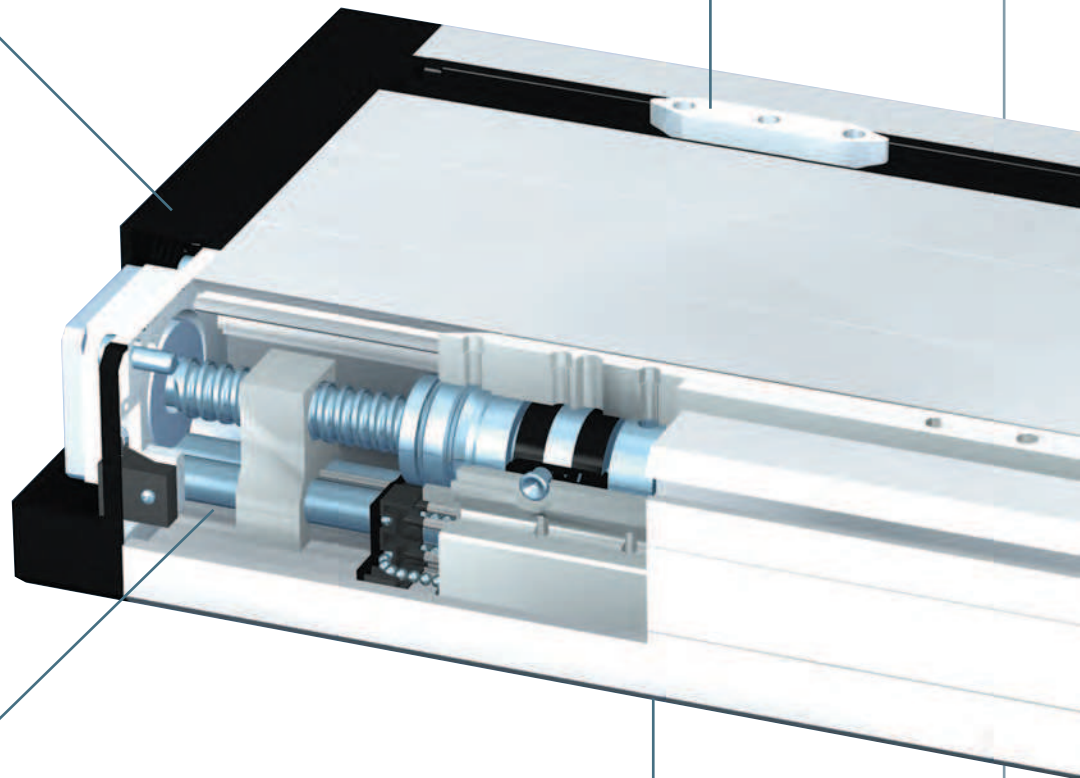


Functional overview

at example LES 5

Plastic cap
electromagnetically shielded

Clamping surface
milled flat



Shaft housing outline
precision milled

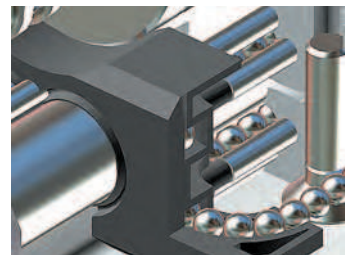
Profile underside
milled flat



- End position buffering both sides with soft PVC parabolic springs
- Counter-bearing with 2 needle sleeves



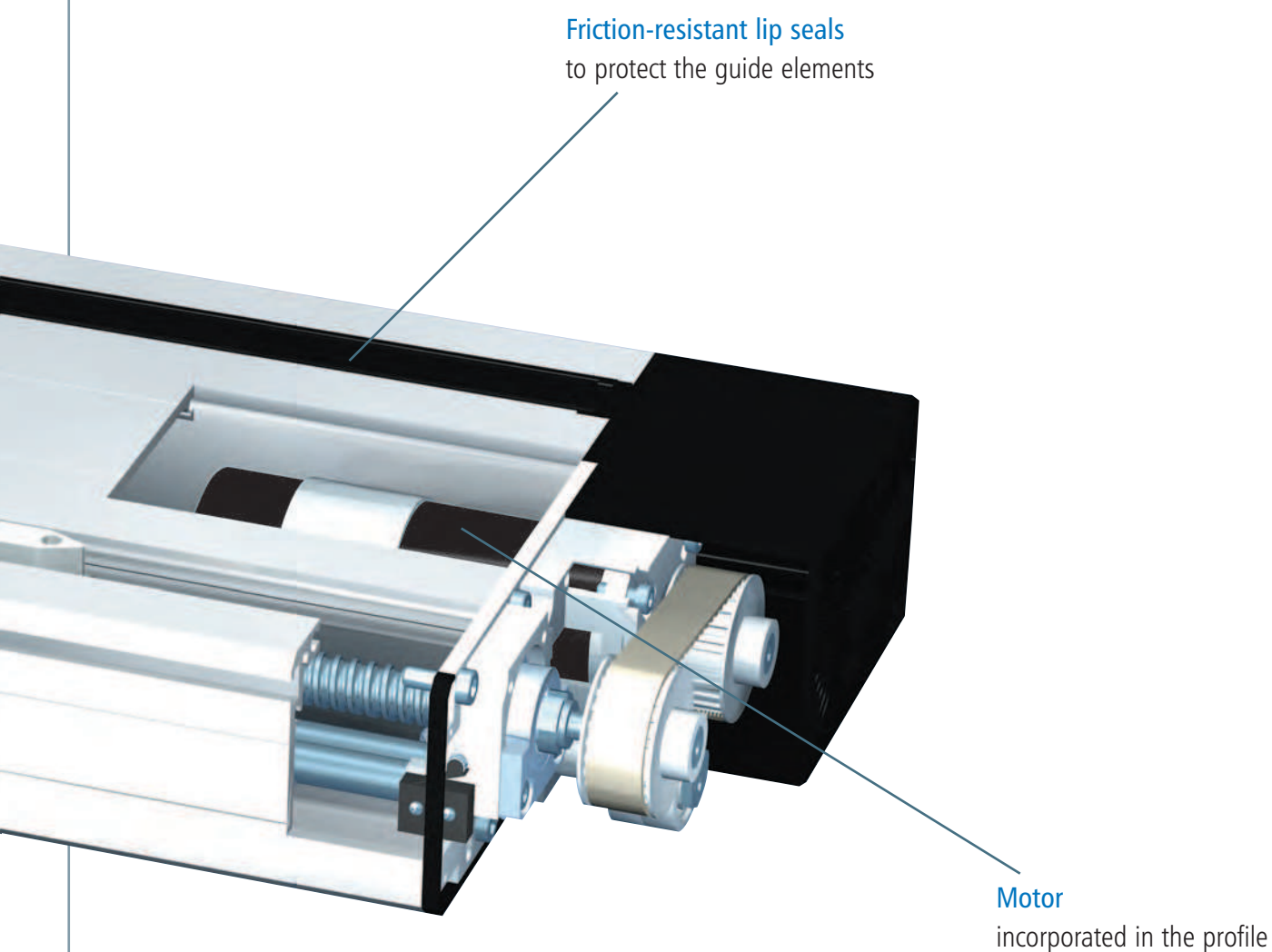
- Spindle support from a profile length of 1500 mm without limiting the process range



- Recirculating ball in patented aluminium linear slides
- Glass fibre reinforced loop components with scrapers

Functional overview

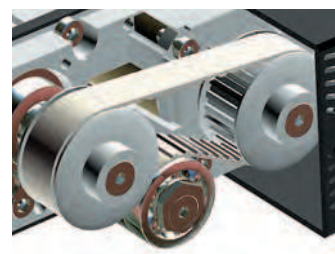
at example LES 5



- Preset play-free recirculating ball nut with scrapers
- Central lubrication system for recirculating ball nut and circulations



- Integrated overrun limit switch
- Spindle bearing with angular contact bearings
- Axially free from play by means of self-locking special nuts



- Belt return and connecting electronics covered completely by protective cap

Linear units with spindle drive

LES 4



LES 4 with side-mounted
belt drive module

LES 4 - bellows gaiter option

Features

- Aluminium shaft housing profile
W75 × H75 mm, naturally anodised
- Clamping area and profile
underside milled flat
- with 2 precision steel shafts
Ø 12 h6, material Cf53,
Hardness 60 ± 2 HRC
- Aluminium shaft slides WS 5/70,
2 x WS 5/70 (70 mm long), adjustable
for no play, central lubrication system
- Recirculating ball drive
2.5/4/5/10 and 20 mm pitches
- Profile sealing with
friction-resistant lip seals
- Cast aluminium end plates
- With 2 limit or reference switches,
Repeat accuracy ± 0.02 mm
- Sealed angular contact bearings
in drive - steel flange

Ordering key

2 3 4 X X X 0 X X X

Drive

- 0 = Preparation
Direct drive modules
1 = Preparation
Belt drive module

Shaft slides

- 0 = 1 Shaft slides 70 mm
2 = 2 Shaft slides 70 mm

Profile length (L1)

- e.g. 029 = 290 mm (min.)
299 = 2990 mm (max.)
(rounded to the last digit)

Standard profile lengths available in 100 mm raster

Recirculating ball drive

- 0 = without
1 = Pitch 2.5 mm
2 = Pitch 4.0 mm
3 = Pitch 5.0 mm
4 = Pitch 10 mm
5 = Pitch 20 mm

Options:

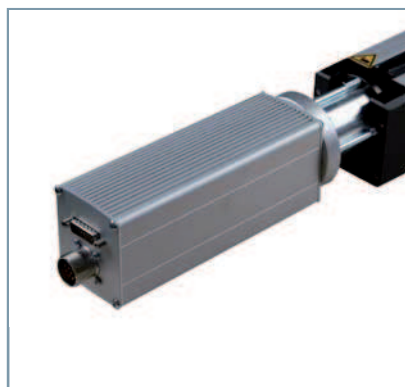
- Black anodized aluminium profile
- Electromagnetic brakes in the motor
module or in drive spindle extension
- Steel slide LS2 (Part no. 223007)
- External limit switch attachment set
(see accessories)

Available on request:

- Length measuring system
- Bellows gaiter cover
- Assembly left of the motor module

Drive modules

see pages 2-66 et seq. of the catalogue



Technical specification Aluminium profile

Aluminium profile LES 4	
Moment of inertia I_x	107.711 cm ⁴
Moment of inertia I_y	125.843 cm ⁴
*Centre of gravity see dimensioned drawing	33.23 mm
Cross-sectional area	18.81 cm ²
Material	AlMgSi0, 5F22
Anodising	E6/EV1
Weight with steel shafts	6.2 kg/m
Weight with steel shafts and spindles	7.6 kg/m

No load running torques

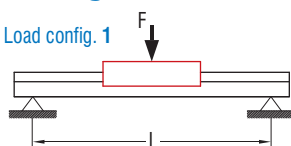
No load torques (Ncm)					
Speed (rpm)	Spindle pitch				
	2.5	4	5	10	20
500	15	15	16	17	18
1500	19	19	19	20	21
3000	23	24	24	25	26

Linear units with spindle drive

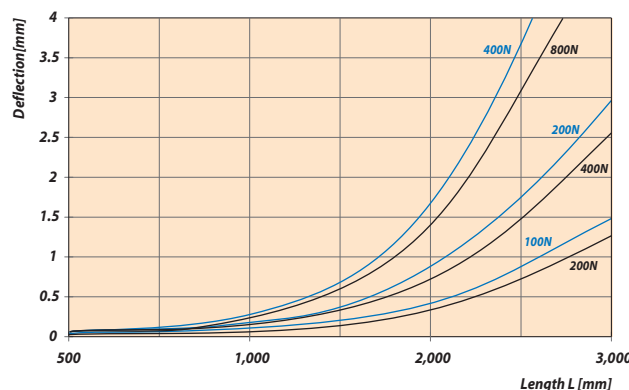
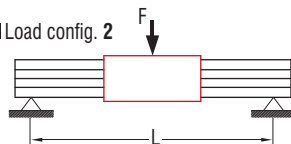
LES 4

Bending

Load config. 1



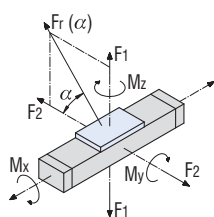
Load config. 2



Load factors

$$F_r(\alpha) = \frac{F_2}{\cos \alpha}$$

$$F_r(\alpha) = \frac{F_1}{\sin \alpha}$$



LES 4 with one WS 5/70	
C_0	2576.65 N
C	1461.14 N
F_1 stat.	2200.67 N
F_1 dyn.	1247.93 N
F_2 stat.	2576.65 N
F_2 dyn.	1461.14 N
M_x stat.	36.45 Nm
M_y stat.	82.16 Nm
M_z stat.	96.20 Nm
M_x dyn.	20.67 Nm
M_y dyn.	46.59 Nm
M_z dyn.	54.55 Nm

LES 4 with two WS 5/70	
C_0	4,954.5 N
C	2,809.5 N
F_1 stat.	4,231.5 N
F_1 dyn.	2,398.5 N
F_2 stat.	4,954.5 N
F_2 dyn.	2,809.5 N
M_x stat.	44.7 Nm
M_y stat.	126.945 Nm
M_z stat.	148.635 Nm
M_x dyn.	25.2 Nm
M_y dyn.	71.955 Nm
M_z dyn.	84.285 Nm

permissible spindle speeds

LES 4 / 5 / 6	Spindle pitch p [mm]	max. permissible feed speed v permissible [mm/s]				
		2.5	4	5	10	20
Profile length L [mm]	max. permissible spindle speed n [rpm]					
490	4000	167	267	333	667	1333
990	3000	125	200	250	500	1000
1390	1500	63	100	125	250	500
1490 *	3000	125	200	250	500	1000
1990 *	1650	69	110	138	275	550
2490 *	1050	44	70	88	175	350
2990 *	750	31	50	63	125	250

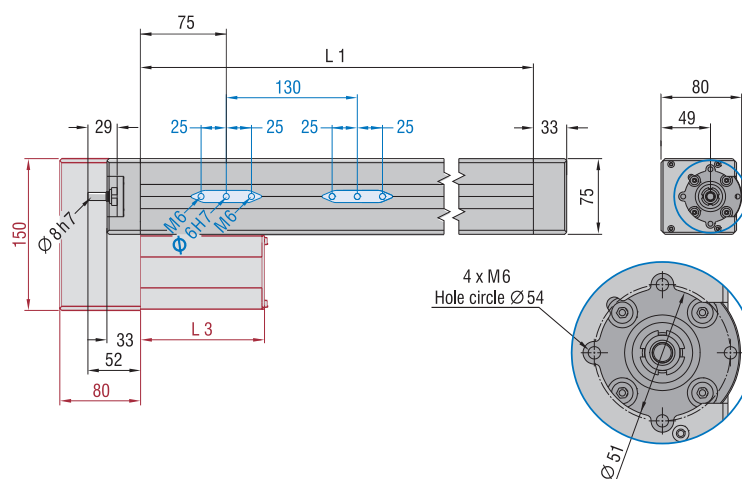
* with spindle support

dimensioned drawing

process travel

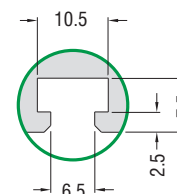
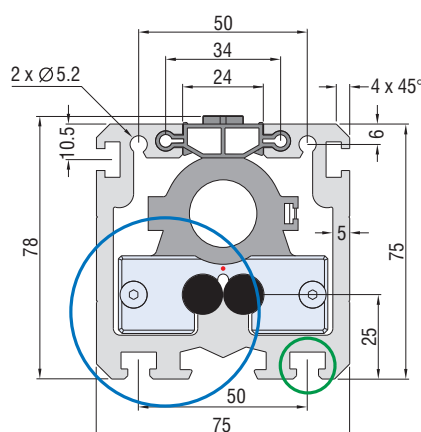
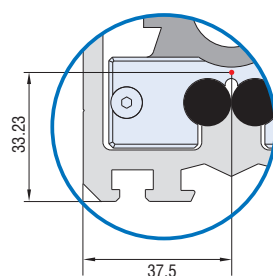
at 1 × WS 5/70 = L1 -150 mm
at 2 × WS 5/70 = L1 -280 mm

external limit switches see pages 2-83



dimensioned drawing

Aluminium profile



Clutch housing

Drive element accessories

Connection options

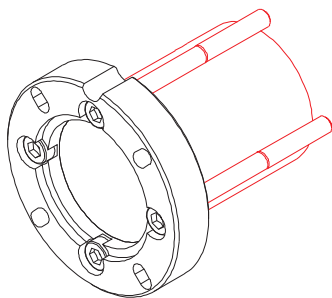
Direct drive preparation

Connecting options <i>Direct drive</i>	LES 4	LES 6	LES 5	Angular gear fixing 0°	Angular gear fixing 90°
MS 200 HT-2 DC 100 EC 60	Connection via coupling casing 1 <i>short sleeve</i> with adequate shaft coupling				Coupling casing 1 <i>long sleeve</i>
MS 600 HT MS 900 HT EC 86	Connection via coupling casing 2 <i>short sleeve</i> with adequate shaft coupling				Coupling casing 2 <i>long sleeve</i>
Angular gear fixing 0°	split coupling casing <i>short sleeve</i> with adequate shaft coupling			Connection via transmission shaft set	
Angular gear fixing 90°	split coupling casing <i>short sleeve</i> with adequate shaft coupling				

Ordering overview

Clutch housing

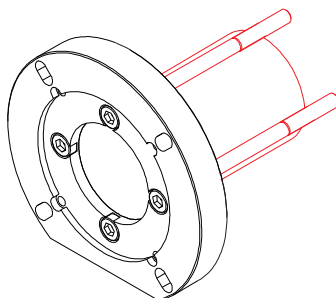
Clutch housing 1



short sleeve
Part no.: 218 100 0001

long sleeve
Part no.: 218 100 0002

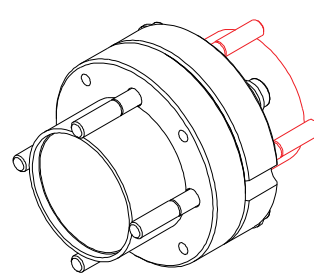
Clutch housing 2



short sleeve
Part no.: 218 100 1001

long sleeve
Part no.: 218 100 1002

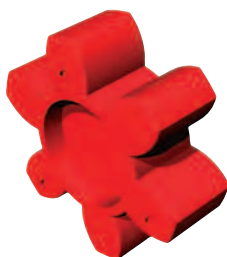
Split clutch housing



short sleeve
Part no.: 218 100 2001

long sleeve
Part no.: 218 100 2002

Clutches



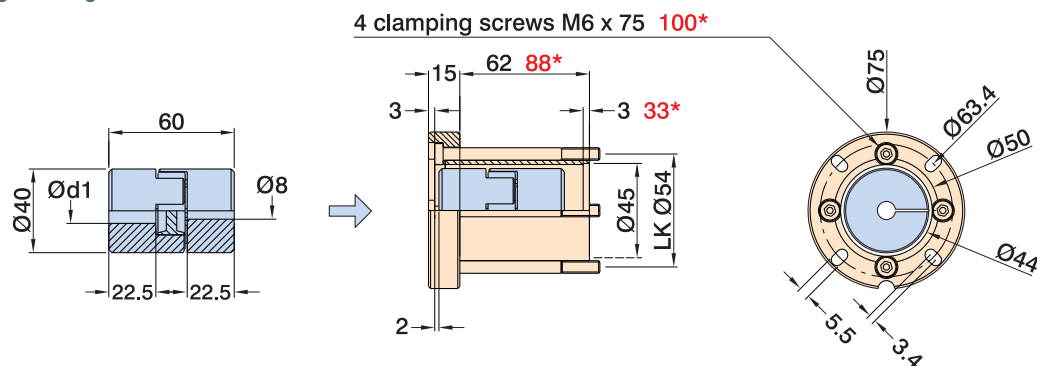
coupling	Item no.:	d_1	d_2
20/30	218 001 5060	5,0	6,0
	218 001 9999	from 4 to 7 mm	
30/40	218 002 6380	6,35	8,0
	218 002 8080	8,0	8,0
	218 002 9999	from 6 to 13 mm	
40/60	218 003 9580	9,52	8,0
	218 003 9999	from 8 to 18 mm	

Clutch housing

Drive element accessories

dimensioned drawing

Coupling casing 1



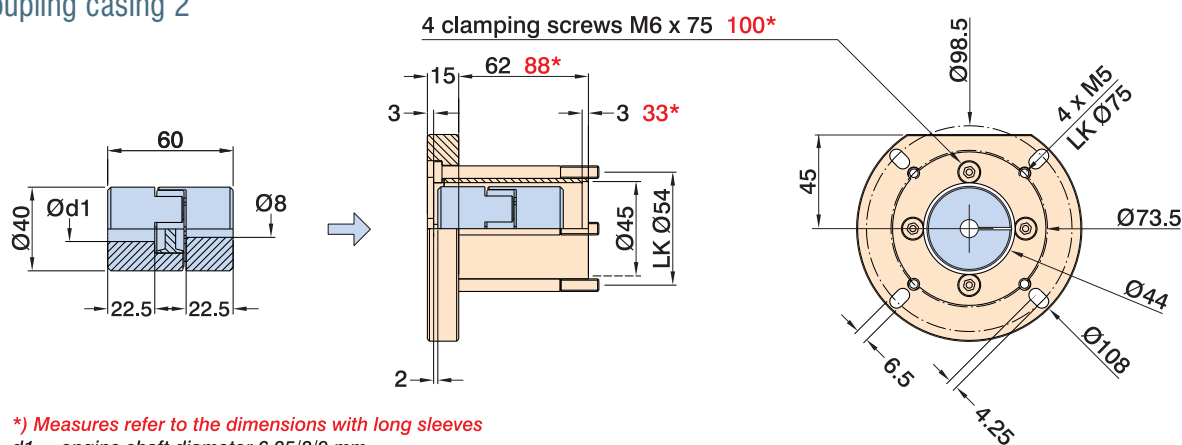
**) Measures refer to the dimensions with long sleeves*

$d1$ = engine shaft diameter 6.35/8/9 mm

Suitable shaft coupling WK 40/60 on page 2-68 (not included in scope of delivery)

dimensioned drawing

Coupling casing 2



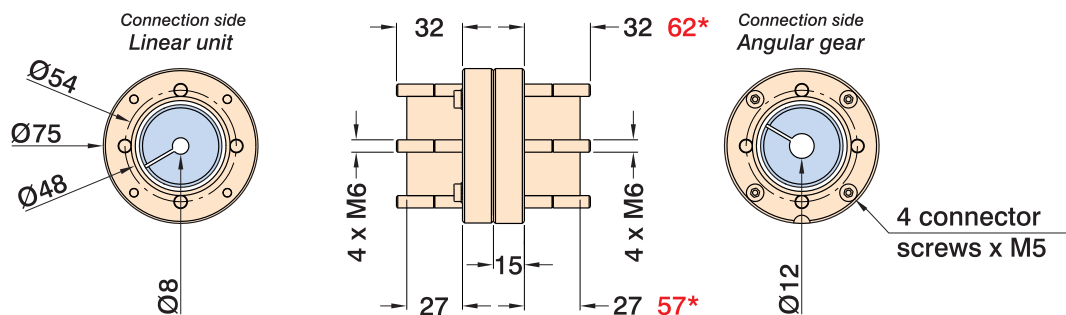
**) Measures refer to the dimensions with long sleeves*

$d1$ = engine shaft diameter 6.35/8/9 mm

Suitable shaft coupling WK 40/60 on page 2-68 (not included in scope of delivery)

dimensioned drawing

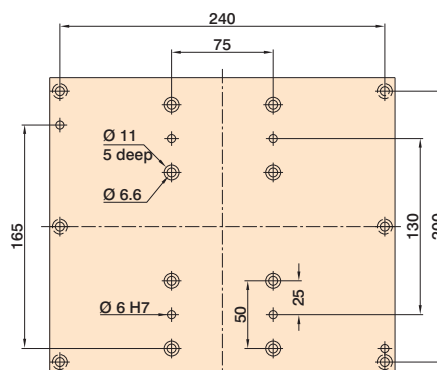
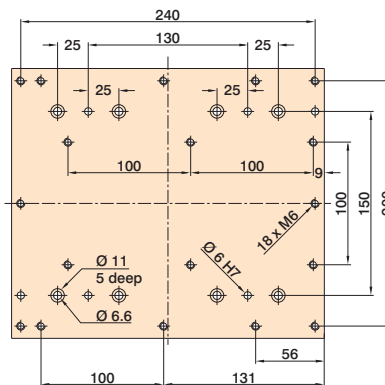
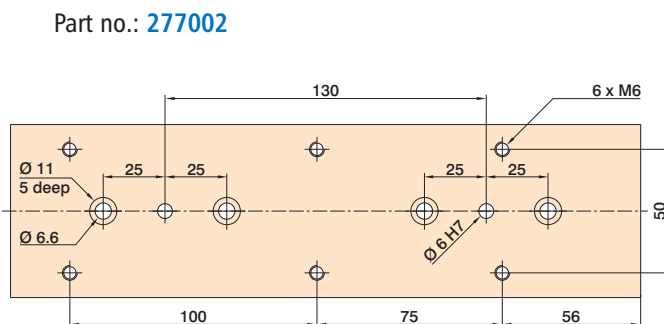
Split coupling casing



**) Measures refer to the dimensions with long sleeves*

Suitable shaft coupling WK 40/60 on page 2-68 (not included in scope of delivery)

Connectors



Slide/crossbench plates

Connectors

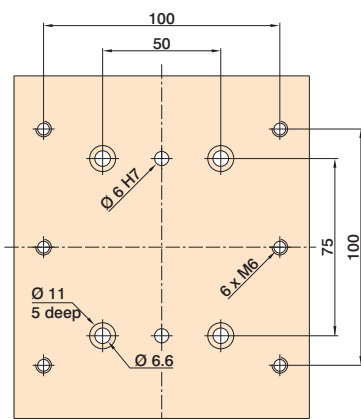
Hole diagram, slide plate PS 8

L 125 × W 145 × H 7.7 mm

Mounting on:

LES 6 with 2 × WS 5/70

Part no.: 277017



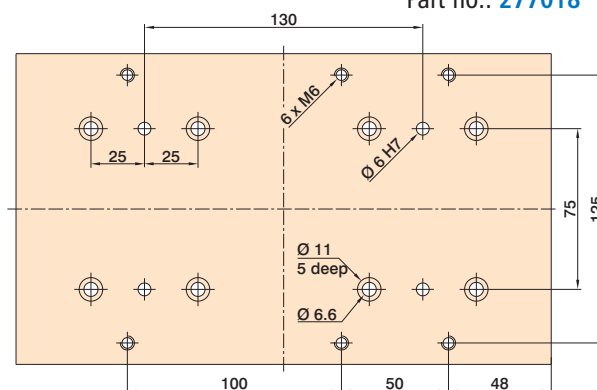
Hole diagram, slide plate PS 9

L 250 × W 145 × H 7.5 mm

Mounting on: LES 6 with 4 × WS 5/70

Fixing option for: Angle bracket WV 7

Part no.: 277018



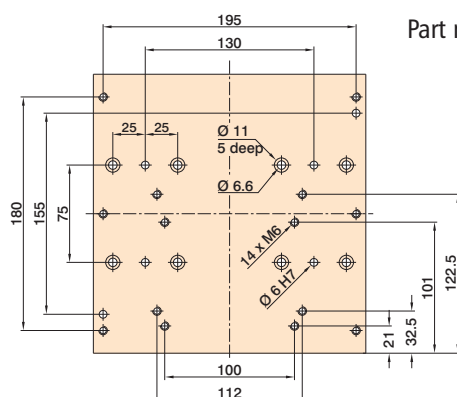
Hole diagram, slide plate PS 10

L 210 × W 215 × H 7.5 mm

Mounting on: LES 6 with 4 × WS 5/70

Mounting on crossbench: LES 6 with LES 6 (in conjunction with PS 11)

Part no.: 277019



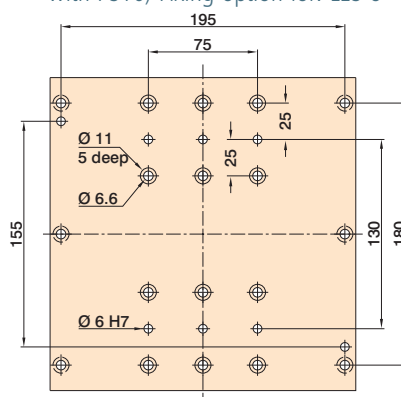
Hole diagram, slide plate PS 11

L 210 × W 215 × H 7.5 mm

Mounting on: LES 6 with 4 × WS 5/70

Mounting on crossbench: LES6 with LES4 (in conjunction with PS10) Fixing option for: LES 6

Part no.: 277020



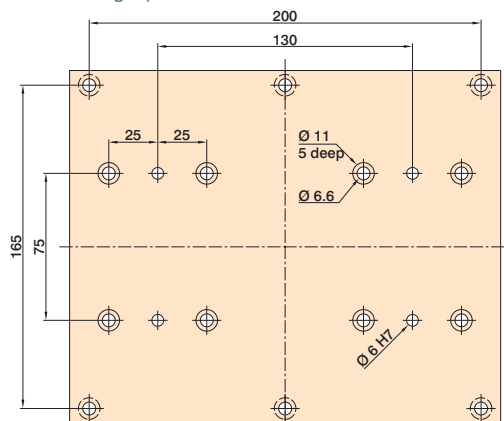
Hole diagram, slide plate PS 12

L 220 × W 180 × H 7.5 mm

Mounting on: LES 6 with 4 × WS 5/70

Fixing option for: LES 5

Part no.: 277021



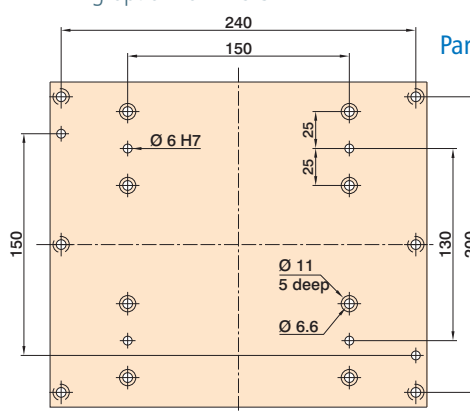
Hole diagram, connection plate VP 2

L 255 × W 220 × H 7.5 mm

Mounting on: LES 5 with 4 × WS 5/70

Fixing option for: LES 5

Part no.: 277006



T-slot slide plates

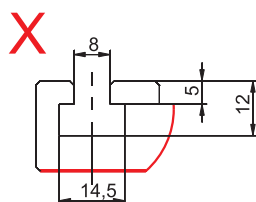
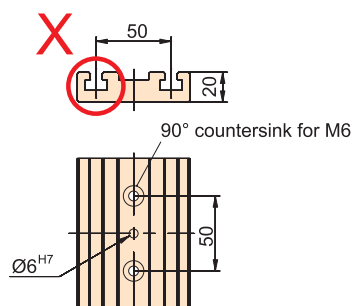
Connectors

Hole pattern T-slot plate PT 25 × 250 for LES 4

L 100 x W 75 x H 20 mm

Mounting on: LES 4 with 1 x WS 5/70

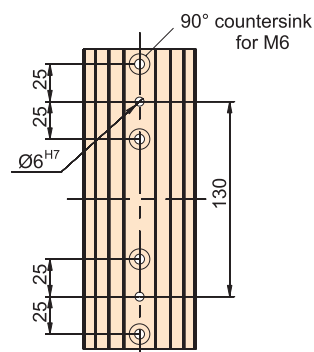
Part no.: **277030 0001**



L 200 x W 75 x H 20 mm

Mounting on: LES 4 with 2 x WS 5/70

Part no.: **277030 0002**

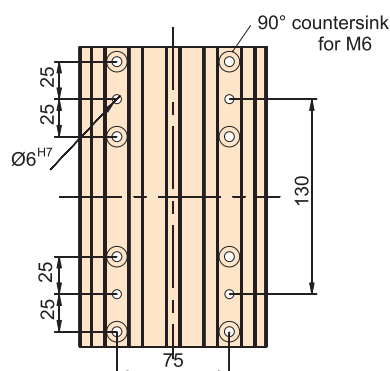
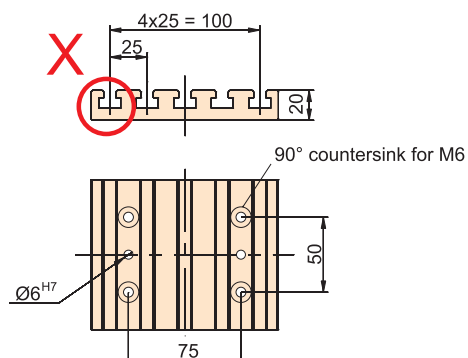


Hole pattern T-slot plate PT 25 × 250 for LES 6

L 100 x W 125 x H 20 mm

Mounting on: LES 6 with 2 x WS 5/70

Part no.: **277030 0003**



Hole pattern T-slot plate PT 25 × 250 for LES 5

L 100 x W 250 x H 20 mm

Mounting on: LES 5 with 2 x WS 5/70

Part no.: **277030 0005**

