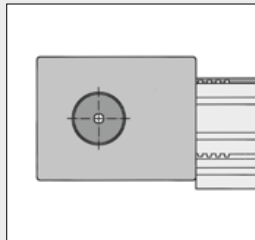
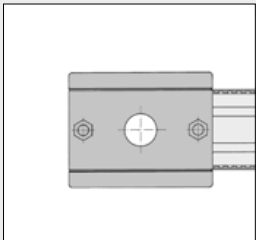
Modular Timing-Belt Drives Timing-Belt Reverse Units

- Drive and Reverse Unit for timing-belt drives
- Can be connected to virtually any motor
- Available with Multi-Spline Shaft or processed according to customer specifications



Timing-belt drives are particularly suitable for high speeds and extended stroke lengths.

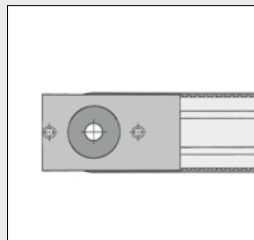
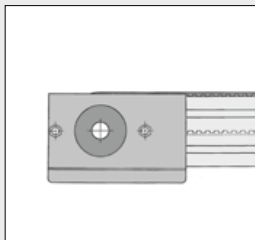
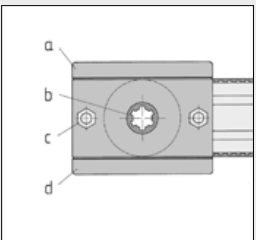
The Timing Belt is fastened to the slide with a Timing Belt Tensioner (1), it is then looped 180° through a Timing-Belt Reverse Unit at the end of the supporting profile (2) and fed back either through or outside the profile (3) to a second Timing-Belt Reverse Unit, where it is again looped 180° (4) before the loose end is connected to and/or tightened on the sliding carriage (5).



Reversal of the Timing Belt around 180°. The Timing Belt can be returned either inside or outside the profile. The timing pulley is provided with multi-spline toothing for attaching drive units or Multi-Spline / Adapter Shafts, or with a bore which can be machined for other shaft / hub connections. The housings of the Timing-Belt Reverse Units feature grooves for connecting to profiles of the relevant Lines.

The special apertures in the Timing-Belt Reverse Unit can also be used to turn the belt through 90°, with the return path being located at any distance from the sliding carriage. If necessary, an additional slide can also be powered, offset at 90° from the first, using the same drive mechanism.

Connection of Timing-Belt Reverse Units either with Multi-Spline Shafts or, for distances in excess of 500 mm, with Adapter Shafts, hollow shafts or Synchroniser Shafts.



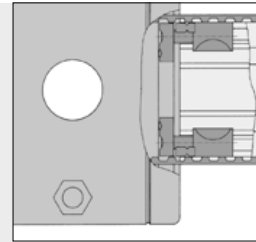
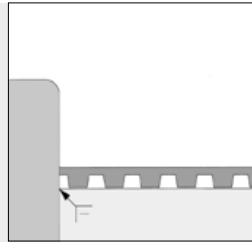
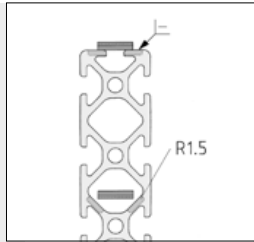
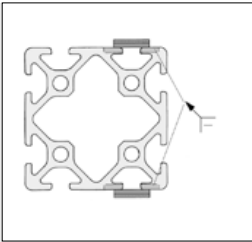
General function of bore and belt covers (exception: Timing-Belt Reverse Units R50 and R75)

- Top belt cover (a) can be detached when used as belt drive
- Timing pulley (b) with multi-spline hub or bore
- Bores in basic shell (c) for mounting Coupling Housings, Adapter Flange, Bevel Gearbox and Ball Screw Unit or for interconnecting Timing-Belt Reverse Units
- Bottom belt cover (d) can be detached where space is restricted



Timing-Belt Reverse Units 5 40 R10

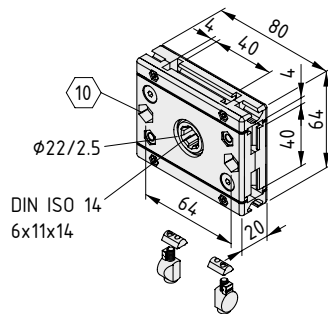
- For driving and reversing Timing Belt R10 T5
- With multi-spline hub or hub processed to customer specifications
- Various motors can be used



Couplings 547

To protect the Timing Belt against damage, the profiles must be rounded at the joint to the Timing-Belt Reverse Unit.

Mounting at a height of 40 mm in the groove of Profile 5 with Universal-Fastening Set 5.

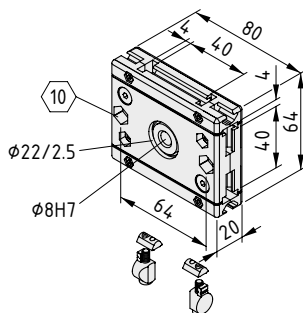


Timing-Belt Reverse Unit 5 40 R10 VK14 5

Timing-Belt Reverse Unit, die-cast aluminium, black
 Ball-bearing timing pulley with multi-spline hub, hub geometry VK14 for Multi-Spline Shaft VK14 DIN ISO 14 - 6x11x14, hub depth 18 mm,
 One revolution corresponds to 140 mm, effective radius $r_w = 22.3$ mm,
 Frictional moment with 1‰ pre-tensioning of the Timing Belt: $M_R = 0.05$ Nm
 Max. load: $M_D = 3.3$ Nm
 Timing Belt length in the Timing-Belt Reverse Unit for
 90° reversal: 110 mm
 180° reversal (outer dimension 80): 135 mm
 180° reversal (outer dimension 64): 150 mm
 2 Universal-Fastening Sets 5, die-cast zinc, bright zinc-pl.
 Pitch $p = 5$ mm Number of teeth $z = 28$
 Notes on Use and Installation
 $m = 262.0$ g

1 pce.

0.0.410.01



Timing-Belt Reverse Unit 5 40 R10 with Bore 5

Timing-Belt Reverse Unit, die-cast aluminium, black
 Ball-bearing timing pulley with bore $\varnothing 8H7$, reborable up to max. $\varnothing 15$ mm
 Hub depth 18 mm
 One revolution corresponds to 140 mm, effective radius $r_w = 22.3$ mm,
 Frictional moment with 1‰ pre-tensioning of the Timing Belt: $M_R = 0.05$ Nm
 Max. load: $M_D = 3.3$ Nm
 Timing Belt length in the Timing-Belt Reverse Unit for
 90° reversal: 110 mm
 180° reversal (outer dimension 80): 135 mm
 180° reversal (outer dimension 64): 150 mm
 2 Universal-Fastening Sets 5, die-cast zinc, bright zinc-pl.
 Pitch $p = 5$ mm Number of teeth $z = 28$
 Notes on Use and Installation
 $m = 277.0$ g

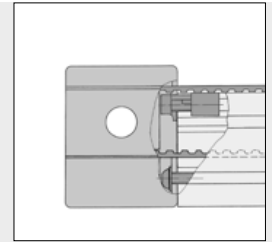
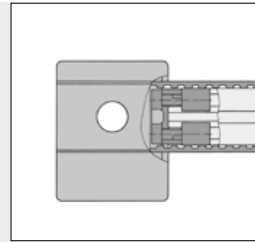
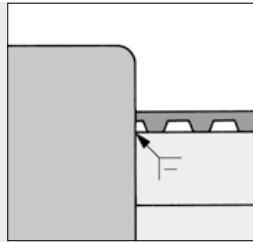
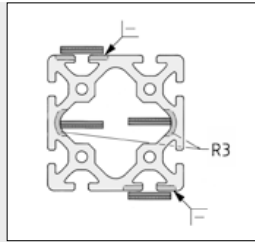
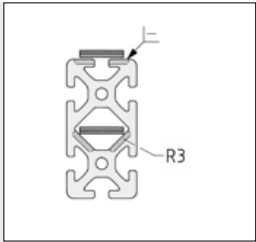
1 pce.

0.0.410.06



Timing-Belt Reverse Units 8 40 R25

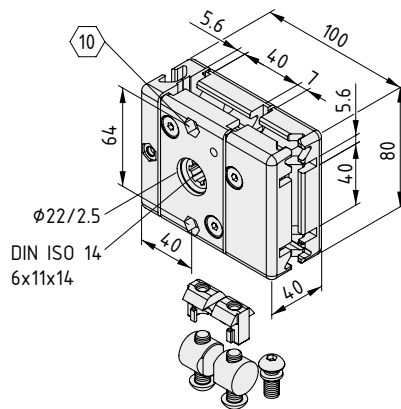
- For driving and reversing Timing Belt R25 T10
- With multi-spline hub or hub processed to customer specifications
- Various motors can be used



To protect the Timing Belt against damage, the profiles must be rounded at the joint to the Timing-Belt Reverse Unit.

Timing-Belt Reverse Unit 8 40 R25 mounted at a height of 40 mm in the groove of Profile 8 using Universal Fastener 8 and special T-Slot Nut or in the core bore using Button-Head Screw ISO 7380-M8 and washer DIN 125-8.4. The special T-Slot Nut can be split in the centre and halved if required.

Couplings

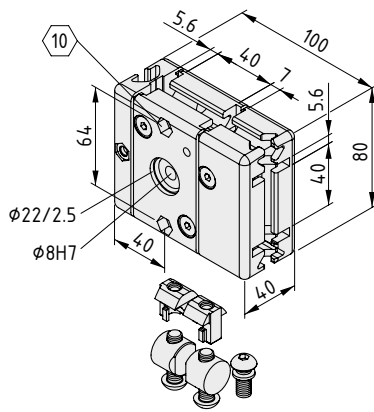


Timing-Belt Reverse Unit 8 40 R25 VK14

Timing-Belt Reverse Unit, die-cast zinc, black
 Ball-bearing timing pulley with multi-spline hub, hub geometry VK14 for Multi-Spline Shaft VK14 DIN ISO 14-6x11x14, hub depth 30 mm
 One revolution corresponds to 150 mm, effective radius $r_w = 23.9$ mm
 Frictional moment with 1‰ pre-tensioning of the Timing Belt: $M_R = 0.30$ Nm
 Max. load: $M_D = 20$ Nm
 Timing Belt length in the Timing-Belt Reverse Unit for 90° reversal: 140 mm
 180° reversal (emerg. on 100 mm side): 160 mm
 180° reversal (emerg. on 80 mm side): 200 mm
 2 Universal Fasteners 8
 2 Button-Head Screws ISO 7380-M8x30, St, bright zinc-pl.
 Special T-Slot Nut M8, cast steel
 Button-Head Screw ISO 7380-M8x20, St, bright zinc-pl.
 Washer DIN 125-8.4 St, bright zinc-plated
 Pitch $p = 10$ mm Number of teeth $z = 15$
 Notes on Use and Installation
 $m = 1.3$ kg

1 pce.

0.0.337.26



Timing-Belt Reverse Unit 8 40 R25 with Bore

Timing-Belt Reverse Unit, die-cast zinc, black

Ball-bearing timing pulley with bore \varnothing 8H7, reborable up to max. \varnothing 15 mm, hub depth 30 mm

One revolution corresponds to 150 mm, effective radius $r_w = 23.9$ mm

Frictional moment with 1‰ pre-tensioning of the Timing Belt: $M_R = 0.30$ Nm

Max. load: $M_D = 20$ Nm

Timing Belt length in the Timing-Belt Reverse Unit for

90° reversal: 140 mm

180° reversal (emerg. on 100 mm side): 160 mm

180° reversal (emerg. on 80 mm side): 200 mm

2 Universal Fasteners 8

2 Button-Head Screws ISO 7380-M8x30, St, bright zinc-pl.

Special T-Slot Nut M8, cast steel

Button-Head Screw ISO 7380- M8x20, St, bright zinc-pl.

Washer DIN 125-8.4 St, bright zinc-plated

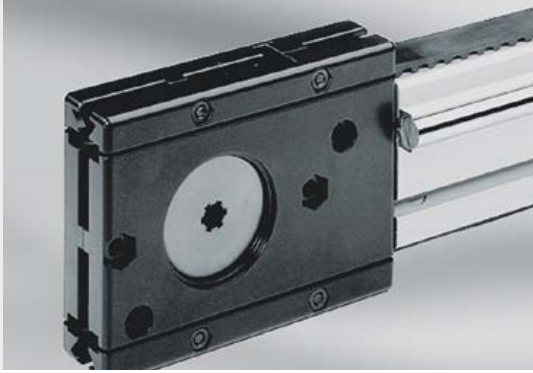
Pitch $p = 10$ mm Number of teeth $z = 15$

Notes on Use and Installation

$m = 1.3$ kg

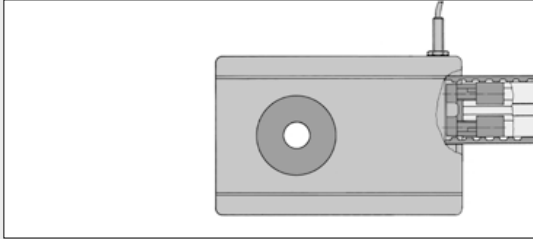
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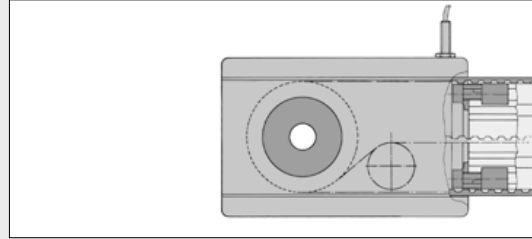


Timing-Belt Reverse Units 8 80 R25

- For driving and reversing Timing Belt R25 T10
- Variable emergence dimension of 40 or 80 mm
- With multi-spline hub or hub processed to customer specifications
- Various motors can be used

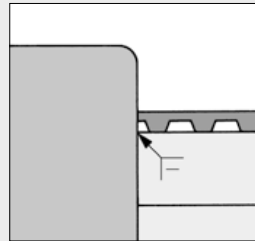
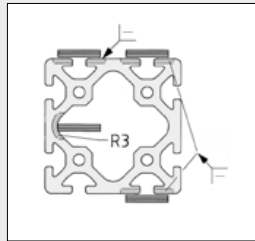
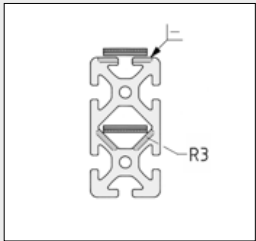


Timing-Belt Reverse Unit 8 80 R25 mounted at a profile height of 40 mm in the groove of Profile 8 using Universal Fastener 8 and special T-Slot Nut or at a profile height of 80 mm by splitting the special T-Slot Nut at the specified break point.



The variation in the emergence dimensions from 80 mm to 40 mm is achieved by rerouting the Timing Belt internally. The Timing Belt is routed with its smooth reverse side over the reversing pulleys.

The allowable driving torque of Timing-Belt Reverse Units 8 80 R25 is limited to $M_D = 40 \text{ Nm}$ when the loaded belt runs through the reversing pulleys. In this case, a Timing-Belt Reverse Unit 8 40 R25 can be used as a second reverse unit.



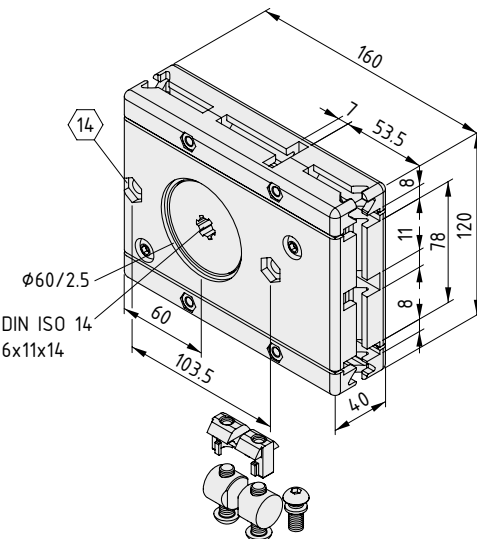
Couplings 547

To protect the Timing Belt against damage, the profiles must be rounded at the joint to the Timing-Belt Reverse Unit.



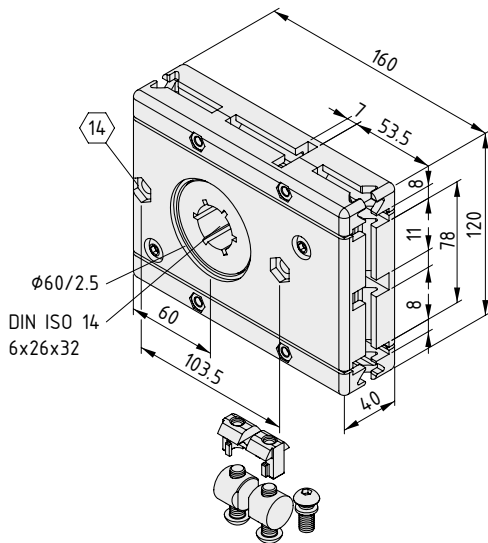
Timing-Belt Reverse Unit 8 80 R25 VK14

Timing-Belt Reverse Unit, die-cast zinc, black
 Ball-bearing timing pulley with multi-spline hub, hub geometry VK14 for Multi-Spline Shaft VK14 DIN ISO 14 - 6x11x14, hub depth 29 mm
 One revolution corresponds to 280 mm, effective radius $r_w = 44.6 \text{ mm}$
 Frict. moment with 1‰ pre-tensioning of the Timing Belt:
 (Emergence dim. 40) $M_R = 1.05 \text{ Nm}$
 (Emergence dim. 80) $M_R = 0.55 \text{ Nm}$
 Max. load: $M_D = 28 \text{ Nm}$
 Timing Belt length in the Timing-Belt Reverse Unit for
 90° reversal: 190 mm
 180° reversal (emergence dim. 40): 360 mm
 180° reversal (emergence dim. 80): 340 mm
 2 Universal Fasteners 8
 2 Button-Head Screws ISO 7380-M8x30, St, bright zinc-pl.
 Special T-Slot Nut M8, cast steel
 Pitch $p = 10 \text{ mm}$ Number of teeth $z = 28$
 Notes on Use and Installation
 $m = 3.3 \text{ kg}$



1 pce.

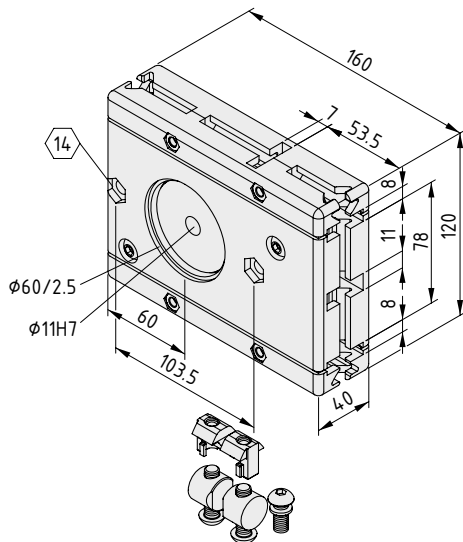
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**Timing-Belt Reverse Unit 8 80 R25 VK32**

Timing-Belt Reverse Unit, die-cast zinc, black
 Ball-bearing timing pulley with multi-spline hub, hub geometry VK14 for Multi-Spline Shaft VK32 DIN ISO 32 - 6x26x32, hub depth 29 mm
 One revolution corresponds to 280 mm, effective radius $r_w = 44.6$ mm
 Frict. moment with 1‰ pre-tensioning of the Timing Belt:
 (Emergence dim. 40) $M_R = 1.05$ Nm
 (Emergence dim. 80) $M_R = 0.55$ Nm
 Max. load: $M_D = 52$ Nm
 Timing Belt length in the Timing-Belt Reverse Unit for
 90° reversal: 190 mm
 180° reversal (emergence dim. 40): 360 mm
 180° reversal (emergence dim. 80): 340 mm
 2 Universal Fasteners 8
 2 Button-Head Screws ISO 7380-M8x30, St, bright zinc-pl.
 Special T-Slot Nut M8, cast steel
 Pitch $p = 10$ mm Number of teeth $z = 28$
 Notes on Use and Installation
 $m = 3.2$ kg

1 pce.

0.0.366.11

**Timing-Belt Reverse Unit 8 80 R25 with Bore**

Timing-Belt Reverse Unit, die-cast zinc, black
 Ball-bearing timing pulley with bore $\varnothing 11H7$, reborable up to max. $\varnothing 50$ mm, hub depth 29 mm
 One revolution corresponds to 280 mm, effective radius $r_w = 44.6$ mm
 Frict. moment with 1‰ pre-tensioning of the Timing Belt:
 (Emergence dim. 40) $M_R = 1.05$ Nm
 (Emergence dim. 80) $M_R = 0.55$ Nm
 Max. load: $M_D = 52$ Nm
 Timing Belt length in the Timing-Belt Reverse Unit for
 90° reversal: 190 mm
 180° reversal (emergence dim. 40): 360 mm
 180° reversal (emergence dim. 80): 340 mm
 2 Universal Fasteners 8
 2 Button-Head Screws ISO 7380-M8x30, St, bright zinc-pl.
 Special T-Slot Nut M8, cast steel
 Pitch $p = 10$ mm Number of teeth $z = 28$
 Notes on Use and Installation
 $m = 3.3$ kg

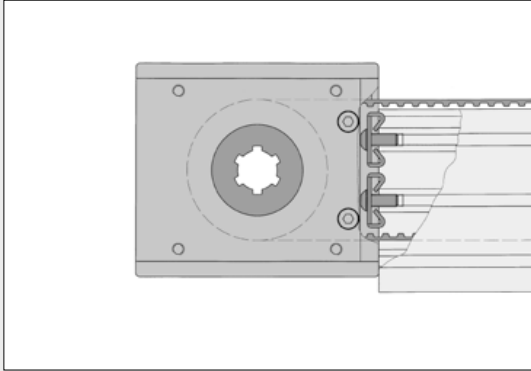
1 pce.

0.0.366.07

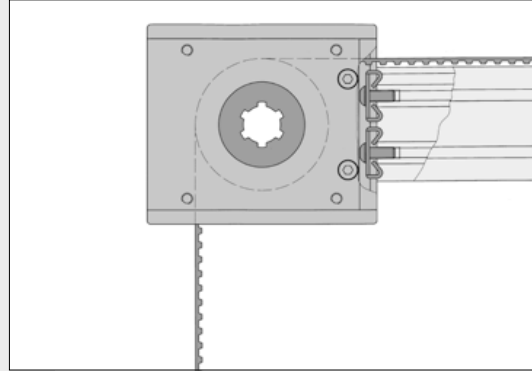


Timing-Belt Reverse Units 8 80 R50 II

- For driving and reversing Timing Belt R50 T10
- Compatible with Profiles 8 in dimensions of 80 x 80 mm and larger
- With multi-spline hub or hub processed to customer specifications
- Various motors can be used

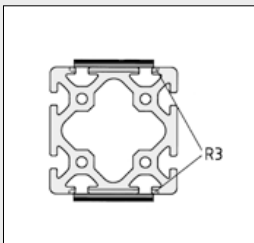


Connection of Timing-Belt Reverse Unit 8 80 R50 II based on a profile height of 120 mm (return of the Timing Belt in the profile cavity) or a profile height of 80 mm with Standard-Fastening Sets 8. To do this, the Timing-Belt Reverse Unit is partially dismantled, secured to the profile and then refitted. The emergence dimension of the Timing Belt is 80 mm.

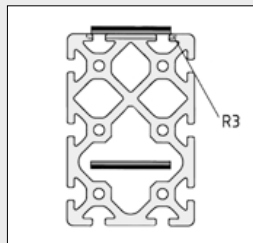


90° reversal of Timing Belt R50 T10.

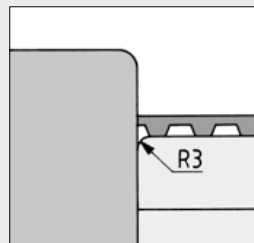
The opening for the Timing Belt is marked out on the inside and must be removed from the cap. If for design reasons the Timing-Belt Reverse Unit is fitted without a cap, the length of the Timing Belt in the Reverse Unit reduces by 10 mm.



To protect the Timing Belt against damage, the profiles must be rounded at the joint to the Timing-Belt Reverse Unit.



The profile cavities of Profiles 8 120x80 and 8 200x80 are suitable for routing back the Timing Belt internally.



Couplings 547

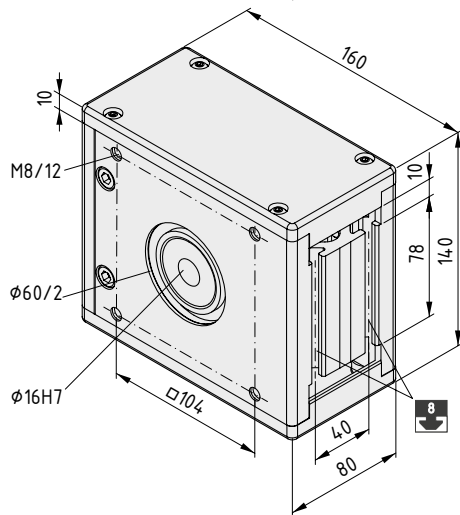
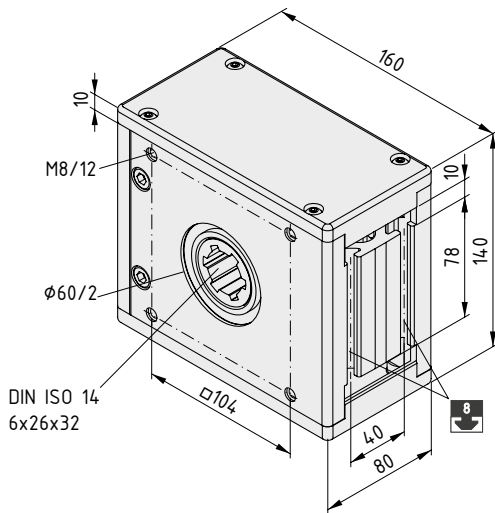


Timing-Belt Reverse Unit 8 80 R50 II VK32

Timing-Belt Reverse Unit, Al, black
 Ball-bearing timing pulley with multi-spline hub, Hub geometry VK32 for Multi-Spline Shaft VK32 DIN ISO 14 - 6x26x32, hub depth 75 mm
 One revolution corresponds to 280 mm, effective radius $r_w = 44.6$ mm
 Frictional moment with 1‰ pre-tensioning of the Timing Belt: $M_R = 1.05$ Nm
 Max. load: $M_p = 92$ Nm
 Timing Belt length in the Timing-Belt Reverse Unit for
 90° reversal: 220 mm
 180° reversal: 300 mm
 Pitch $p = 10$ mm Number of teeth $z = 28$
 $m = 3.9$ kg

1 pce.

0.0.426.19



Timing-Belt Reverse Unit 8 80 R50 II with Bore

Timing-Belt Reverse Unit, Al, black
 Ball-bearing timing pulley with bore $\varnothing 16H7$, reborable up to max. $\varnothing 36$ mm, hub depth 75 mm
 One revolution corresponds to 280 mm, effective radius $r_w = 44.6$ mm
 Frictional moment with 1‰ pre-tensioning of the Timing Belt: $M_R = 1.05$ Nm
 Max. load: $M_p = 92$ Nm
 Timing Belt length in the Timing-Belt Reverse Unit for
 90° reversal: 220 mm
 180° reversal: 300 mm
 Pitch $p = 10$ mm Number of teeth $z = 28$
 $m = 4.2$ kg

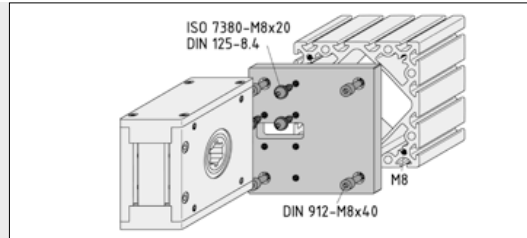
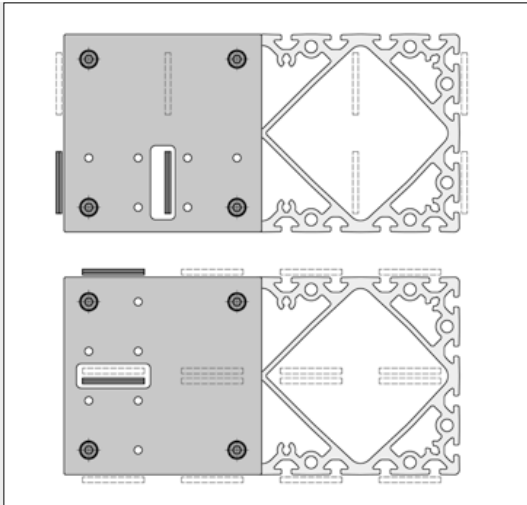
1 pce.

0.0.426.21



Mounting Plate

- For fastening Timing-Belt Reverse Unit 8 80 R50 II to Profiles 8 160x160 and 320x160.



1. Fitting the Mounting Plate to the end face of the profile:
Secure plate to the profile core bores using four bolts DIN 912-M8x40.
2. Fitting the Timing-Belt Reverse Unit 8 80 R50 II to the Mounting Plate:
Drive 3 Button-Head Screws M8x20 with washers DIN 125-8.4 into the threaded bores of the Mounting Plate.

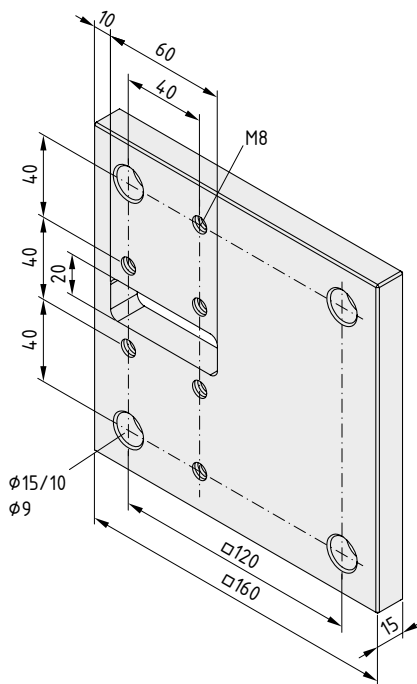
The Mounting Plate can be used to fasten Timing Belt R50 to any face of the profile.

Connecting Plate 160x160 U80R50

Al
m = 1.0 kg

black, 1 pce.

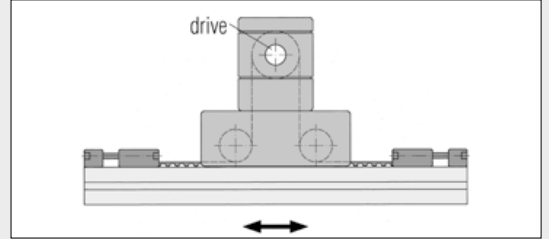
0.0.480.71





Timing-Belt Counter-Reverse Unit 8 R25

- For installing the drive on the slide
- Emergence dimension of Timing Belt 40 mm
- Ideal for vertical axes
- Drive with Timing-Belt Reverse Unit 8 40 R25 or 8 80 R25

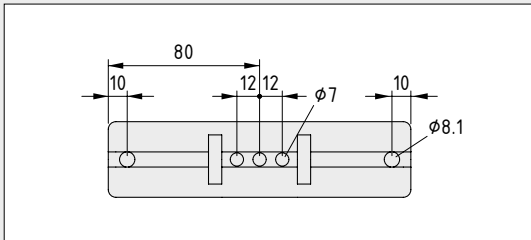


If the Counter-Reverse Unit is used, the Timing-Belt Tensioner is employed to attach and tension the Timing Belt on the supporting profile.

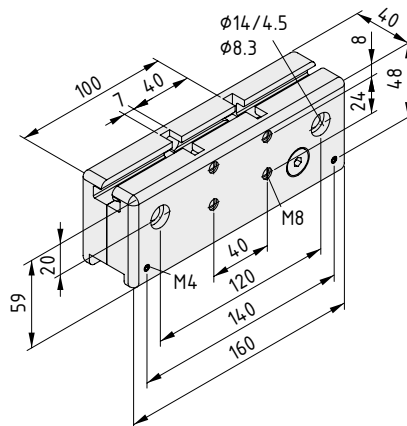
Possible connection to Timing-Belt Reverse Unit 8 40 R25 / 80 R25.

Moving support profile with stationary carriage unit and drive.

When fastening and tensioning the Timing Belt on a sliding carriage or support profile (using Counter-Reverse Unit 8) a Tensioning Block is required for each end of the Timing Belt. The number of Fixing Blocks is determined by the application.



The Line 8 groove on the rear of the Timing-Belt Counter-Reverse Unit can be used for fastening the Timing-Belt Reverse Units and Proximity Switch M8.



Timing-Belt Counter-Reverse Unit 8 R25



Counter-Reverse Unit, Al, black
 Frictional moment with 1‰ pre-tensioning of the Timing Belt:
 $M_R = 0.30 \text{ Nm}$
 Timing Belt length in Counter-Reverse Unit:
 2 x 105 mm
 $m = 770.0 \text{ g}$

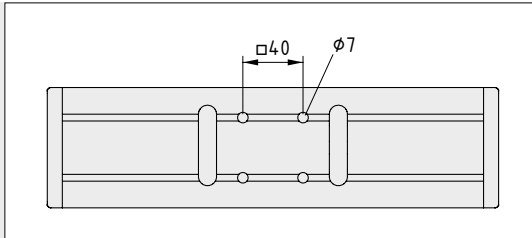
1 pce.

0.0.362.00

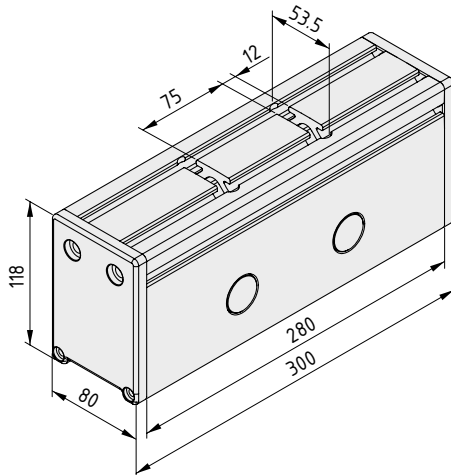


Timing-Belt Counter-Reverse Unit 8 80 R50

- For installing the drive on the slide
- Emergence dimension of Timing Belt 80 mm
- Ideal for vertical axes
- Drive with Timing-Belt Reverse Unit 8 80 R50 II



The Line 8 grooves of the Housing Profile can be used for fastening the Timing-Belt Reverse Unit and the slide construction.



Timing-Belt Counter-Reverse Unit 8 80 R50



Housing Al, black
 2 caps, PA, black
 2 ball-bearing reverse rollers, for Timing Belt width 50 mm
 Frictional moment with 1‰ pre-tensioning of the Timing Belt:
 $M_R = 0.75 \text{ Nm}$
 Timing Belt length in the Counter-Reverse Unit:
 2 x 202 mm
 $m = 4.7 \text{ kg}$

1 pce.

0.0.362.07



Timing Belts

- Quiet running, rigid traction device
- Highly flexible stranding results in a low-maintenance belt despite tight bending radii
- Steel cables with polyurethane sheathing
- Designed specifically for use with Timing-Belt Reverse Units and Timing-Belt Counter-Reverse Units from item



The overall length of the Timing Belt is calculated from the length of the supporting profile and the Timing Belt segments located in the Timing-Belt Reverse Units.

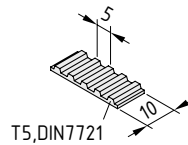
The pre-tensioning should be larger than or equal to the expected operating load. The pre-tensioning and operating load together must not exceed the maximum permissible load. To set the calculated pre-tensioning distance ΔL , it is advisable to measure the elongation during the tensioning process. The required minimum pre-tensioning distance of the Timing Belt must be calculated as a function of the pre-tensioning force F_V :

$$\Delta L = \frac{L \cdot F_V}{1000 \cdot K}$$

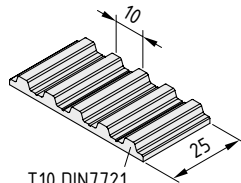
L = Total length of the Timing Belt in mm

F_V = Pre-tensioning force in N

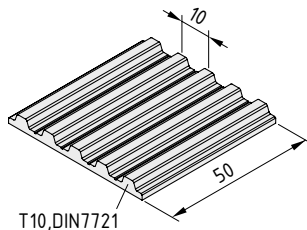
K = Constant of expansion in N (equivalent to the pre-tensioning force to expand the Timing Belt by 1‰)



T5, DIN7721



T10, DIN7721



T10, DIN7721

Timing Belt R10 T5

With integrated steel wires

Perm. load 300 N

$K = 75$ N

$m = 23$ g/m

black, cut-off max. 50 m

0.0.400.04

black, 1 roll length 50 m

0.0.400.11

Timing Belt R25 T10

With integrated steel wires

Perm. load 2,400 N

$K = 500$ N

$m = 125$ g/m

black, cut-off max. 50 m

0.0.337.10

black, 1 roll length 50 m

0.0.337.64

Timing Belt R50 T10

With integrated steel wires

Perm. load 4,200 N

$K = 1,000$ N

$m = 250$ g/m

black, cut-off max. 50 m

0.0.426.03

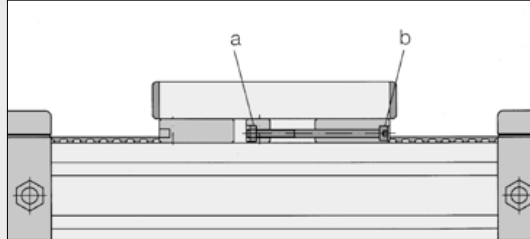
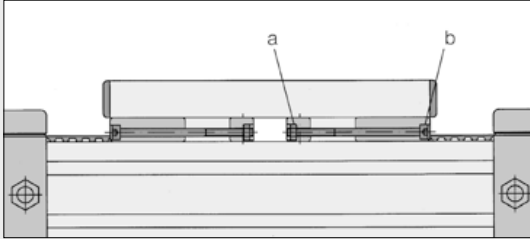
black, 1 roll length 50 m

0.0.426.10



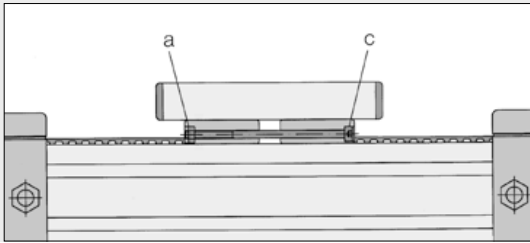
Timing-Belt Tensioner

- For fastening and tensioning Timing Belts
- Can be installed underneath the sliding carriage or at the profile end



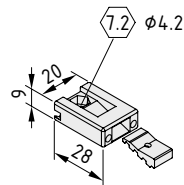
Fastening and tensioning the Timing Belt on a sliding carriage using Tensioning Blocks and Fixing Block and the appropriate bolts.

Where high loads are involved, Tensioning Block 8 and Fixing Block 8 will need to be pinned (dowel ISO 2338-Ø 6 mm). The position of the dowels is indicated by the prepared bores Ø 5.5 mm.



	5 R10	8 R25	8 R50
a = hexagon nut DIN 985	M3	M6	M6
b = Hexagon Socket Head Cap Screw DIN 912	M3x50	M6x80	M6x100
c = Hexagon Socket Head Cap Screw DIN 912	M3x60	M6x100	M6x140

Hexagon Socket Head Cap Screws 152

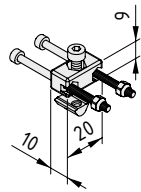


Timing-Belt Tensioner, Tensioning Block 5 R10

Tensioning Block, die-cast aluminium, black
Interlocking fixing piece, die-cast aluminium, black
m = 8.5 g

1 set

0.0.400.07

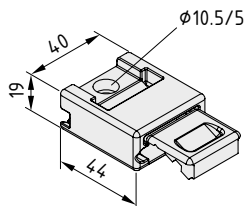


Timing-Belt Tensioner, Fixing Block 5 R10

Fixing Block, die-cast aluminium, black
Cap Screw DIN 912-M4x10, St, bright zinc-plated
T-Slot Nut 5 St M4, bright zinc-plated
2 hexagon nuts DIN 985-M3, self-locking, St, bright zinc-plated
2 Cap Screws DIN 912-M3x50, St, bright zinc-plated
m = 13.0 g

1 set

0.0.400.06

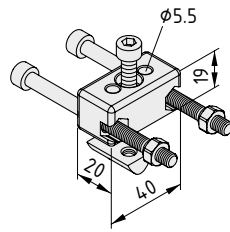


Timing-Belt Tensioner, Tensioning Block 8 R25

Tensioning Block, cast steel, black
Interlocking fixing piece, cast steel, black
m = 136.0 g

1 set

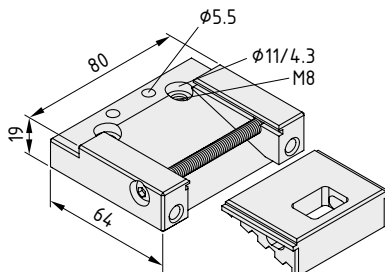
0.0.426.29

**Timing Belt Tensioner, Fixing Block 8 R25**

Fixing Block, cast steel, black
 Cap Screw DIN 912-M6x25, St, bright zinc-plated
 T-Slot Nut 8 St M6, bright zinc-plated
 2 hexagon nuts DIN 985-M6, self-locking, St, bright zinc-plated
 2 Cap Screws DIN 912-M6x80, St, bright zinc-plated
 m = 128.0 g

1 set

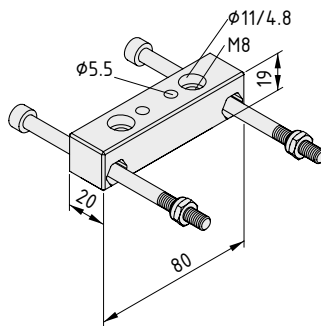
0.0.426.30

**Timing-Belt Tensioner, Tensioning Block 8 R50**

Tensioning Block, Al, anodized, black
 Interlocking fixing piece, Al, anodized, black
 m = 205.0 g

1 set

0.0.426.04

**Timing-Belt Tensioner, Fixing Block 8 R50**

Fixing Block, Al, anodized, black
 2 hexagon nuts DIN 985-M6, self-locking, St, bright zinc-pl.
 2 Hexagon Socket Head Cap Screws DIN 912-M6x100, St, bright zinc-plated
 m = 119.0 g

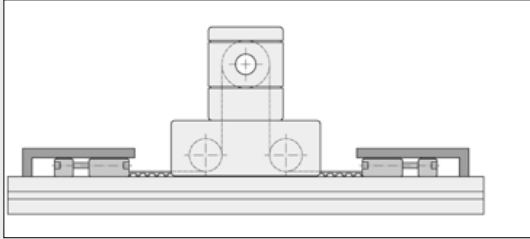
1 set

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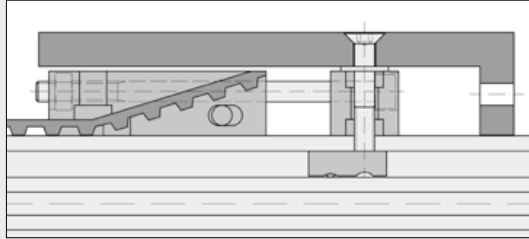


Timing-Belt Tensioner Holder

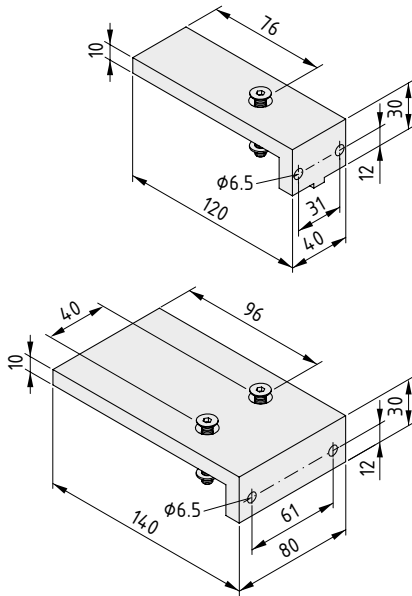
- For reinforcing the hold of Timing-Belt Tensioners on driven linear axes
- For holding down tensioners and ensuring the belt runs straight and level
- For reducing vibrations and taking strain off screw connections



Drawing of a linear drive with moving axis. Holders prevent the timing-belt tensioners lifting away from the profile.



The Timing-Belt Tensioner Holder is screwed together with the fixing block. The tensioning screws of the timing-belt tensioner are accessed through the holes provided.



Timing-Belt Tensioner Holder 8 R25



Holder, Al, anodized, natural
 Countersunk Screw DIN 7991-M6x40, St, bright zinc-plated
 3 adapter washers DIN 988, St, stainless
 m = 160.0 g

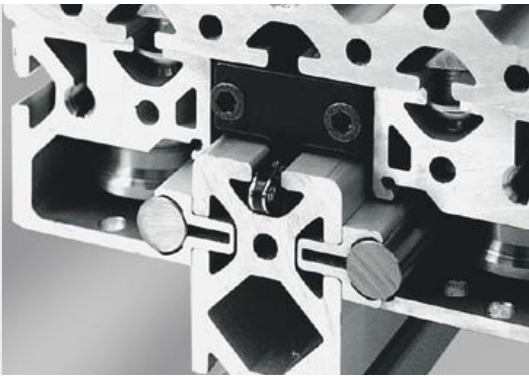
1 set	0.0.426.33
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Timing-Belt Tensioner Holder 8 R50



Holder, Al, anodized, natural
 2 Countersunk Screws DIN 7991-M6x40, St, bright zinc-plated
 6 adapter washers DIN 988, St, stainless
 m = 360.0 g

1 set	0.0.426.36
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Modular Chain Drive Chain Carrier 8

- Chain drive for Linear Slides
- Chain Carrier connects slide and drive chain
- Ideal for simple drive solutions



Chain Carrier 8 connects the drive chain and the carriage of the linear slide.

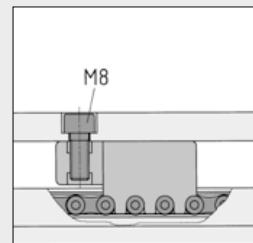
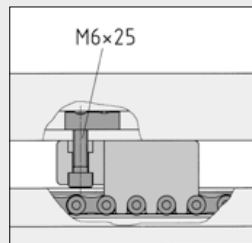
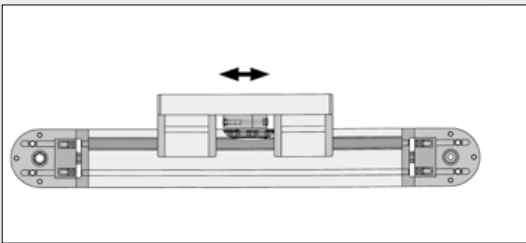
The connecting block is fastened to the carriage and the chain pick-up is inserted into the chain. After the carriage has been mounted onto the slide, the components are screwed together.



Note:

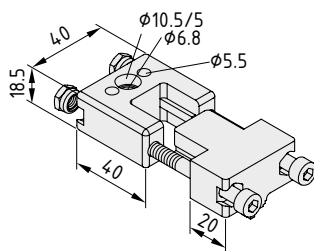
All the required drive elements for the chain drive can be found in Section 12 on Conveyors

378



Options for fastening the Chain Carrier.

The connecting block must also be pinned (dowel ISO 2338- \varnothing 6 mm) under high loads. The position of the dowels is determined by the \varnothing 5.5 mm holes which have been prepared.



Chain Carrier 8



Connecting block, St, black
Chain pick-up, St, black
2 Cap Screws DIN 912-M6x55, St, bright zinc-plated
2 hexagon nuts DIN 985-M6, St, bright zinc-plated
m = 300.0 g

1 set

0.0.463.46



Modular Rack Drive Rack 8

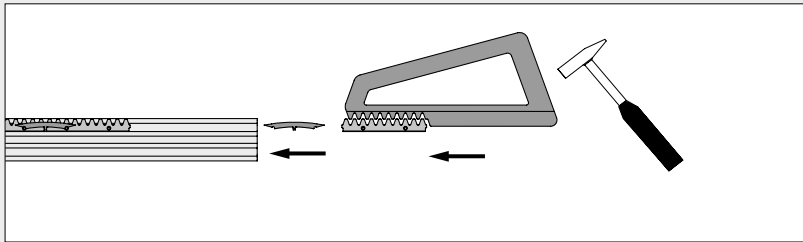
- The rack sits entirely in the profile groove
- High drive rigidity with minimum space requirements
- Practical clamping technology eliminates need for machining during installation
- Only End Sections need to be screwed into place



This rack drive is unrivalled in its compact design. There's nothing above it and no space is wasted. High rigidity and long service life combine with minimum maintenance.

Rack drive 8 is designed for use with a Linear Slide 8 D14.

Precise manufacturing tolerances and an effective and innovative longitudinal fastening system result in reduced pitch error over longer lengths.



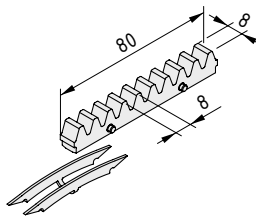
Rack 8 Assembly Tool 591

Rack 8 End Section and Rack 8 Segment 80

The two parts of the Rack 8 End Section form the start and finish of a rack. As many Segment 80 pieces as required can be used between these two points. The protected clamp technology secures each Segment with no extra work required. Note:

Rack 8 must not be installed in profiles of type "light" or "E".

The short but precise length of each rack segment eliminates systematic errors typical in longer lengths. The connecting clips form an effective fastening system that holds each rack segment securely in place.

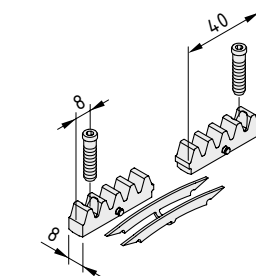


Rack 8 Segment 80

Rack segment, St
Spring clip, St, stainless
m = 47.0 g

1 set

0.0.621.94

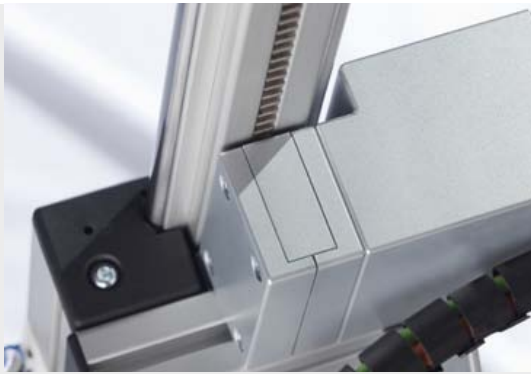


Rack 8 End Section

2 rack end sections, St
2 dowel screws M5x22, St
Spring clip, St, stainless
m = 50.0 g

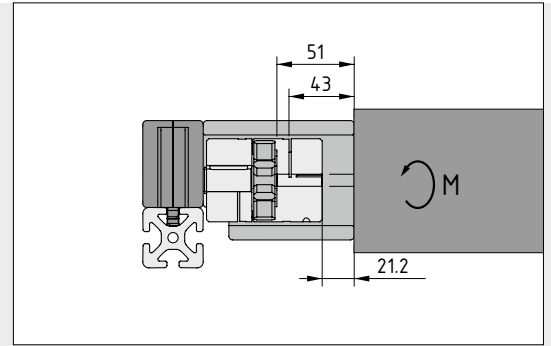
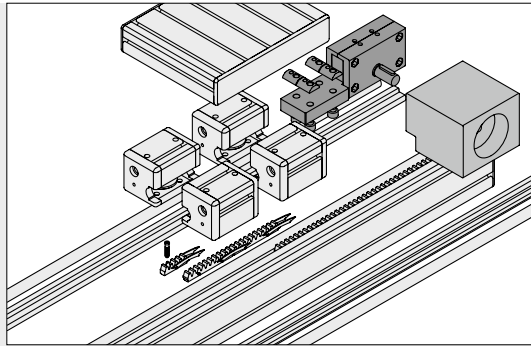
1 set

0.0.621.93



Rack 8 Drive Module

- Slide driven directly via the rack
- Versatile coupling ensures virtually any motor can be connected



The item rack drive can also be used with a motor of the customer's choosing. That's why the Coupling Module comes with a universal coupling for connecting virtually any motor. The coupling is connected directly to the module's housing.

Technical data:

Maximum drive force 1000 N

$M_{max} = 23 \text{ Nm}$

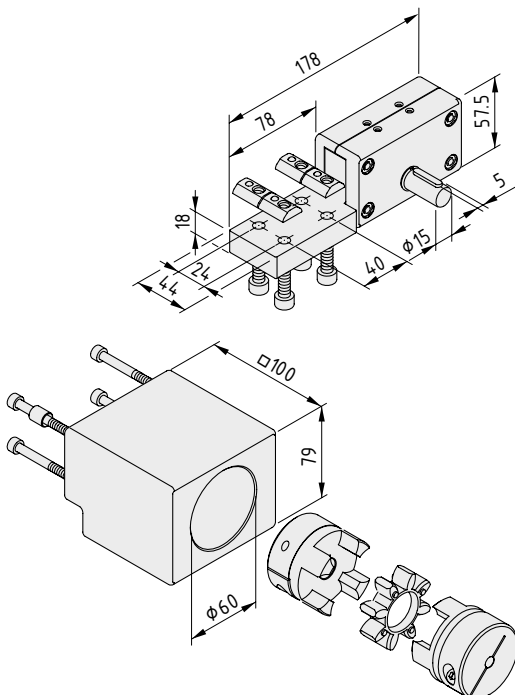
$n = 1200 \text{ /min}$ ($V_{max} = 3\text{m/s}$)

The Rack 8 Coupling Module fits nearly any motor – simply process the housing and coupling to suit your needs. You will, however, need to take care over how far the shaft extends into the coupling half.



Service offering from your item partner

The item rack drive comes complete with a Linear Slide 8 D14 as a service offering from your item partner. Quick, simple and delivered to your specifications.



Rack 8 Drive Module



- Drive housing, Al, white aluminium similar to RAL 9006
- Height-adjustable carriage connection plate, St, white aluminium
- Drive gear, double ball bearing, $z = 18$, St
- One revolution corresponds to 144 mm
- 2 felt discs
- 4 Hexagon Socket Head Cap Screws DIN 912-M8x20, bright zinc-plated
- 4 T-Slot Nuts 8 St M8, heavy duty
- Notes on Use and Installation
- $m = 1.5 \text{ kg}$

1 set

0.0.621.69

Rack 8 Coupling Module



- Coupling housing, Al, white aluminium
- Coupling set D55
- Screws, fastening elements and centring sleeves
- $m = 1.7 \text{ kg}$

1 set

0.0.621.73



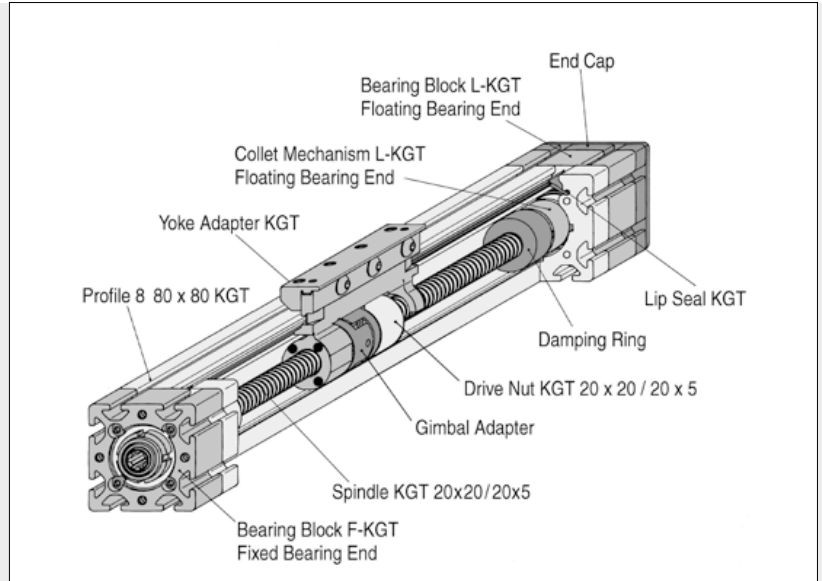
Ball Screw Units

- High accuracy, high efficiency, high rigidity
- For use in Linear Units and handling systems
- Drive side can be selected as required
- Can be combined with any guides

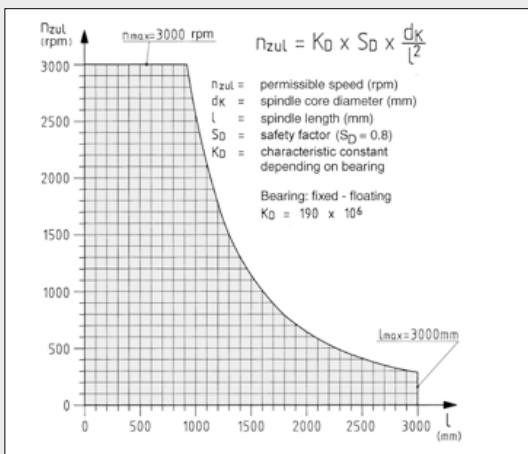


Ball Screw Units KGT are suitable for use as a drive mechanism for linear slides, particularly for low speeds and short strokes. They feature high precision, high efficiency, high rigidity of the drive system and low mechanical wear:

- For use in linear units, conveyors, handling devices, work bench design and any other fixtures
- Powered by hand wheel, AC/DC motors, stepper motors and hydraulic or pneumatic drive mechanisms
- Choice of power input end
- Can be combined with any type of guide
- Individual components are replaceable
- Full compatibility with MB Building Kit System products

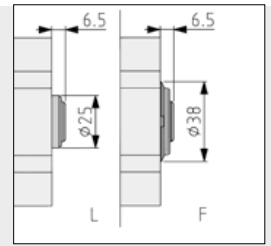
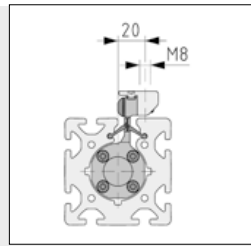
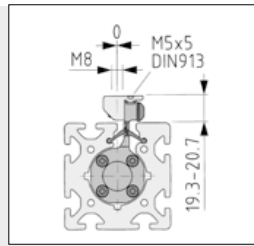
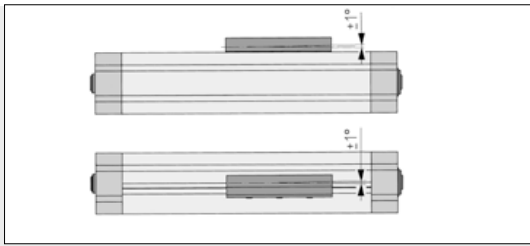


The modular design of the Ball Screw Units KGT with no need for complex machining results in short delivery times and facilitates installation and maintenance.



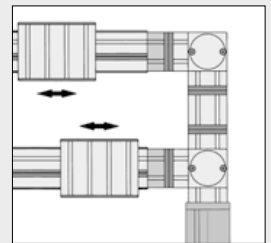
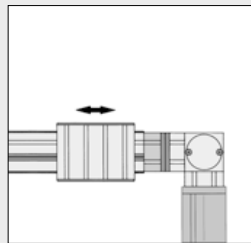
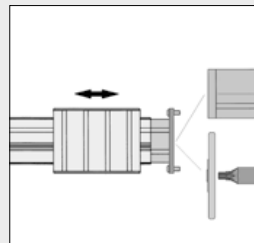
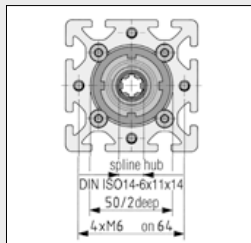
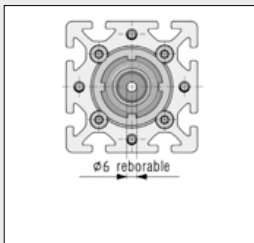
The Ball Screw Unit KGT can be driven from the fixed or floating bearing end. The Ball Screw Unit should be positioned so as to ensure that the main load is a tensile load from the fixed bearing end (i.e. fixed bearing at the top in a vertical unit).

The maximum stroke velocities of the Ball Screw Unit depend on the spindle length (see diagram opposite). Under axial compression, the buckling behaviour of the spindle must be taken into consideration.



Suitable for combination with all item linear slides.
The necessary guidance for the yoke must be provided by the external linear slide.
The driving nut is suspended on gimbals to prevent strains and allow for slight errors in alignment with the load.

The yoke adapter can be matched to the height of the slide by means of grub screws DIN 913-M5x5.
The position of the connecting thread M8 for securing the slide can be either central or offset relative to the slide depending on the position the yoke adapter is used in.



Connection dimensions of the Bearing Blocks at the floating (L) and fixed (F) bearing ends. Depending on the drive type selected, the Bearing Blocks and drive holders may need to be machined.

The hub is reborable up to max. \varnothing 17 mm or \varnothing 14 mm for insertion of a parallel keyway as per DIN 6885 T1.

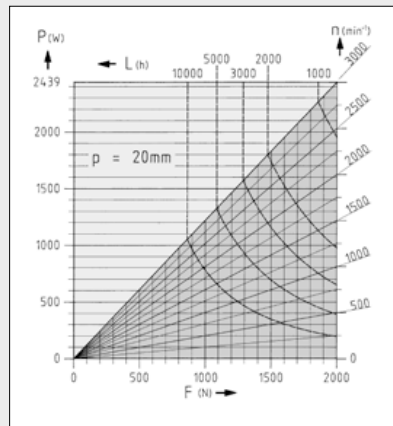
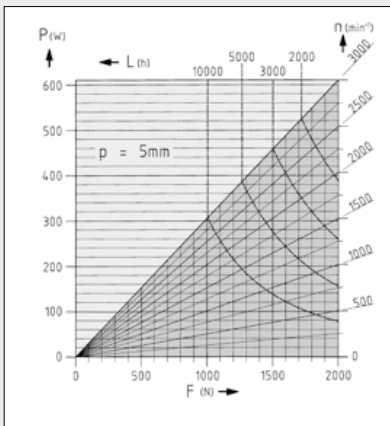
Direct drive connection with Adapter Plate 120x80. Various drives adaptable using the Adapter Shaft and Adapter Flange Universal.

Direct connection to Bevel Gearbox WG via Adapter Plate 80x80. Drives can be connected to Bevel Gearbox WG with the Coupling Housings.

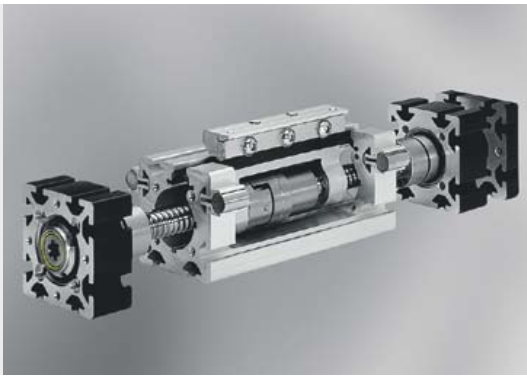
Parallel arrangement of Ball Screw Units in connection with Bevel Gearboxes.

Couplings 547

Calculation of Service Life



The service life of the spindle / drive nut combination can be calculated as a function of the axial load and drive speed.



Ball Screw Units KGT

- For Linear Units with the ultimate positioning accuracy
- Low-wear spindle for long-term precision
- Complete drive unit in a profile that is enclosed on three sides
- Compatible with various item linear slides

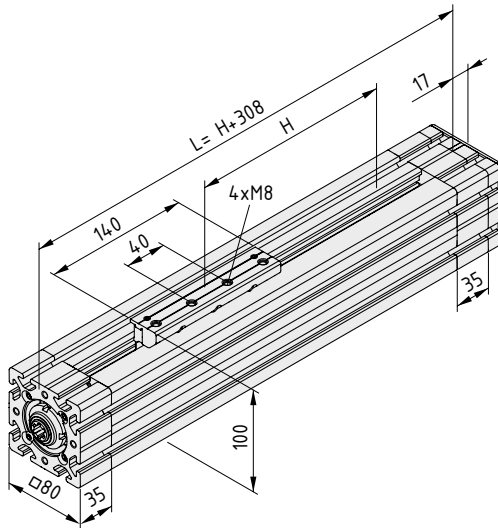


Complete drive units of variable stroke length (H), spindle pitch 5 mm or 20 mm and drive option via Multi-Spline Shaft or individually machined hubs.
Supporting profile with integrated lip seals, fixed and floating bearing blocks, specially designed ball-bearing collet mechanism for holding the spindle, end of stroke damping, secure yoke,

play-minimised drive nut suspended on gimbals, rolled spindle, grease lubrication
Lubrication interval: every 400-500 service hours with lithium-based ball-bearing grease (not general purpose grease)
Acceleration_{max.} = 5 m/s²
Stroke length_{max.} = 2762 mm
Total length L = stroke length + 308 mm

Adapter Plates (for motors and drives) 556

Couplings 547



Ball Screw Unit KGT 20x5, VK14



Pitch p = 5 mm
Stroke velocity_{max.} = 0.25 m/s
Efficiency of overall unit = 80 %
Backlash_{max.(spindle/drive nut)} = 0.04 mm
m = 5 kg + H x 0.011 kg/mm

1 pce. 0.0.414.33

Ball Screw Unit KGT 20x5, bored and keyed to customer specification



Pitch p = 5 mm
Stroke velocity_{max.} = 0.25 m/s
Efficiency of overall unit = 80 %
Backlash_{max.(spindle/drive nut)} = 0.04 mm
m = 5 kg + H x 0.011 kg/mm

1 pce. 0.0.414.51

Ball Screw Unit KGT 20x20, VK14



Pitch p = 20 mm
Stroke velocity_{max.} = 1.00 m/s
Efficiency of overall unit = 85 %
Backlash_{max.(spindle/drive nut)} = 0.08 mm
m = 5 kg + H x 0.011 kg/mm

1 pce. 0.0.414.32

Ball Screw Unit KGT 20x20, bored and keyed to customer specification



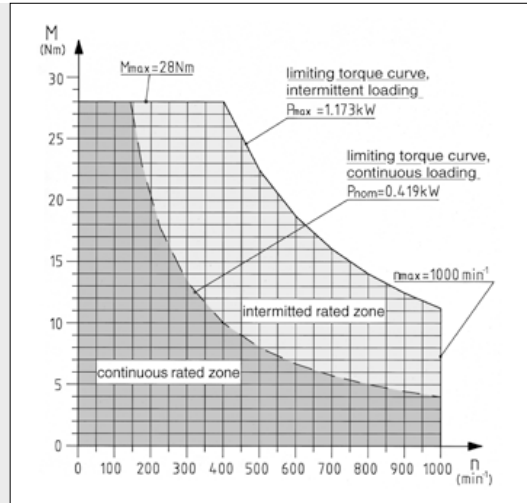
Pitch p = 20 mm
Stroke velocity_{max.} = 1.00 m/s
Efficiency of overall unit = 85 %
Backlash_{max.(spindle/drive nut)} = 0.08 mm
m = 5 kg + H x 0.011 kg/mm

1 pce. 0.0.414.50

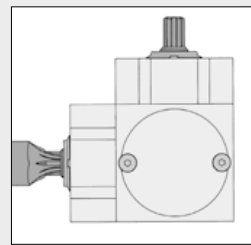
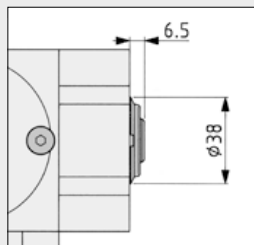
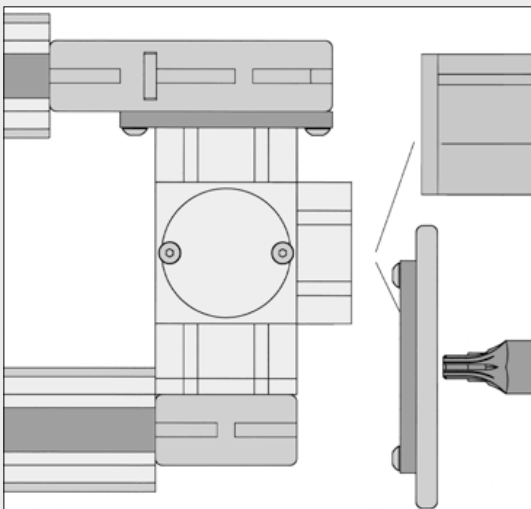


Bevel Gearbox


- Power transmission, drive and linear axis
- For a timing-belt drive, chain drive or Ball Screw Unit
- Input torque redirected by 90°.
- Distribution of input torque and option of adjusting direction of rotation on output shafts
- Subsequent changeover to other kinematics is also possible
- High efficiency, low backlash and low mechanical wear



The diagram is used for calculating the permissible torques M and speeds n of the Bevel Gearboxes. For loads in the continuous rated zone, continuous operation is permissible. In the intermittent rated zone, operating times must be reduced accordingly.



The geometry for connecting multi-spline hub to Multi-Spline Shaft or solid shaft $\varnothing 30$ mm can be changed by using Connecting Shaft U-WG or the Adapter Shaft.

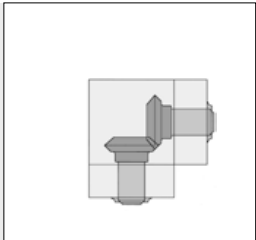
Adapter Plates (for motors and drives)  556

The Bevel Gearboxes with special kinematics and the ability to combine several Bevel Gearboxes allows flexible positioning of drives and linear units.

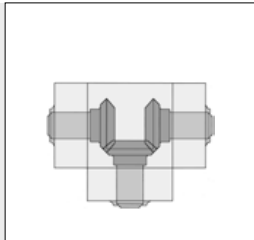


Bevel Gearboxes WG

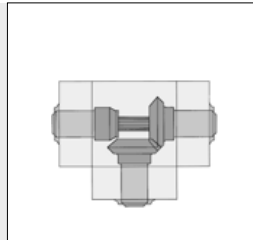
- For connecting drives in virtually any position
- Five connection variants from 90° to 360°
- Also suitable for synchronising drive elements



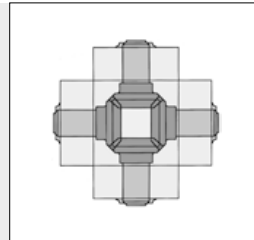
Bevel Gearbox WG 90°



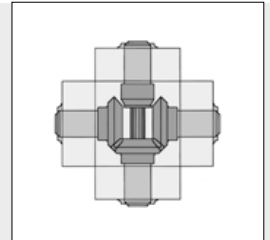
Bevel Gearbox WG 180°



Bevel Gearbox WG 180° D



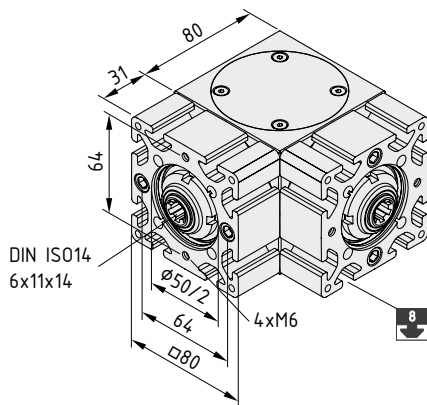
Bevel Gearbox WG 360°



Bevel Gearbox WG 360° D

The following applies to all the products below:

Box, box lid and Bearing Blocks, Al, anodized, black
 Straight-toothed ball-bearing bevel gear pairs, made of high strength steel with minimal backlash and wear-resistant surface
 Prelubricated, maintenance-free
 Gear ratio $i = 1 : 1$
 Nominal torque $M_{nom} = 10 \text{ Nm}$
 Nominal speed $n_{nom} = 400 \text{ min}^{-1}$
 Nominal power $P_{nom} = 0.419 \text{ kW}$
 Torque $M_{max} = 28 \text{ Nm}$
 Speed $n_{max} = 1000 \text{ min}^{-1}$
 Power $P_{max} = 1.173 \text{ kW}$
 Service life $L = 10,000 \text{ h}$
 Play angle $\alpha_{max} = 20'$



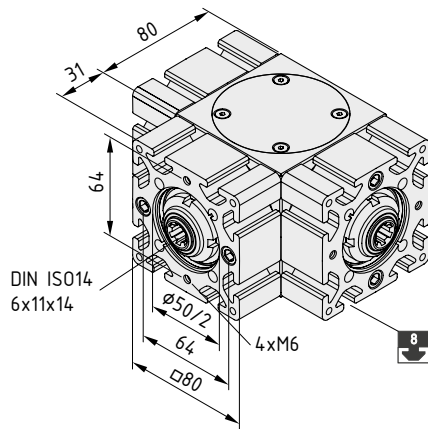
Bevel Gearbox WG 90°



Efficiency = 93% $m = 2.0 \text{ kg}$

1 pce.

0.0.408.10

**Bevel Gearbox WG 180°**

Efficiency = 90% m = 2.6 kg

1 pce.

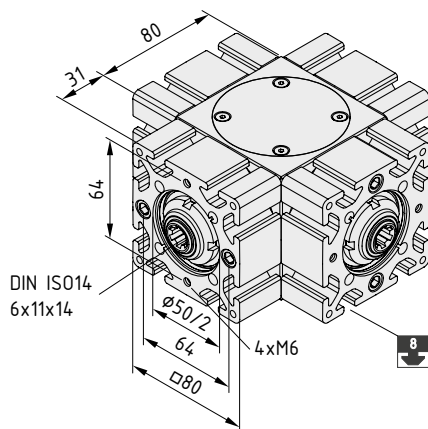
0.0.408.20

Bevel Gearbox WG 180° D

Efficiency = 91% m = 2.7 kg

1 pce.

0.0.408.25

**Bevel Gearbox WG 360°**

Efficiency = 87% m = 3.4 kg

1 pce.

0.0.408.26

Bevel Gearbox WG 360° D

Efficiency = 88% m = 3.4 kg

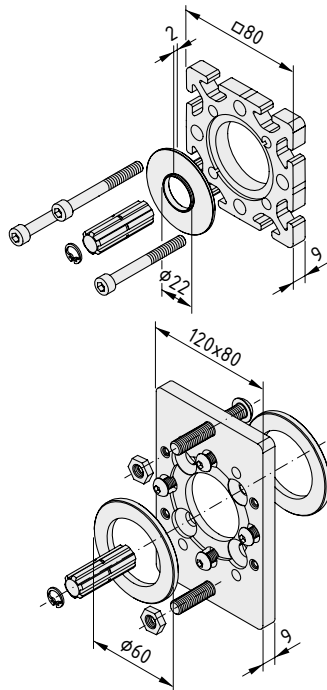
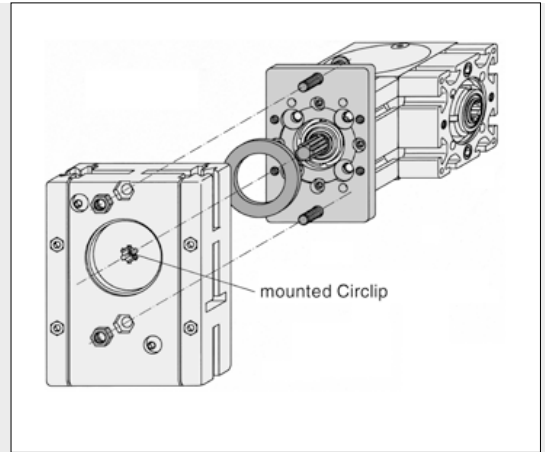
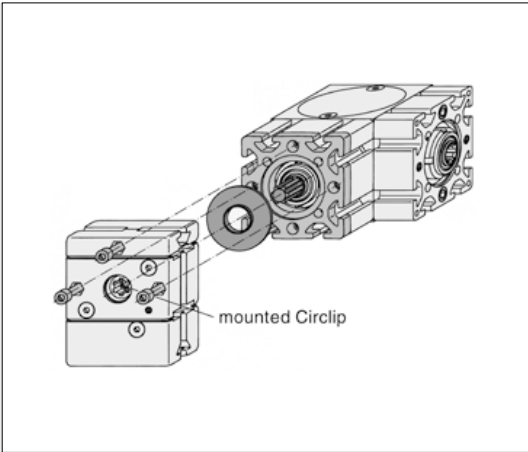
1 pce.

0.0.408.27



Fastening Sets for Bevel Gearboxes

■ For connecting Bevel Gearboxes to Timing-Belt Reverse Units



Fastening Set U40-WG



Locating profile 80x80x9, Al, anodized, black
 Centring piece D50-D22
 Connecting Shaft U-WG
 3 Hexagon Socket Head Cap Screws DIN 912-M6x55, St, black
 Circlip N
 m = 185.0 g

1 set

0.0.408.23

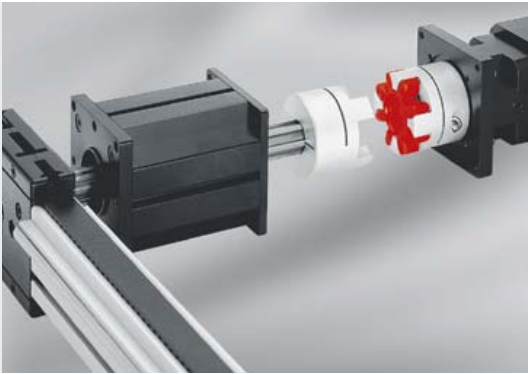
Fastening Set U80-WG



Adapter Plate 120x80
 Centring Piece D60-D60
 Centring Piece D50-D50
 Connecting Shaft U-WG
 Circlip N
 4 Button-Head Screws ISO 7380-M6x16, St, bright zinc-plated
 2 Button-Head Screws ISO 7380-M8x50, St, black
 2 hexagon nuts DIN 936-M8, St, black
 m = 320.0 g

1 set

0.0.408.24



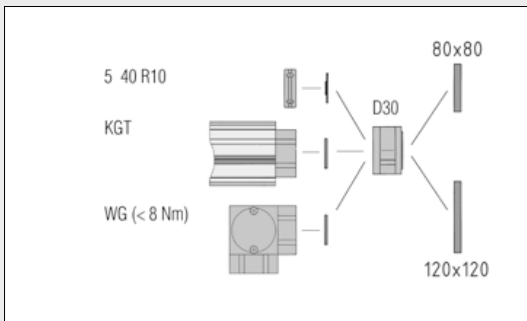
Couplings

- Compensation for alignment errors
- Cushioning of drive influences
- Simple installation and maintenance

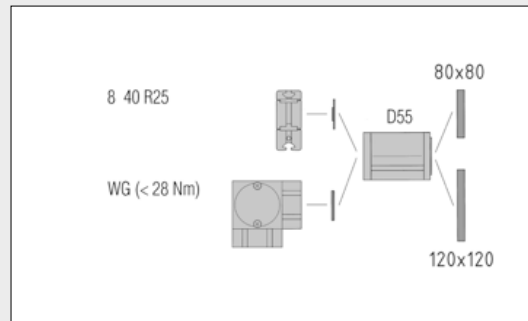


Couplings can be installed between the mechanical drive elements (Timing-Belt Reverse Units, chain drives, Ball Screw Units, Bevel Gearboxes) and the drive in order to suppress and compensate for angular errors and radial or axial offset.

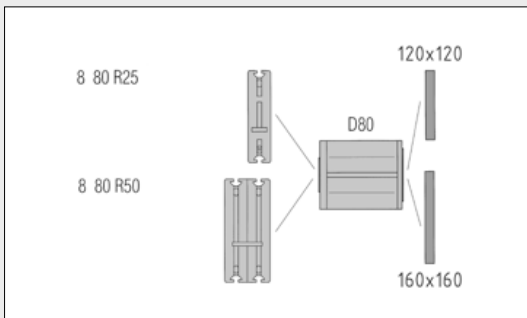
The use of couplings means that a plug-type connection is possible between the drive and mechanical drive elements, thereby facilitating assembly, machining and maintenance. To achieve a safe connection between drive and drive element, the coupling shafts must be covered by a Coupling Housing with a length and diameter that is suitable for the various couplings.



The connection dimensions and the permissible torque range ($M_b < 8 \text{ Nm}$) make Coupling D30 ideally suited for use with Ball Screw Units (Ball Screw Units KGT; Centring Piece D50-D50), Timing-Belt Reverse Unit 5 40 R10 with multi-spline VK14 (Centring Piece D50-D22) and (optionally) Bevel Gearboxes WG (Centring Piece D50-D50).



The connection dimensions and the permissible torque range ($M_b < 50 \text{ Nm}$) make Coupling D55 ideally suited for use with Timing-Belt Reverse Unit 8 40 R25 with multi-spline VK14 (Centring Piece D50-D22) and (optionally) Bevel Gearboxes WG (Centring Piece D50-D50: note torque limit 28 Nm!).



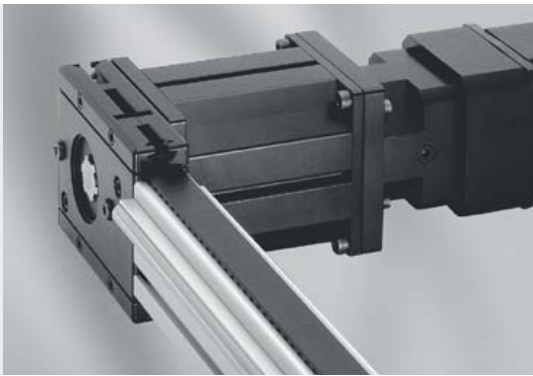
Coupling D80 is used with an appropriately sized Coupling Housing for the purpose of transferring the high torque ($M_b < 100 \text{ Nm}$) of Timing-Belt Reverse Units 8 80 R25 and 8 80 R50 II with multi-spline VK32. The Coupling Housing has a corresponding Centring Piece ($\varnothing 60 \text{ mm}$) for the Timing-Belt Reverse Units.

Coupling Housing 8 D30, D55 or D80 should be used as appropriate to the connection dimensions of the motors.



Note:

Further technical data on the couplings can be found in Section 19.



Coupling Housing 8

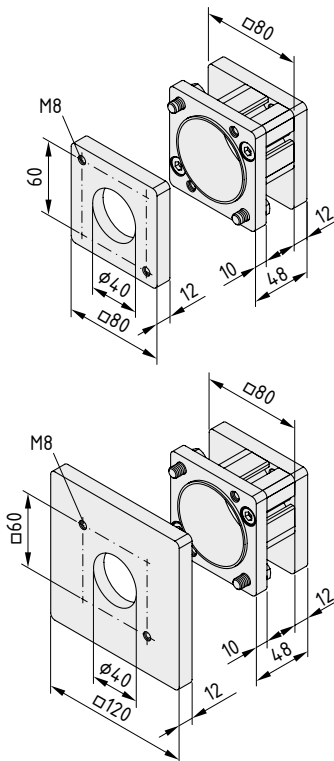
- Stable connection between motor and linear drive
- Can be modified to suit the size of the coupling and the drive casing



In addition to the connection between the rotating elements described above, the casings of the mechanical drive elements must also have a static connection to the drives. This is achieved using various Coupling Housings which are adapted in length and diameter to the various couplings. Universal Coupling Adapter Plates, which have to be provided with fastening bores and centring diameters for the relevant drives, enable the drive to be secured to the Coupling Housing.

The Coupling Housings create a stable connection between mechanical drive elements and motors. Coupling Adapter Plates Universal are used to make the connection with the drive. They need to be selected in a size that is suitable for the housing type and machined according to the connection geometry of the drive.

It is advisable to provide separate support for the drive unit (motor and coupling) at the Coupling Housing.



Coupling Housing 8 D30 80x80



Coupling Housing 8 D30, black
 2 hexagon screws DIN 933-M8x22, St, black
 Coupling Adapter Plate D30/D55 Universal 80x80, Al, black
 m = 460.0 g

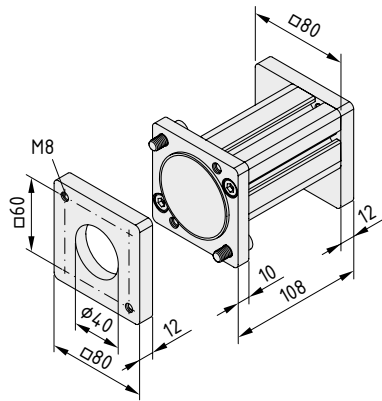
1 set	0.0.628.95
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Coupling Housing 8 D30 120x120



Coupling Housing 8 D30, black
 2 hexagon screws DIN 933-M8x22, St, black
 Coupling Adapter Plate D30/D55 Universal 120x120, Al, black
 m = 1.0 kg

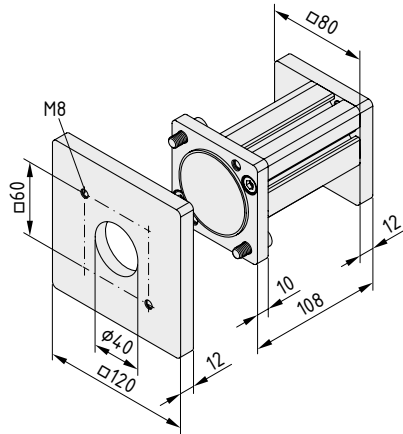
1 set	0.0.628.96
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**Coupling Housing 8 D55 80x80**

Coupling Housing 8 D55, black
 2 Hexagon Socket Head Cap Screws DIN 912-M8x20, St, black
 Coupling Adapter Plate D30/D55 Universal 80x80, Al, black
 m = 750.0 g

1 set

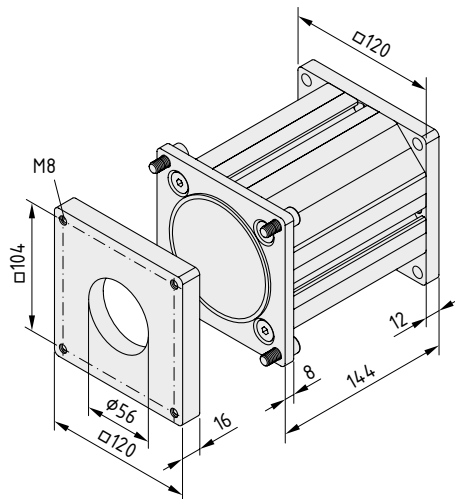
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**Coupling Housing 8 D55 120x120**

Coupling Housing 8 D55, black
 2 Hexagon Socket Head Cap Screws DIN 912-M8x20, St, black
 Coupling Adapter Plate D30/D55 Universal 120x120, Al, black
 m = 1.0 kg

1 set

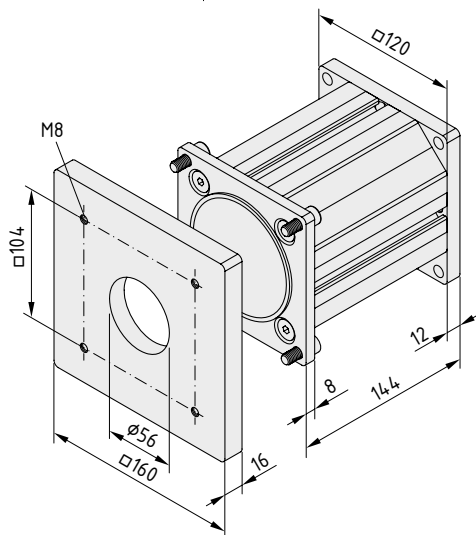
0.0.628.98

**Coupling Housing 8 D80 120x120**

Coupling Housing 8 D80, black
 4 Hexagon Socket Head Cap Screws DIN 912-M8x20, St, black
 Coupling Adapter Plate D80 Universal 120x120, Al, black
 m = 1.8 kg

1 set

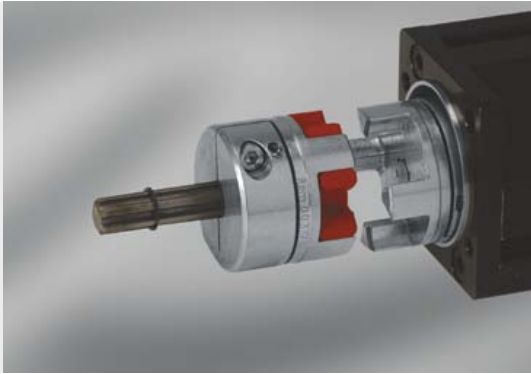
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**Coupling Housing 8 D80 160x160**

Coupling Housing 8 D80, black
 4 Hexagon Socket Head Cap Screws DIN 912-M8x20, St, black
 Coupling Adapter Plate D80 Universal 160x160, Al, black
 m = 2.3 kg

1 set

0.0.629.00



Coupling Sets

- Rigid torque transmission
- Elastic Coupling Inserts, easy to install
- Prepared multi-spline connections enable plug-in connection

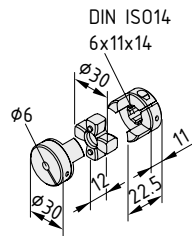


The Coupling Halves with multi-spline hubs VK14 and VK32 can be connected with the corresponding Connecting Shafts or mechanical drive elements without the need for machining.

In the case of Coupling Halves with bores, simple machining (reboring, parallel keyway, etc.) is required to ensure they match the drive output shaft of gear-boxes/motor drives.

The Coupling Halves are connected to the Coupling Inserts, which exhibit an elasticity that is configured for the item drive elements.

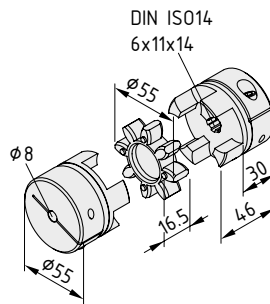
In conjunction with Ball Screw Units driven with stepper motors, the flexible couplings make it possible to decouple the moving masses of the spindle and drive.



Coupling D30

Coupling Half D30 D6 Al, reborable up to \varnothing 16 mm
 Coupling Half D30 VK 14, reborable up to \varnothing 28 mm
 Coupling Insert D30, hardness 80 Sh A
 Torque range: $M_D < 8$ Nm
 Elasticity_{dyn.} = 0.318 °/ Nm
 Elasticity_{stat.} = 0.955 °/ Nm
 Perm. offset_{axial} = 1.00 mm
 Perm. offset_{radial} = 0.21 mm
 Perm. offset_{angular} = 1.1 °
 m = 52.0 g

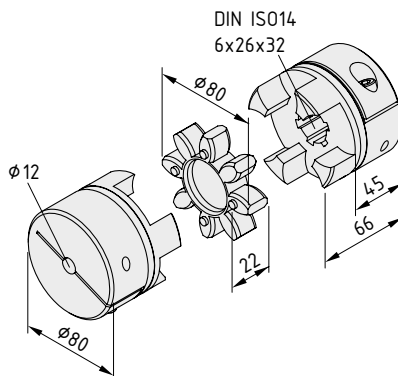
1 set 0.0.628.83



Coupling D55

Coupling Half D55 D8, reborable up to \varnothing 28 mm
 Coupling Half D55 VK14
 Coupling Insert D55, hardness 98 Sh A
 Torque range: $M_D < 50$ Nm
 Elasticity_{dyn.} = 0.009 °/ Nm
 Elasticity_{stat.} = 0.028 °/ Nm
 Perm. offset_{axial} = 1.40 mm
 Perm. offset_{radial} = 0.10 mm
 Perm. offset_{angular} = 0.9 °
 m = 280.0 g

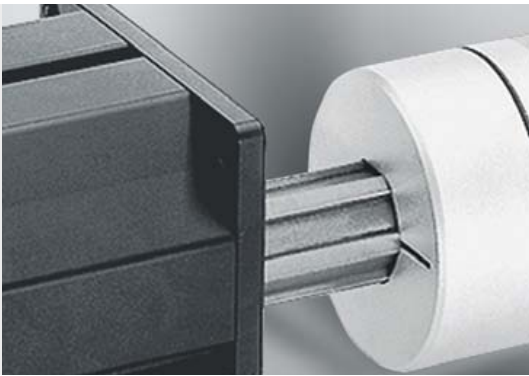
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Coupling D80

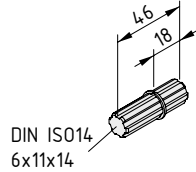
Coupling Half D80 D12,
 Coupling Insert D80, hardness 98 Sh A
 Coupling Half D80 VK32, reborable up to \varnothing 45 mm
 Torque range: $M_D < 200$ Nm
 Elasticity_{dyn.} = 0.003 °/ Nm
 Elasticity_{stat.} = 0.008 °/ Nm
 Perm. offset_{axial} = 1.80 mm
 Perm. offset_{radial} = 0.12 mm
 Perm. offset_{angular} = 0.9 °
 m = 924.0 g

1 set 0.0.628.85



Connecting Shafts

- Torsionally rigid connection between drives and couplings
- Simple plug-in connection thanks to Multi-Spline Shaft

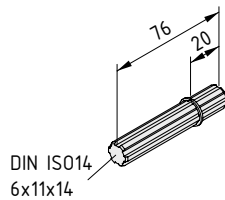


Connecting Shaft VK14 R10/KGT

Multi-Spline Shaft similar to DIN ISO 14-6x11x14, St, C 45 k
Snap ring W14
m = 44.0 g

1 pce.

0.0.463.17

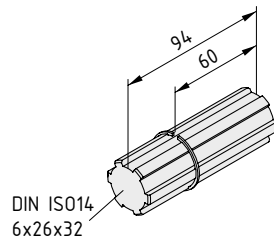


Connecting Shaft VK14 R25/WG

Multi-Spline Shaft similar to DIN ISO 14-6x11x14, St, C 45 k
Snap Ring W14
m = 73.0 g

1 pce.

0.0.463.15

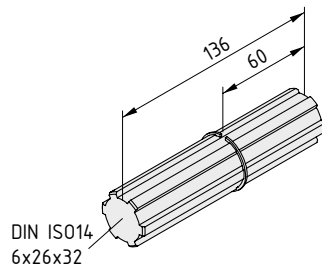


Connecting Shaft VK32 R25

Multi-Spline Shaft similar to DIN ISO 14-6x26x32, St, C 45 k
Snap Ring W32
m = 470.0 g

1 pce.

0.0.337.93



Connecting Shaft VK32 R50

Multi-Spline Shaft similar to DIN ISO 14-6x26x32, St, C 45 k
Snap Ring W32
m = 680.0 g

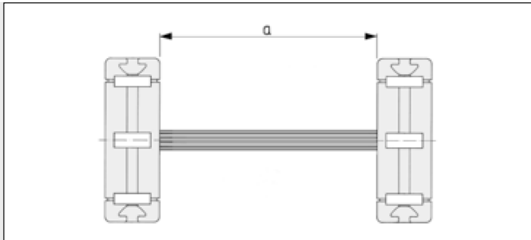
1 pce.

0.0.337.92



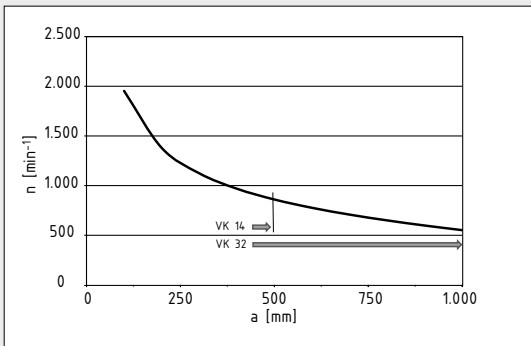
Multi-Spline Shafts

- Simple power transmission through plug-in connection
- For building drive shafts and Synchroniser Shafts



Suitable for use in combination with Timing-Belt Reverse Units for generating synchronous movements up to a distance "a".

Multi-Spline Shaft	$a_{max.}$ [mm]
VK 14	500
VK 32	1,000



The permissible speed of a Synchroniser Shaft depends on its length.

DIN ISO14
6x11x14

Multi-Spline Shaft VK14

Multi-Spline Shaft, similar to DIN ISO 14-6x11x14, St, C 45 k
Polar resistance moment: $W_t = 261 \text{ mm}^3$
 $m = 0.92 \text{ kg/m}$

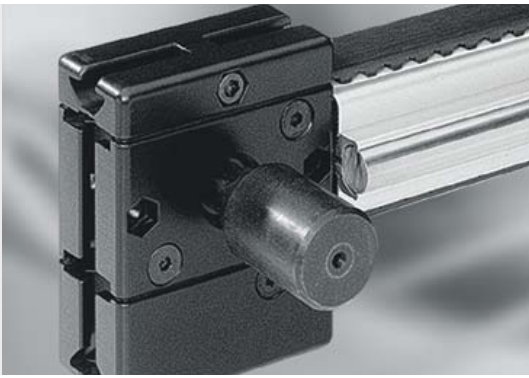
cut-off max. 3000 mm	0.0.337.05
1 pce., length 3000 mm	0.0.453.82

DIN ISO14
6x26x32

Multi-Spline Shaft VK32

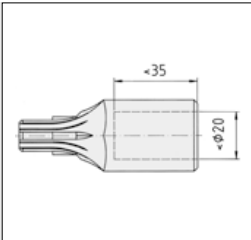
Multi-Spline Shaft, similar to DIN ISO 14-6x26x32, St, C 45 k
Polar resistance moment: $W_t = 3,450 \text{ mm}^3$
 $m = 5.00 \text{ kg/m}$

cut-off max. 3000 mm	0.0.337.63
1 pce., length 3000 mm	0.0.452.50

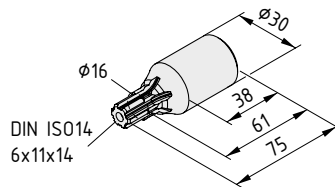


Adapter Shaft

- For a torsionally rigid connection between shafts and Reverse Units, Bevel Gearboxes or Ball Screw Units



The Adapter Shaft only uses half the hub width of timing pulleys R25 for transferring the torque. With alternating loads, it is necessary to reduce the torque values of the Timing-Belt Reverse Units with Adapter Shafts. The plug-in connection must be lubricated with a multi-purpose grease or similar.



Adapter Shaft VK14

St
surface-hardened
m = 275.0 g

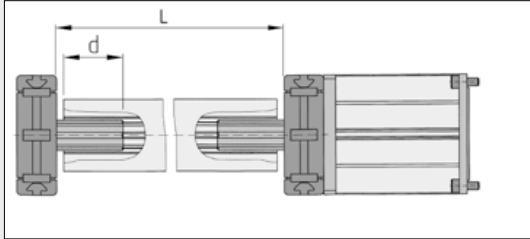
black, 1 pce.

0.0.337.25



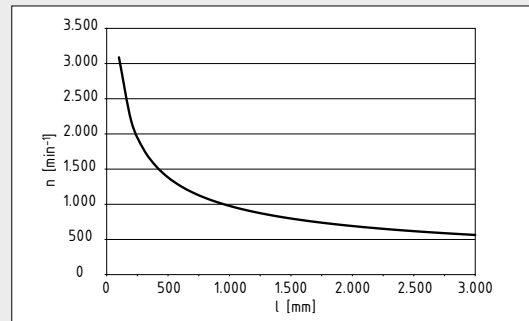
Synchroniser Shaft Profiles

- For easily constructing Synchroniser Shafts between drive elements
- Connection made via Multi-Spline Shafts
- Increased torsional rigidity

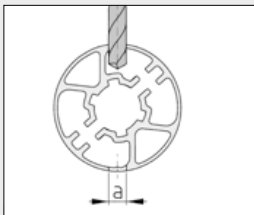


Use of a synchronising shaft for connecting two Timing-Belt Reverse Units.
The length of a Multi-Spline Shaft section depends on the minimum penetration depth (d), the construction sizes of the connected dynamic elements and the gap between the rotating and fixed parts.

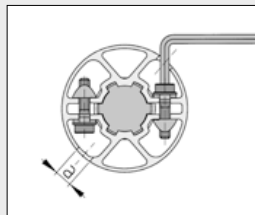
	Synchronising Shaft Profile	
	VK14	VK32
a	∅ 8 mm	∅ 10 mm
b	10 mm	15 mm
c	20 mm	30 mm
d	min. 40 mm	min. 60 mm
M	28 Nm	100 Nm



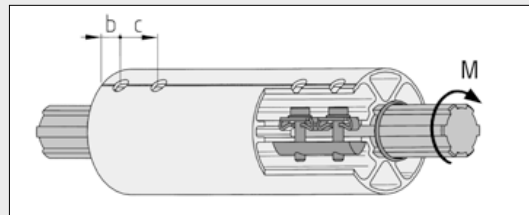
The permissible speed of a Synchroniser Shaft depends on its length.



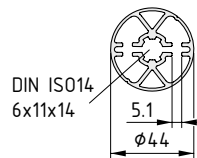
The mounting holes for the tensioning screws are drilled perpendicular to the profile's centre axis along the marking grooves.



The tensioning screws are tightened through the mounting holes drilled earlier.



The clamping set contains all parts required for fastening the Multi-Spline Shaft sections to both ends of a Synchronising Shaft Profile.
Snap Rings W should be used to secure the Synchroniser Shaft axially between the drive elements.



Synchronising Shaft Profile VK14

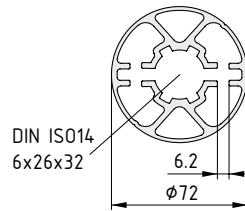
Al, anodized

A [cm ²]	m [kg/m]	I _y [cm ⁴]	I _z [cm ⁴]	I _t [cm ⁴]
4.77	1.29	7.17	6.68	10.63
natural, cut-off max. 3000 mm				0.0.463.57
natural, 1 pce., length 3000 mm				0.0.454.04

Clamping Set for Synchronising Shaft Profile VK14

8 standard connecting plates 5, St, bright zinc-plated
4 T-Slot Nuts 6 St 2xM5-40, bright zinc-plated
8 screws M5x16, St, bright zinc-plated
m = 88.0 g

1 set	0.0.463.72
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Synchronising Shaft Profile VK32

Al, anodized

A [cm ²]	m [kg/m]	I _x [cm ⁴]	I _y [cm ⁴]	I _t [cm ⁴]	
11.62	3.13	47.42	45.09	65.95	
natural, cut-off max. 3000 mm					0.0.463.56
natural, 1 pce., length 3000 mm					0.0.454.05

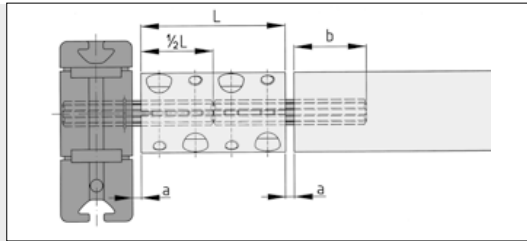
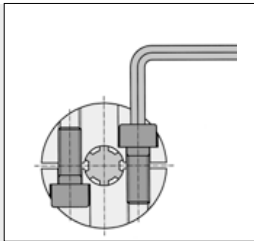
Clamping Set for Synchronising Shaft Profile VK32

8 standard connecting plates 6, St, bright zinc-plated
 4 T-Slot Nuts 8 St 2xM6-60, bright zinc-plated
 8 screws M6x25, St, bright zinc-plated
 m = 196.0 g

1 set	0.0.463.30
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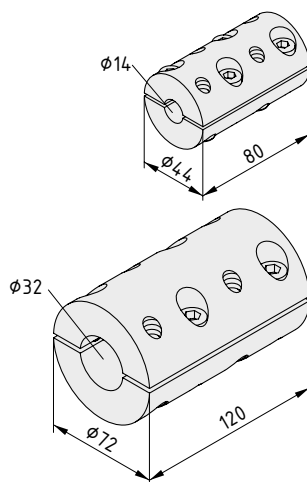

Synchroniser Shaft Equaliser Couplings

- For the precise angular alignment of synchronised linear drives
- Power-lock connection for Multi-Spline Shafts



	Synchronizer Shaft Equaliser Coupling	
	VK14	VK32
L	80 mm	120 mm
a	1-1.5 mm	2-3 mm
b	min. 40 mm	min. 60 mm

The Synchroniser Shaft Equaliser Coupling is positioned at the ends of the Multi-Spline Shafts and power-locked using clamping screws. The tightening torque of the clamping screws is 25 Nm (Equaliser Coupling VK14) or 50 Nm (Equaliser Coupling VK32). The two halves of the coupling must be screwed onto degreased shaft ends using the waxed screws supplied, so as to transfer the necessary torque.


Synchroniser Shaft Equaliser Coupling VK14

2 half shells, St, bright zinc-plated
 8 Hexagon Socket Head Cap Screws DIN 912-M8x20, St, bright zinc-plated and waxed
 m = 0.7 kg

1 set	0.0.472.28
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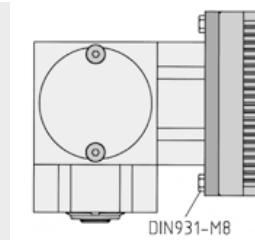
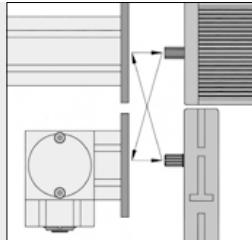
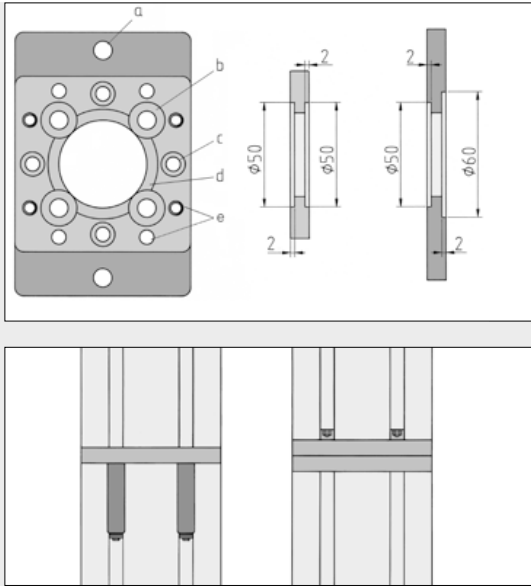
Synchroniser Shaft Equaliser Coupling VK32

2 half shells, St, bright zinc-plated
 8 Hexagon Socket Head Cap Screws DIN 912-M10x30, St, bright zinc-plated and waxed
 m = 2.8 kg

1 set	0.0.472.29
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Adapter Plates

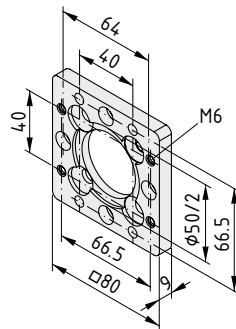
- For connecting together drives, Bevel Gearboxes, Reverse Units and profiles
- Suitable bores for a range of connection dimensions



Attachment of drives (possibly with Adapter Flange Universal) and Timing-Belt Reverse Units to the Bevel Gearboxes with Adapter Plates.

Where space is restricted, hexagon screws DIN 931-M8 can be used.

Possibilities for butt fastenings with Adapter Plates and Automatic Fasteners.

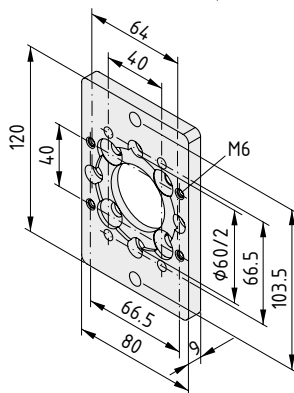


Adapter Plate 80x80

Al, anodized
m = 91.0 g

black, 1 pce.

0.0.408.16



Adapter Plate 120x80

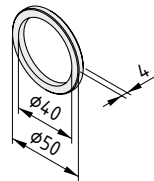
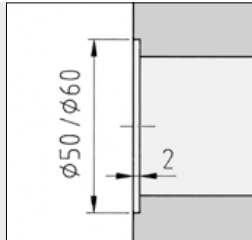
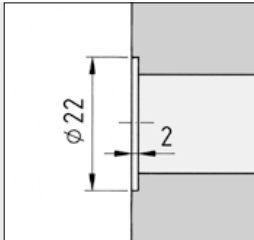
Al, anodized
m = 164.0 g

black, 1 pce.

0.0.408.06

Centring Pieces

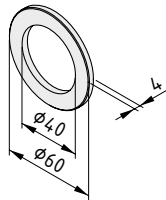
■ For centring housings and Adapter Plates



Centring Piece D50-D50

St
m = 21.0 g
black, 1 pce.

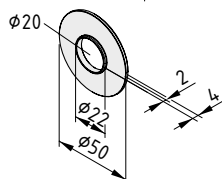
0.0.408.12



Centring Piece D60-D60

St
m = 48.0 g
black, 1 pce.

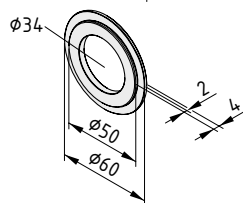
0.0.408.11



Centring Piece D50-D22

St
m = 27.0 g
black, 1 pce.

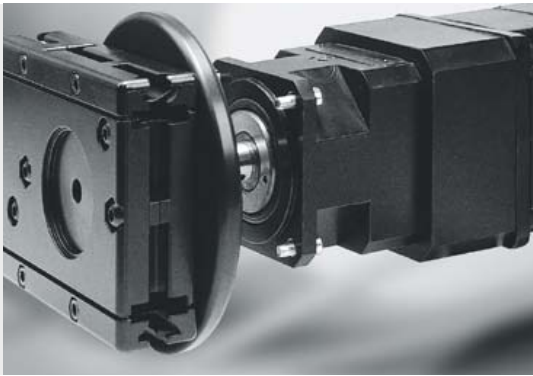
0.0.379.17



Centring Piece D60-D50

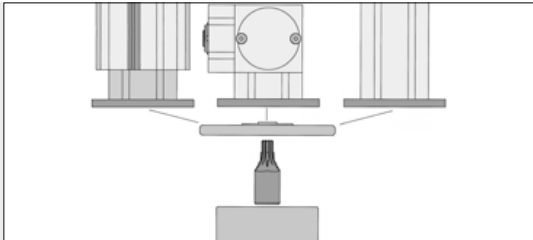
St
m = 47.0 g
black, 1 pce.

0.0.379.18

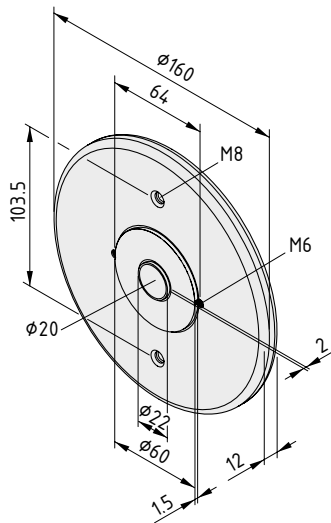


Adapter Flange

- Universal adapter for connecting motors
- Integrated centring system for Timing-Belt Reverse Units
- Easily machined to suit connection geometry



Virtually any drive can be connected to a Ball Screw Unit KGT, Bevel Gearbox or profile using the Adapter Shaft, Adapter Plate 120x80 and Adapter Flange Universal.



Adapter Flange Universal

Al, anodized
m = 635.0 g

black, 1 pce.

0.0.337.32



Proximity Switch

- Inductive proximity switch for added safety in linear drives
- Installed in Line 8 groove (Proximity Switch 8)
- Installed in Timing-Belt Reverse Unit (Proximity Switch M8)

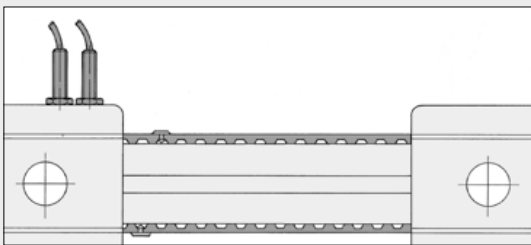


Proximity Switch M8 is a versatile device for limiting the terminal position or for reference on linear units with timing-belt drives. It is available with a permanent or plug-in connecting cable.

The cam reaching the Proximity Switch signals the electrical terminal position and/or the reference point of the unit on the Timing Belt.

The Proximity-Switch Fastening Set is used to position and attach inductive Proximity Switches M8 on the Timing-Belt Reverse Units.

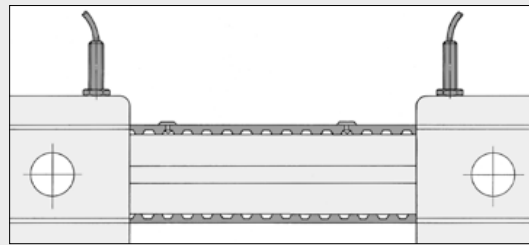
Proximity-Switch Connecting Cable in plug-in design with integrated LEDs for displaying the switch function and operating voltage.



Possible arrangement of Proximity Switches 8 and Proximity-Switch Cams 8:

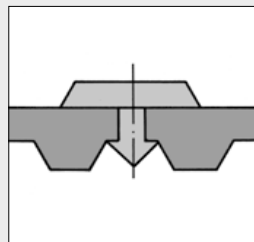
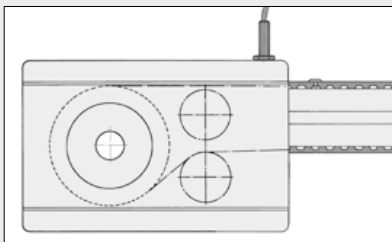
The Proximity-Switch Cams run through the Timing-Belt Reverse Units.

Particularly suitable when used with the drive end Timing Belt Reverse Unit for simplifying cable routing between the drive unit, Proximity Switch and motor control unit.



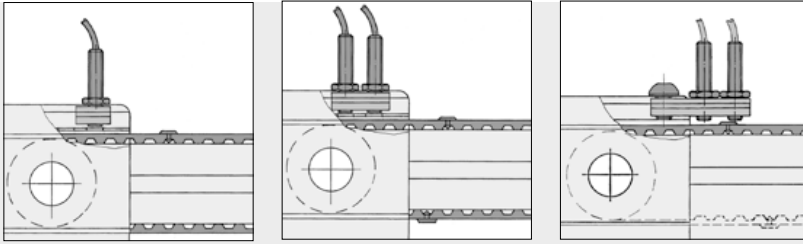
Possible arrangement of Proximity Switches 8 and Proximity-Switch Cams 8:

The Proximity-Switch Cams do not run through the Timing-Belt Reverse Units.



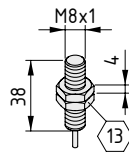
When using Proximity-Switch Cams 8 with reversing on the flat side (Timing-Belt Counter-Reverse Unit 8 R25/ Timing-Belt Reverse Unit 8 80 R25 with emergence 40 mm), these must not pass through the Timing-Belt Reverse Units. In this case, Proximity Switches 8 and Proximity-Switch Cams 8 must be positioned to prevent this from happening.

Proximity-Switch Cam 8 is pressed into the Timing Belt at the required positions from the flat side.



Options for fastening Proximity Switches 8 in conjunction with the Proximity-Switch Fastening Set. Depending on the application, the Proximity-Switch Fastening Set must be shortened accordingly.

Proximity Switch 8 is particularly suitable in conjunction with Timing-Belt Reverse Units 8 or Timing-Belt Counter-Reverse Unit 8, Proximity-Switch Fastening Set 8 and Proximity-Switch Cams 8. Timing-Belt Reverse Units 8 are provided with openings for the Proximity Switch at appropriate points in order to ensure compact installation.



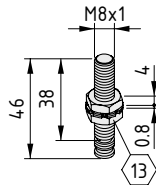
Proximity Switch M8



St, stainless
 Inductive Proximity Switch, positive switching, suitable for installation in thread M8x1
 Voltage = 10...30 V DC
 Max. switching current = 200 mA
 Sensing range = 1.5 mm
 LED control display
 Connecting cable, black l = 3 m; d = 3.5 mm
 m = 54.0 g

1 pce.

0.0.337.14



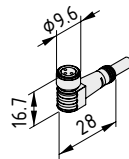
Proximity Switch M8, Plug Connection



St, stainless
 Inductive Proximity Switch, positive switching, suitable for installation in thread M8x1
 Voltage = 10...30 V DC
 Max. switching current = 200 mA
 Sensing range = 1.5 mm
 LED control display
 m = 16.0 g

1 pce.

0.3.001.24



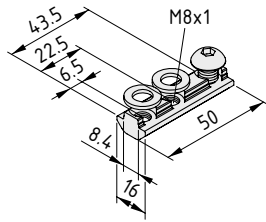
Proximity-Switch Connecting Cable



Outer sheath PUR, black
 Structure LifY11Y, 3x0.25 mm²
 Plug: integrated 3-pole plug with metal collar M8x1
 Cable inlet angled by 90°
 LED control display: Green = Operating display, Yellow/orange = Switch function display
 Connecting cable l = 5 m; d = 4.0 mm
 m = 144.0 g

1 pce.

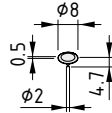
0.3.001.25

**Proximity-Switch Fastening Set 8**

St
 2 washers DIN 433-8.4, St, bright zinc-plated
 Button-Head Screw ISO 7380- M8x10, St, bright zinc-pl.
 m = 37.0 g

1 set

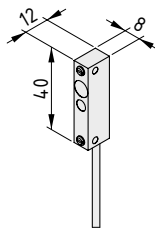
0.0.337.31

**Proximity-Switch Cam 8**

St
 m = 0.2 g
 black, 1 pce.

0.0.337.15

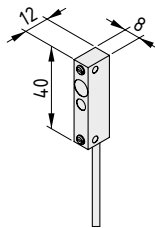
Proximity Switch for use directly in the profile groove

**Proximity Switch 8 - 1NC**

Inductive Proximity Switch, positive switching
 Casing Al, anodized, natural
 Fixing mechanism, fixing screws
 Voltage = 10...30 V DC
 Switching current_{max} = 150mA
 Sensing range = 2 mm
 Cable, grey l = 3 m ; d = 3 mm
 m = 51.0 g

1 pce.

0.0.600.05

**Proximity Switch 8 - 1NO**

Inductive Proximity Switch, positive switching
 Casing Al, anodized, natural
 Fixing mechanism, fixing screws
 Voltage = 10...30 V DC
 Switching current_{max} = 150mA
 Sensing range = 2 mm
 Cable, grey l = 3 m ; d = 3 mm
 m = 51.0 g

1 pce.

0.3.001.30