# CONNECTION OF MOTORS

### TIMING BELT PULLEY LR 6 & LR 6 COMPACT

Rotary-current-, step or servo-motors with max. shaft diameter of 14 mm are suitable. Assemble directly on the timing belt pulley. The pulley bore with fitting key groove and the connection side of the reverse unit will be designed according to customer specification.

### TIMING BELT PULLEY T 45

Rotary-current-, step or servo-motors with max. shaft diameter of 16mm are suitable. Assemble directly on the timing belt pulley. The pulley bore with fitting key groove and the connection side of the reverse unit will be designed according to customer specification.

### TIMING BELT PULLEY T 90

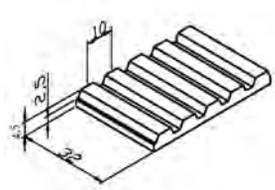
Rotary-current-, step or servo-motors with max. shaft diameter of 24 mm are suitable. Assemble directly on the timing belt pulley. The pulley bore with fitting key groove and the connection side of the reverse unit will be designed according to customer-specification.

### CALCULATION OF TIMING BELT LENGTH

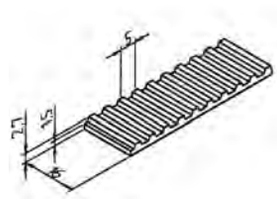
**When using T 45 and T90**
2 x rail length + 2 x 210 mm (Pulley)
- slide length - 2 x 20 mm (Belt tensioner)
= 2 x rail length - slide length + 380 mm

**When using LR6**
2 x rail length + 260 mm

**When using LR6 compact (Timing belt 16 AT 5)**
2 x rail length + 220 mm




**Timing belt 32 AT 10**
part no. 28.0093/0




**Timing belt 16 AT 5**
part no. 28.0502/0

**Technical data of the pulleys in the Timing belt pulley**

| TIMING BELT PULLEY | LR 6 | T 45 (LR 12 & LR 16) | T 90 (LR 12 & LR 16) |
|---|---|---|---|
| Effective diameter | 56.05 mm | 58.6 mm | 58.6 mm |
| Timing belt width | 16 mm | 32 mm | 32 mm |
| Teeth | 36 | 19 | 19 |
| Bore for driving shaft | 10 mm | 8 mm | 8 mm |
| Reborable to max. | 14 mm | 16 mm | 30 mm |
| Traverse (1 rotation) | 180 mm | 190 mm | 190 mm |
| Timing belt | 16AT5 | 32AT10 | 32AT10 |
| Belt length in pulley | 160 mm | 210 mm | 210 mm |

# COMPONENTS – LINEARSYSTEM LR

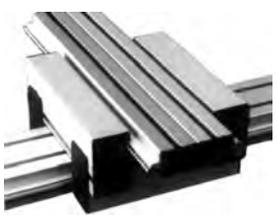
The linear system LR is based on double-row angular contact bearings made of bearing steel, hardened and ground precision shafts 1.1214 (Cf 53). Any required stroke length can be implemented. The slides are equipped with double-row roller bearings with gothic arch outer grooves. For very high loads multiple bearings are attached with steel-T-Slot bars directly to the slideplate giving the construction great rigidity. No special bearing profiles are required for the assembly. The clearance between bearings and shafts can be adjusted by eccentric bushings.

Both closed and open-frame slides with any desired length or width can be fabricated. Linear modul LR 6 X/Y-tables are easily constructed by the attachment of 4 bearings on to the top of the slide. The guide rails for this configuration are made from profile 45 x 32. End caps LR and cover profile AL also fit the Y-axis.

The slides are completely covered, lubrication felts are fitted in the endcaps which clean and grease the shafts. For maintenance purposes the felts can be exchanged quickly and easily without tools. This advantage is important for applications in rough working conditions

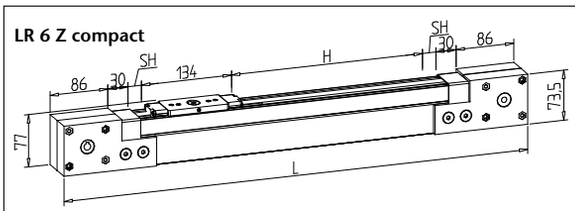
Both closed and open-frame slides with any desired length or width can be fabricated. Please specify the desired dimensions A and B when ordering.

X/Y-tables are easily constructed by the attachment of 4 bearings on to the top of the slide. The guide rails for this configuration are made from profile 45 x 32. End caps LR and cover profile AL also fit the yaxis.

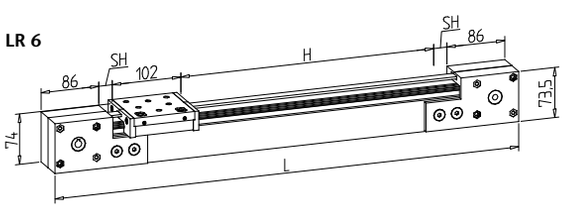


**X/Y-table**

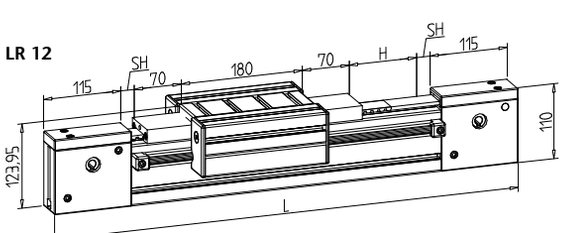
**LR 6 Z compact**



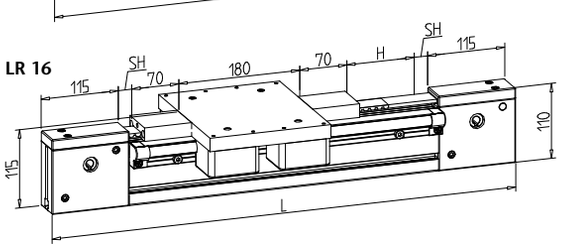

**LR 6**




**LR 12**




**LR 16**




**LR 6 Z compact**
**Calculation of total length L:**
Required traverse H
+ Slide length (134)
+ 2 x Pulley (172)
+ 2 x Protective guard (60)
= Traverse + 406 mm *

**LR 6**
**Calculation of total length L:**
Required traverse H
+ Slide length (102)
+ 2 x Pulley (172)
= Traverse + 314 mm*

**LR 12 + LR 16**
**Calculation of total length L:**
Required traverse H
+ Slide length (180)
+ 2 x Pulley (230)
+ 2 x Belt tensioner (140)
= Traverse + slide length + 550 mm

*** As the belt tension is applied on the timing belt pulley this is only a reference value**

**Optionally calculate and specify safety distances „SH“.**

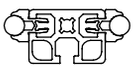
# RAILS

THE MINITEC PROFILE SYSTEM IS THE IDEAL CARRIER FOR LINEAR TECHNOLOGY.
ALL MINITEC PROFILES (EXCEPT UL) CAN BE FITTED WITH A SHAFT SUPPORT AND A SHAFT.

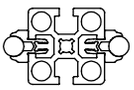
**LR 6 compact**
part no. 28.0119/0

**LR 6 S**
part no. 28.0525/0

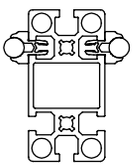
**LR 12**
**Rail 19**
part no. 28.0009/0



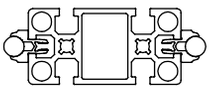
**LR 12**
**Rail 32**
part no. 28.0010/0



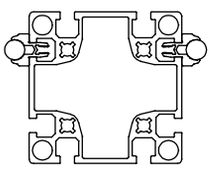
**LR 12**
**Rail 45**
part no. 28.0006/0



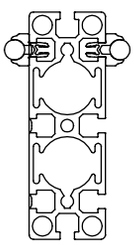
**LR 12**
**Rail 45 x 90 H**
part no. 28.0007/2



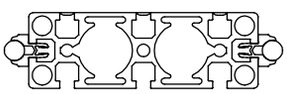
**LR 12**
**Rail 45 x 90 F**
part no. 28.0007/1



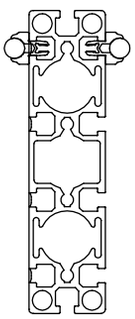
**LR 12**
**Rail 90**
part no. 28.0008/0



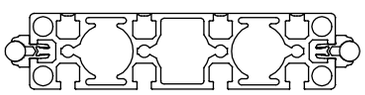
**LR 12**
**Rail 135 H**
part no. 28.0012/2



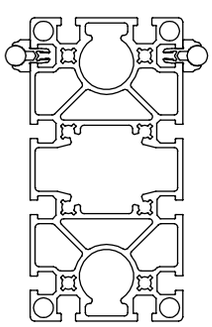
**LR 12**
**Rail 135 F**
part no. 28.0012/1



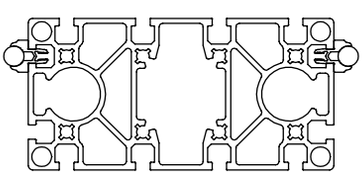
**LR 12**
**Rail 45 x 180 H**
part no. 28.0013/2



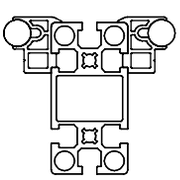
**LR 12**
**Rail 45 x 180 F**
part no. 28.0013/1



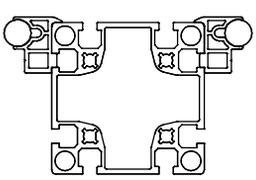
**LR 12**
**Rail 180 H**
part no. 28.0011/2



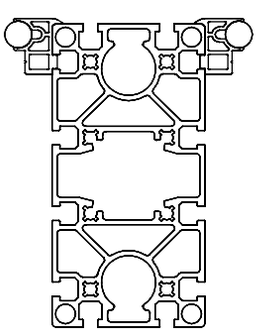
**LR 12**
**Rail 180 F**
part no. 28.0011/1



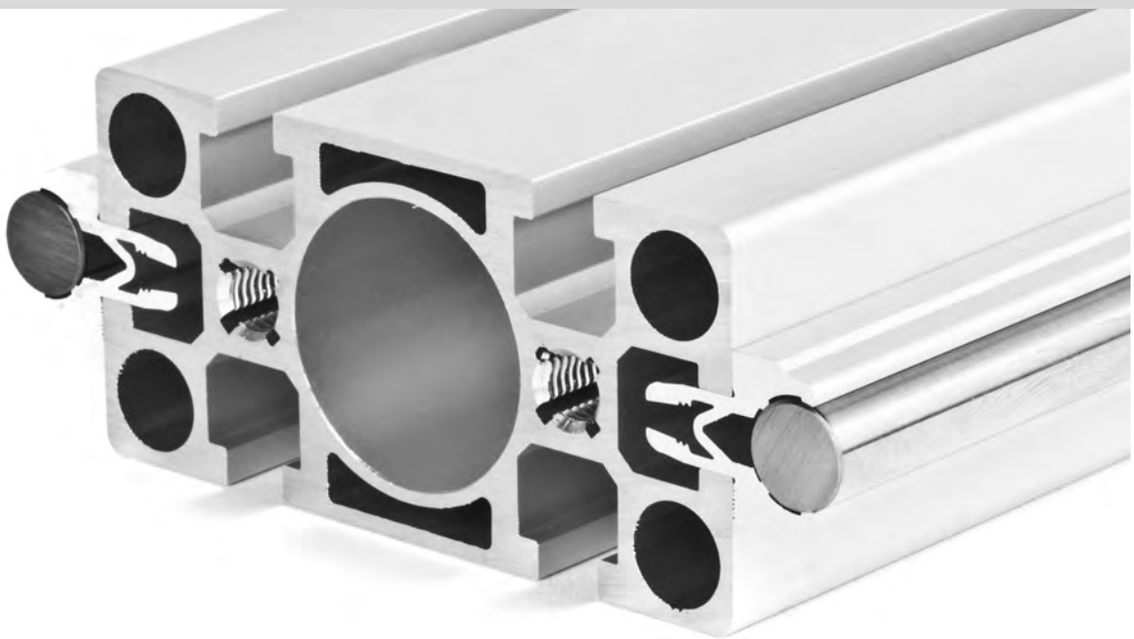
**LR 16**
**Rail LR 16 45 x 90 H**
part no. 28.0820/0



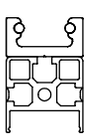
**LR 16**
**Rail LR 16 90**
part no. 28.0821/0



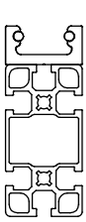
**LR 16**
**Rail LR 16 90 x 180 H**
part no. 28.0822/0



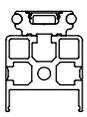
**LR 6 compact and LR 6 S – other possible combinations:**



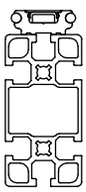
**Profile 45 x 45 R**
LR 6 compact



**Profile 45 x 90 F**
LR 6 compact



**Profile 45 x 45 R**
LR 6 S



**Profile 45 x 90 F**
LR 6 S

**LR 12 – other possible combinations:**

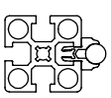
**Rail made of Profile 19 x 45**

**Rail made of Profile 19 x 32**

**Rail made of Profile 32 x 32 F**

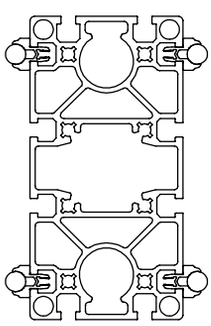
**Rail made of Profile 45 x 32 F**

**Rail made of Profile 45 x 32 F**

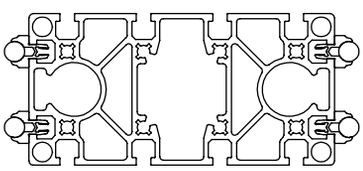


**Rail made of Profile 45 x 45**

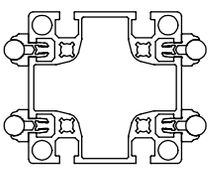
**LR 12 – other possible combinations:**



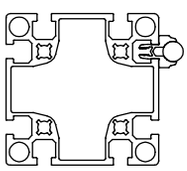
**Rail made of Profile 90 x 180 S**



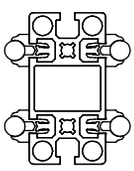
**Rail made of Profile 90 x 180 S**



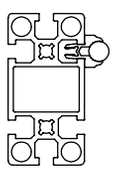
**Rail made of Profile 90 x 90 L**



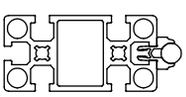
**Rail made of Profile 90 x 90 L**



**Rail made of Profile 45 x 90**

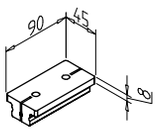


**Rail made of Profile 45 x 90**

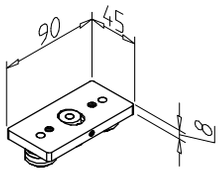


**Rail made of Profile 45 x 90**

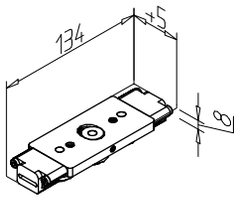
# CONSTRUCTION DESIGN OF SLIDES



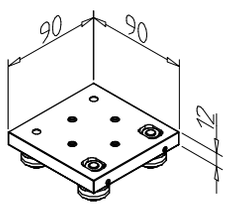

**Slide**
**LR 6 compact**
part no. 28.0127/0



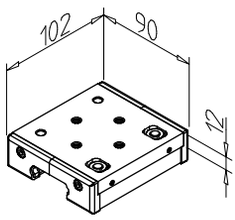

**LR 6 compact**
part no. 28.0140/0



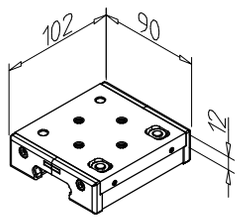

**LR 6 Z compact**
part no. 28.0520/0



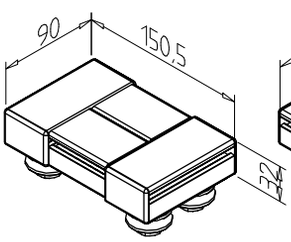

**LR 6**
part no. 28.0138/0



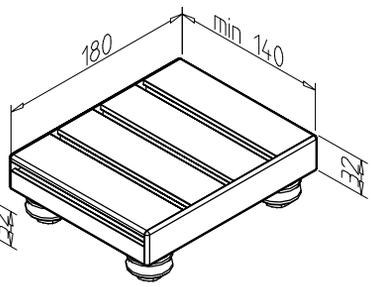

**LR 6 with cover**
part no. 28.0138/1



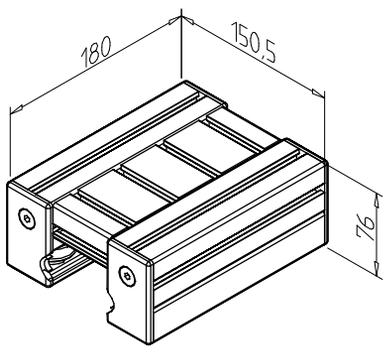

**LR 6 Z**
part no. 28.0138/2



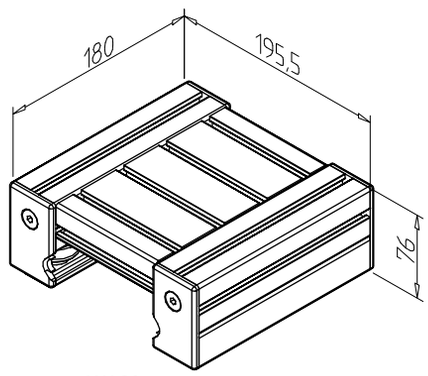

**LW 32**
part no. 28.0088/0



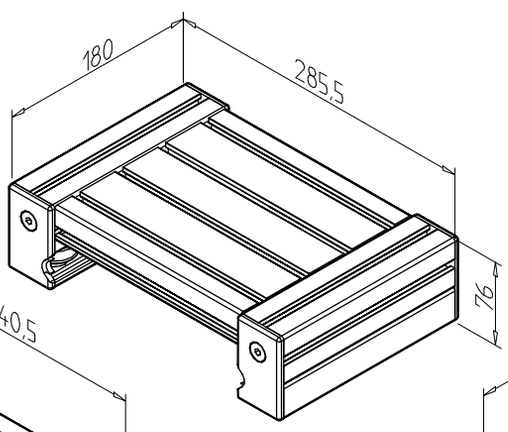

**LW 32 E**
part no. 28.0089/0



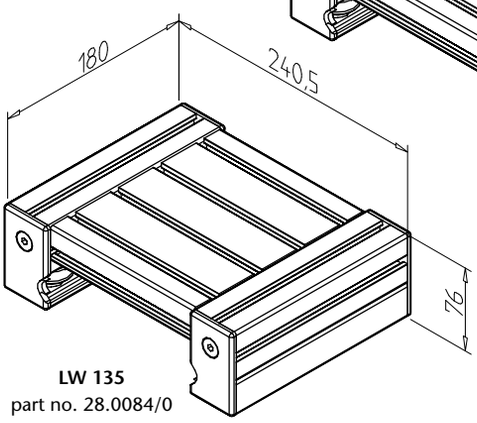

**LW 45**
part no. 28.0091/0



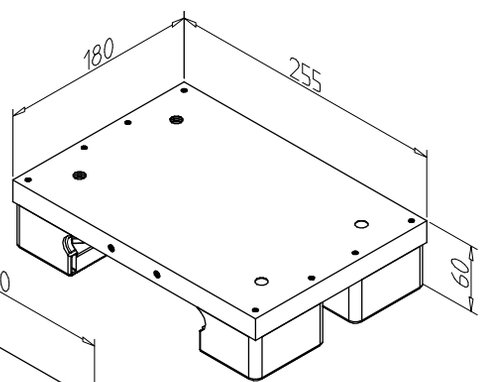

**LW 90**
part no. 28.0092/0



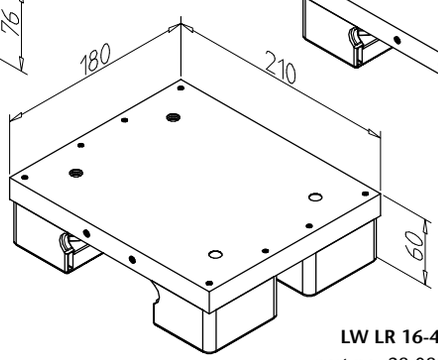

**LW 180**
part no. 28.0087/0




**LW 135**
part no. 28.0084/0

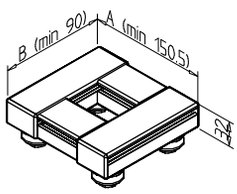



**LW LR 16-90**
part no. 28.0822/0

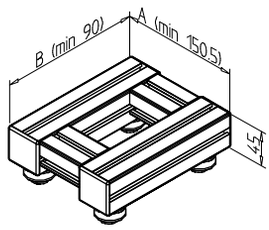



**LW LR 16-45**
part no. 28.0810/0

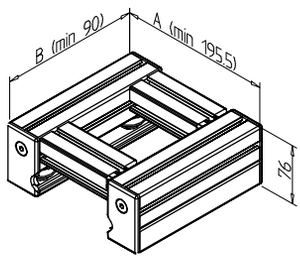
**Special slide models:**



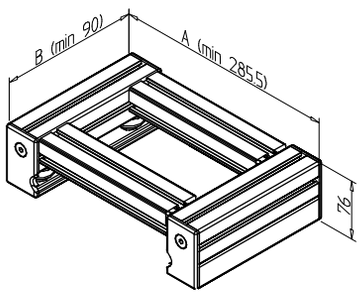

**LW 32 special model**
**(Open Frame)**
part no. 28.0089/2S




**LW 45 special model**
**(Open Frame)**
part no. 28.0091/4S



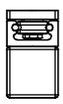

**LW 90 special model**
**(Open Frame)**
part no. 28.0092/3S



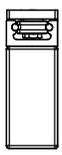

**LW 180 special model**
**(Open Frame)**
part no. 28.0087/2S

# POSSIBLE COMBINATIONS OF RAILS AND SLIDES

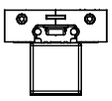
**LW LR 6 compact**
**Rail LR 6 compact**



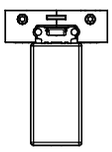
**LW LR 6 compact**
**Rail aus Profile 45x90F**



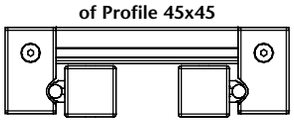
**Slide LR 6**
**Rail LR 6 S/45**



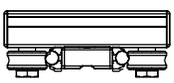
**Slide LR 6**
**Rail LR 6 S/90**



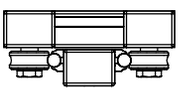
**Slide LW 135**
**2x special rail made of Profile 45x45**



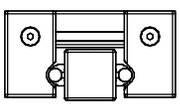
**LW 32 E**
**Rail 19**



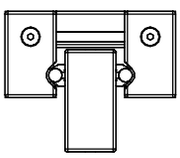
**LW 32**
**Rail 32**



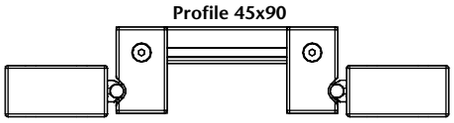
**LW 45**
**Rail 45**



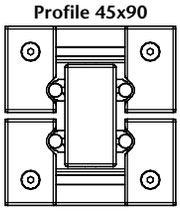
**LW 45**
**Rail 45x90H**



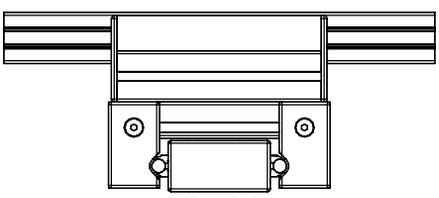
**Special carriage**
**2x special rail made of Profile 45x90**



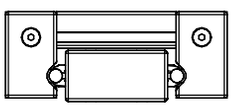
**2x LW 45**
**Special rail made of Profile 45x90**



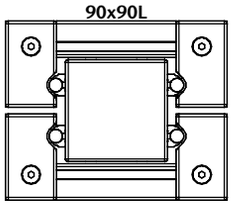
**2x LW 90**
**Rail 45x90F**



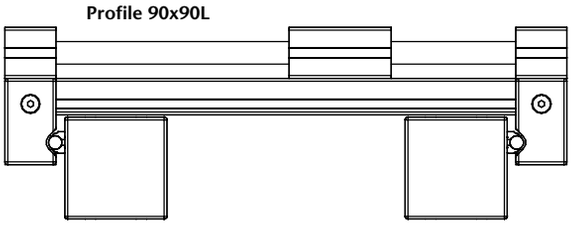
**LW 90**
**Rail 45x90F**



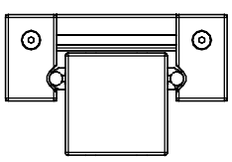
**2x LW 90**
**Special rail made of 90x90L**



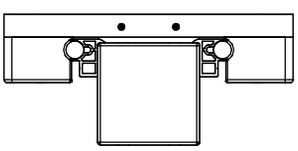
**Special slide**
**2x special rail made of Profile 90x90L**



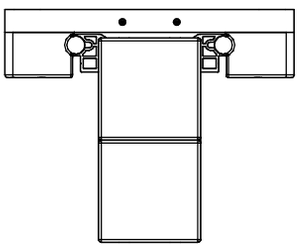
**LW 90**
**Rail 90**



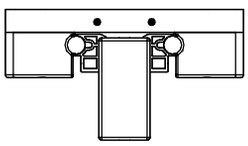
**LW LR 16-90**
**Rail LR 16-90**



**LW LR 16-90**
**Rail LR 16-90x180H**



**LW LR 16-45**
**Rail LR 16-45**



# LOAD CAPACITY

| LINEAR SYSTEM | | LR 6 | LR 12 | | | | | LR 16 | |
|---|---|---|---|---|---|---|---|---|---|
| SLIDE | LR 6 COMPACT | SLIDE LR 6 WITH 4 BEARINGS L = 90 mm | SLIDE 45 WITH 4 BEARINGS L = 180 mm | SLIDE 90 WITH 4 BEARINGS L = 180 mm | SLIDE 135 WITH 4 BEARINGS L = 180 mm | SLIDE 180 WITH 4 BEARINGS L = 180 mm | SLIDE 180 WITH 8 BEARINGS L = 360 mm | SLIDE LR 16-45 | SLIDE LR 16-90 |
| Mx max. | 40 Nm | 30 Nm | 79 Nm | 107 Nm | 130 Nm | 165 Nm | 240 Nm | 158 Nm | 214 Nm |
| My max. | 40 Nm | 75 Nm | 120 Nm | 120 Nm | 120 Nm | 120 Nm | 275 Nm | 288 Nm | 288 Nm |
| Mz max. | 40 Nm | 40 Nm | 202 Nm | 202 Nm | 202 Nm | 202 Nm | 470 Nm | 323 Nm | 323 Nm |
| Fy max. | 700 N | 800 N | 3500 N | 3500 N | 3500 N | 3500 N | 7000 N | 7000 N | 7000 N |
| Fz max. | 1100 N | 640 N | 1500 N | 1500 N | 1500 N | 1500 N | 3000 N | 3000 N | 3000 N |

**Maximal Speed**

Slide 45 - 180: 10 m/sec

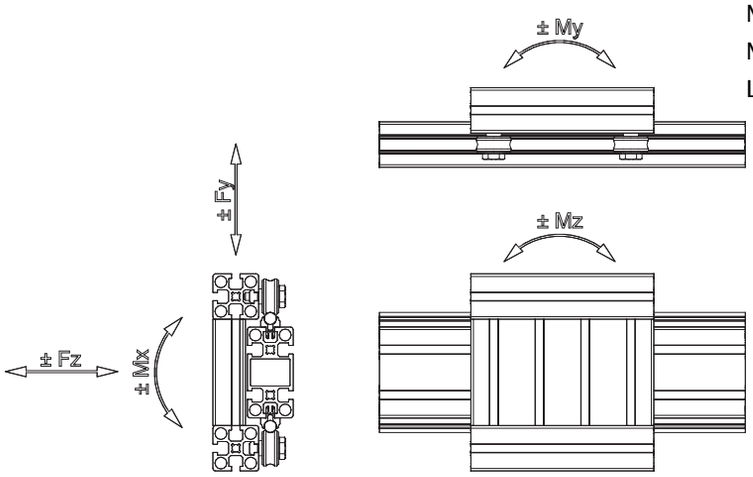
Slide LR 6: 5 m/sec

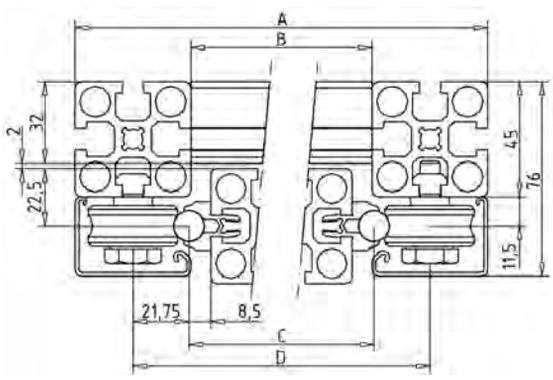
**CALCULATING THE PERMISSIBLE MOMENT LOAD DEPENDING ON THE CARRIAGE LENGTH, WITH 4 BEARINGS:**

My max. = 0.89 • (L-45) Nm

Mz max. = 1.50 • (L-45) Nm

L = Slide length




**REFERENCE VARIABLE**

| SLIDE TYPE / DIMENSION | LR 6 COMPACT | LR 6 | LW 45 | LW 90 | LW 135 | LW 180 | LR 16-45 | LR 16-90 |
|---|---|---|---|---|---|---|---|---|
| A | 45 | 90 | 150.5 | 195.5 | 240.5 | 285.5 | 210 | 255 |
| B | - | - | 60.5 | 105.5 | 150.5 | 195.5 | - | - |
| C | 30 | 32 | 62 | 107 | 152 | 197 | 85 | 130 |
| D | 2 | 60 | 105.5 | 150.5 | 195.5 | 240.5 | 149.5 | 194.5 |