



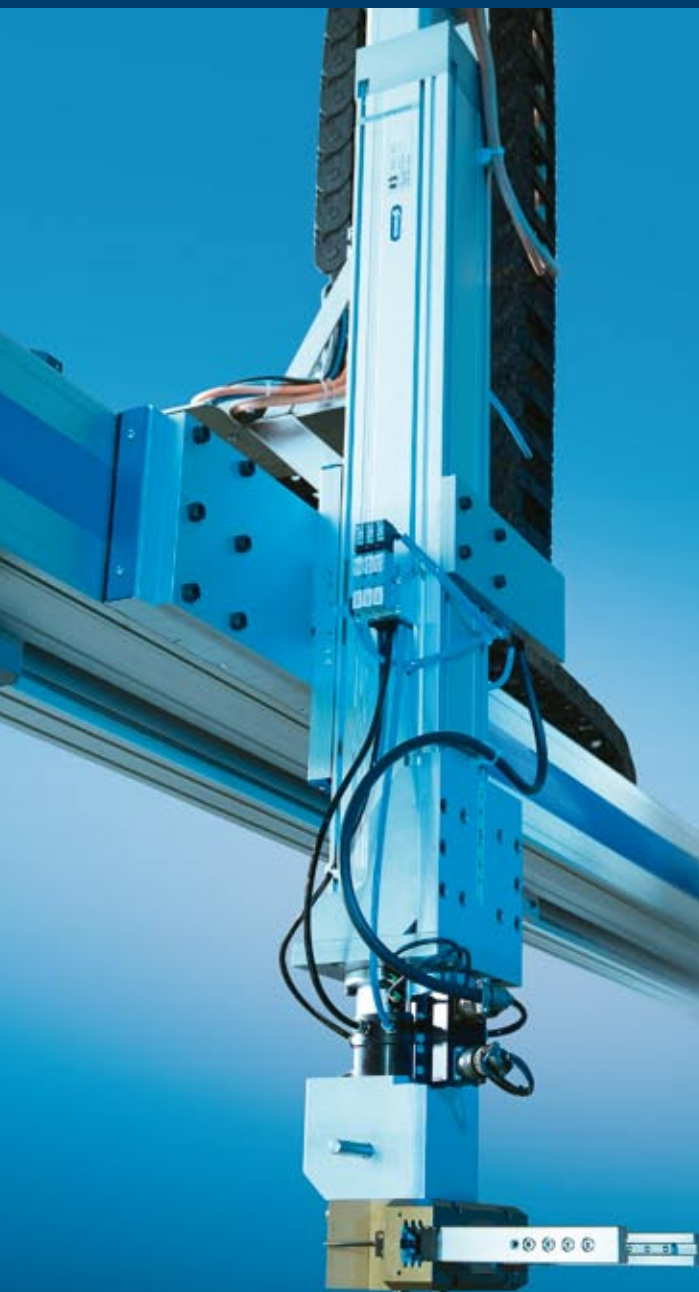
# SYSTEM HSB

Series	Size	Page
<b>Introduction to System HSB</b>		<b>144</b>
<b>Toothed-belt Drive</b>		<b>156</b>
B		
B	40-ZSS	162
B	50C-ZRS	166
B	50C-ARS	170
B	60-ZSS	174
B	70C-ZRS/-ZSS	178
B	70C-ARS/-ASS	182
B	80-ZRS/-ZSS	186
B	80-ARS/-ASS	190
B	80C-ZSS	194
B	100-ZRS/-ZSS	198
B	100D-ZSS	202
B	100D-ASS	206
B	110-ZRS/-ZSS	210
B	110-ARS/-ASS	214
B	120-ZRS/-ZSS	218
B	140-ZRS/-ZSS	222
B	140-ARS/-ASS	226
B	140C-ZSS	230
B	140C-ASS	234
B	165-ZSS	238
B	180-ZSS	242
B	180-ASS	246
B	180C-ZRS/-ZSS	250
B	180C-ARS/-ASS	254
D		
D	110-ZSS	258
D	145-ZSS	262
D	200-ZSS	266
D	240-ZSS	268

Series	Size	Page
<b>Rack and Pinion Drive</b>		<b>274</b>
B		
B	180-AZSS	280
<b>Ball Screw Drive</b>		<b>284</b>
B		
B	40-SSS	290
B	50C-SRS	294
B	60-SSS	298
B	70C-SRS/-SSS	302
B	70C-SRS-RL/-SSS-RL	306
B	80-SRS/-SSS	310
B	80-SRS-RL/-SSS-RL	314
B	100D-SSS	318
B	110-SRS/-SSS	322
B	140-SRS/-SSS	326
B	140C-SSS	330
B	165-SSS	334
B	180-SSS	338
B	180C-SRS/-SSS	342
D		
D	110-SSS	346
D	145-SSS	350
D	200-SSS	354
D	240-SSS	358
A		
A	15B-155	362
A	20B-225	366
A	30B-325	370
A	35B-455	374

# System HSB

## Linear Axes - System Explanation



### System HSB

**Flexible, modular, and universal** – The system with almost limitless possibilities








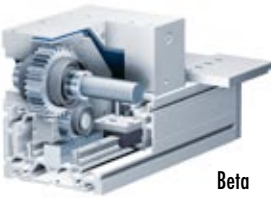
With its System HSB, SCHUNK offers a comprehensive, complete modular system of linear axes. The HSB modular system enables different axis systems to easily be assembled into powerful and individual functional modules for different load ranges. The extensive range of different sizes, drives and guidance types provides a huge variety of options.

### Solutions à la carte

Component variety and free combinations - HSB linear axes create scope for application-specific solutions. They offer a varied range of uses, including your special applications. Depending on the axis / module types, the range available also includes corrosion resistant versions, sealed air and additional slide seals.

Certified solutions can be provided for explosion proof environments, in category 3, zones 2 and 22 and category 2, zone 1.

Simply contact us with your specific requirements.

Roller Guide		Profiled Rail Guide	
Ball screw axes (roller ball or trapezoidal threaded ball screw)			Linear tables
 Beta	 Beta	 Delta	 Alpha
Toothed belt axes			Rack and pinion drive
 Beta	 Beta	 Delta	 Beta



**Sizes**  
40 .. 180



**Useful stroke**  
up to 7,720 mm



**Driving force**  
up to 18,000 N



**Moment load**  
up to 12,000 Nm



**Max. speed**  
Up to 8 m/s

### The basic modules

The HSB modular design is based on two different series of linear axes and one linear table series:

- **Beta mechanical linear units** available in eleven sizes
- **Delta compact linear units** as self-supporting axis systems. With finished profiles for higher precision applications and double rail system for high moment loads
- **Alpha flat linear tables** designed for high forces and moments

### Types of drive

- Ball screw spindle/Trapezoidal threaded spindle
- Toothed belt
- Rack (Beta 180)

### Types of guidance

- **Roller guide** for high-speed applications
  - Smooth running due to optimized thixotropic behavior
  - Low noise due to steady thixotropic behavior
  - Large stroke lengths possible with no problems
  - Low maintenance due to life-time lubrication of rollers
  - Economical alternative to rail guides
  - Runs without play due to fitted carriage in profile
- **Profiled rail guide** for precise positioning
  - High guide load bearing capacity
  - Extended lifetime
  - High guidance accuracy

### Accessories

You can choose from an extensive range of compatible accessories depending on the application: From covers and mountings to angle gears, bevel gears, couplings, synchronization shafts, and limit switches, through to complete drive solutions including servo motor, drive control unit and cable set.





### MLD linear direct axis standard drive system

HSB linear axes are supplied with innovative Bosch Rexroth INDRAMOTION drive components as standard. Alternatively, we can provide other popular drive systems for industrial applications on request.

#### Scope of delivery:

By arrangement, we offer complete packages consisting of:

- HSB linear axis
- Motor flange (adapter between linear axis and motor) with coupling
- Motor
- Cable set
- Drive control unit
- Commissioning software

#### Design:

On request, our project engineers will determine the input torque and choose the optimum standard motor and drive controller for your specific application and the selected HSB linear axis.

At all times, the focus is on your application.

#### We optimize:

- Size
- Version (BASIC or ADVANCED)
- Firmware
- Safety features
- Interface

### INDRAMOTION, BASIC and ADVANCED control units

The IndraDrive drive control units can be connected to the customer's machine environment using popular field bus systems or the parallel interface. Different firmware versions enable even your most complicated requirements to be met. All positioning tasks can be performed with a BASIC control unit and the basic firmware package.

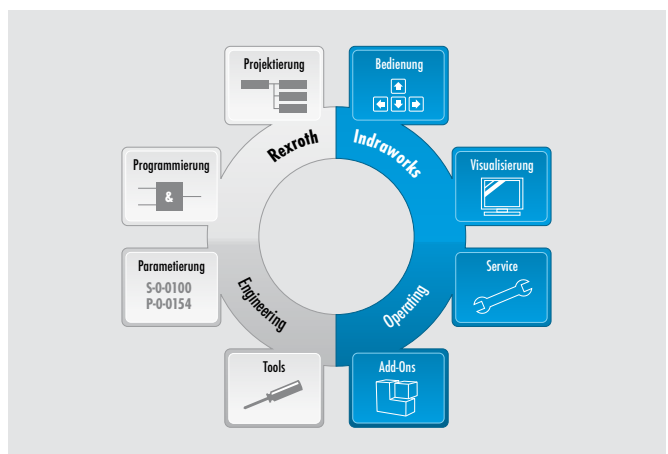
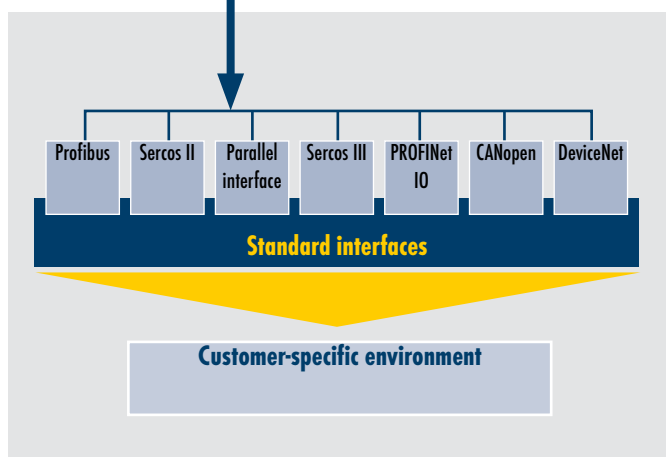
The ADVANCED control unit also offers optional integrated safety engineering and greater flexibility in terms of the configuration.

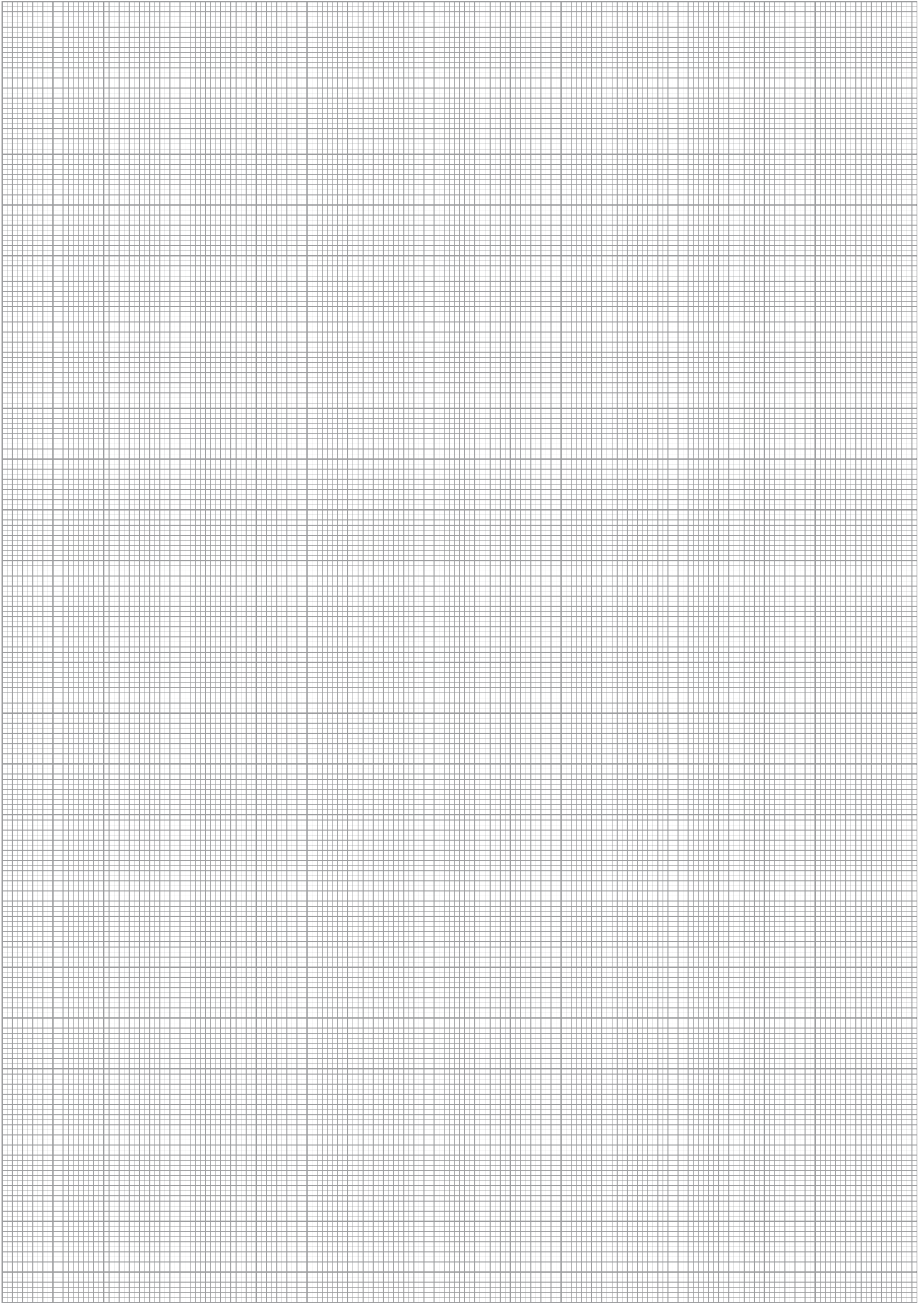
IndraMotion MLD (drive-based motion logic) combines drive functions, motion control and processing logic into a state of the art, open automation platform for modular machine concepts. Programming is possible in all IEC61131-3 languages.

**Safety on Board.** These days, safety concepts are increasingly being realized easily and economically using IndraDrive drive control units with certified safety engineering. The wide range of integrated safety functions, optionally available under the "Safety on Board" name, provides integrated safety in your application for commissioning, operation and service. This means that you can easily protect personnel against uncontrolled axis movements, as the IndraDrive safely monitors stoppages or movement at reduced speed and, in case of faults, shuts down the drives with a minimal response time.

#### Commissioning software

The IndraWorks engineering tool from Rexroth is an excellent and powerful program for programming, configuration, commissioning and service.



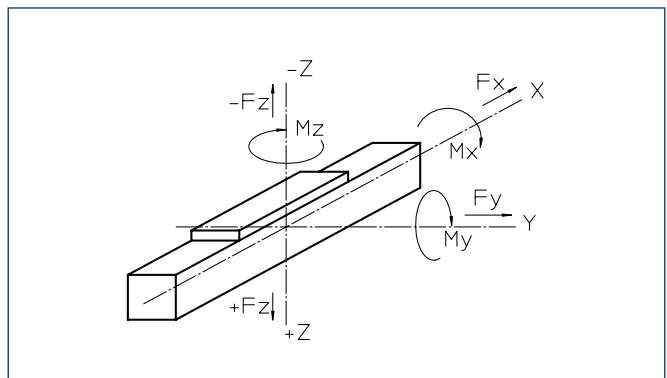


### Linear axis performance overview with toothed belt or rack and pinion drive

Designation	Toothed belt	$F_x$	$F_y$	$F_z$	$F_z$	$M_x$	$M_y$	$M_z$	$M_{empty}$	$M_{Amax}$	$d$	$s_{max}$	$L_{max}$
Beta		[N]	[N]	[N]	[N]	[Nm]	[Nm]	[Nm]	[Nm]	[Nm]	[mm]	[mm]	[mm]
B 40-ZSS	16 AT 5-E	500	500	600	300	12	30	30	0.3	8.3	0.08	850	1070
B 50C-ZRS	20 AT 5-E	700	300	600	400	30	50	50	0.4	12.7	0.08	7710	8000
B 50C-ARS	20 AT 5-E	700	300	600	400	30	50	50	1.5	13.8	0.08	7710	8000
B 60-ZSS	25 AT 5-E	850	500	1400	800	50	160	100	1.1	22.7	0.08	7620	8000
B 70C-ZRS	32 AT 5-E	1100	300	1000	400	35	120	50	1.2	31.8	0.08	7640	8000
B 70C-ZSS	32 AT 5-E	1100	600	1800	1200	60	180	120	1.2	31.8	0.08	6840	7200
B 70C-ARS	32 AT 5-E	900	300	1000	400	35	120	50	1.0	32.5	0.08	7640	8000
B 70C-ASS	32 AT 5-E	900	600	1800	1200	60	180	120	1.0	32.5	0.08	7640	8000
B 80-ZRS	32 AT 5-E	1350	500	1500	800	50	180	100	1.5	48.8	0.08	7600	8000
B 80-ZSS	32 AT 5-E	1350	800	3000	2000	100	250	250	1.5	48.8	0.08	7600	8000
B 80-ARS	32 AT 10	1000	500	1500	800	50	180	100	1.5	36.5	0.08	7590	8000
B 80-ASS	32 AT 10	1000	800	3000	2000	100	250	250	1.5	36.5	0.08	7590	8000
B 80C-ZSS	32 AT 10	2200	1600	4000	3000	300	500	500	1.8	75.3	0.08	7600	8000
B 100-ZRS	40 AT 10	2800	1000	2500	1200	200	250	200	2.5	91.6	0.08	7420	7900
B 100-ZSS	40 AT 10	2800	1000	3000	2000	200	300	300	2.5	91.6	0.08	7420	7900
B 100D-ZSS	40 AT 10-E	1500	1800	4000	3000	350	750	750	2.5	40.7	0.08	7720	8100
B 100D-ASS	40 AT 10-E	2200	1800	4000	3000	350	950	950	2.5	86.5	0.08	7680	8100
B 110-ZRS	50 ATL 10	4000	2000	5000	2500	300	600	450	3.5	194.5	0.08	7520	8100
B 110-ZSS	50 ATL 10	4000	3000	8000	4000	400	800	600	3.5	194.5	0.08	7520	8100
B 110-ARS	50 ATL 10	2000	2000	5000	2500	300	600	450	3.5	99.0	0.08	7440	8100
B 110-ASS	50 ATL 10	2000	3000	8000	4000	400	800	600	3.5	99.0	0.08	7440	8100
B 120-ZRS	50 ATL 10	4000	2500	6000	3000	350	700	700	3.2	156.0	0.08	7520	8100
B 120-ZSS	50 ATL 10	4000	3000	8000	4000	400	1200	600	3.2	156.0	0.08	7520	8100
B 140-ZRS	50 AT 10-E	4000	2500	5000	3000	350	700	700	3.5	143.6	0.08	7540	8100
B 140-ZSS	50 AT 10-E	4000	2500	6000	4000	500	1000	1000	3.5	143.6	0.08	7540	8100
B 140-ARS	50 AT 10-E	1800	2500	5000	3000	350	700	700	3.5	99.0	0.08	7470	8100
B 140-ASS	50 AT 10-E	1800	2500	6000	4000	500	1000	1000	3.5	99.0	0.08	7470	8100
B 140C-ZSS	50 AT 10-E	4000	3200	7500	5000	600	1200	1200	3.5	143.6	0.08	7470	8100
B 140C-ASS	50 AT 10-E	1800	3200	7500	5000	600	1200	1200	3.5	99.0	0.08	7470	8100
B 165-ZSS	75 AT 20	10000	5000	15000	8000	700	1400	1100	12.0	712.3	0.08	6920	7700
B 180-ZSS	75 AT 10	6000	6000	12000	6000	1500	3000	1500	8.0	313.6	0.08	5500	6200
B 180-ASS	75 AT 10	3500	6000	12000	6000	1500	3000	1500	8.0	186.3	0.08	5470	6200
B 180C-ZRS	75 AT 10	6000	6000	10000	6000	1200	2000	1200	8.0	313.6	0.08	5500	6200
B 180C-ZSS	75 AT 10	6000	8000	15000	8000	1800	3600	1800	8.0	313.6	0.08	5500	6200
B 180C-ARS	75 AT 10	3500	6000	10000	6000	1200	2000	1200	8.0	186.3	0.08	5470	6200
B 180C-ASS	75 AT 10	3500	8000	15000	8000	1800	3600	1800	8.0	186.3	0.08	5470	6200
<b>Delta</b>													
D 110-ZSS	25 AT 5-E	750	1200	3000	1500	500	650	650	1.6	12.3	0.08	1220	1500
D 145-ZSS	50 AT 5-E	1900	2500	5000	3000	800	1000	1000	2.2	35.5	0.08	1660	2000
D 200-ZSS	75 AT 10-E	6000	5000	8000	5000	3500	4300	3200	3.8	143.9	0.08	3520	4000
D 240-ZSS	50 AT 10-E	2500	6000	12000	8000	4500	6000	4500	3.5	63.2	0.08	2550	3000
<b>Beta Rack</b>													
B 180-AZS	Rack m=3	4500	8000	16000	8000	2000	4000	2000	10.0	239.5	0.05	5400	6000

① For mechanical linear units with roller guides, with static loads the static basic load rating ( $C_{stat}$ ) must be taken into account.

- $M_{idle}$  = Idle torque  $\pm 30\%$
- $d_s$  = Repeat accuracy  $\pm$
- $s_{max}$  = Maximum standard stroke length (longer on request)
- $L_{max}$  = Maximum standard length (longer on request)

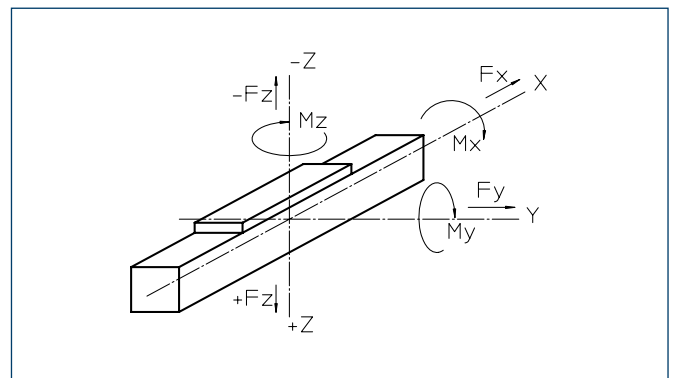


### Performance overview for linear axes with ball-screw spindle drive

Designation	Ball-screw spindle drive	$F_x$	$F_y$	$F_z$	$F_z$	$M_x$	$M_y$	$M_z$	$M_{empty}$	$M_{Amax}$	$d_{pn/ps}$	$d_s$	SA	$s_{max}$	$L_{max}$
Beta		[N]	[N]	[N]	[N]	[Nm]	[Nm]	[Nm]	[Nm]	[Nm]	[mm]	[mm]	[n]	[mm]	[mm]
B 40-SSS	1204/1205	500	500	600	300	12	30	30	0.4	1.1	0.08/0.03	0.03	2	890	1090
B 50C-ZRS	1204/1205	1000	300	600	400	30	50	50	0.3	1.1	0.08/0.03	0.03	-	860	1090
B 60-SSS	2005/2020/2050	4000	600	1800	1200	60	180	120	0.7	32.5	0.08/0.03	0.03	8	5120	5400
B 70C-SRS	1605/1610/1620	2000	300	1000	400	35	120	60	0.35	6.7	0.08/0.03	0.03	8	2730	3050
B 70C-SSS	1605/1610/1620	2000	600	1800	1200	60	180	120	0.4	6.7	0.08/0.03	0.03	8	2730	3050
B 70C-SRS-RL	TR 1604	2000	300	1000	400	35	120	60	0.35	On request	-	0.05	4	-	6100
B 70C-SSS-RL	TR 1604	2000	600	1800	1200	60	180	120	0.4	On request	-	0.05	4	-	6100
B 80-SRS	2005/2020/2050	4000	500	1500	800	50	180	100	0.6	32.4	0.08/0.03	0.03	8	5020	5400
B 80-SSS	2005/2020/2050	4000	800	3000	2000	100	250	250	0.8	32.6	0.08/0.03	0.03	8	5020	5400
B 80-SRS-RL	2005	4000	500	1500	800	50	180	100	0.6	On request	-	0.03	4	-	8000
B 80-SSS-RL	2005	4000	800	3000	2000	100	250	250	0.8	On request	-	0.03	4	-	8000
B 80-SRS-RL	TR 2004	4000	500	1500	800	50	180	100	0.6	On request	-	0.05	4	-	8000
B 80-SSS-RL	TR 2004	4000	800	3000	2000	100	250	250	0.8	On request	-	0.05	4	-	8000
B 100D-SSS	2005/2020/2050	4000	1800	4000	3000	350	750	750	1.3	33.1	0.08/0.03	0.03	8	5060	5400
B 110-SRS	2505/2510/2525/2550	6000	2000	5000	2500	300	600	450	1.0	48.7	0.1/0.04	0.03	10	4920	5400
B 110-SSS	2505/2510/2525/2550	6000	3000	8000	4000	400	800	600	1.5	49.2	0.1/0.04	0.03	10	4920	5400
B 140-SRS	2505/2510/2525/2550	6000	2500	5000	3000	350	700	700	1.0	48.7	0.1/0.04	0.03	10	4920	5400
B 140-SSS	2505/2510/2525/2550	6000	2500	6000	4000	500	1000	1000	1.5	49.2	0.1/0.04	0.03	10	4920	5400
B 140C-SSS	2505/2510/2525/2550	6000	3200	7500	5000	600	1200	1200	1.5	49.2	0.1/0.04	0.03	10	4920	5400
B 165-SSS	4005/4010/4020/4040	18000	5000	15000	8000	700	1400	1100	3.0	117.6	0.1/0.04	0.03	8	4910	5500
B 180-SSS	3205/3210/3220/3240	12000	6000	12000	6000	1500	3000	1500	2.5	78.9	0.1/0.04	0.03	8	4930	5500
B 180C-SRS	3205/3210/3220/3240	12000	6000	10000	6000	1200	2000	1200	1.8	40.0	0.1/0.04	0.03	8	4930	5500
B 180C-SSS	3205/3210/3220/3240	12000	8000	15000	8000	1800	3600	1800	2.5	40.7	0.1/0.04	0.03	8	4930	5500
<b>Delta</b>															
D 110-SSS	1605/1610/1620	2000	1200	3000	1500	500	650	650	0.9	7.3	0.08/0.03	0.03	4	1270	1500
D 145-SSS	2505/2510/2525/2550	6000	2500	5000	3000	800	1000	1000	1.1	48.8	0.1/0.04	0.03	4	1700	2000
D 200-SSS	3205/3210/3220/3240	10000	5000	8000	5000	3500	4300	3200	2.8	66.5	0.1/0.04	0.03	4	3620	4000
D 240-SSS	3205/3210/3220/3240	12000	6000	12000	8000	4500	6000	4500	2.8	79.2	0.1/0.04	0.03	4	2600	3000
<b>Alpha</b>															
A 15B-155	2005/2020	4000	2000	20000	15000	1000	900	400	0.35	13.1	0.08/0.03	0.03	4	1235	1500
A 20B-225	2505/2510/2525	6000	5000	58000	40000	4000	3000	1200	1.2	20.3	0.1/0.04	0.03	4	1645	2000
A 30B-325	3205/3210/3220/3232	12000	8000	75000	50000	5000	4000	2000	1.6	62.7	0.1/0.04	0.03	4	2540	3000
A 35B-455	4005/4010/4020/4040	18000	14000	120000	80000	12000	10000	5000	2.5	117.1	0.1/0.04	0.03	4	2420	3000

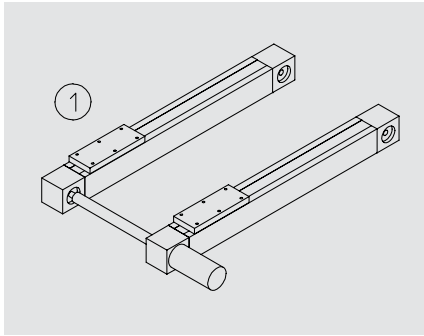
① For mechanical linear units with roller guides, with static loads the static basic load rating ( $C_{stat}$ ) must be taken into account.

- $M_{idle}$  = Idle torque +/- 30%
- $d_{pn/ps}$  = Axial play (normal/minimal play)
- $d_s$  = Repeat accuracy +/-
- SA = Maximum number of spindle supports
- $s_{max}$  = Maximum standard stroke length (longer on request)
- $L_{max}$  = Maximum standard length (longer on request)
- $M_{Amax}$  = Maximum input torque, each value for ball-screw spindle drive with greatest pitch  
Values for other pitch values differ considerably in some cases, see technical data for specifications for individual slide sizes

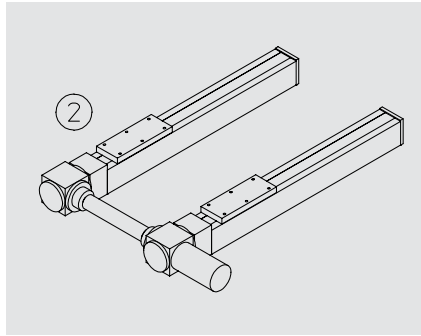




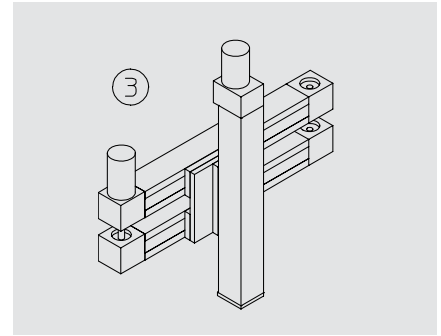
### Example arrangement for multiple systems



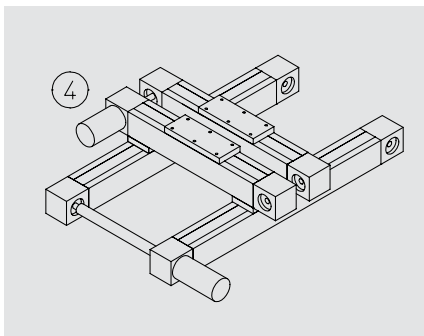
**1** X gantry: Two toothed belt axes with mechanically coupled drive via connection shaft



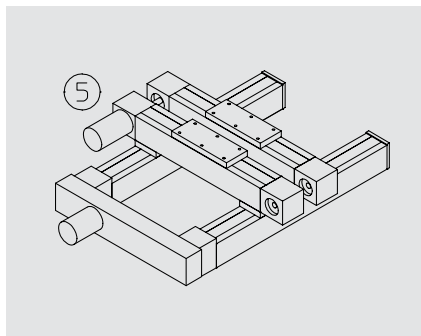
**2** X gantry: Two spindle powered axes with mechanically coupled drive via bevel gear and connection shaft



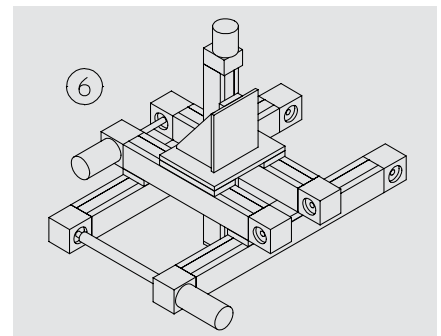
**3** Linear gantry: Spindle powered drive on two mechanically coupled drive axes. The second axis can only be used for torque support.



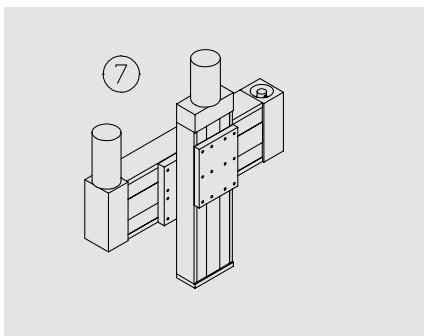
**4** Two-axis surface gantry: Toothed belt axes coupled to or for support of two mechanically coupled driven toothed belt axes



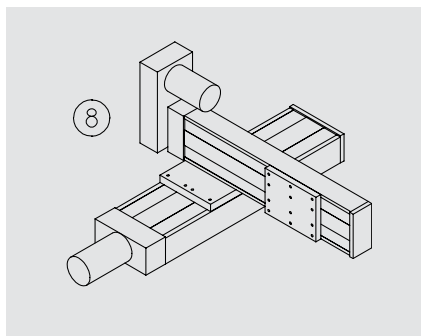
**5** Two-axis surface gantry: Toothed belt axes coupled to or for support of two mechanically coupled spindle powered axes via bevel gear and central motor connection



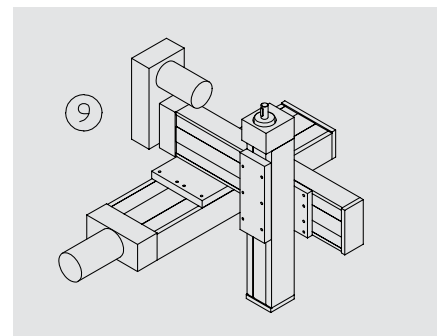
**6** Three-axis surface gantry: Toothed belt axes coupled to or for support of two mechanically coupled driven toothed belt axes and centrally installed boom axis



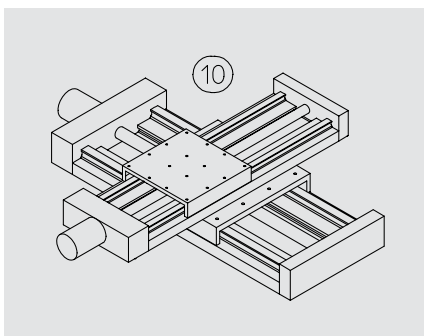
**7** X-Y slide compact axes:  
Spindle powered axis on toothed belt axis



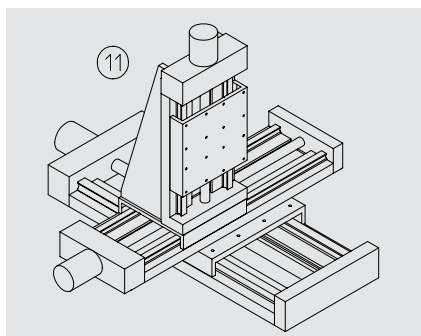
**8** X-Y slide compact axes:  
Spindle powered axis with angle gear on spindle powered axis



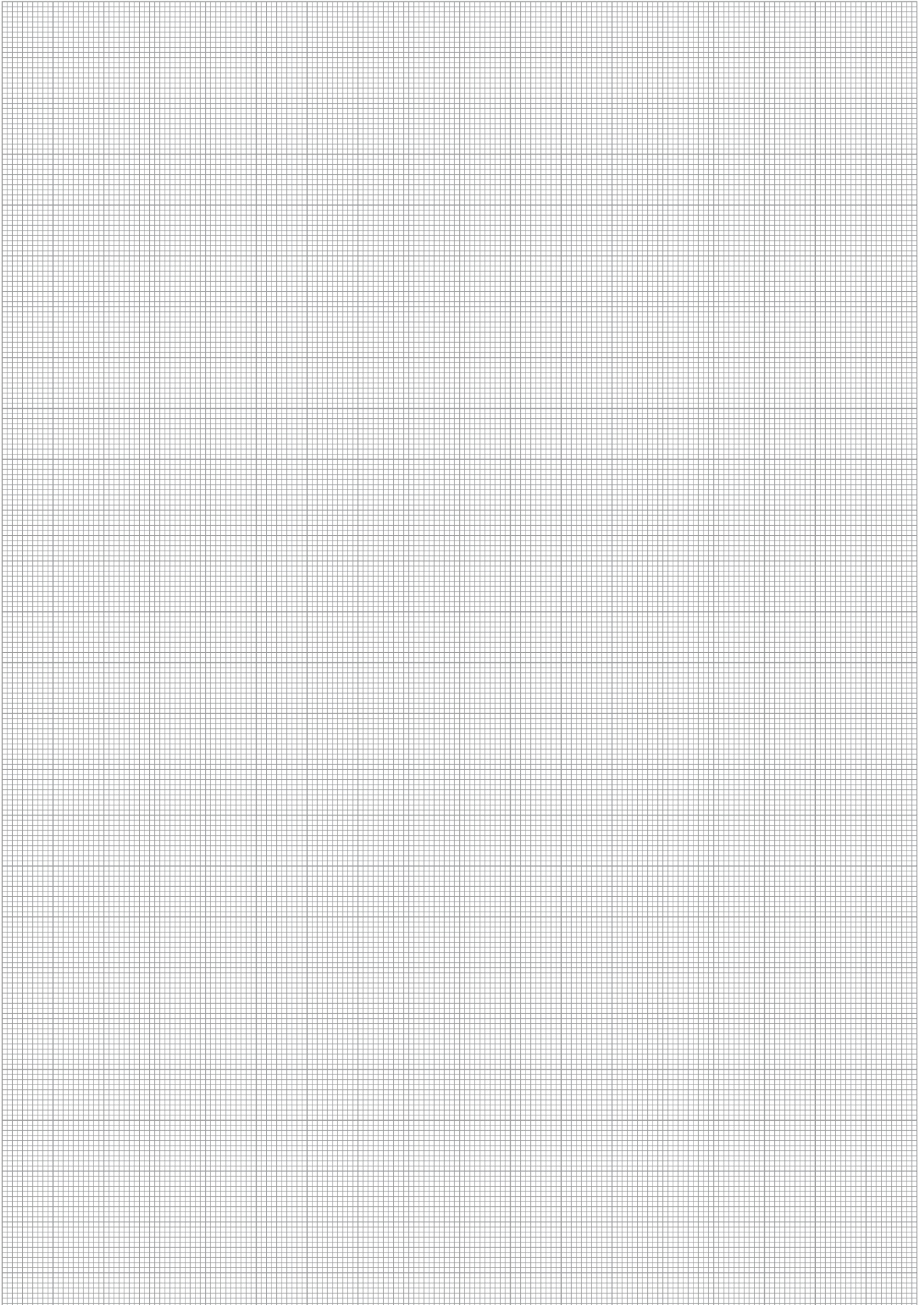
**9** Three-axis table compact axis system:  
Spindle powered axis with angle gear on spindle powered axis and vertical spindle axis



**10** X-Y slide:  
Flat construction spindle powered X-Y slide system based on A series



**11** Three-axis table system:  
Flat construction spindle powered table system based on A series in 3 axes



Company		Project	
Contact		Telephone	
ZIP, City		Fax	
Street		E-mail	

Please provide an accurate description of the task.

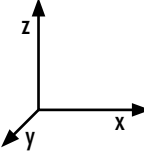
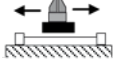

Please provide a sketch of the required process, specifying the dimensions and masses of the individual components.

### 3. Requirement information (please check)

<input type="checkbox"/> One-off application	<input type="checkbox"/> Technical improvement
<input type="checkbox"/> Series, number of units per year:	<input type="checkbox"/> Cost reduction
<input type="checkbox"/> New design	<input type="checkbox"/>




### 4. Axis information - System configuration (please check)

<input type="checkbox"/> x	<input type="checkbox"/> z	<input type="checkbox"/> x-x	<input type="checkbox"/> x-x-y	<input type="checkbox"/> x-x-y	<input type="checkbox"/> x-x-y-z	<input type="checkbox"/> x-x-y-z
<input type="checkbox"/> x-y	<input type="checkbox"/> x-y-z	<input type="checkbox"/> x-y-z	<input type="checkbox"/> x-z	<input type="checkbox"/> x-z	<input type="checkbox"/> x-z	<input type="checkbox"/> x-z

	Payload (load)	[kg]	X-axis horizontal	Y-axis horizontal	Z-axis vertical	
	Load projection (lever arm) of load at axis fixture	X direction	[mm]	Slide position: Top (1) Side (2) Bottom (3)		
		Y direction	[mm]			
		Z direction	[mm]			
	Slide position: Enter relevant number (1 - 3)					
Basic information	Attachment type:	 Slide moved (standard)  Axis moved (boom)	<input type="checkbox"/> Standard <input type="checkbox"/> Boom	<input type="checkbox"/> Standard <input type="checkbox"/> Boom	<input type="checkbox"/> Standard <input type="checkbox"/> Boom	
	Stroke (inc. over stroke)	[mm]				
	...of which useful stroke	[mm]				
Load	Additional force (e.g. process force)	[N]				
	Direction of additional force (axis and direction, e.g. Z+)					
Dynamics	Speed $V_{max}$	[m/s]				
	$a_{max}$	[m/s <sup>2</sup> ]				
Emergency stop function			<input type="checkbox"/> Yes <input type="checkbox"/> No			
Operating data	Total cycle time (inc. rest period)	[s]				
	Travel time as proportion of total cycle	[s]				
	Operating hours per year	[hrs] on [days]		hours on	days	
Accuracy	Min. repeat accuracy	[mm]				
Environment	Temperature	[°C]				
	Air humidity	[%]				
	Dirt, interference fields, place of use					
Control	Control unit	Bosch Rexroth	Indradrive Basic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Indradrive Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Indradrive Cs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Siemens	Sinamics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Other: _____					
Interfaces		<input type="checkbox"/> Profibus <input type="checkbox"/> Sercos III	<input type="checkbox"/> Profinet <input type="checkbox"/> Parallel	<input type="checkbox"/> Sercos II <input type="checkbox"/> _____		
Cable set		<input type="checkbox"/> 5 m <input type="checkbox"/> 10 m <input type="checkbox"/> 15 m <input type="checkbox"/> 20 m	<input type="checkbox"/> 5 m <input type="checkbox"/> 10 m <input type="checkbox"/> 15 m <input type="checkbox"/> 20 m	<input type="checkbox"/> 5 m <input type="checkbox"/> 10 m <input type="checkbox"/> 15 m <input type="checkbox"/> 20 m		



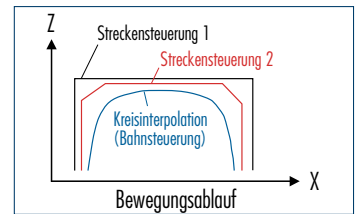
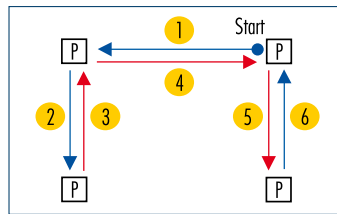
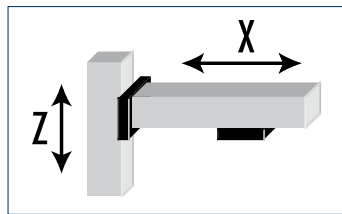
## 5. HSB axis options

		X-axis horizontal	Y-axis horizontal	Z-axis vertical	
Drive	Axis: HSB a, HSB b, HSB d (please specify if defined)				
	Toothed belt drive		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Drive shaft	<div style="display: flex; align-items: center; gap: 10px;"> <div style="text-align: center;"> <b>AZ1</b>   </div> <div style="text-align: center;"> <b>AZ2:</b>   </div> <div style="text-align: center;"> <b>AZ6</b>   </div> </div>	<input type="checkbox"/> AZ1 <input type="checkbox"/> AZ2 <input type="checkbox"/> AZ6	<input type="checkbox"/> AZ1 <input type="checkbox"/> AZ2 <input type="checkbox"/> AZ6	
	Covering tape		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Ball screw drive		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Ball screw supports		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Ball screw drive right/left		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Guide	Roller guide		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Profiled rail guide		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Sliding guide		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slide	Number of slides				
	Slide center distance [mm]				
	Long slide		<input type="checkbox"/> Long	<input type="checkbox"/> Long	<input type="checkbox"/> Long
Limit switches	Inductive	Opener	2m cable		
			10 m cable		
		Closer	2m cable		
			10 m cable		
	Mechanical (no cable)				
Motor attachment	Motor flange (motor add-on kit)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Coupling		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Angle gear		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Bevel gear		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Connection shaft		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Pedestal bearing for connection shaft		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sealed air	Air purge connection		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mounting	Number of T-nuts				
	Mounting strip				
Motor	Bosch Rexroth	<input type="checkbox"/> MSK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Siemens	<input type="checkbox"/> 1FK7		<input type="checkbox"/>	<input type="checkbox"/>
	Other _____		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Brake		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gears	Bosch Rexroth	<input type="checkbox"/> GTE	<input type="checkbox"/> GTM	<input type="checkbox"/>	<input type="checkbox"/>
	Siemens			<input type="checkbox"/>	<input type="checkbox"/>
	Other _____				
Documentation	<input type="checkbox"/> Schunk standard design Language: English / Content: Assembly instructions, drawing(s), bill(s) of materials / Delivery format: PDFs on CD-ROM				
	<input type="checkbox"/> Special design (additional cost)    Definition:				

### 6. Cycle information

To calculate the optimum linear direct drive, it is important to define the future application in as much detail as possible in advance.

Example:  
Pick & place application



### 7. Cycle table (each system axis considered individually)

Cycle step	Axis	Travel [mm]	Permissible travel time [s]	Shutdown time after positioning [s]	Useful load [kg]
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

### 8. Calculation basis

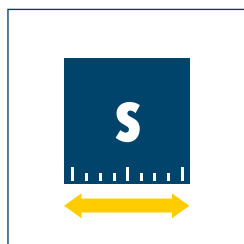
Definitions					Most extreme movement
Speed	v	[m/s]	Deadweight - slide	$m_{dw}$ [kg]	
Acceleration	a	[m/s²]	Additional mass - load	$m_{add}$ [kg]	
Travel	s	[m]	Counter force	$F_{cnt}$ [N or kgm/s²]	
Time	t	[s]	Theoretical force required	$F_{the}$ [N or kgm/s²]	
Total mass moved	$m_{tot}$	[kg]			

### 9. Formulae

Speed	$V = a \times t = \sqrt{2a \times s}$	Acceleration	$a = 2s / t^2 = V / t$
Travel	$s = a \times t^2 / 2 = v \times t$	Time	$t = V / a = 2s / v$
Mass moved	$m_{tot} = m_{dw} + m_{add}$	Force	$F_{the} = m_{tot} \times a + F_{cnt}$
Motor force	$F = (F_{the} + \text{control reserve}) \times \text{dynamic correction factor} \times \text{on time factor}$		

# System HSB Toothed-belt Drive

## Linear Axes • Toothed-belt Drive



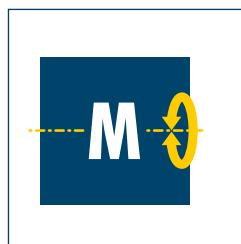
### Range of stroke

up to 7,720 mm



### Driving force

up to 10,000 N



### Moment load

up to 3,600 Nm



### Repeat accuracy

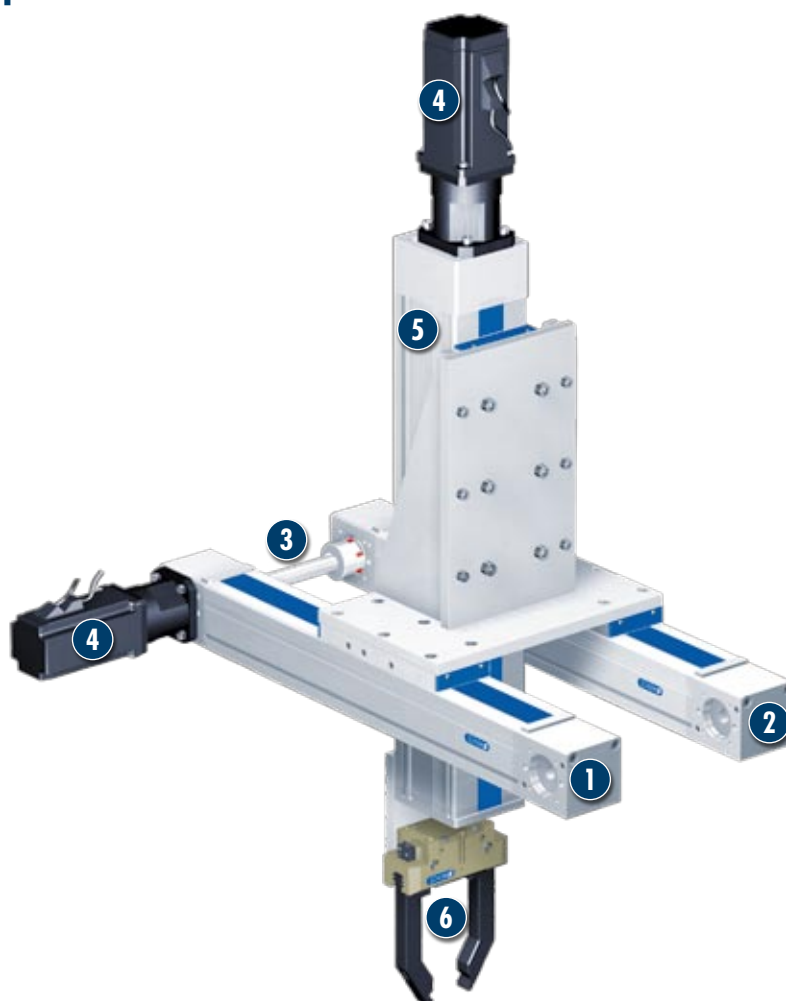
+/- 0.08 mm



### Max. speed

Up to 8 m/s

## Application example



### Loading gantry for automatic tool loading

- 1 Toothed belt axis B 80-ZRS driving
- 2 Toothed belt axis B 80-ZRS synchronized
- 3 Connection shaft with claw coupling for synchronization
- 4 Servo motors with flange connection
- 5 Vertical axis with ball screw spindle B 110-SSS
- 6 2-finger parallel gripper, PGN plus 80

### Linear axis with toothed belt drive

The range includes 15 sizes. Depending on use, it is possible to choose between roller guide and profiled rail guide.

### Area of application

Economical axis applications with high demands for dynamics and smooth running. Even long stroke lengths can be realized with this drive system.

### Your advantages and benefits

#### Complete modular system

with standard components for maximum availability

#### Closed system

for maximum dirt resistance

#### Profiled rail or roller guide

for optimum adaptation to the application

#### Economical system

due to ease of maintenance and optimum size - performance ratio



### General information about the series

#### Drive

free from play, robust toothed belt drive, adjustable toothed belt tension

#### Profile guide

Aluminum press-drawn section with plastic tape cover, choice of profile rail or roller guide

#### Material

Natural anodized aluminum parts

#### Operating temperature

From 10°C to 80°C

#### Warranty

24 months

For production reasons, the colors may vary from those shown in the catalog.

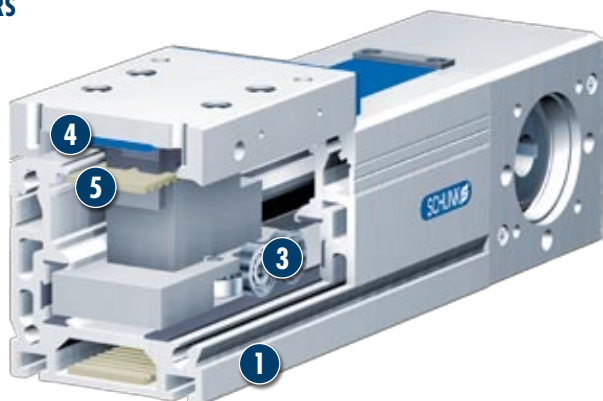


# System HSB Toothed-belt Drive

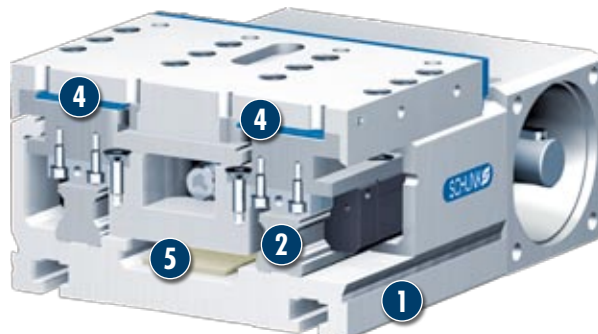
Linear Axes • **Toothed belt drive**

## Sectional diagram of the functions

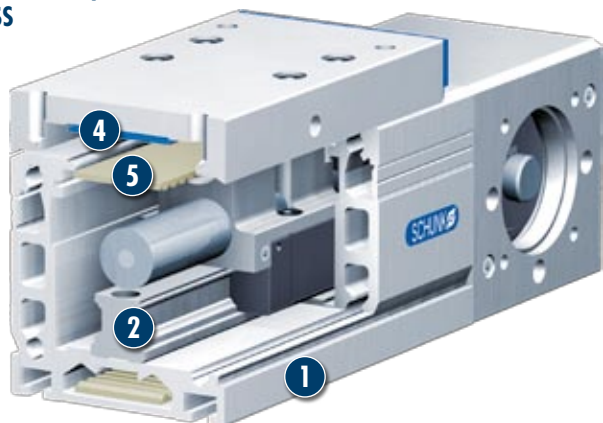
HSB beta® system  
ZRS



HSB delta® system  
ZSS



HSB beta® system  
ZSS



- |   |                                  |   |                               |   |                    |
|---|----------------------------------|---|-------------------------------|---|--------------------|
| 1 | Axis body as the support profile | 3 | Roller guide                  | 5 | Toothed drive belt |
| 2 | Profiled rail guide              | 4 | Covering tape made of plastic |   |                    |

## Description of function

The axis carriage is driven by a toothed belt and precisely guided by a roller or profiled rail guide. The covering tape runs through the axis carriage.

## Options and special information

The servo motor can be connected to the pinion shaft by a flange and a coupling.

- ① On request, SCHUNK can supply complete drive solutions including motor, gears, controller, and cables.

### Accessories

Accessories from SCHUNK – the suitable companion for the best functionality, reliability, and controlled production for all automation components.

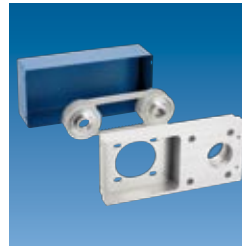
#### Motor flanges



#### Motors



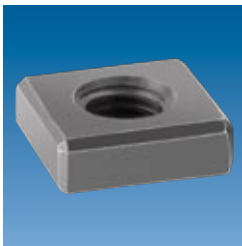
#### Angle belt drive



#### Bevel gear



#### T-nut



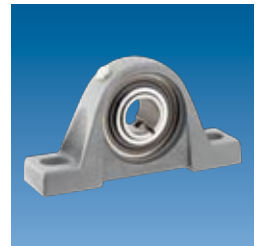
#### Connection shafts



#### Mounting strips



#### Pedestal bearing



#### Inductive proximity switch



#### Mechanical roller switches



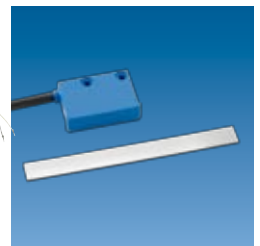
#### Drive controller



#### Cable set



#### Stroke measuring system



① Please see the side views at the end of the respective size for information concerning specific sizes, availability, designation, and ID numbers. Further information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

### General information about the series

#### Static load / basic load ratings

For linear units with roller guides, with static loads the static basic load rating ( $C_{\text{stat}}$ ) must be taken into account.

An overview of the static and dynamic basic load ratings for the systems can be found in the "Technical data for installed guides" tables

# System HSB Toothed-belt Drive

## Linear Axes • Toothed-belt Drive

### How to order - Toothed belt drive

B 80 Z R S - 32 AT5 - E - 220 - 1000 - 1420 - AK - AZ1 - 1

**Product series B = Beta, D = Delta**

**Size (version)**

**Drive**

Z = Toothed belt drive

A = Driven slide (type B)

**Guidance system**

R = Roller guide (type B)

S = Rail guide

G = Sliding guide (type B)

**Design version**

S = Standard

**Drive version**

Toothed belt width and tooth pitch

**Stroke per revolution**

**Distance traveled**

**Overall length**

**Cover**

AK = Cover tape

**Accessories**

BL 1,2,3,5 and 6 = Mounting strip

EMS / EMB = Mechanical limit switch attached (S - Siemens, B - Balluff)

E02 / E010 = Inductive limit switch, opener with 2m / 10 m cable attached

ES2 / ES10 = Inductive limit switch, closer with 2m / 10 m cable attached

NS ① = T-nut M4

NS ② = T-nut M5

NS ③ = T-nut M6

NS ④ = T-nut M8, 6 thick

NS ⑤ = T-nut M8, 8 thick

NS ⑥ = T-nut M10

NS ⑦ = T-nut M3

NS ⑧ = T-nut M5

NS ⑨ = T-nut M4, 4.5 thick

NS ⑩ = T-nut M6, 6 thick

NS ⑪ = T-nut M4, 3.5 thick

NS ⑫ = T-nut M3, 4.5 thick

RM 2 = T-nut M4

RM 4 = T-nut M5

RM 6 = T-nut M6

AZ 1 = Short drive shaft, attachment side C

AZ 2 = Short drive shaft, attachment side D

AZ 6 = Long drive shaft, attachment side C and D

**Special design**

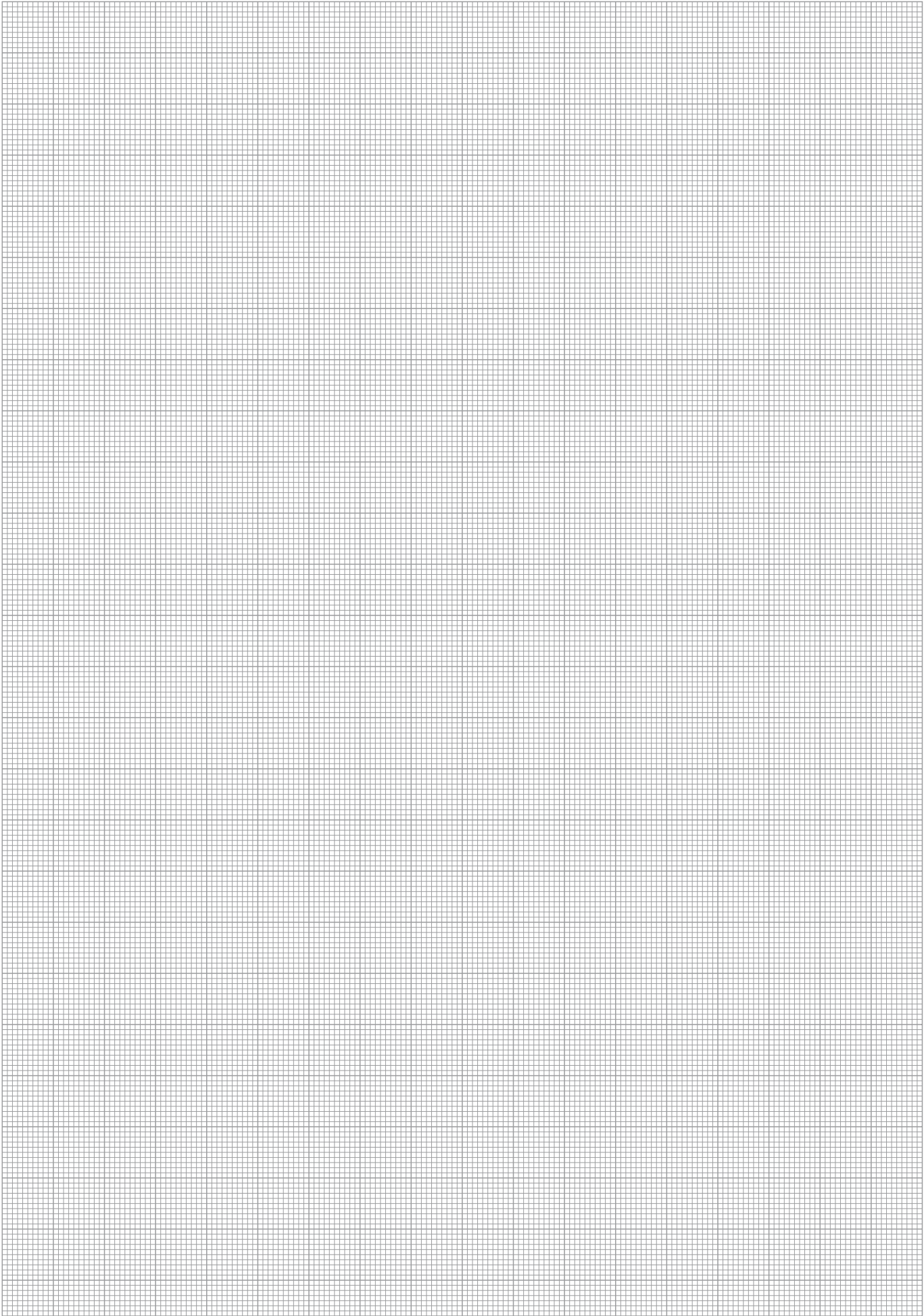
0 = Standard

1 = Special (specification in plain text)

**Additional accessories (separate item)**

MGK = Motor flange and coupling (from dimension sheet)

URT = Angle belt drive (from dimension sheet)





### Advantages of profiled rail guide

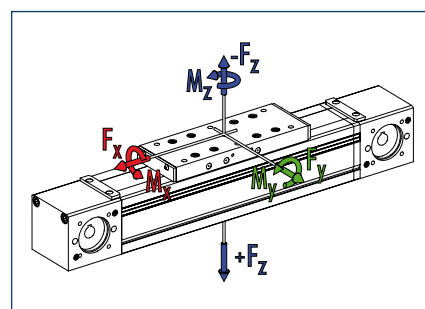
High load bearing capacity

Long lifetime

High precision



### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	500
<span style="color: green;">■</span> $F_y$	[N]	500
<span style="color: blue;">■</span> $F_z$	[N]	600
<span style="color: blue;">■</span> $-F_z$	[N]	300
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	12
<span style="color: green;">■</span> $M_y$	[Nm]	30 (50)
<span style="color: blue;">■</span> $M_z$	[Nm]	30 (50)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	8.3

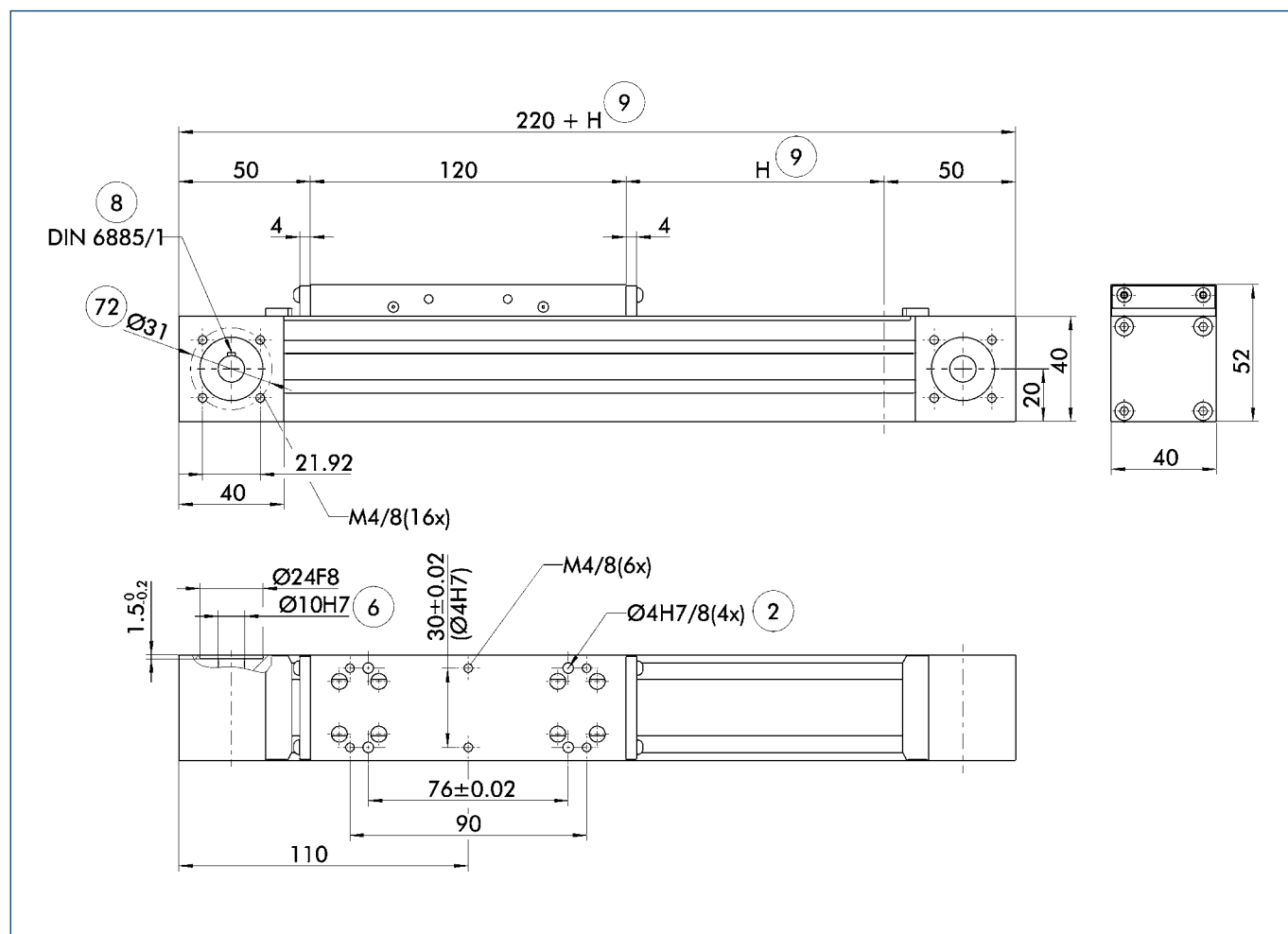
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 40-ZSS
Max. travel speed	[m/s]	3
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	30
Idle torque	[Nm]	0.3
Drive		
Drive element	Toothed belt	16 AT 5-E
Travel per revolution	[mm]	100
Maximum stroke	[mm]	850
Max. total length	[mm]	1070
Moment of inertia	[kgm <sup>2</sup> ]	0.0002
Weights		
Basic without travel	[kg]	1.7
Travel per 100 mm	[kg]	0.3
Slide plate 120 mm	[kg]	0.3
Slide plate 200 mm	[kg]	0.5

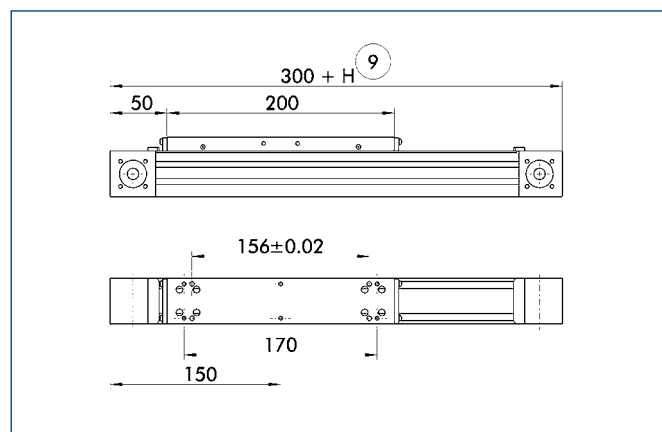
### Main views



- (2) Assembly connection
- (6) Drive connection
- (8) Feather key DIN 6885
- (9) Useful stroke

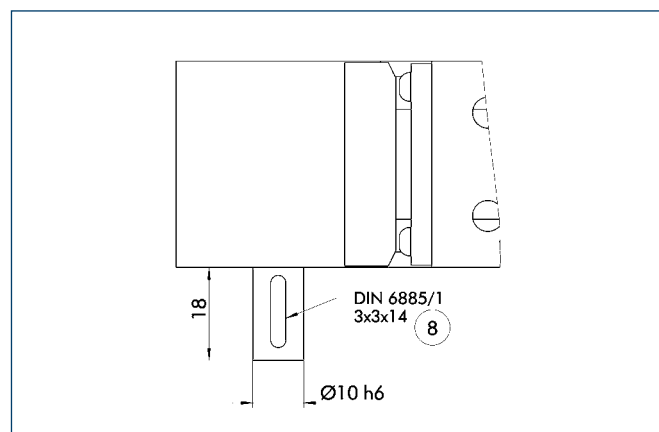
- (72) Bolt pitch circle

### Long slide



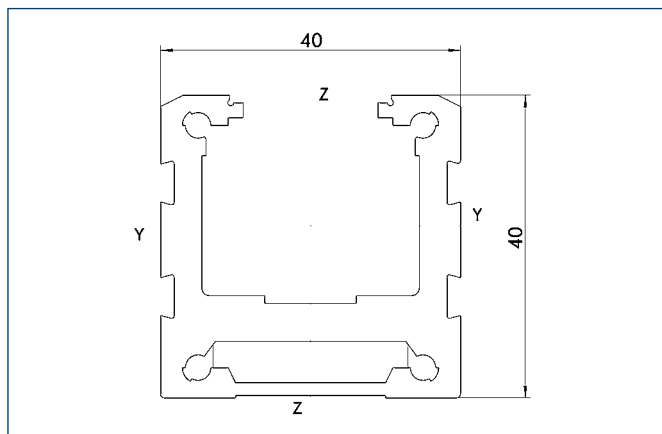
- (9) Useful stroke

### Drive journal connection dimensions



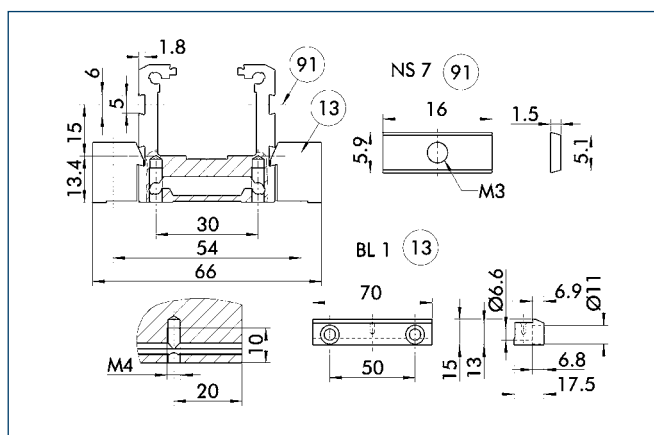
- (8) Feather key
- Caution: No plug-in drive shaft – AZ – Define position (see order designation)!

## Profile ZSS



Specific mass	[kg/m]	1.71
Planar dimension	[mm <sup>2</sup> ]	635
Planar moment of inertia $I_y$	[mm <sup>4</sup> ]	88917
Planar moment of inertia $I_z$	[mm <sup>4</sup> ]	133350
Load torque $W_y$	[mm <sup>3</sup> ]	3757
Load torque $W_z$	[mm <sup>3</sup> ]	6665

## Mounting



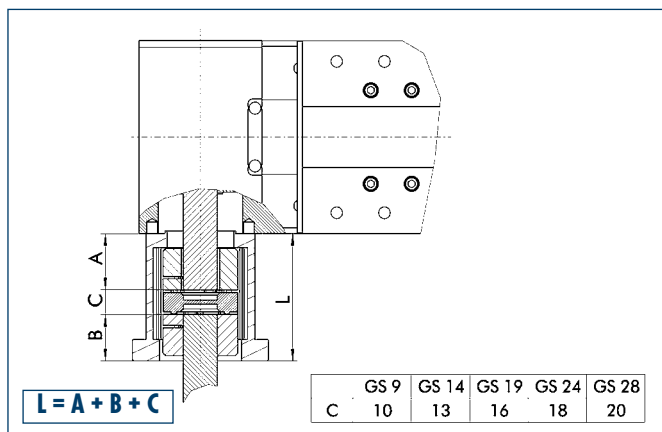
⑬ Mounting strip

⑨① Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS7	0331423
Mounting strip	BL1	0331400

## Motor flange schematic diagram

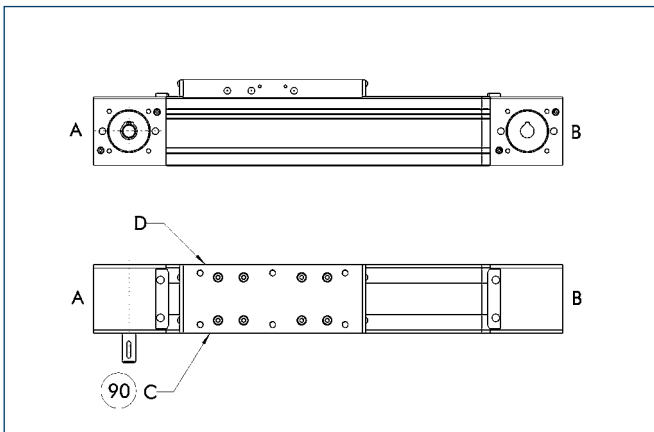


The table shows the relevant dimension **C** of the standard couplings.  
For dimension A refer to drive journal connection dimensions, for dimension B refer to corresponding motor dimension sheet, dimension L may differ in individual cases.

Different drive solutions can be attached to our axes.  
SCHUNK can supply you with the right motor flange and coupling for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

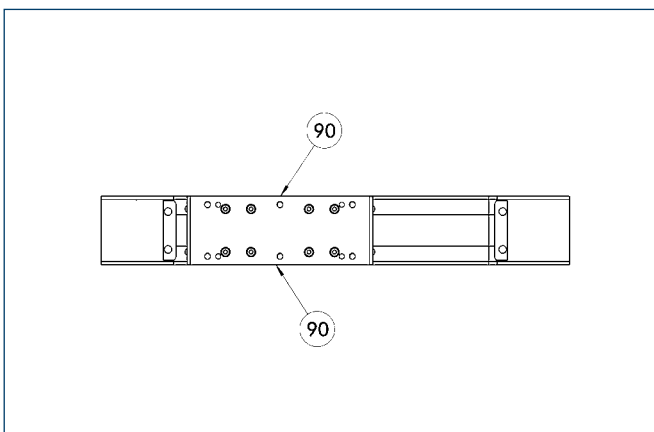
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



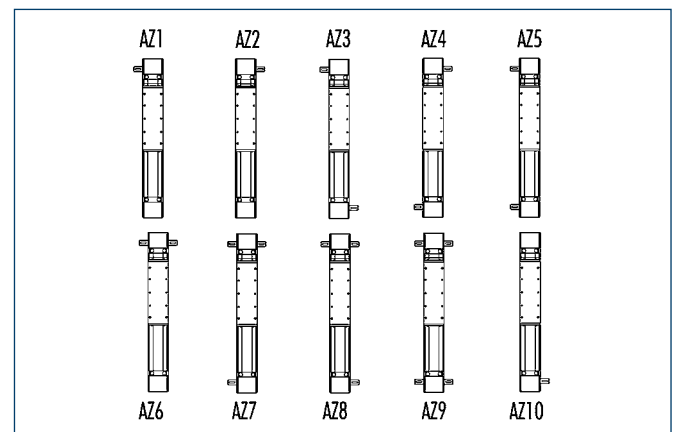
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

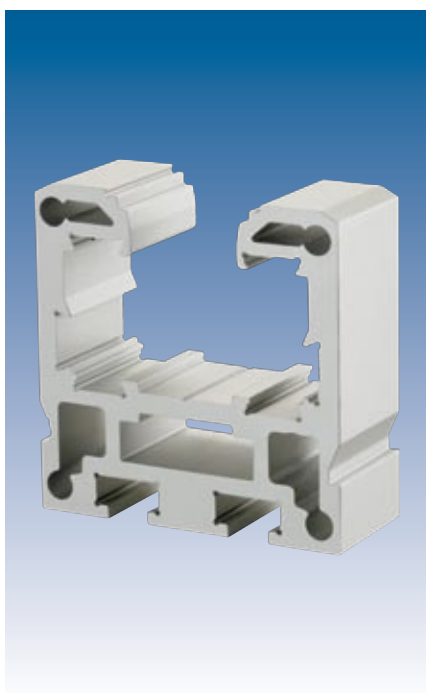
If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.



### Advantages of roller guide

#### High maximum moments

due to optimum force transmission to the profile

#### Long stroke lengths

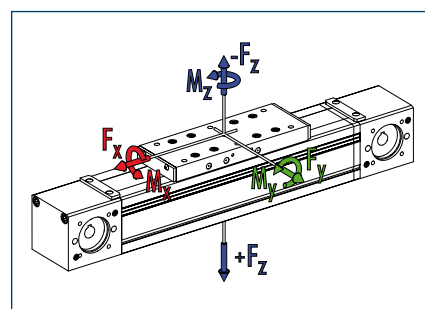
can be achieved with no problems

#### Life-time lubricated rollers

for easy maintenance use

#### Smooth, low-noise running

### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	700
<span style="color: green;">■</span> $F_y$	[N]	300
<span style="color: blue;">■</span> $F_z$	[N]	600
<span style="color: blue;">■</span> $-F_z$	[N]	400
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	30
<span style="color: green;">■</span> $M_y$	[Nm]	50 (65)
<span style="color: blue;">■</span> $M_z$	[Nm]	50 (65)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	12.7

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 50C-ZRS
Max. travel speed	[m/s]	3
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	30
Idle torque	[Nm]	0.4
<b>Drive</b>		
Drive element	Toothed belt	20 AT 5-E
Travel per revolution	[mm]	110
Maximum stroke	[mm]	7710
Max. total length	[mm]	8000
Moment of inertia	[kgm <sup>2</sup> ]	0.0003
<b>Weights</b>		
Basic without travel	[kg]	1.45
Travel per 100 mm	[kg]	0.35
Slide plate 150 mm	[kg]	0.45
Slide plate 200 mm	[kg]	0.6

- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts
- ㉑ Bolt pitch circle

Technical drawing of a mechanical part, showing front and top views.

**Front View:**

- Total width:  $340 + H$
- Central section width: 200
- Left flange width: 70
- Feature 9 is indicated in a circle.

**Top View:**

- Total length: 170
- Central section length:  $150 \pm 0.02$
- Right flange length: 170
- Internal feature length: 114

- ⑨ Useful stroke

22

Ø12 h6

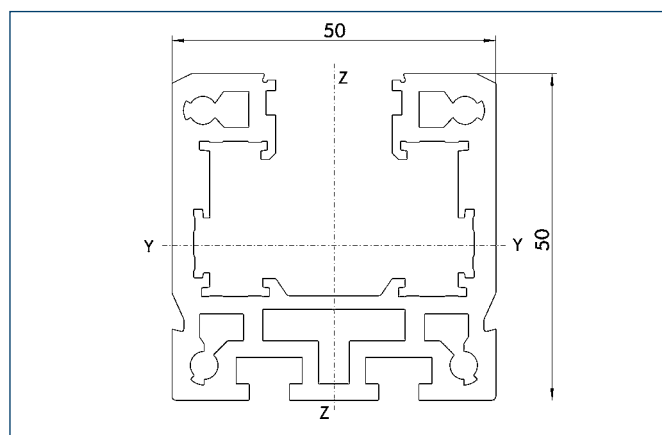
DIN 6885/1  
4x4x14

8

- ⑧ Feather key

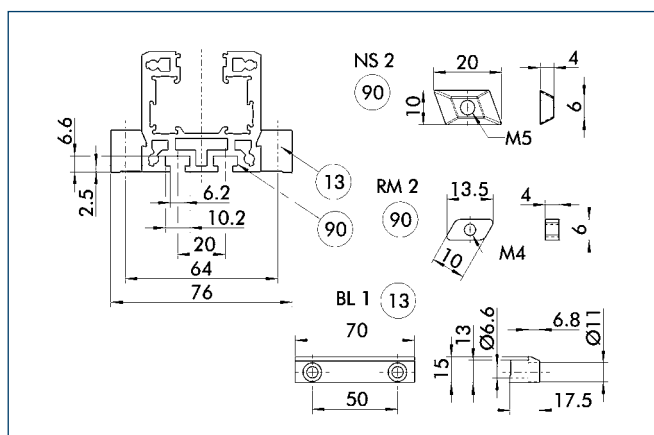


### Profile ZRS



Specific mass	[kg/m]	2.45
Planar dimension	[mm <sup>2</sup> ]	908
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	236683
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	295187
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	8622
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	11804

### Mounting



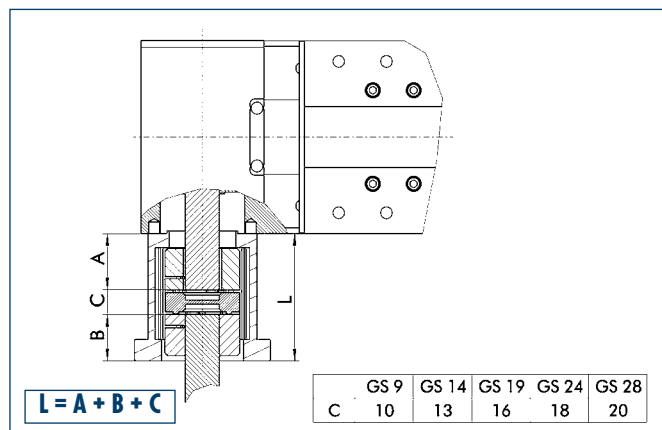
⑬ Mounting strip

⑨ T-nut on base side

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS2	0331405
T-nut	RM2	0331425
Mounting strip	BL1	0331400

### Motor flange schematic diagram

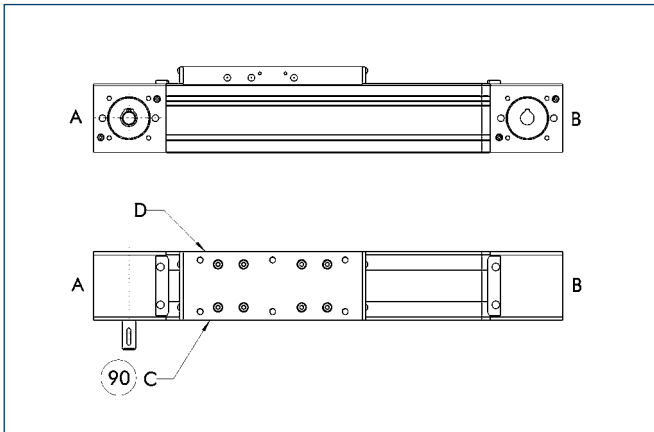


The table shows the relevant dimension **C** of the standard couplings.  
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.  
SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

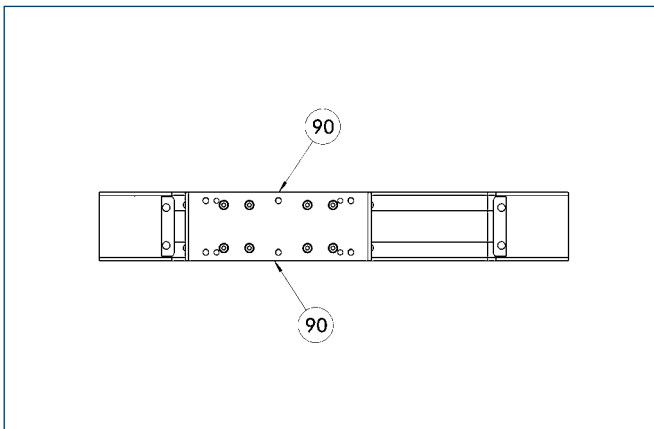
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



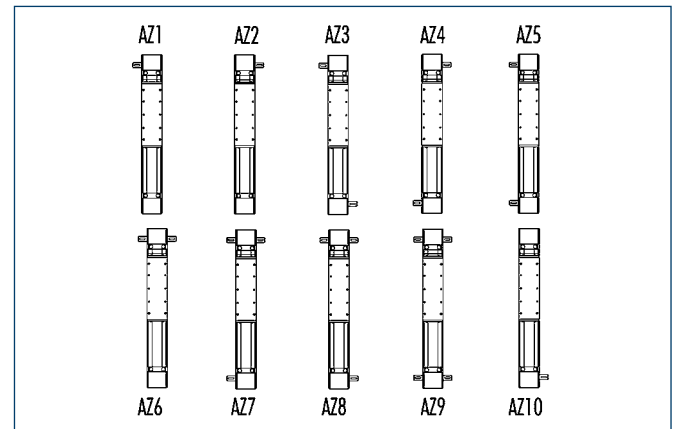
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

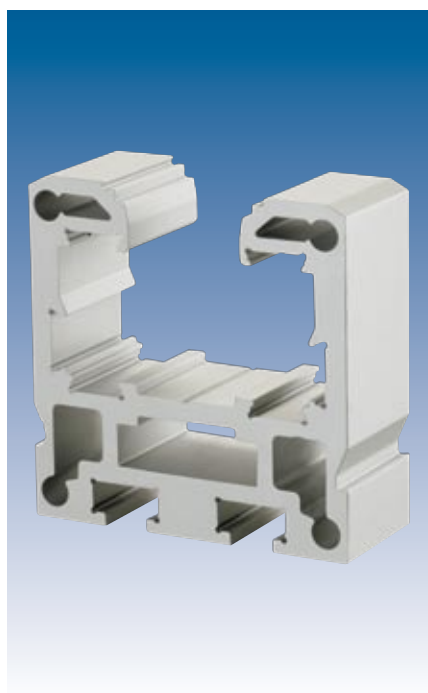
If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.



### Advantages of roller guide

#### High maximum moments

due to optimum force transmission to the profile

#### Long stroke lengths

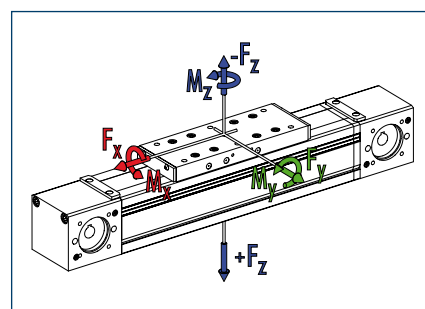
can be achieved with no problems

#### Life-time lubricated rollers

for easy maintenance use

#### Smooth, low-noise running

### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	700
<span style="color: green;">■</span> $F_y$	[N]	300
<span style="color: blue;">■</span> $F_z$	[N]	600
<span style="color: blue;">■</span> $-F_z$	[N]	400
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	30
<span style="color: green;">■</span> $M_y$	[Nm]	50
<span style="color: blue;">■</span> $M_z$	[Nm]	50
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	13.8

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

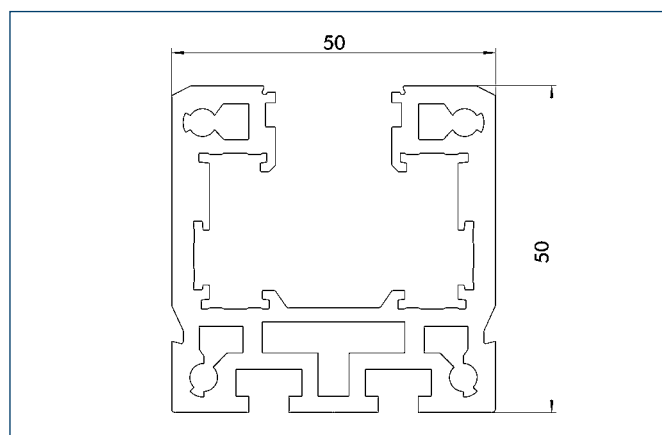
Designation		B 50C-ARS
Max. travel speed	[m/s]	3
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	30
Idle torque	[Nm]	1.5
<b>Drive</b>		
Drive element	Toothed belt	20 AT 5-E
Travel per revolution	[mm]	110
Maximum stroke	[mm]	7710
Max. total length	[mm]	8000
Moment of inertia	[kgm <sup>2</sup> ]	0.0003
<b>Weights</b>		
Basic without travel	[kg]	2.5
Travel per 100 mm	[kg]	0.3
Slide drive 140 mm	[kg]	1.25

- ① Linear unit connection
- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts
- ㉔ Bolt pitch circle

Technical drawing of a bracket. The bracket has a vertical plate with two circular holes. The distance between the centers of these holes is 22. The bracket is shown with a DIN 6885/1 4x4x14 insert. The hole has a diameter of  $\varnothing 12 h6$ .

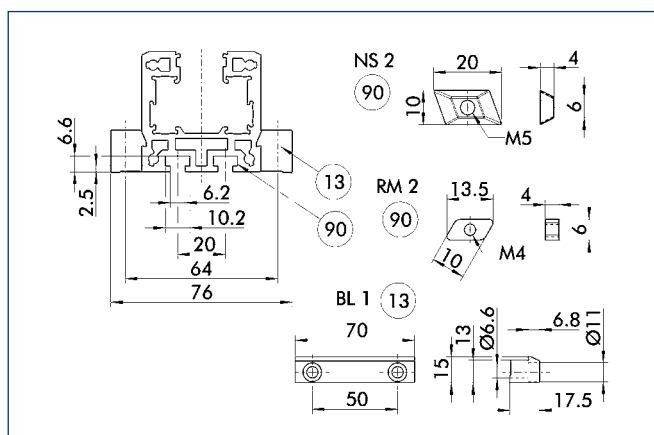
- ⑧ Feather key

### Profile ARS



Specific mass	[kg/m]	2.45
Planar dimension	[mm <sup>2</sup> ]	908
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	236683
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	295187
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	8622
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	11804

### Mounting



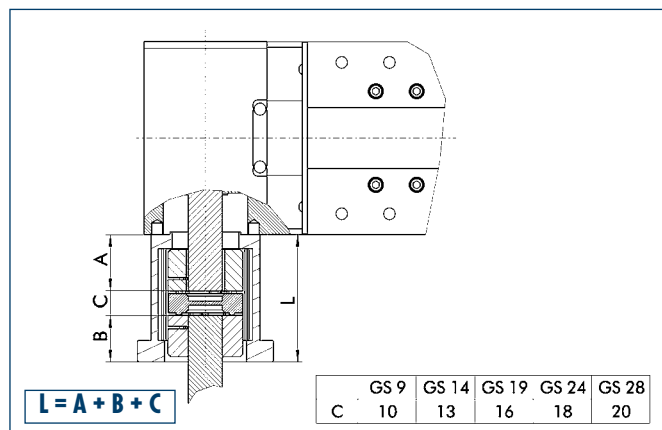
⑬ Mounting strip

⑨ T-nut on base side

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS2	0331405
T-nut	RM2	0331425
Mounting strip	BL1	0331400

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

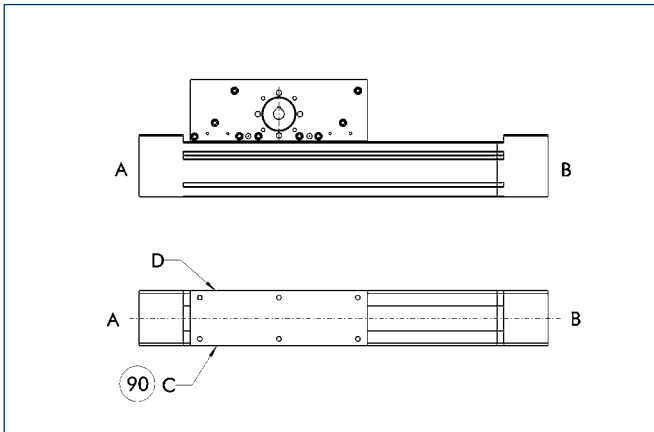
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

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① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

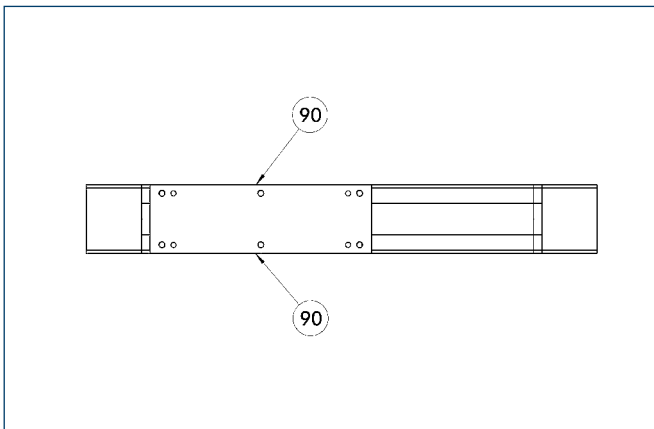
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



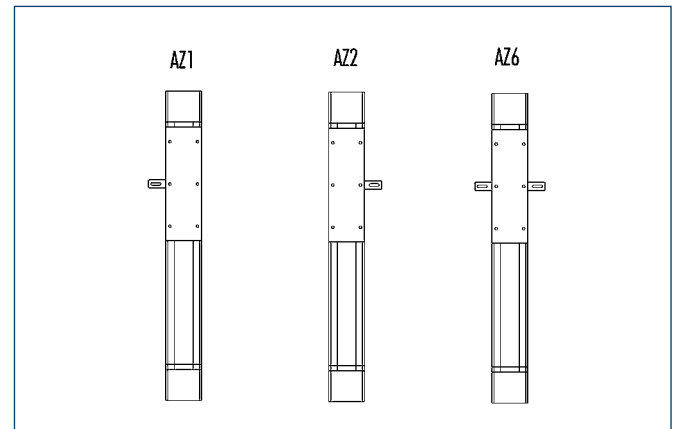
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.

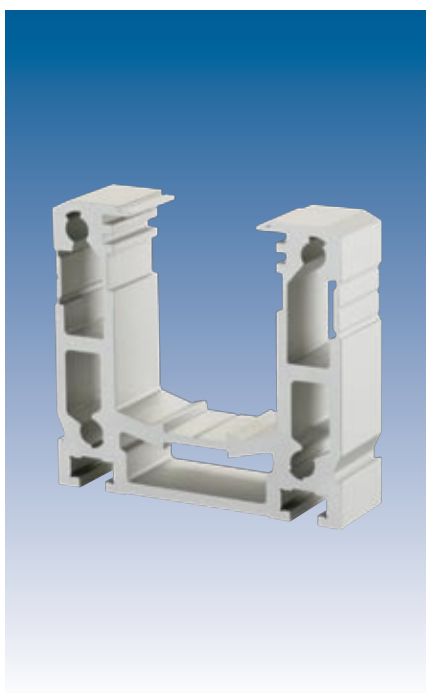


### Advantages of profiled rail guide

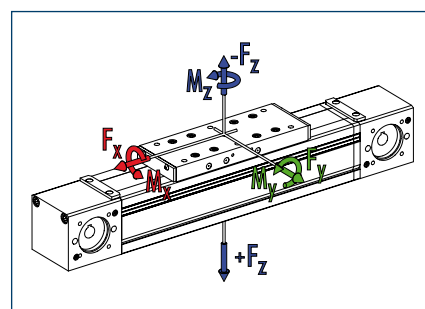
High load bearing capacity

Long lifetime

High precision



### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	850
<span style="color: green;">■</span> $F_y$	[N]	500
<span style="color: blue;">■</span> $F_z$	[N]	1400
<span style="color: blue;">■</span> $-F_z$	[N]	800
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	50
<span style="color: green;">■</span> $M_y$	[Nm]	160 (200)
<span style="color: blue;">■</span> $M_z$	[Nm]	160 (200)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	22.7

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 60-ZSS
Max. travel speed	[m/s]	5
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	30
Idle torque	[Nm]	1.1
Drive		
Drive element	Toothed belt	25 AT 5-E
Travel per revolution	[mm]	160
Maximum stroke	[mm]	7620
Max. total length	[mm]	8000
Moment of inertia	[kgm <sup>2</sup> ]	0.0002
Weights		
Basic without travel	[kg]	4.55
Travel per 100 mm	[kg]	0.59
Slide plate 190 mm	[kg]	1.22
Slide plate 230 mm	[kg]	1.72

[illegible]

- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts

[illegible]

⑨ Useful stroke

34

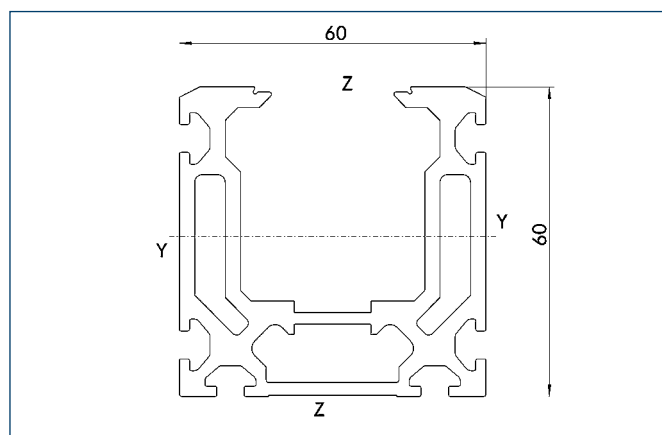
DIN 6885/1  
5x5x20

Ø 14 h6

8

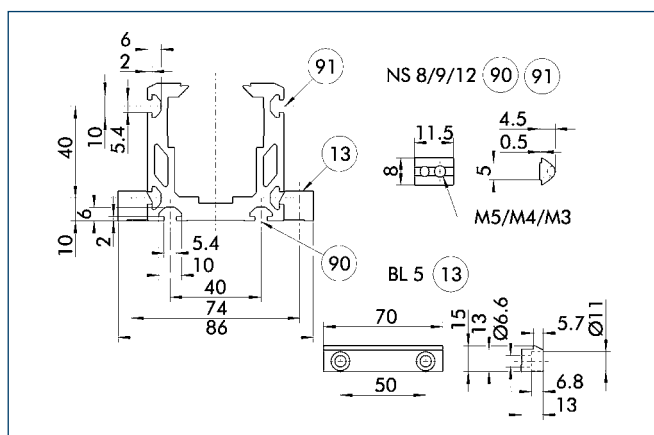
⑧ Feather key

## Profile ZSS



Specific mass	[kg/m]	3.02
Planar dimension	[mm <sup>2</sup> ]	1117
Planar moment of inertia $I_y$	[mm <sup>4</sup> ]	400283
Planar moment of inertia $I_z$	[mm <sup>4</sup> ]	521983
Load torque $W_y$	[mm <sup>3</sup> ]	11929
Load torque $W_z$	[mm <sup>3</sup> ]	17380

## Mounting

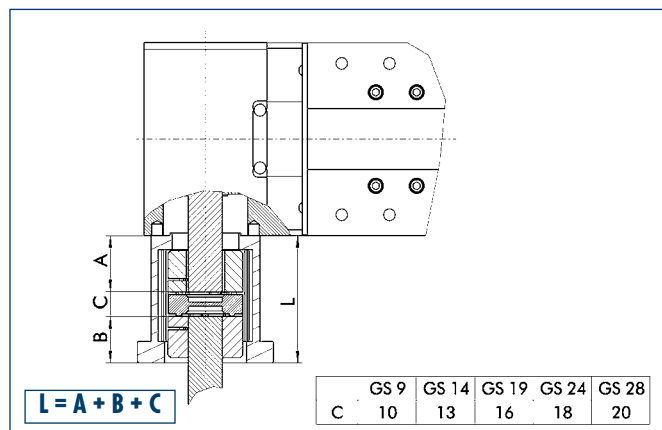


- (13) Mounting strip
- (90) T-nut on base side  
(91) Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS8	0331420
T-nut	NS9	0331421
T-nut	NS12	0331424
Mounting strip	BL5	0331419

## Motor flange schematic diagram

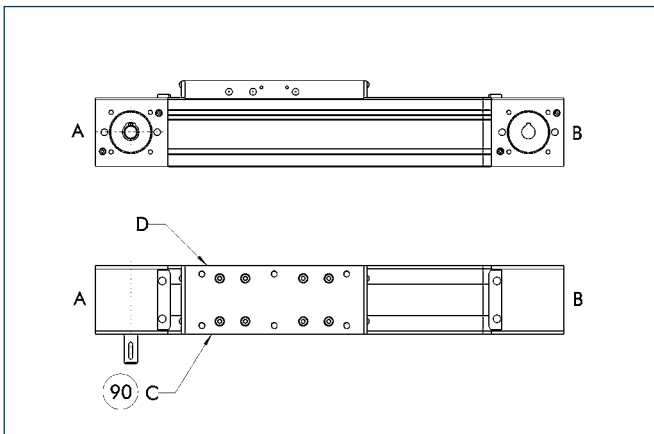


The table shows the relevant dimension **C** of the standard couplings.  
For dimension A refer to drive journal connection dimensions, for dimension B refer to corresponding motor dimension sheet, dimension L may differ in individual cases.

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### Limit switch position



90 Limit switch standard position

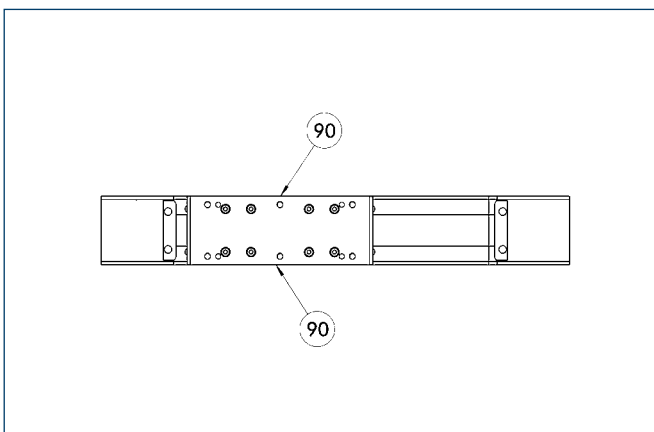
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

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### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



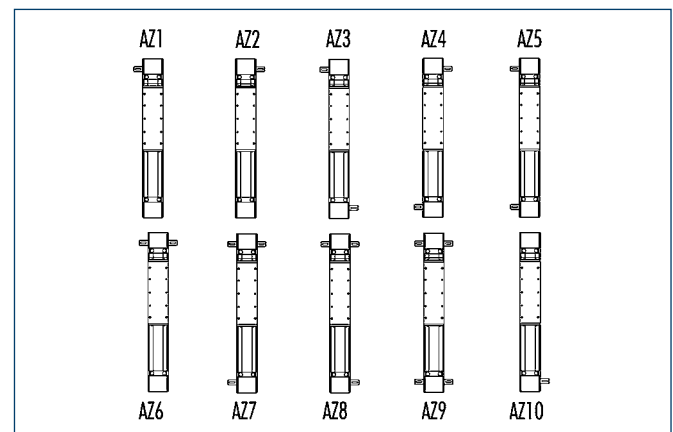
90 Standard lubrication connection

#### Standard connection

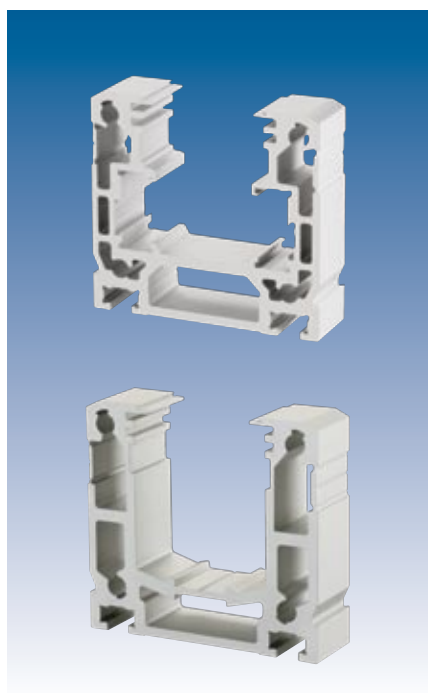
Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.



### Advantages of roller guide

**High maximum moments**  
due to optimum force transmission to the profile

**Long stroke lengths**  
can be achieved with no problems

**Life-time lubricated rollers**  
for easy maintenance use

**Smooth, low-noise running**

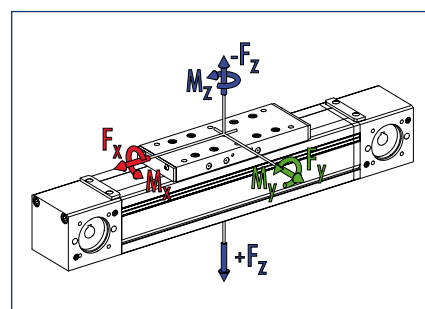
### Advantages of profiled rail guide

**High load bearing capacity**

**Long lifetime**

**High precision**

### Loads and load torques



Load		ZRS dynamic	ZSS dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	1100	1100
<span style="color: green;">■</span> $F_y$	[N]	300	600
<span style="color: blue;">■</span> $F_z$	[N]	1000	1800
<span style="color: blue;">■</span> $-F_z$	[N]	400	1200
Load torques		ZRS dynamic	ZSS dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	35	60
<span style="color: green;">■</span> $M_y$	[Nm]	120 (150)	180 (230)
<span style="color: blue;">■</span> $M_z$	[Nm]	50 (60)	120 (150)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	31.8	31.8

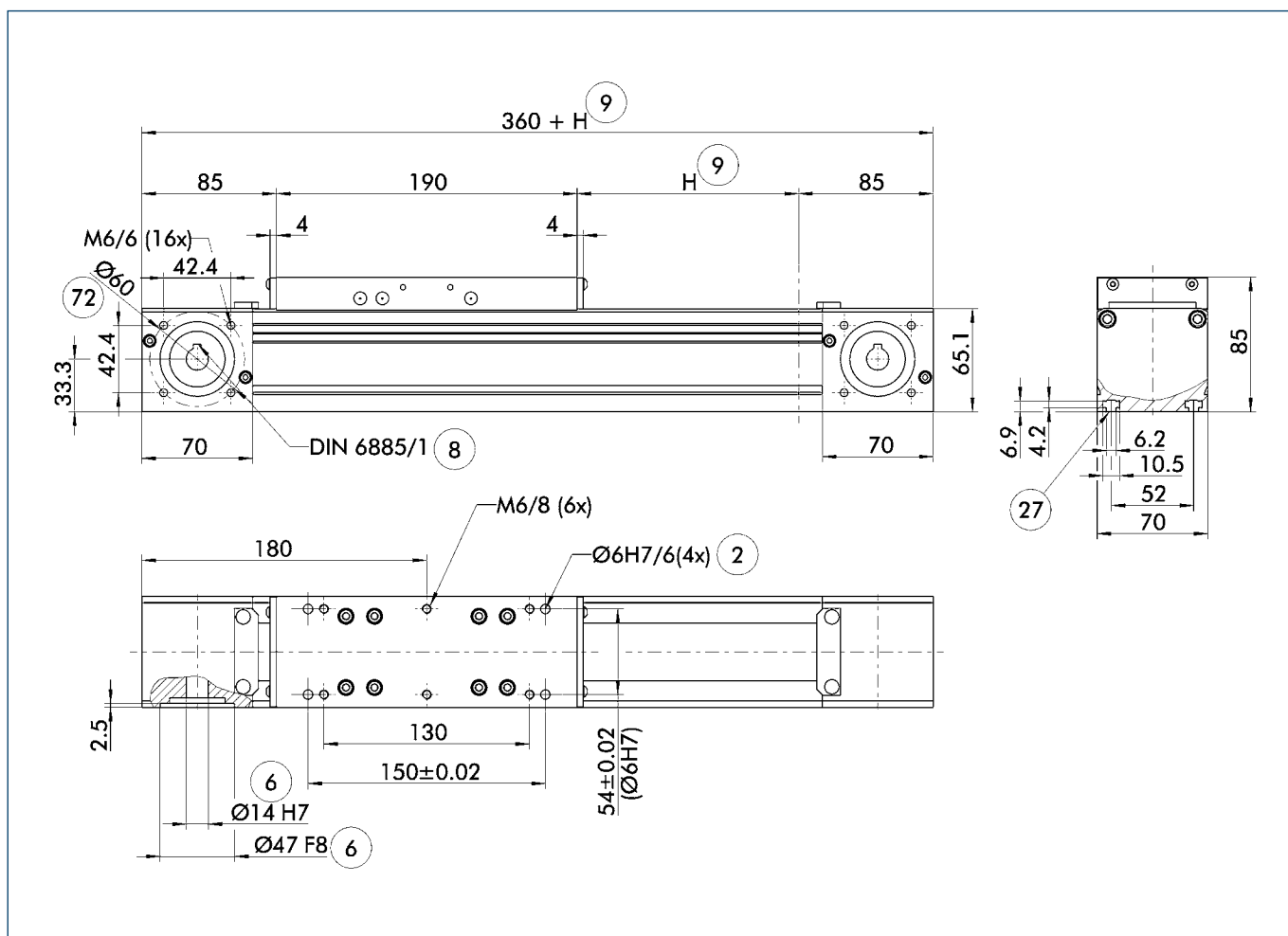
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

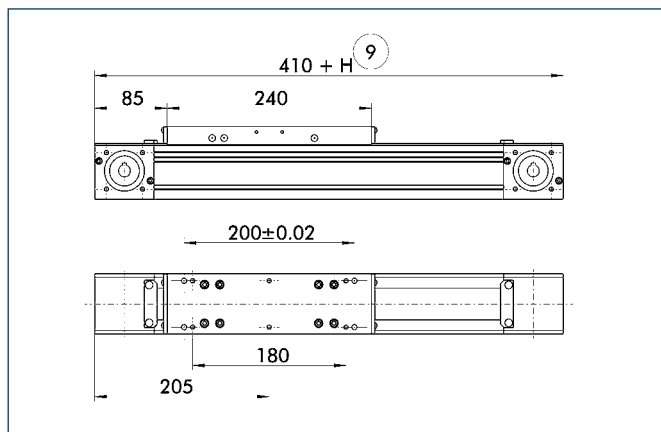
Designation		B 70C-ZRS	B 70C-ZSS
Max. travel speed	[m/s]	8	5
Repeat accuracy	[mm]	± 0.08	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	30	30
Idle torque	[Nm]	1.2	1.2
<b>Drive</b>			
Drive element	Toothed belt	32 AT 5-E	32 AT 5-E
Travel per revolution	[mm]	175	175
Maximum stroke	[mm]	7640	6840
Max. total length	[mm]	8000	7200
Moment of inertia	[kgm <sup>2</sup> ]	0.0004	0.0002
<b>Weights</b>			
Basic without travel	[kg]	3.1	3.4
Travel per 100 mm	[kg]	0.59	0.38
Slide plate 190 mm	[kg]	1.3	1.65
Slide plate 240 mm	[kg]	1.65	2.1

### Main views



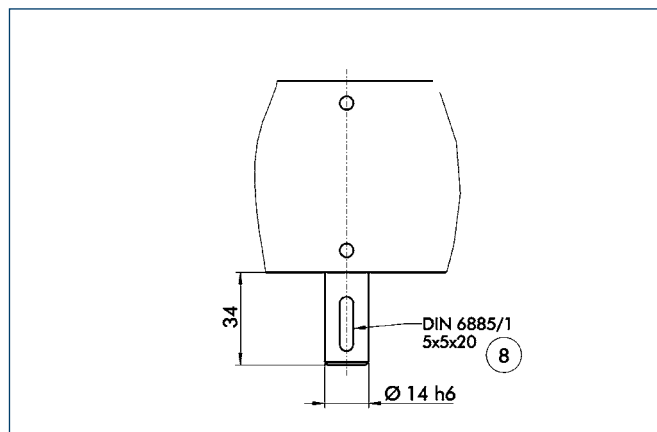
- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ②⑦ Mounting groove for T-nuts
- ⑦② Bolt pitch circle

### Long slide



- ⑨ Useful stroke

### Drive journal connection dimensions

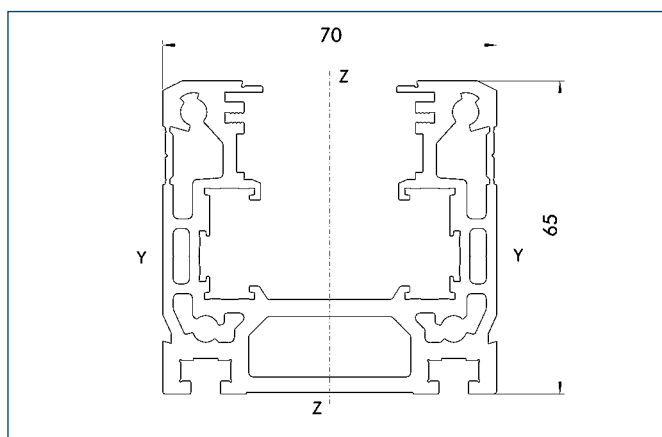


- ⑧ Feather key



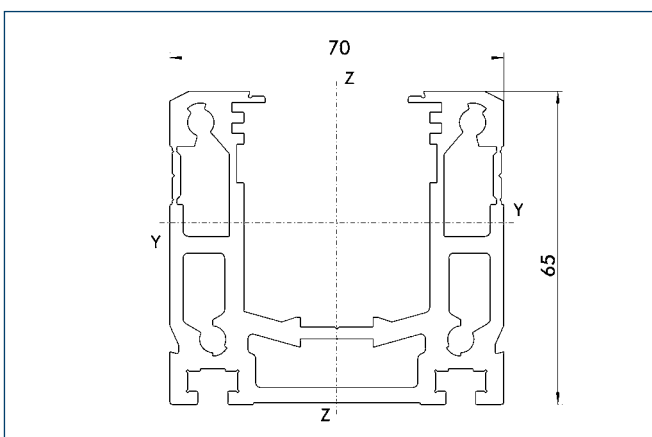
## Linear Axes • Toothed-belt Drive

## Profile ZRS



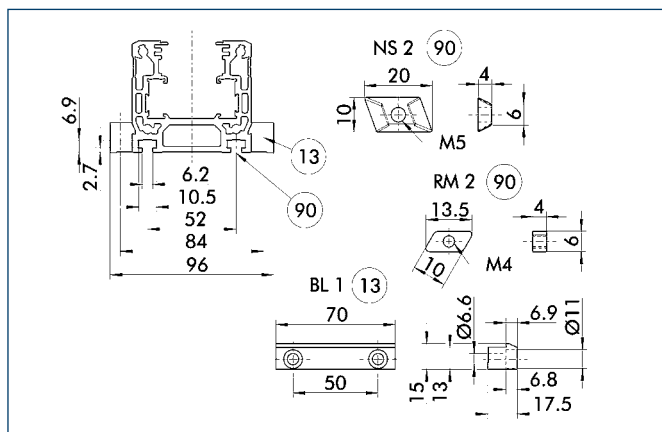
Specific mass	[kg/m]	3.7
Planar dimension	[mm <sup>2</sup> ]	1370
Planar moment of inertia $I_y$	[mm <sup>4</sup> ]	585283
Planar moment of inertia $I_z$	[mm <sup>4</sup> ]	854713
Load torque $W_y$	[mm <sup>3</sup> ]	15835
Load torque $W_z$	[mm <sup>3</sup> ]	24410

## Profile ZSS



Specific mass	[kg/m]	3.7
Planar dimension	[mm <sup>2</sup> ]	1370
Planar moment of inertia $I_y$	[mm <sup>4</sup> ]	563059
Planar moment of inertia $I_z$	[mm <sup>4</sup> ]	852507
Load torque $W_y$	[mm <sup>3</sup> ]	14743
Load torque $W_z$	[mm <sup>3</sup> ]	24335

## Mounting

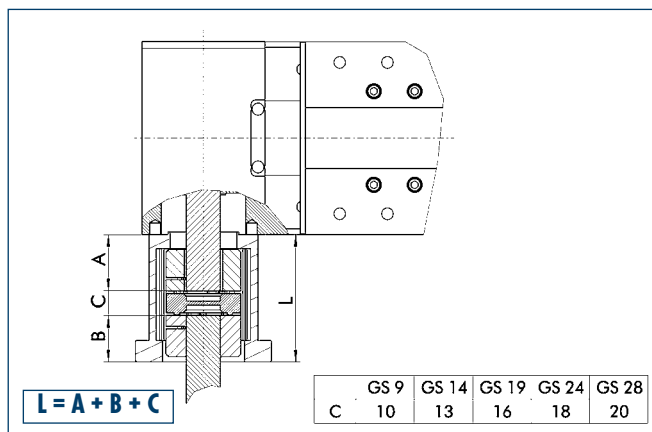


- ⑬ Mounting strip

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS2	0331405
T-nut	RM2	0331425
Mounting strip	BL1	0331400

## Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

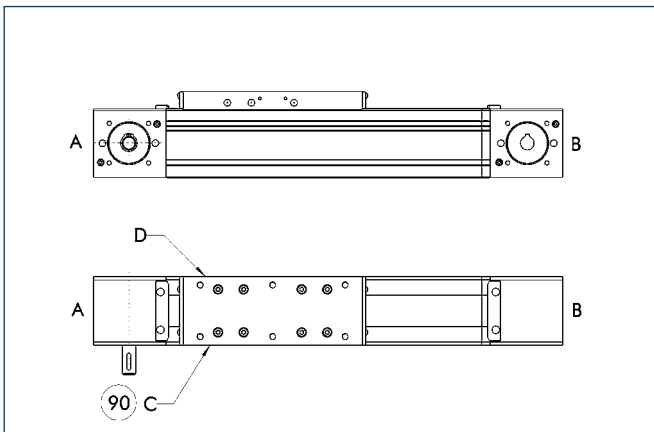
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### Limit switch position



90 Limit switch standard position

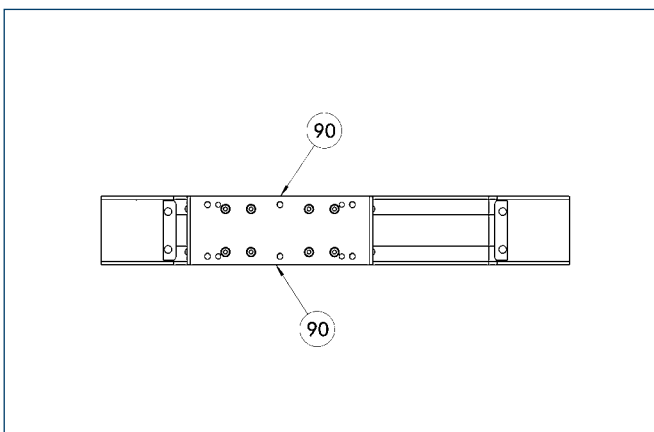
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

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### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



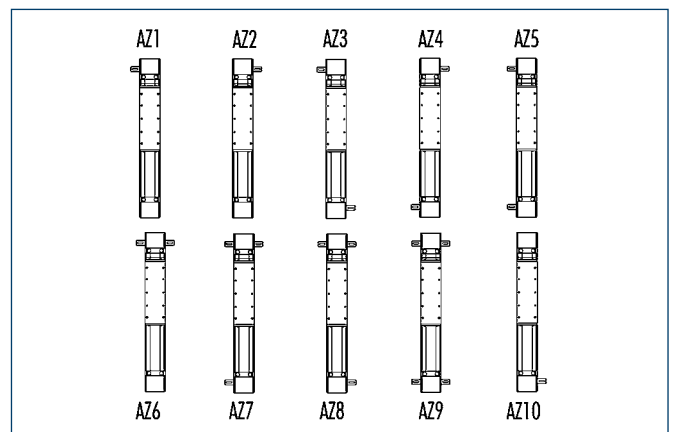
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

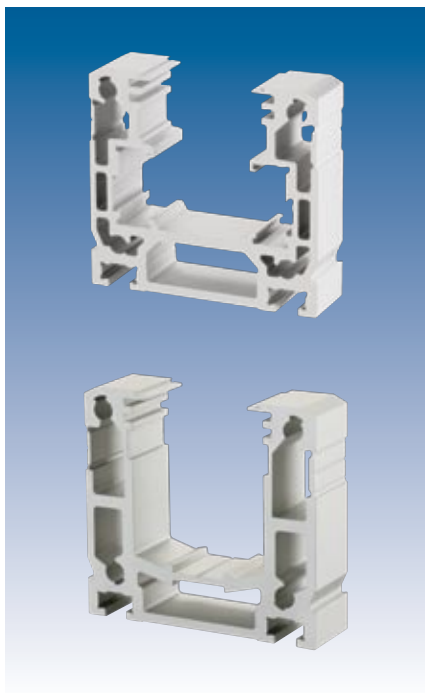
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**Long stroke lengths**  
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**Life-time lubricated rollers**  
for easy maintenance use

**Smooth, low-noise running**

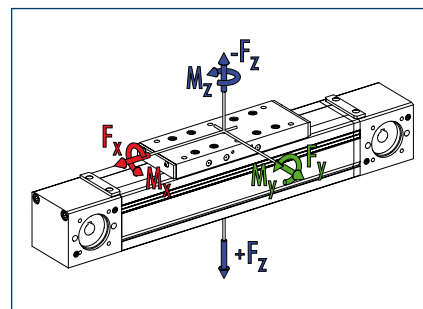
### Advantages of profiled rail guide

**High load bearing capacity**

**Long lifetime**

**High precision**

### Loads and load torques



Load		ARS dynamic	ASS dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	900	900
<span style="color: green;">■</span> $F_y$	[N]	300	600
<span style="color: blue;">■</span> $F_z$	[N]	1000	1800
<span style="color: blue;">■</span> $-F_z$	[N]	400	1200
Load torques		ARS dynamic	ASS dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	35	60
<span style="color: green;">■</span> $M_y$	[Nm]	120	180
<span style="color: blue;">■</span> $M_z$	[Nm]	50	120
<span style="color: blue;">■</span> $M_{zmax}$	[Nm]	32.5	32.5

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

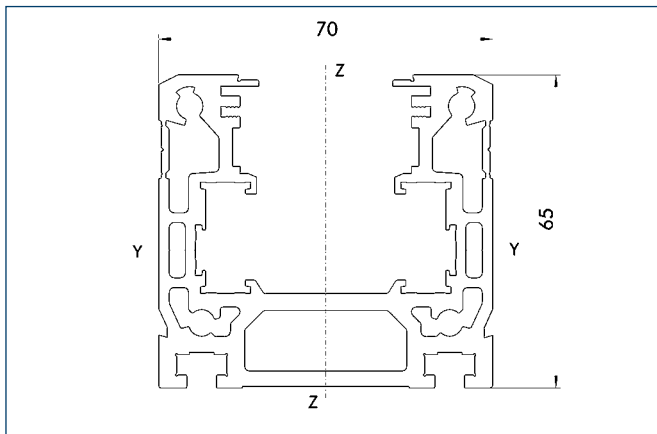
### Technical data

Designation		B 70C-ARS	B 70C-ASS
Max. travel speed	[m/s]	5	5
Repeat accuracy	[mm]	± 0.08	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	30	30
Idle torque	[Nm]	1	1
<b>Drive</b>			
Drive element	Toothed belt	32 AT 5-E	32 AT 5-E
Travel per revolution	[mm]	220	220
Maximum stroke	[mm]	7640	7640
Max. total length	[mm]	8000	8000
Moment of inertia	[kgm <sup>2</sup> ]	0.0061	0.0061
<b>Weights</b>			
Basic without travel	[kg]	7.5	7.9
Travel per 100 mm	[kg]	0.38	0.60
Slide drive 220 mm	[kg]	5.0	5.5

- ① Linear unit connection
- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts
- ㉔ Bolt pitch circle

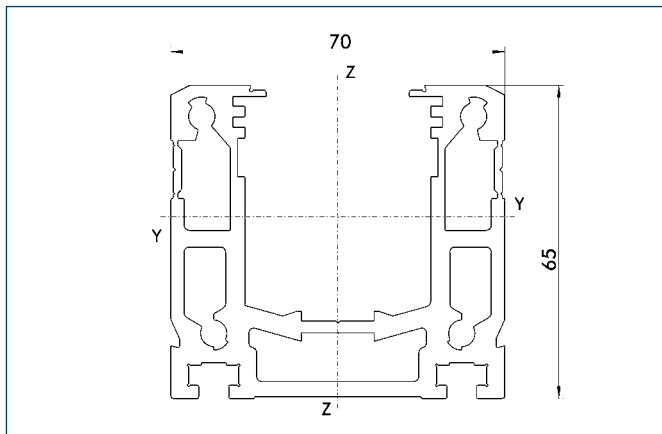
- ⑧ Feather key

### Profile ARS



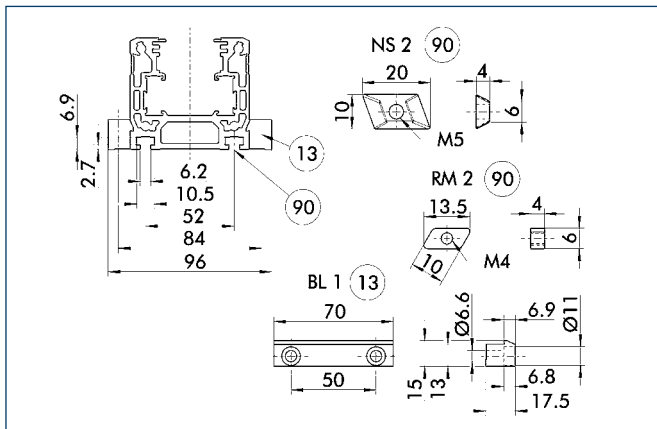
Specific mass	[kg/m]	3.7
Planar dimension	[mm <sup>2</sup> ]	1370
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	585283
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	854713
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	15835
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	24410

### Profile ASS



Specific mass	[kg/m]	3.7
Planar dimension	[mm <sup>2</sup> ]	1370
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	563059
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	852507
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	14743
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	24335

### Mounting



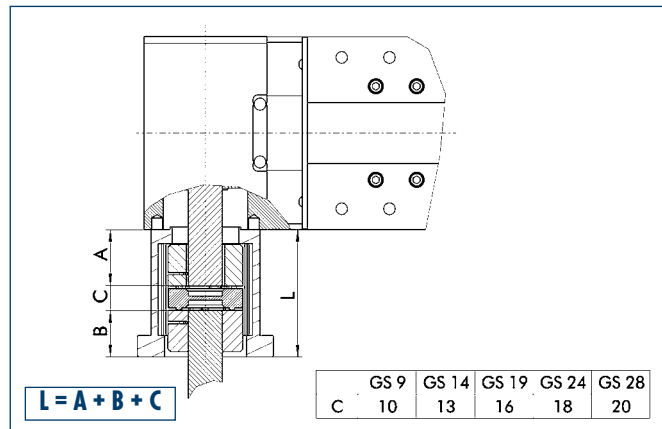
13 Mounting strip

90 T-nut on base side

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS2	0331405
T-nut	RM2	0331425
Mounting strip	BL1	0331400

### Motor flange schematic diagram



$$L = A + B + C$$

The table shows the relevant dimension **C** of the standard couplings.

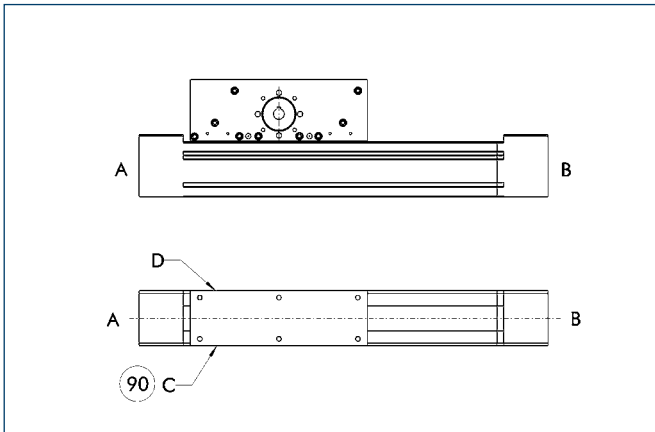
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

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① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

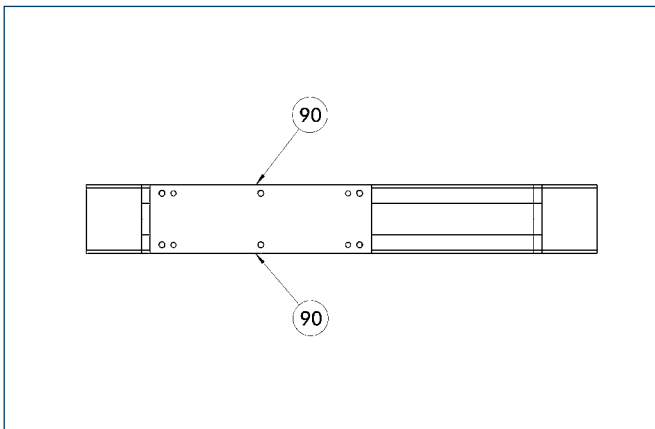
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



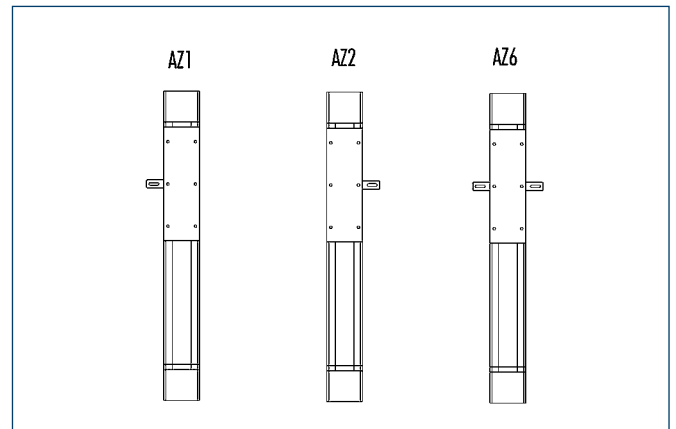
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

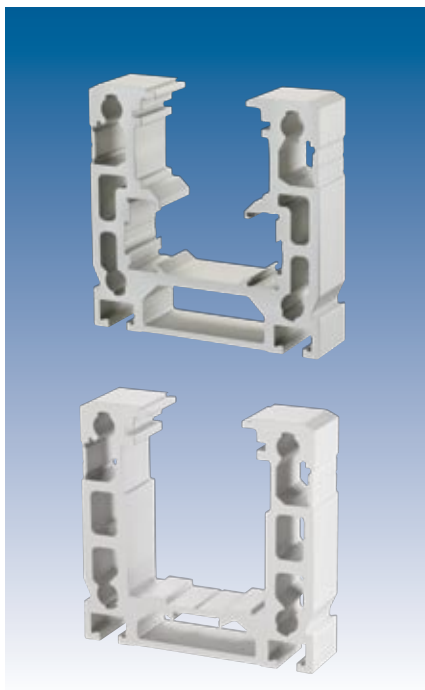
If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.





### Advantages of roller guide

**High maximum moments**  
due to optimum force transmission to the profile

**Long stroke lengths**  
can be achieved with no problems

**Life-time lubricated rollers**  
for easy maintenance use

**Smooth, low-noise running**

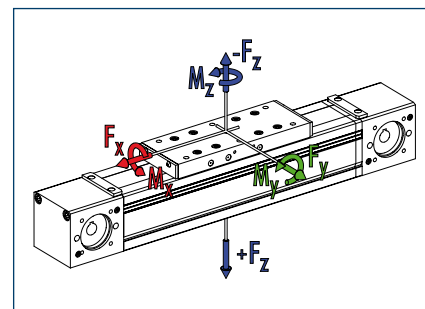
### Advantages of profiled rail guide

**High load bearing capacity**

**Long lifetime**

**High precision**

### Loads and load torques



Load		ZRS dynamic	ZSS dynamic
$F_x^{**}$	[N]	1350	1350
$F_y$	[N]	500	800
$F_z$	[N]	1500	3000
$-F_z$	[N]	800	2000
Load torques		ZRS dynamic	ZSS dynamic
$M_x$	[Nm]	50	100
$M_y$	[Nm]	180 (220)	250 (300)
$M_z$	[Nm]	100 (130)	250 (300)
$M_{z_{max}}$	[Nm]	48.8	48.8

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 80-ZRS	B 80-ZSS
Max. travel speed	[m/s]	8	5
Repeat accuracy	[mm]	0.08	0.08
Max. acceleration	[m/s <sup>2</sup> ]	40	40
Idle torque	[Nm]	1.5	1.5
<b>Drive</b>			
Drive element	Toothed belt	32 AT 5-E	32 AT 5-E
Travel per revolution	[mm]	220	220
Maximum stroke	[mm]	7600	7600
Max. total length	[mm]	8000	8000
Moment of inertia	[kgm <sup>2</sup> ]	0.0033	0.003
<b>Weights</b>			
Basic without travel	[kg]	5.5	6.1
Travel per 100 mm	[kg]	0.6	0.85
Slide plate 210 mm	[kg]	2.1	1.8
Slide plate 270 mm	[kg]	2.7	2.3

Technical drawing of a mechanical assembly, likely a linear actuator or motor, showing front, side, and detail views. The drawing includes dimensions and callouts for various components.

**Front View Dimensions:**

- Overall length:  $400 + H + 20$
- End flange diameter:  $\varnothing 65$
- End flange thickness: 46
- End flange mounting holes: M6/10 (16x)
- End flange mounting holes diameter:  $\varnothing 8H7/8.5$  (8x)
- End flange mounting holes position: 95 + 10
- End flange mounting holes diameter: 9
- End flange mounting holes position: 90
- End flange mounting holes diameter: 9
- End flange mounting holes position: 90
- End flange mounting holes diameter: 9
- End flange mounting holes position: 90

**Side View Dimensions:**

- Overall height: 100
- Overall width: 80
- Overall depth: 62
- Overall width: 12.2
- Overall depth: 9.5
- Overall width: 6
- Overall depth: 27

**Detail View Dimensions:**

- Overall length:  $200 + 10$
- Overall width: 170
- Overall depth:  $145 \pm 0.02$
- Overall width: 60  $\pm 0.02$  ( $\varnothing 6H7$ )
- Overall depth: 4
- Overall width: 41.5
- Overall depth:  $\varnothing 50F8$  (6)
- Overall width:  $\varnothing 16H7$  (6)
- Overall depth:  $\varnothing 6H7/6$  (4x) (2)
- Overall width: M8/8 (6x)

- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts
- ㉑ Bolt pitch circle
- ㉒ Change of dimension with optional cover tape

Technical drawing of a 1000mm long ball bearing slide rail, showing two views with dimensions.

**Top View Dimensions:**

- Total length:  $460 + H + 20$
- End flange offset:  $95 + 10$
- Distance between flanges:  $270$
- Corner radius/angle:  $90^\circ$

**Side View Dimensions:**

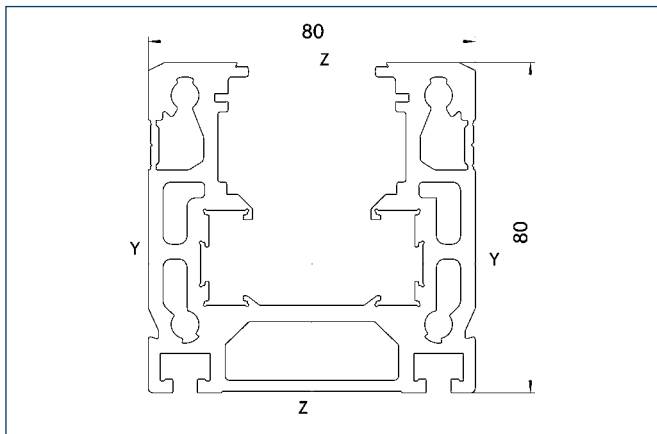
- Width:  $205 \pm 0.02$
- Total height:  $230$
- Bottom flange offset:  $220 + 10$
- Corner radius/angle:  $90^\circ$

- ⑨ Useful stroke

Technical drawing of a mounting bracket (Fig. 1) showing a side view and a front view. The side view shows a rectangular plate with a mounting flange on the right side. The front view shows a vertical plate with a central slot and a mounting flange at the bottom. Dimensions include a height of 34 mm for the main body and a diameter of Ø16 h6 for the mounting hole. A callout indicates the use of DIN 6885/1 5x5x20 screws.

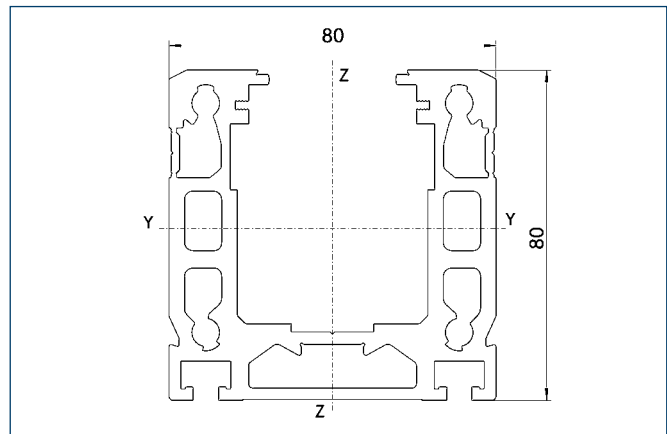
- ⑧ Feather key

### Profile ZRS



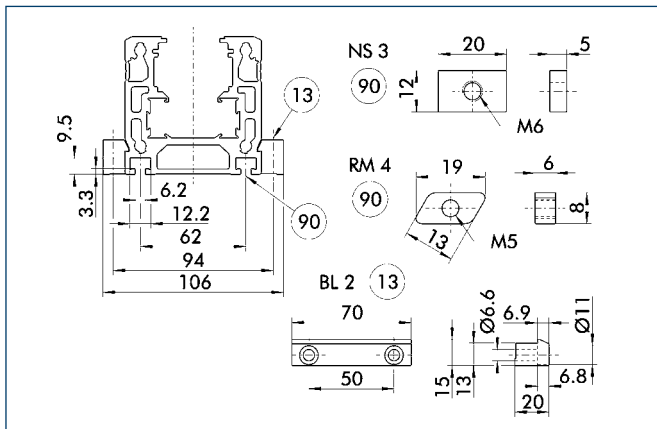
Specific mass	[kg/m]	5.64
Planar dimension	[mm <sup>2</sup> ]	2090
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	1294343
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	1732340
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	30263
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	43258

### Profile ZSS



Specific mass	[kg/m]	5.4
Planar dimension	[mm <sup>2</sup> ]	2000
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	1303940
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	1680598
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	29397
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	41895

### Mounting



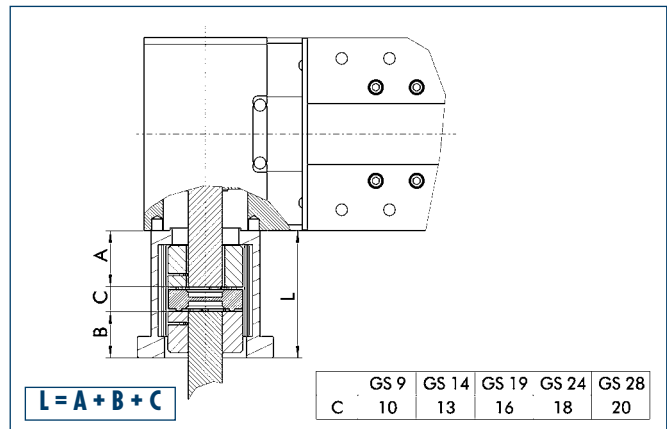
13 Mounting strip

90 T-nut on base side

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	RM4	0331426
Mounting strip	BL2	0331401

### Motor flange schematic diagram



$$L = A + B + C$$

The table shows the relevant dimension **C** of the standard couplings.

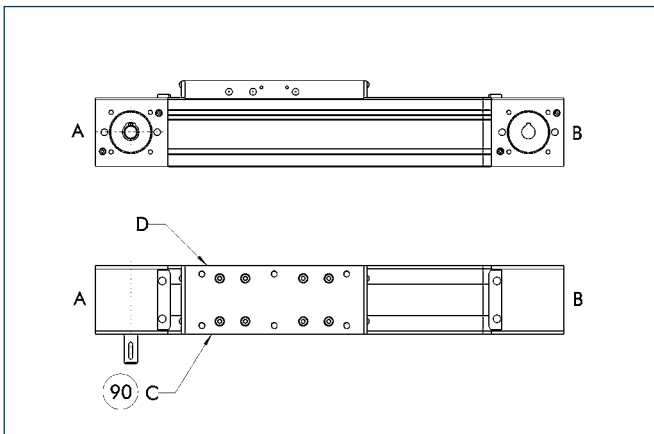
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

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### Limit switch position



90 Limit switch standard position

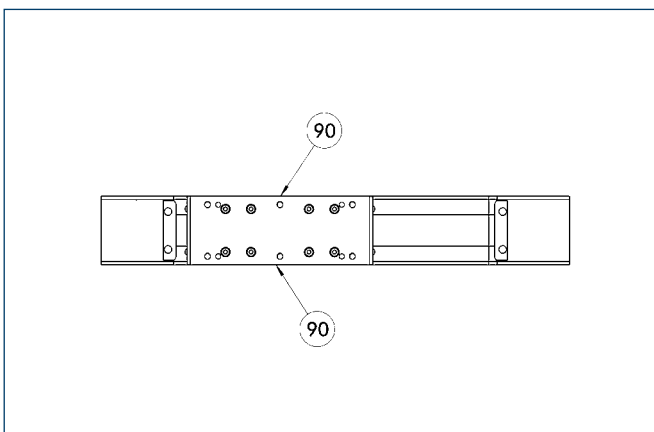
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



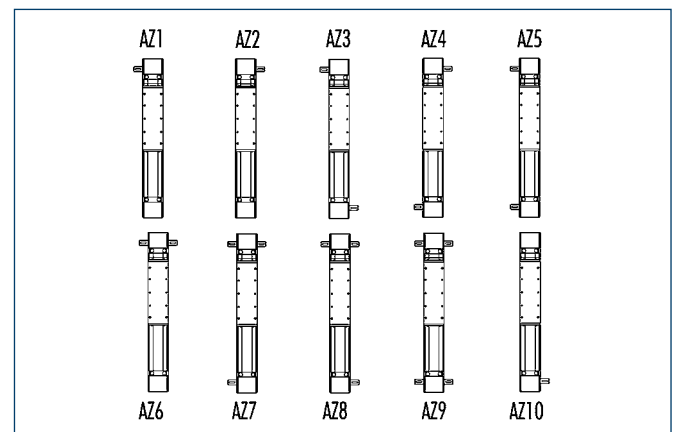
90 Standard lubrication connection

#### Standard connection

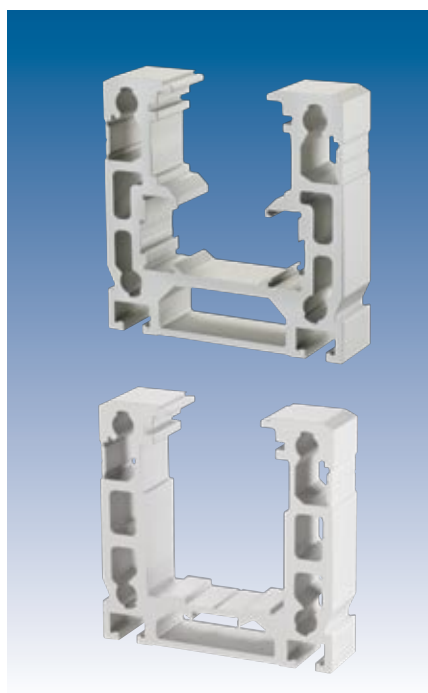
Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.



### Advantages of roller guide

**High maximum moments**  
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**Long stroke lengths**  
can be achieved with no problems

**Life-time lubricated rollers**  
for easy maintenance use

**Smooth, low-noise running**

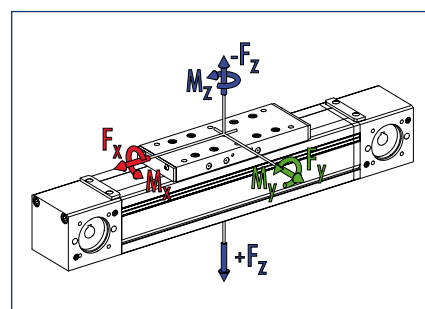
### Advantages of profiled rail guide

**High load bearing capacity**

**Long lifetime**

**High precision**

### Loads and load torques



Load		ARS dynamic	ASS dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	1000	1000
<span style="color: green;">■</span> $F_y$	[N]	500	800
<span style="color: blue;">■</span> $F_z$	[N]	1500	3000
<span style="color: blue;">■</span> $-F_z$	[N]	800	2000
Load torques		ARS dynamic	ASS dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	50	100
<span style="color: green;">■</span> $M_y$	[Nm]	180	250
<span style="color: blue;">■</span> $M_z$	[Nm]	100	250
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	36.5	36.5

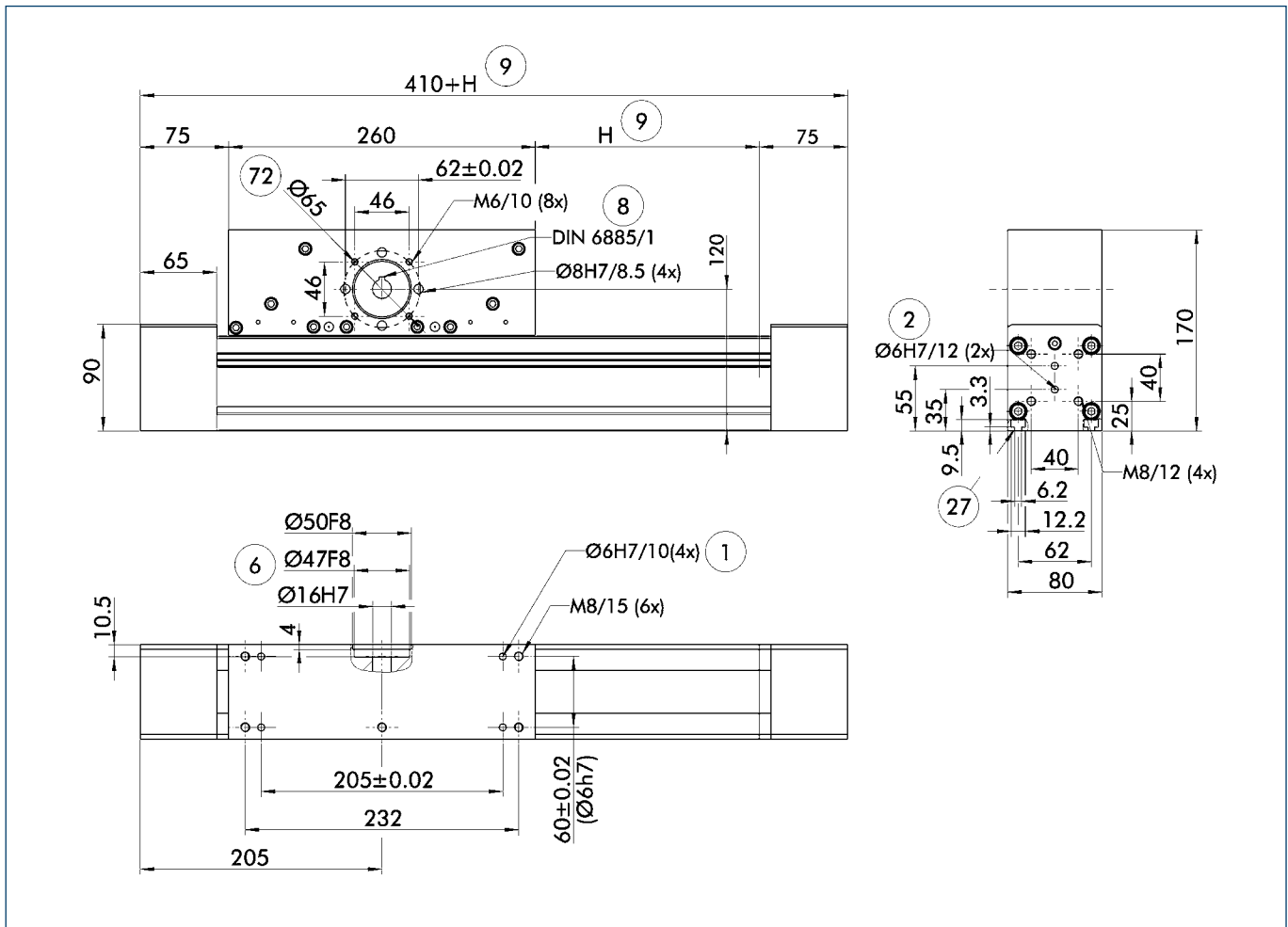
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

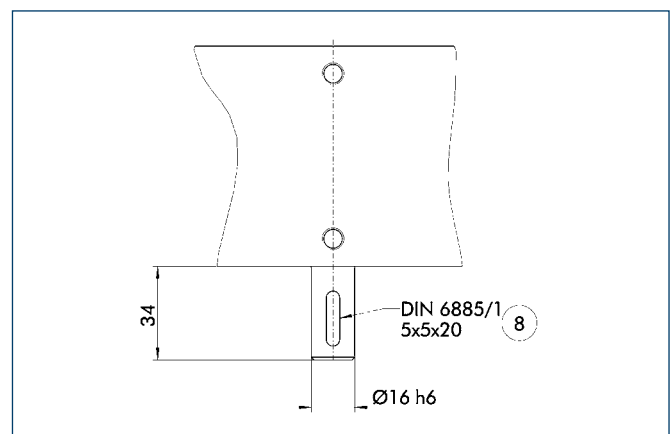
Designation		B 80-ARS	B 80-ASS
Max. travel speed	[m/s]	8	5
Repeat accuracy	[mm]	± 0.08	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	40	40
Idle torque	[Nm]	1.5	1.5
<b>Drive</b>			
Drive element	Toothed belt	32 AT 10	32 AT 10
Travel per revolution	[mm]	220	220
Maximum stroke	[mm]	7590	7590
Max. total length	[mm]	8000	8000
Moment of inertia	[kgm <sup>2</sup> ]	0.0092	0.0086
<b>Weights</b>			
Basic without travel	[kg]	10.5	11.5
Travel per 100 mm	[kg]	0.6	0.85
Slide drive 260 mm	[kg]	7.5	7.0

### Main views



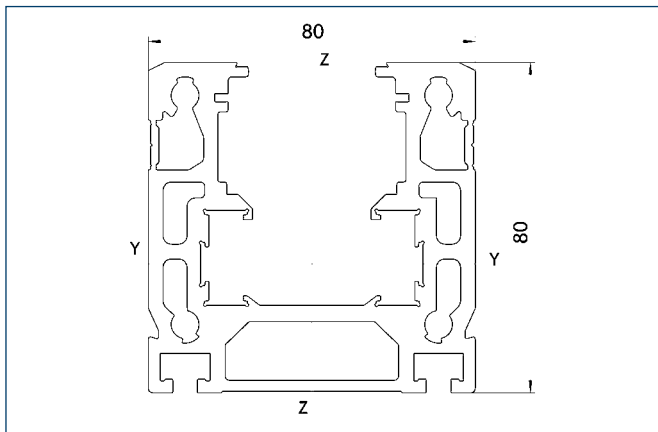
- |                          |                               |
|--------------------------|-------------------------------|
| ① Linear unit connection | ②⑦ Mounting groove for T-nuts |
| ② Assembly connection    | ⑦ Bolt pitch circle           |
| ⑥ Drive connection       |                               |
| ⑧ Feather key DIN 6885   |                               |
| ⑨ Useful stroke          |                               |

### Drive journal connection dimensions



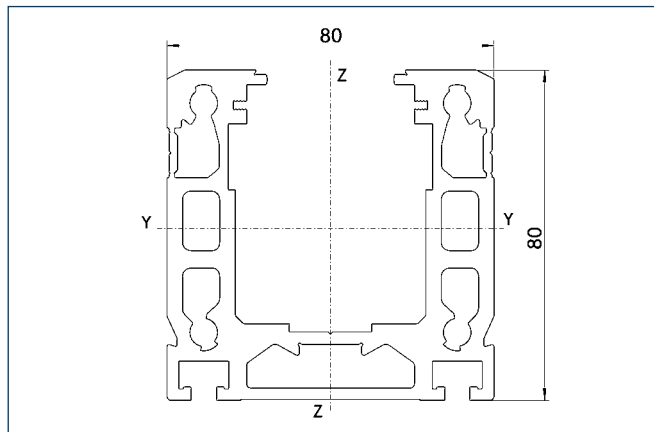
- ⑧ Feather key

### Profile ARS



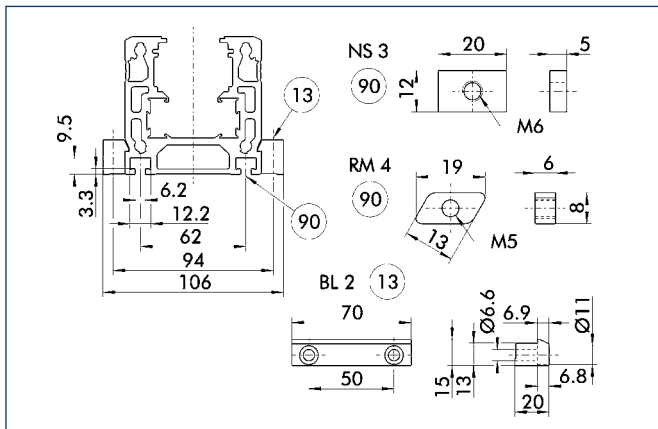
Specific mass	[kg/m]	5.64
Planar dimension	[mm <sup>2</sup> ]	2090
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	1294343
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	1732340
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	30263
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	43258

### Profile ASS



Specific mass	[kg/m]	5.4
Planar dimension	[mm <sup>2</sup> ]	2000
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	1303940
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	1680598
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	29397
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	41895

### Mounting



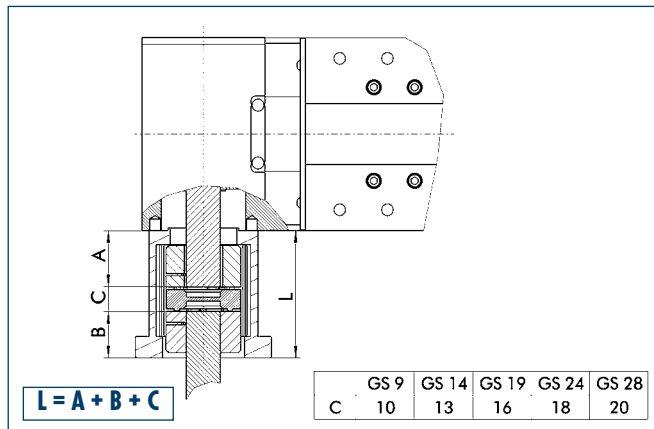
13 Mounting strip

90 T-nut on base side

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	RM4	0331426
Mounting strip	BL2	0331401

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

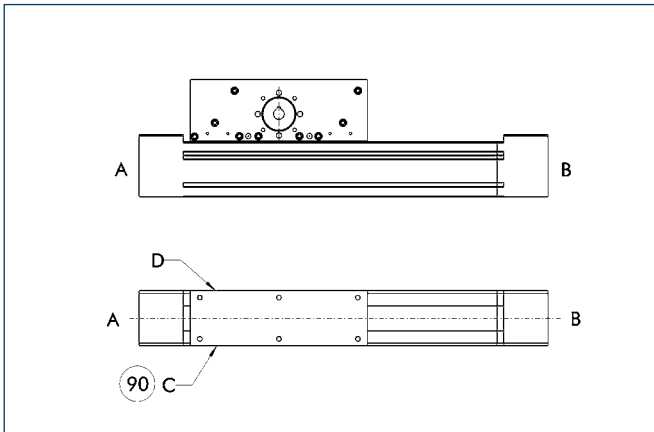
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

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① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

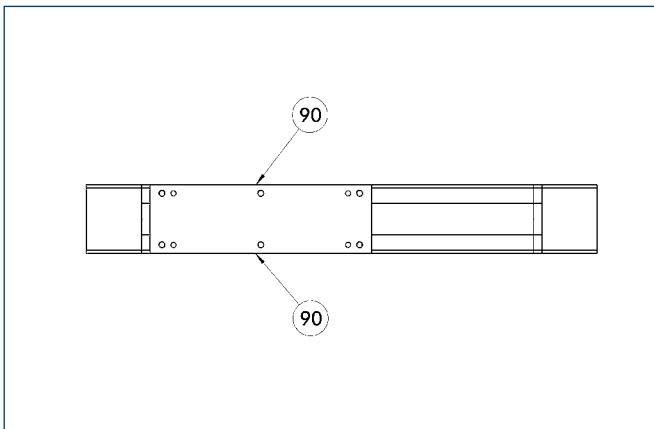
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



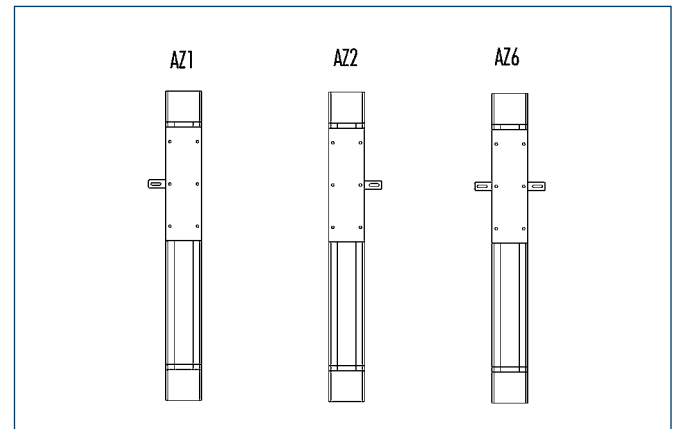
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



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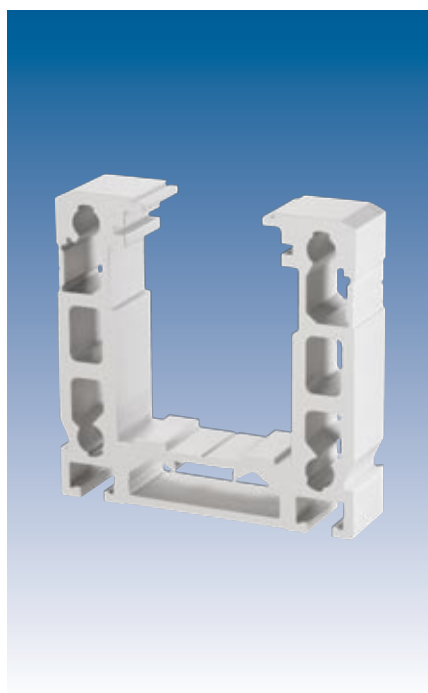


### Advantages of profiled rail guide

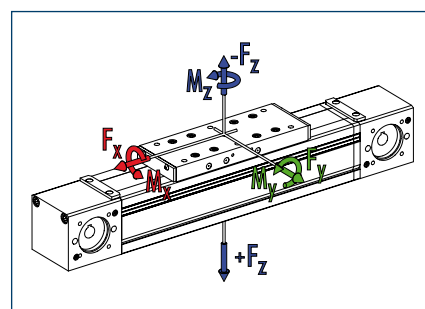
High load bearing capacity

Long lifetime

High precision



### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	2200
<span style="color: green;">■</span> $F_y$	[N]	1600
<span style="color: blue;">■</span> $F_z$	[N]	4000
<span style="color: blue;">■</span> $-F_z$	[N]	3000
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	300
<span style="color: green;">■</span> $M_y$	[Nm]	500 (640)
<span style="color: blue;">■</span> $M_z$	[Nm]	500 (640)
<span style="color: blue;">■</span> $M_{z, \text{max}}$	[Nm]	75.3

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 80C-ZSS
Max. travel speed	[m/s]	5
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	40
Idle torque	[Nm]	1.8
<b>Drive</b>		
Drive element	Toothed belt	32 AT 10
Travel per revolution	[mm]	210
Maximum stroke	[mm]	7600
Max. total length	[mm]	8000
Moment of inertia	[kgm <sup>2</sup> ]	0.004
<b>Weights</b>		
Basic without travel	[kg]	7.8
Travel per 100 mm	[kg]	0.98
Slide plate 210 mm	[kg]	2.75
Slide plate 270 mm	[kg]	3.25

Technical drawing of a mechanical assembly, likely a linear actuator or motor, showing front, side, and detail views with dimensions and callouts.

**Front View Dimensions:**

- Overall length:  $400 + H + 20$
- End flange diameter:  $\varnothing 65$
- End flange thickness: 46
- End flange mounting holes: M6/10 (16x)
- End flange mounting holes:  $\varnothing 8H7/8.5$  (8x)
- End flange mounting holes: DIN 6885/1
- End flange mounting holes:  $62 \pm 0.02$
- End flange mounting holes: 9
- End flange mounting holes: 90
- End flange mounting holes: 95 + 10
- End flange mounting holes: 210
- End flange mounting holes: 4
- End flange mounting holes: 85
- End flange mounting holes: 46
- End flange mounting holes: 72

**Side View Dimensions:**

- Overall height: 100
- Overall width: 80
- Overall depth: 62
- Overall depth: 12.2
- Overall depth: 6
- Overall depth: 9.5
- Overall depth: 27

**Detail View Dimensions:**

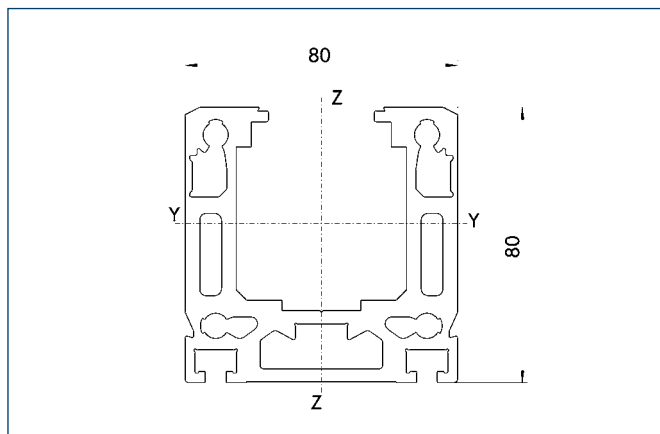
- Overall length:  $200 + 10$
- Overall width: 170
- Overall depth:  $145 \pm 0.02$
- Overall depth:  $60 \pm 0.02$  ( $\varnothing 6H7$ )
- Overall depth: 4
- Overall depth: 41.5
- Overall depth:  $\varnothing 50F8$  (6)
- Overall depth:  $\varnothing 20H7$  (6)
- Overall depth:  $\varnothing 6H7/6$  (4x) (2)
- Overall depth: M8/8 (6x)
- Overall depth: 90

- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts
- ㉑ Bolt pitch circle
- ㉒ Change of dimension with optional cover tape

- ⑨ Useful stroke
- ⑨⑩ Change of dimension with optional cover tape

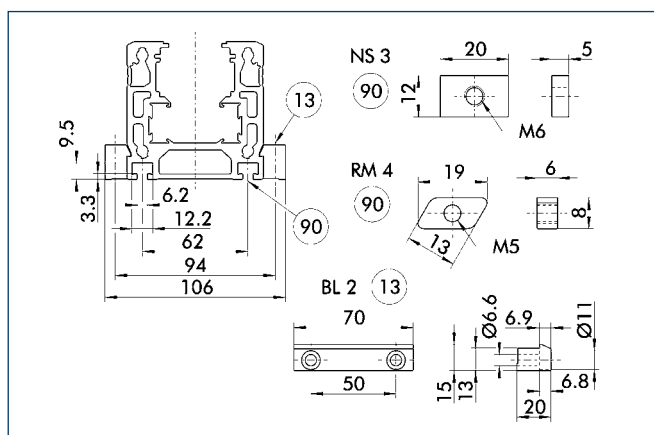
- ⑧ Feather key

### Profile ZSS



Specific mass	[kg/m]	5.92
Planar dimension	[mm <sup>2</sup> ]	2191
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	1376276
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	1772609
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	30375
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	44315

### Mounting



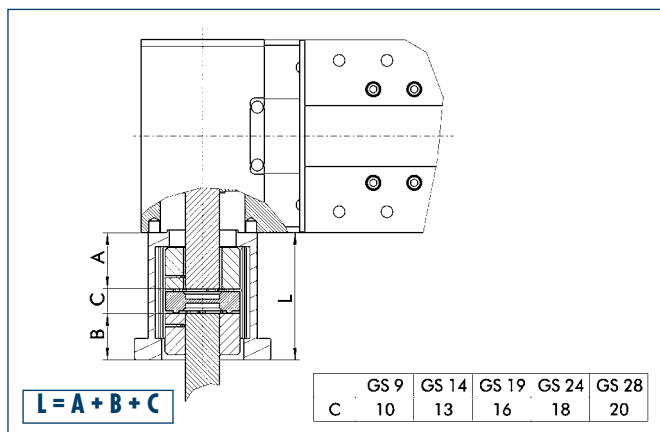
⑬ Mounting strip

⑨⑩ T-nut on base side

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	RM4	0331426
Mounting strip	BL2	0331401

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

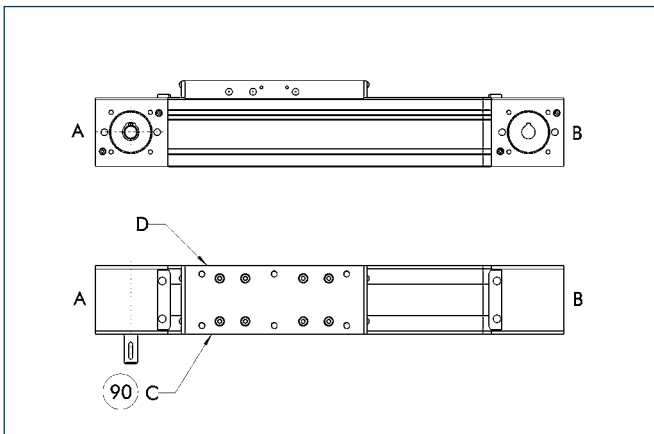
SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.



More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

### Limit switch position



90 Limit switch standard position

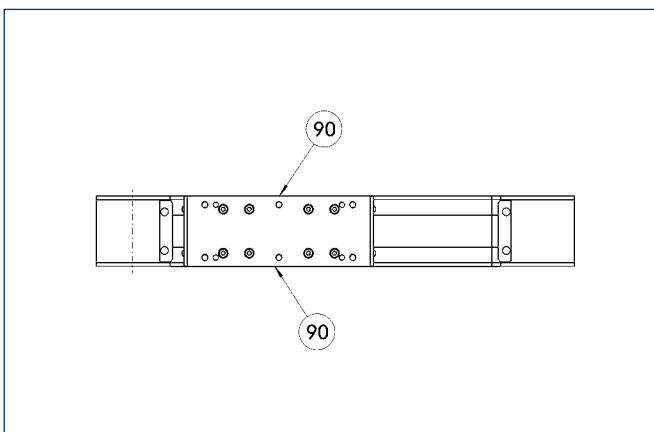
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



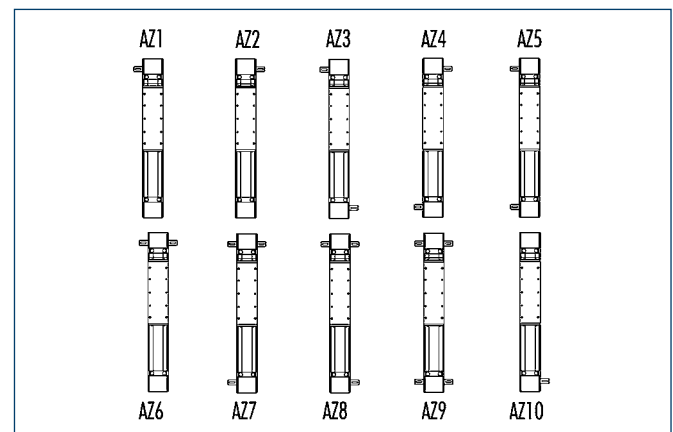
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

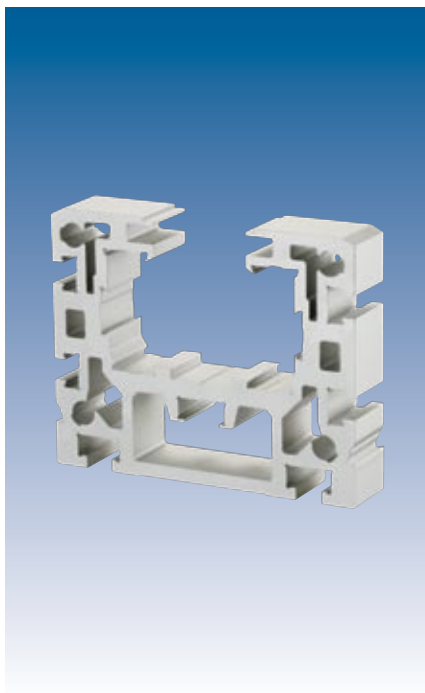
### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.



More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.



### Advantages of roller guide

**High maximum moments**  
due to optimum force transmission to the profile

**Long stroke lengths**  
can be achieved with no problems

**Life-time lubricated rollers**  
for easy maintenance use

**Smooth, low-noise running**

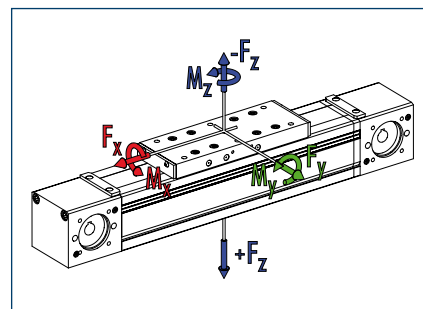
### Advantages of profiled rail guide

**High load bearing capacity**

**Long lifetime**

**High precision**

### Loads and load torques



Load		ZRS dynamic	ZSS dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	2800	2800
<span style="color: green;">■</span> $F_y$	[N]	1000	1000
<span style="color: blue;">■</span> $F_z$	[N]	2500	3000
<span style="color: blue;">■</span> $-F_z$	[N]	1200	2000
Load torques		ZRS dynamic	ZSS dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	200	200
<span style="color: green;">■</span> $M_y$	[Nm]	250 (350)	300 (420)
<span style="color: blue;">■</span> $M_z$	[Nm]	200 (280)	300 (420)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	91.6	91.6

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 100-ZRS	B 100-ZSS
Max. travel speed	[m/s]	8	5
Repeat accuracy	[mm]	± 0.08	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	40	40
Idle torque	[Nm]	2.5	2.5
<b>Drive</b>			
Drive element	Toothed belt	40 AT 10	40 AT 10
Travel per revolution	[mm]	200	200
Maximum stroke	[mm]	7420	7420
Max. total length	[mm]	7900	7900
Moment of inertia	[kgm <sup>2</sup> ]	0.013	0.0126
<b>Weights</b>			
Basic without travel	[kg]	9.5	9.1
Travel per 100 mm	[kg]	1.1	1.45
Slide plate 280 mm	[kg]	4.1	3.8
Slide plate 400 mm	[kg]	5.85	5.43

[illegible]

- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts
- ㉑ Bolt pitch circle
- ㉒ Change of dimension with optional cover tape

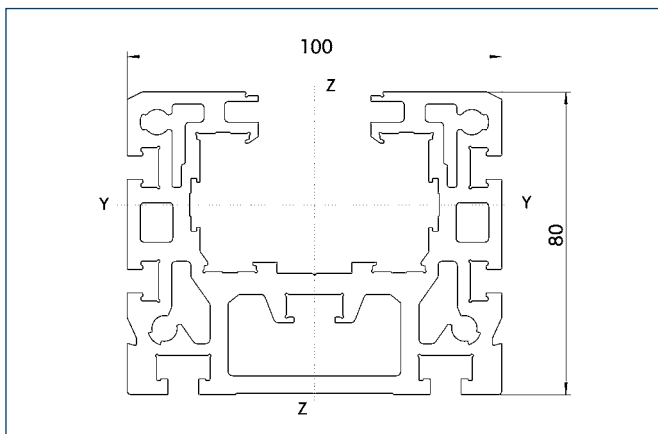
[illegible]

- ⑨ Useful stroke
- ⑨⑩ Change of dimension with optional cover tape

Technical drawing of a door handle assembly. The drawing shows a side view of a door with a handle. The handle is labeled "DIN 6885/1 6x6x25" and is shown in a circular cross-section with a diameter of "Ø20 h6". The handle is mounted on a door plate that is 34 units high. A small circle with the number "8" is also present.

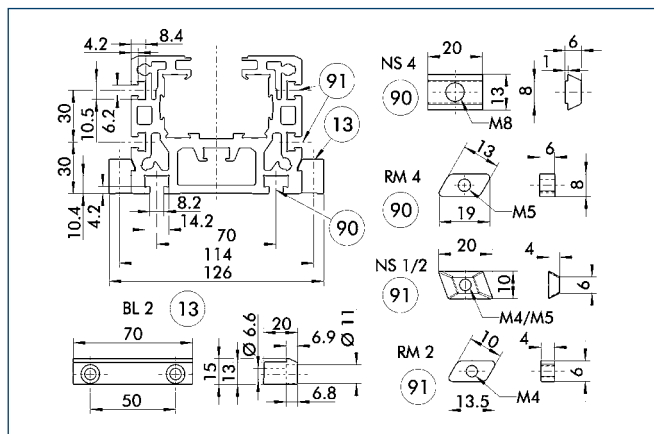
- ⑧ Feather key

### Profile ZRS/ZSS



Specific mass	[kg/m]	7.97
Planar dimension	[mm <sup>2</sup> ]	2950
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	1782959
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	3507213
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	40598
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	70137

### Mounting



13 Mounting strip

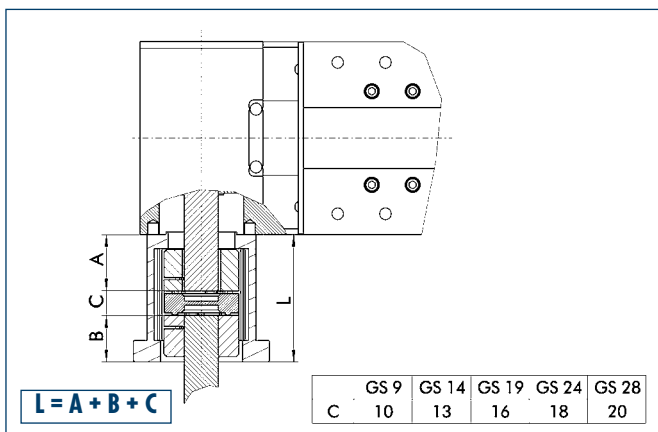
90 T-nut on base side

91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS1	0331404
T-nut	NS2	0331405
T-nut	NS4	0331407
T-nut	RM2	0331425
T-nut	RM4	0331426
Mounting strip	BL2	0331401

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

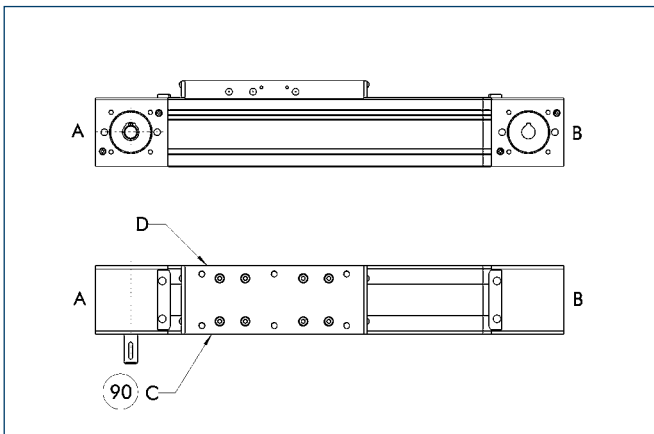
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

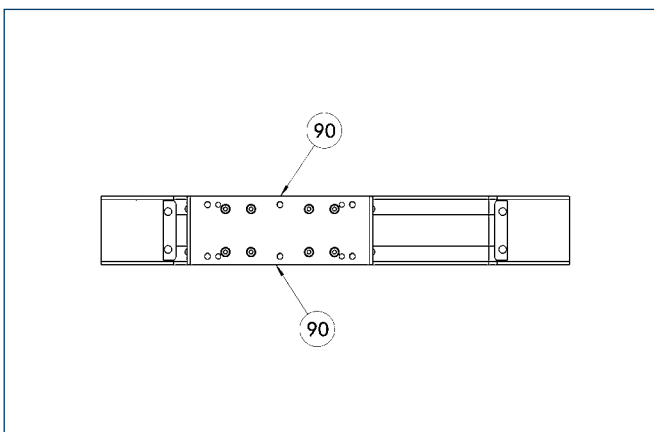
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



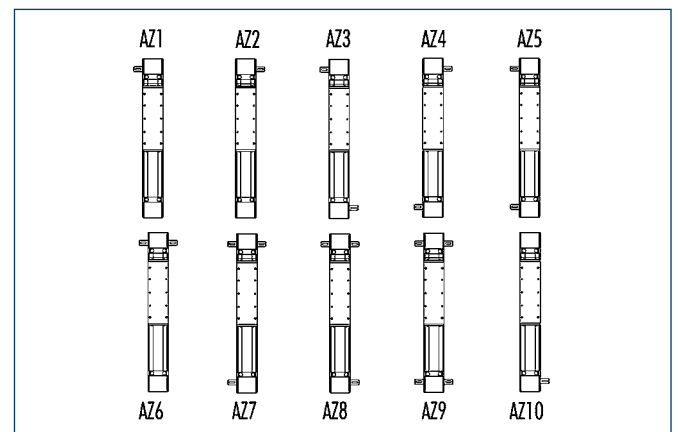
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.

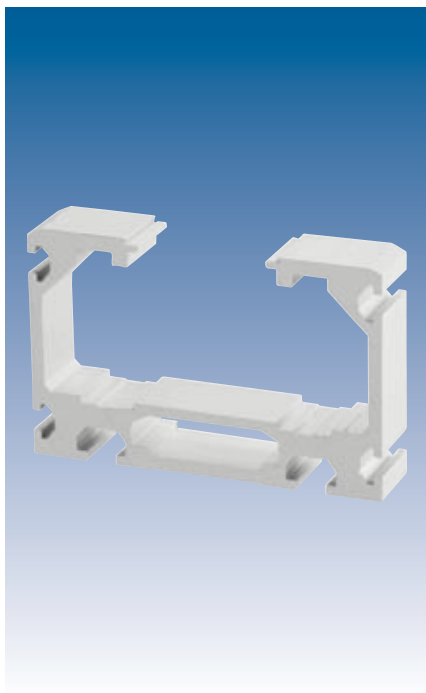


### Advantages of profiled rail guide

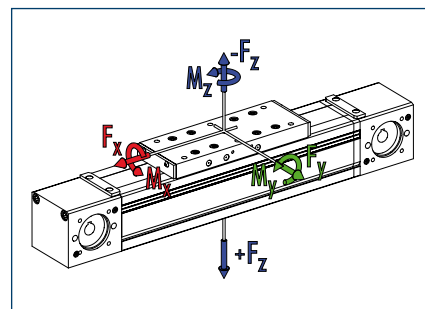
High load bearing capacity

Long lifetime

High precision



### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	1500
<span style="color: green;">■</span> $F_y$	[N]	1800
<span style="color: blue;">■</span> $F_z$	[N]	4000
<span style="color: blue;">■</span> $-F_z$	[N]	3000
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	350
<span style="color: green;">■</span> $M_y$	[Nm]	750 (1000)
<span style="color: blue;">■</span> $M_z$	[Nm]	750 (1000)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	40.7

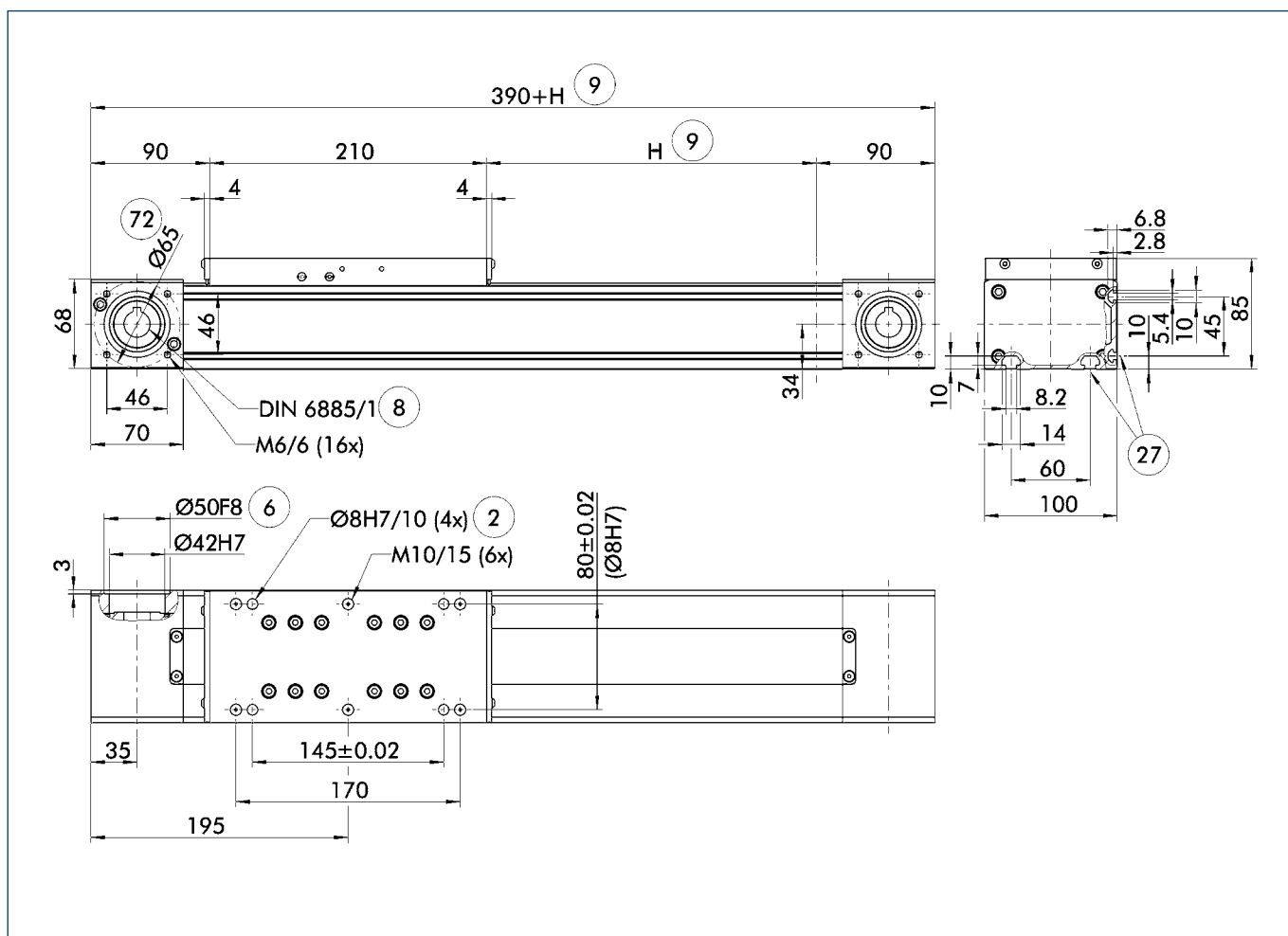
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 100D-ZSS
Max. travel speed	[m/s]	5
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60
Idle torque	[Nm]	2.5
Drive		
Drive element	Toothed belt	40 AT 10-E
Travel per revolution	[mm]	160
Maximum stroke	[mm]	7720
Max. total length	[mm]	8100
Moment of inertia	[kgm <sup>2</sup> ]	0.0028
Weights		
Basic without travel	[kg]	6.8
Travel per 100 mm	[kg]	0.75
Slide plate 210 mm	[kg]	3.5
Slide plate 270 mm	[kg]	4.1

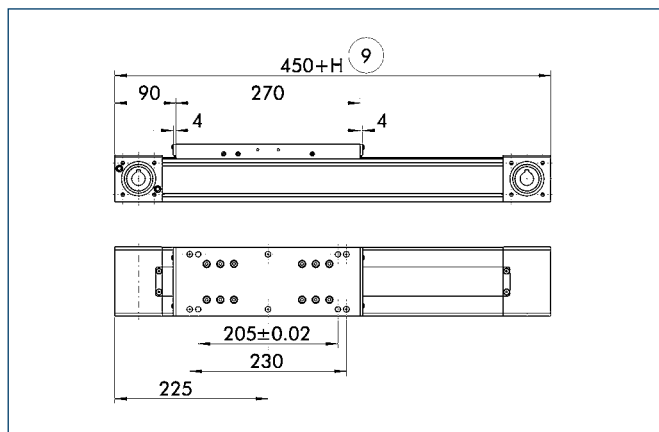
### Main views



- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke

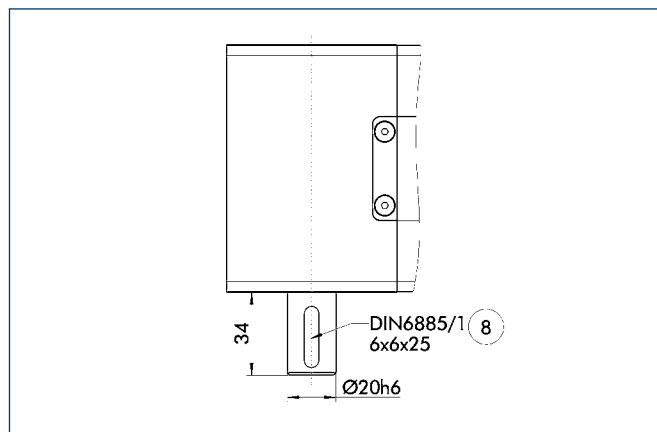
- ②7 Mounting groove for T-nuts
- ⑦2 Bolt pitch circle

### Long slide



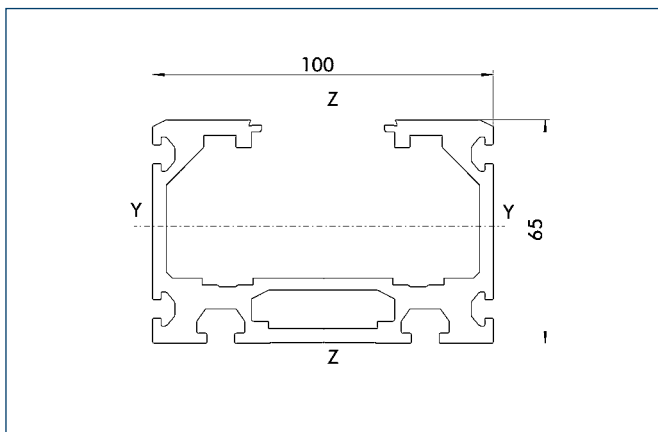
- ⑨ Useful stroke

### Drive journal connection dimensions



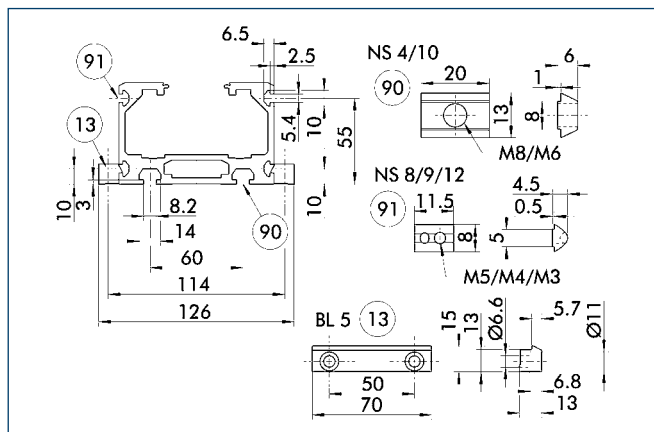
- ⑧ Feather key

### Profile ZSS



Specific mass	[kg/m]	4.87
Planar dimension	[mm <sup>2</sup> ]	1804
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	917779
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	2328911
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	23869
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	46578

### Mounting

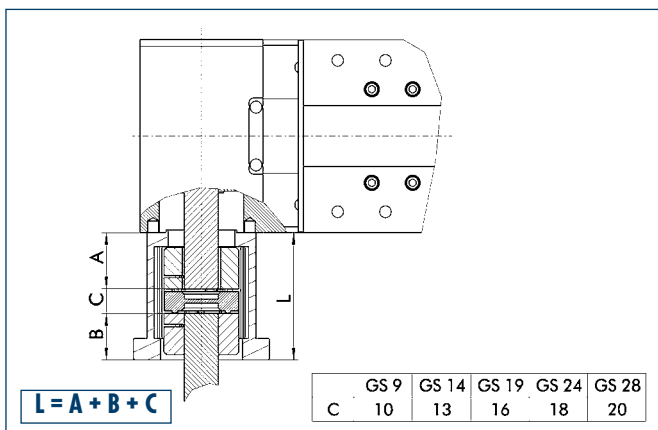


- 13 Mounting strip  
 90 T-nut on base side  
 91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS4	0331407
T-nut	NS8	0331420
T-nut	NS9	0331421
T-nut	NS10	0331422
T-nut	NS12	0331424
Mounting strip	BL5	0331419

### Motor flange schematic diagram

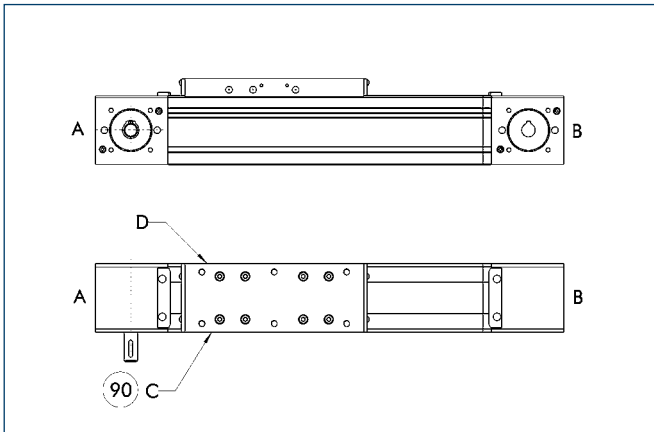


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

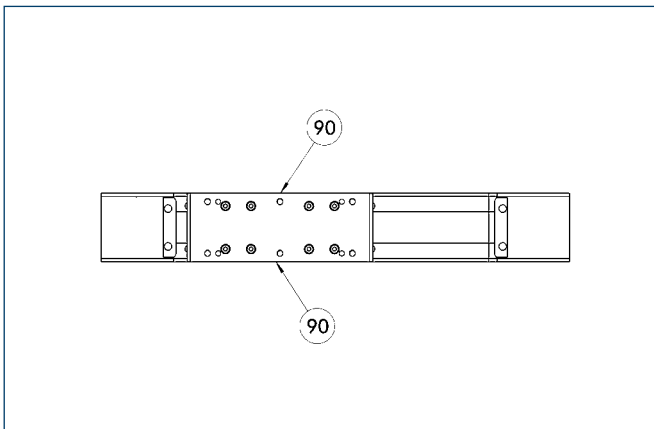
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



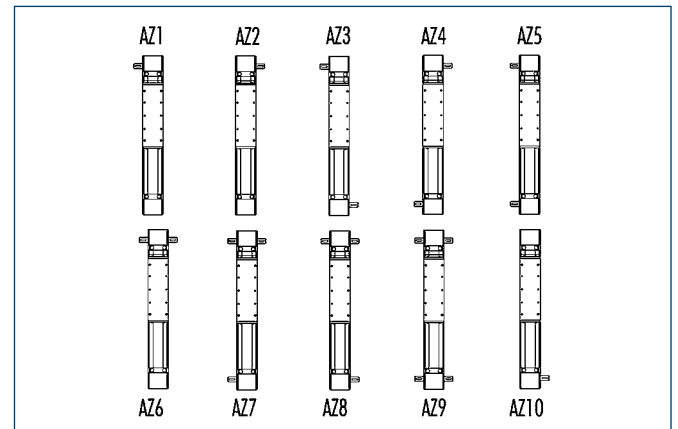
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.

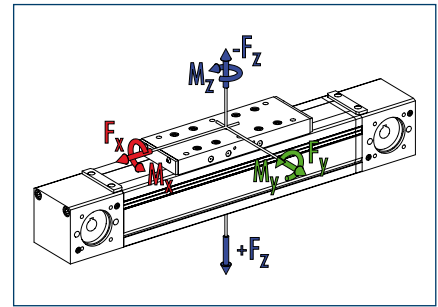
### Advantages of profiled rail guide

High load bearing capacity

Long lifetime

High precision

### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	2200
<span style="color: green;">■</span> $F_y$	[N]	1800
<span style="color: blue;">■</span> $F_z$	[N]	4000
<span style="color: blue;">■</span> $-F_z$	[N]	3000
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	350
<span style="color: green;">■</span> $M_y$	[Nm]	950
<span style="color: blue;">■</span> $M_z$	[Nm]	950
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	86.5

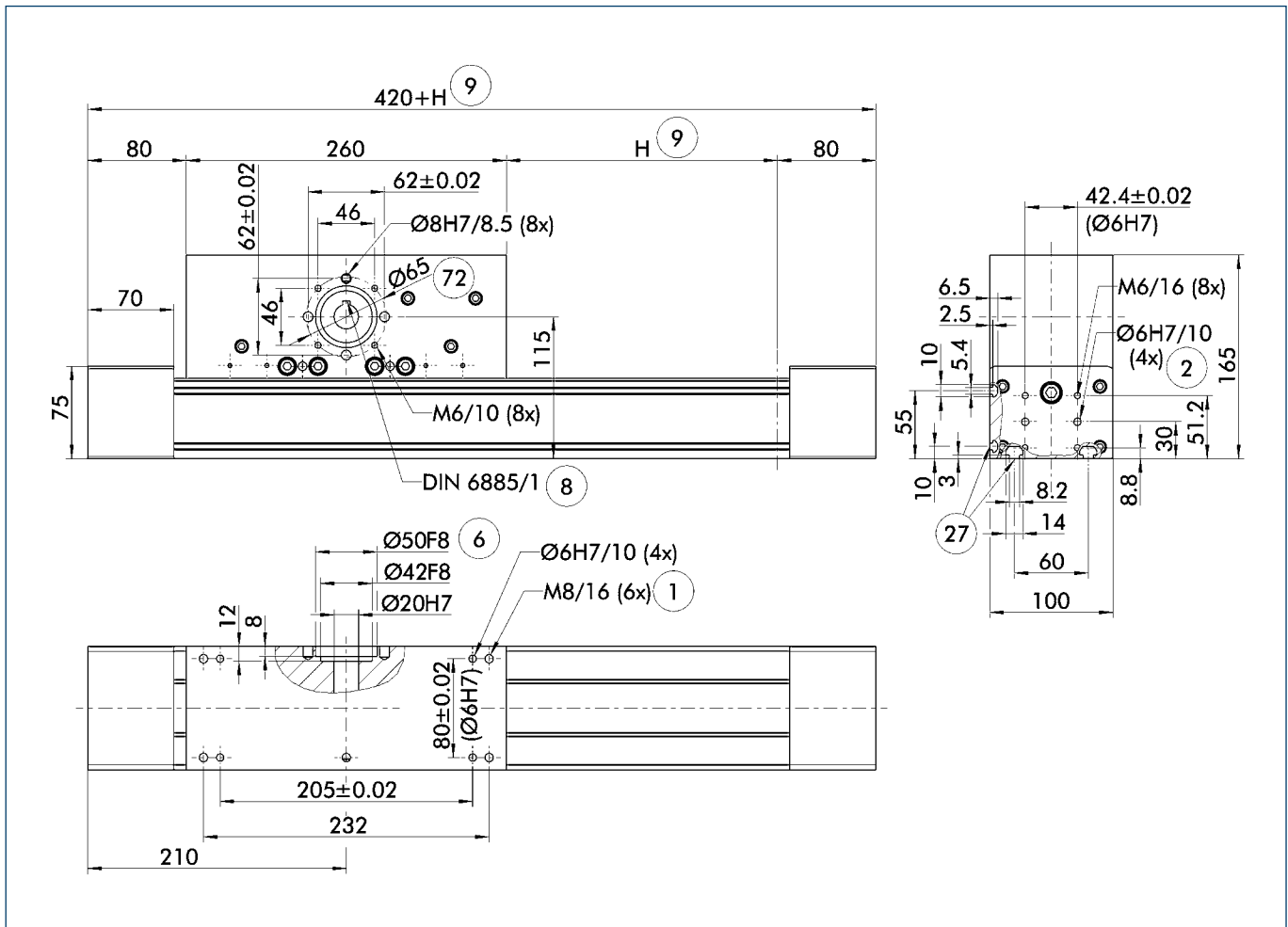
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

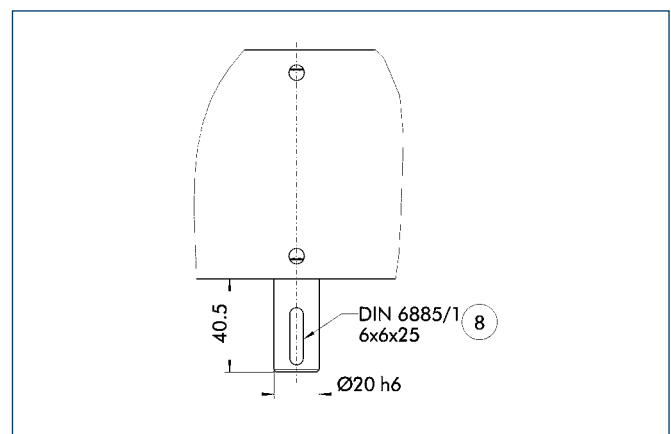
Designation		B 100D-ASS
Max. travel speed	[m/s]	5
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60
Idle torque	[Nm]	2.5
Drive		
Drive element	Toothed belt	40 AT 10-E
Travel per revolution	[mm]	240
Maximum stroke	[mm]	7680
Max. total length	[mm]	8100
Moment of inertia	[kgm <sup>2</sup> ]	0.012
Weights		
Basic without travel	[kg]	14.0
Travel per 100 mm	[kg]	0.9
Slide drive 400 mm	[kg]	8.6

### Main views



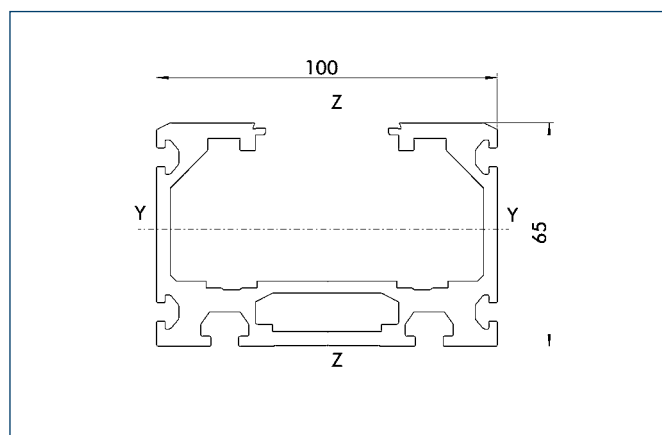
- ① Linear unit connection
- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ②⑦ Mounting groove for T-nuts
- ⑦② Bolt pitch circle

### Drive journal connection dimensions



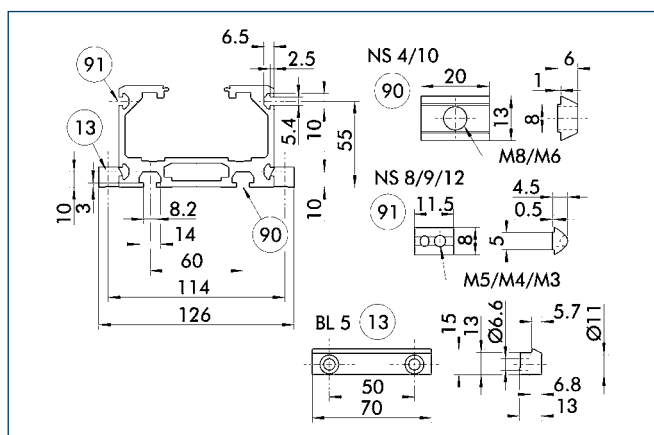
- ⑧ Feather key

## Profile ASS



Specific mass	[kg/m]	4.87
Planar dimension	[mm <sup>2</sup> ]	1804
Planar moment of inertia $I_y$	[mm <sup>4</sup> ]	917779
Planar moment of inertia $I_z$	[mm <sup>4</sup> ]	2328911
Load torque $W_y$	[mm <sup>3</sup> ]	23869
Load torque $W_z$	[mm <sup>3</sup> ]	46578

## Mounting

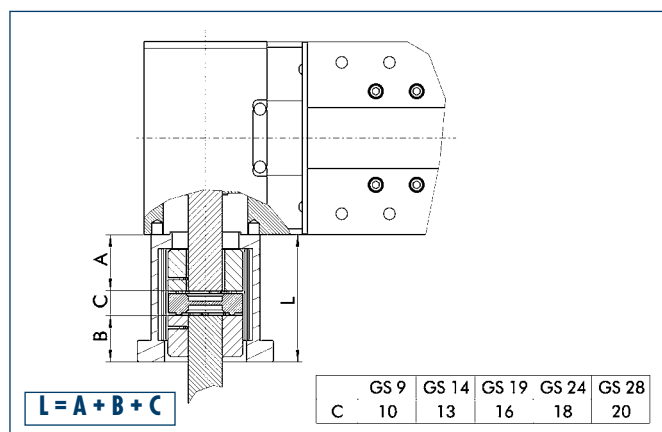


- (13) Mounting strip
- (90) T-nut on base side  
(91) Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS4	0331407
T-nut	NS8	0331420
T-nut	NS9	0331421
T-nut	NS10	0331422
T-nut	NS12	0331424
Mounting strip	BL5	0331419

## Motor flange schematic diagram

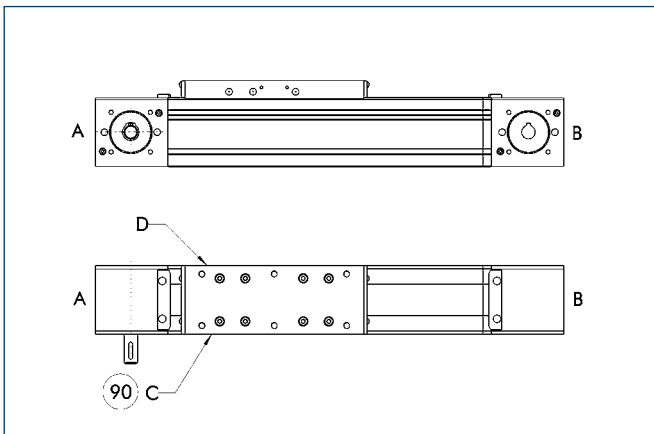


The table shows the relevant dimension **C** of the standard couplings.  
For dimension A refer to drive journal connection dimensions, for dimension B refer to corresponding motor dimension sheet, dimension L may differ in individual cases.

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### Limit switch position



90 Limit switch standard position

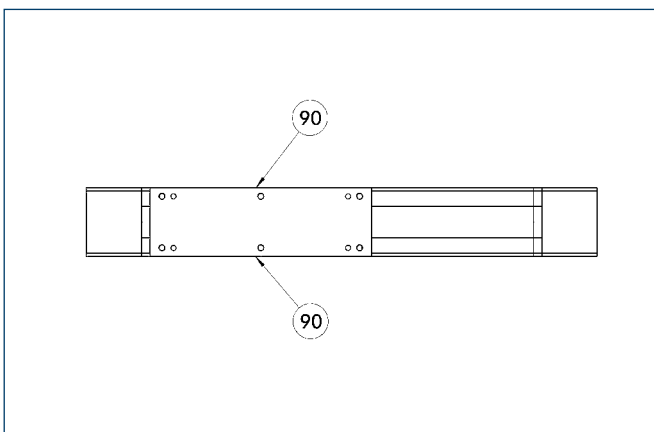
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

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### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



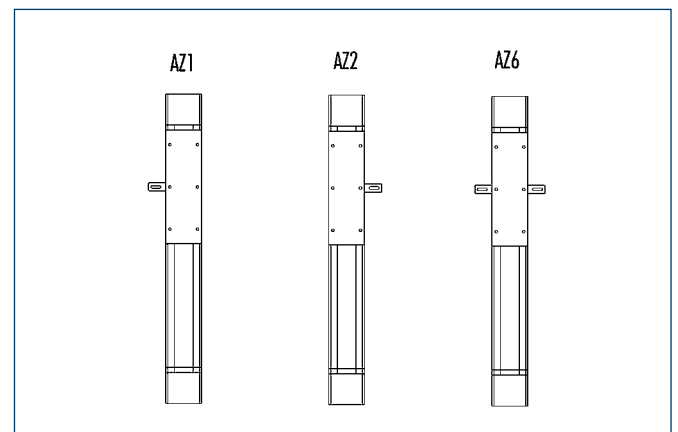
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

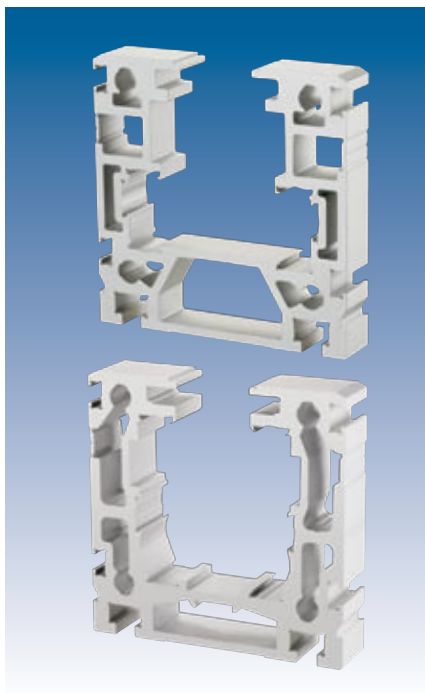
If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.





### Advantages of roller guide

**High maximum moments**  
due to optimum force transmission to the profile

**Long stroke lengths**  
can be achieved with no problems

**Life-time lubricated rollers**  
for easy maintenance use

**Smooth, low-noise running**

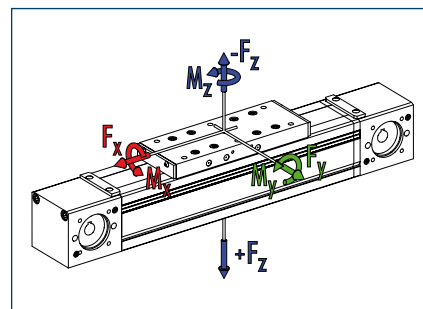
### Advantages of profiled rail guide

**High load bearing capacity**

**Long lifetime**

**High precision**

### Loads and load torques



Load		ZRS dynamic	ZSS dynamic
$F_x^{**}$	[N]	4000	4000
$F_y$	[N]	2000	3000
$F_z$	[N]	5000	8000
$-F_z$	[N]	2500	4000
Load torques		ZRS dynamic	ZSS dynamic
$M_x$	[Nm]	300	400
$M_y$	[Nm]	600 (800)	800 (1200)
$M_z$	[Nm]	450 (550)	600 (800)
$M_{z_{max}}$	[Nm]	194.5	194.5

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 110-ZRS	B 110-ZSS
Max. travel speed	[m/s]	8	5
Repeat accuracy	[mm]	± 0.08	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60	60
Idle torque	[Nm]	3.5	3.5
<b>Drive</b>			
Drive element	Toothed belt	50 ATL 10	50 ATL 10
Travel per revolution	[mm]	300	300
Maximum stroke	[mm]	7520	7520
Max. total length	[mm]	8100	8100
Moment of inertia	[kgm <sup>2</sup> ]	0.0180	0.0160
<b>Weights</b>			
Basic without travel	[kg]	15.7	18.0
Travel per 100 mm	[kg]	1.5	2.1
Slide plate 320 mm	[kg]	4.8	5.2
Slide plate 500 mm	[kg]	7.5	8.2

[illegible]

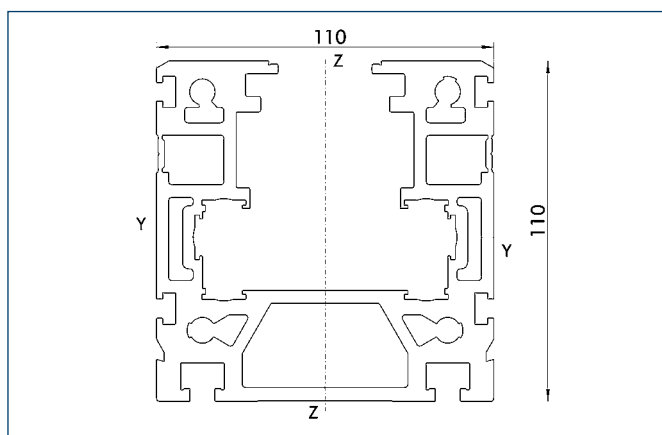
- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts
- ㉑ Bolt pitch circle

Technical drawing of a 1000mm long extruded aluminum profile. The top view shows a total length of 1000mm (760mm + H), with a 130mm section at each end containing a circular feature. The bottom view shows a total length of 1000mm (430mm ± 0.02), with a 380mm section at each end containing a circular feature. The profile has a central slot and a series of holes along its length.

- ⑨ Useful stroke

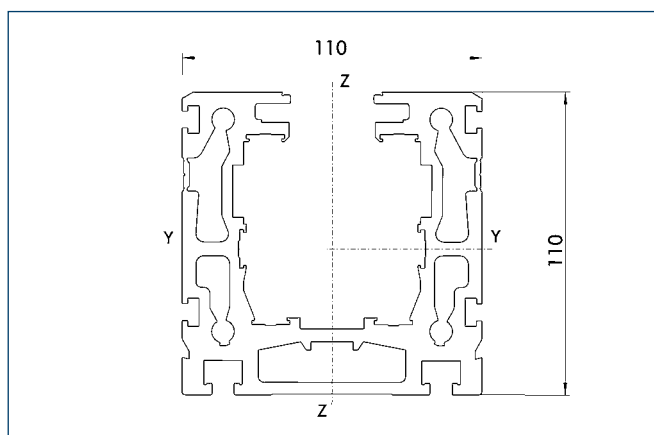
- ⑧ Feather key

### Profile ZRS



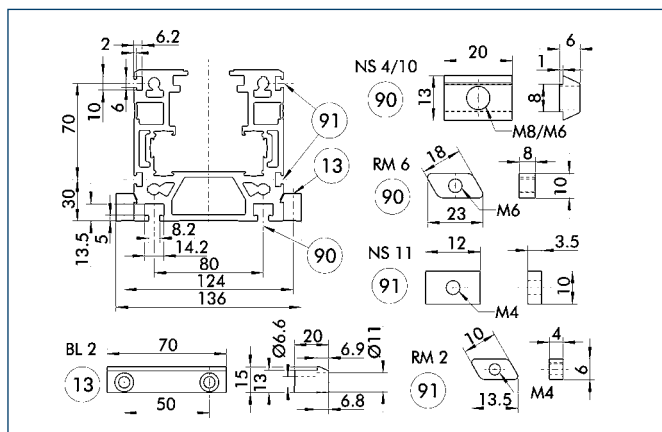
Specific mass	[kg/m]	10.69
Planar dimension	[mm <sup>2</sup> ]	3961
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	5114812
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	6177042
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	87307
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	111528

### Profile ZSS



Specific mass	[kg/m]	10.54
Planar dimension	[mm <sup>2</sup> ]	3902
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	4974348
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	5898662
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	79469
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	106973

### Mounting



13 Mounting strip

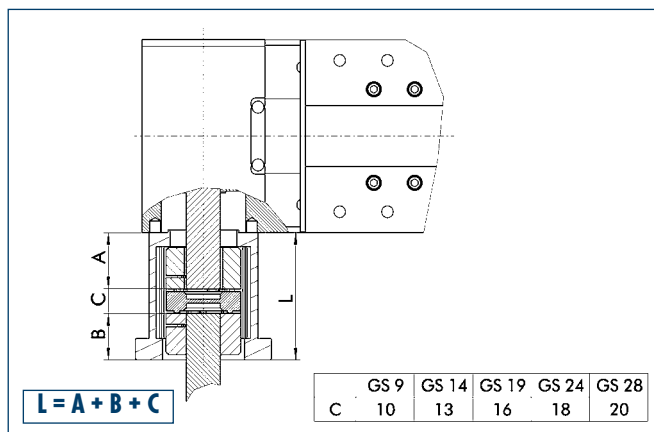
90 T-nut on base side

91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS4	0331407
T-nut	NS10	0331422
T-nut	NS11	0331429
T-nut	RM2	0331425
T-nut	RM6	0331427
Mounting strip	BL2	0331401

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

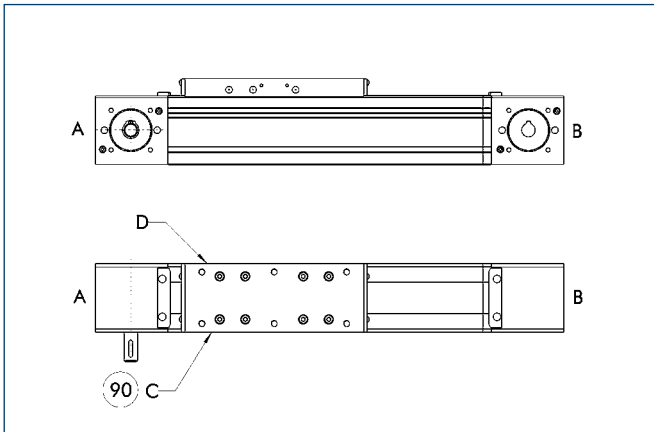
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

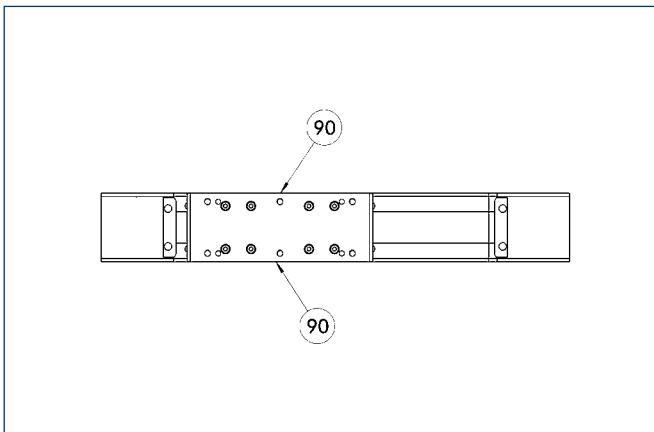
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



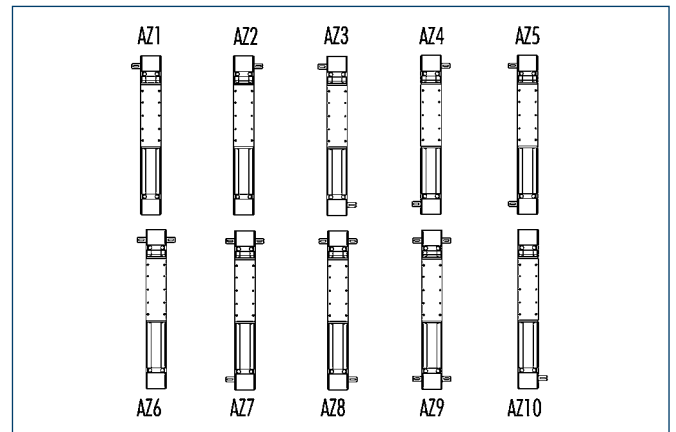
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

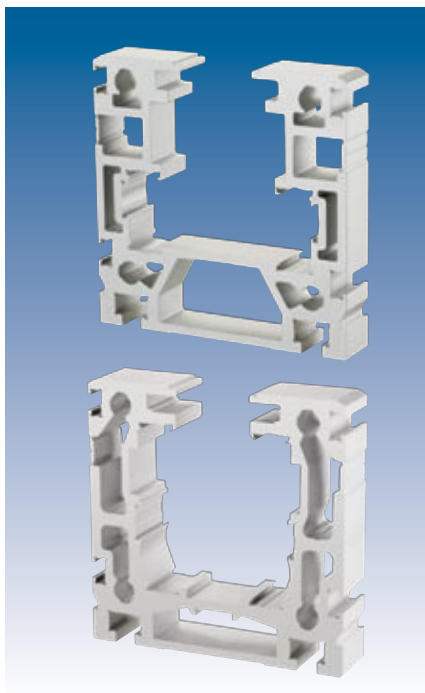
### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.



More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.



### Advantages of roller guide

**High maximum moments**  
due to optimum force transmission to the profile

**Long stroke lengths**  
can be achieved with no problems

**Life-time lubricated rollers**  
for easy maintenance use

**Smooth, low-noise running**

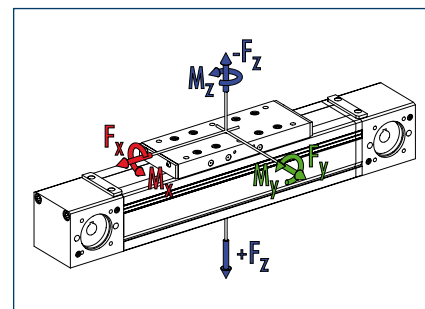
### Advantages of profiled rail guide

**High load bearing capacity**

**Long lifetime**

**High precision**

### Loads and load torques



Load		ARS dynamic	ASS dynamic
$F_x^{**}$	[N]	2000	2000
$F_y$	[N]	2000	3000
$F_z$	[N]	5000	8000
$-F_z$	[N]	2500	4000
Load torques		ARS dynamic	ASS dynamic
$M_x$	[Nm]	300	400
$M_y$	[Nm]	600	800
$M_z$	[Nm]	450	600
$M_{z_{max}}$	[Nm]	99.0	99.0

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 110-ARS	B 110-ASS
Max. travel speed	[m/s]	8	5
Repeat accuracy	[mm]	± 0.08	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60	60
Idle torque	[Nm]	3.5	3.5
<b>Drive</b>			
Drive element	Toothed belt	50 ATL 10	50 ATL 10
Travel per revolution	[mm]	300	300
Maximum stroke	[mm]	7440	7440
Max. total length	[mm]	8100	8100
Moment of inertia	[kgm <sup>2</sup> ]	0.035	0.037
<b>Weights</b>			
Basic without travel	[kg]	27.00	29.0
Travel per 100 mm	[kg]	1.2	1.4
Slide drive 400 mm	[kg]	15.00	16.00

Technical drawing of a mechanical assembly, showing a top view and a side view.

**Top View Dimensions:**

- Overall width:  $660 + H$
- Overall height: 125
- Distance from left edge to center: 130
- Distance from center to right edge: 130
- Distance from left edge to first hole: 110
- Distance between holes: 72
- Distance from center to hole: 53
- Hole diameter:  $\varnothing 75$
- Hole diameter:  $71 \pm 0.02$
- Hole diameter:  $\varnothing 8H7/8.5$  (8x)
- Hole diameter: M8/12 (8x)
- Distance from center to hole: 53
- Distance from center to hole: 160
- Standard: DIN 6885/1

**Side View Dimensions:**

- Overall length: 330
- Distance from left edge to center: 280
- Distance from center to right edge: 350 ± 0.02
- Distance from center to hole: 80 ± 0.02 ( $\varnothing 8H7$ )
- Hole diameter:  $\varnothing 25H7$
- Hole diameter:  $\varnothing 62F8$
- Distance from center to hole: 11
- Hole diameter: M10/18 (6x)
- Hole diameter:  $\varnothing 8H7/12$  (4x)

**Detail View Dimensions:**

- Hole diameter: M10/20 (8x)
- Hole diameter:  $\varnothing 8H7/10$  (4x)
- Distance from left edge to hole: 80
- Distance from left edge to hole: 60
- Distance from left edge to hole: 40
- Distance from left edge to hole: 13.5
- Distance from left edge to hole: 5
- Distance from left edge to hole: 8.2
- Distance from left edge to hole: 14.2
- Distance from left edge to hole: 80
- Distance from left edge to hole: 110
- Distance from left edge to hole: 22
- Distance from left edge to hole: 220

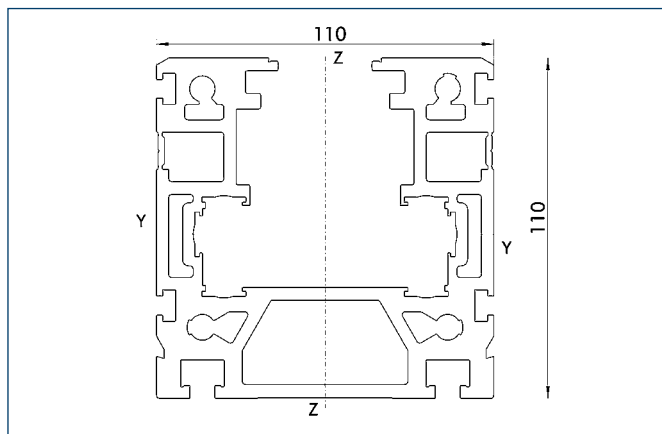
- |   |                        |    |                            |
|---|------------------------|----|----------------------------|
| ① | Linear unit connection | ②7 | Mounting groove for T-nuts |
| ② | Assembly connection    | ⑦2 | Bolt pitch circle          |
| ⑥ | Drive connection       |    |                            |
| ⑧ | Feather key DIN 6885   |    |                            |
| ⑨ | Useful stroke          |    |                            |

Technical drawing of a lamp base. The drawing shows a side view of the base with a height dimension of 40. The base is mounted on a circular hole with a diameter of  $\varnothing 25$  h6. The mounting hole is specified as DIN 6885/1 8x7x25. A circular feature with the number 8 is also indicated.

- ⑧ Feather key

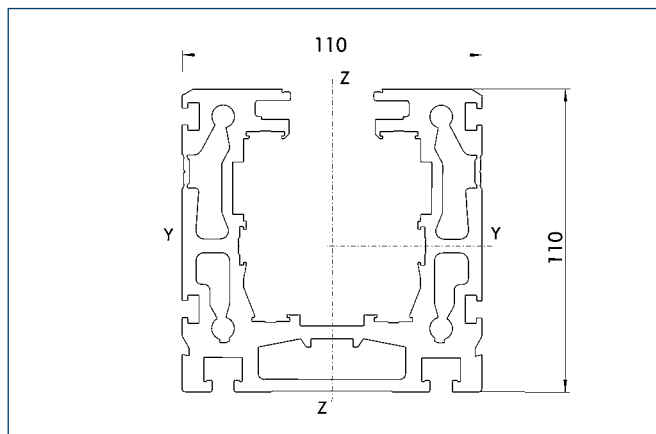
## Linear Axes • Toothed-belt Drive

## Profile ARS



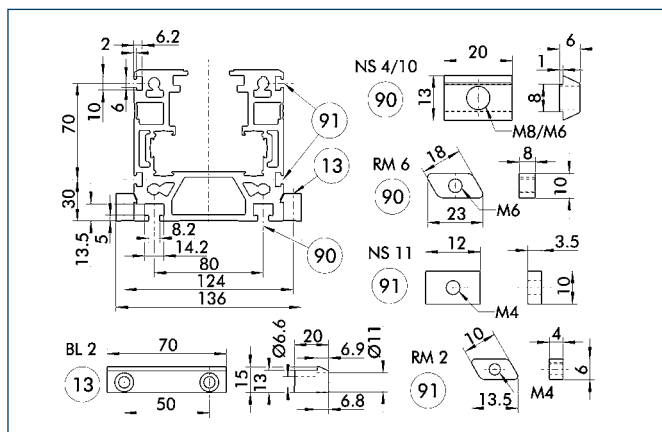
Specific mass	[kg/m]	10.69
Planar dimension	[mm <sup>2</sup> ]	3961
Planar moment of inertia $I_y$	[mm <sup>4</sup> ]	5114812
Planar moment of inertia $I_z$	[mm <sup>4</sup> ]	6177042
Load torque $W_y$	[mm <sup>3</sup> ]	87307
Load torque $W_z$	[mm <sup>3</sup> ]	111528

## Profile ASS



Specific mass	[kg/m]	10.54
Planar dimension	[mm <sup>2</sup> ]	3902
Planar moment of inertia $I_y$	[mm <sup>4</sup> ]	4974348
Planar moment of inertia $I_z$	[mm <sup>4</sup> ]	5898662
Load torque $W_y$	[mm <sup>3</sup> ]	79469
Load torque $W_z$	[mm <sup>3</sup> ]	106973

## Mounting

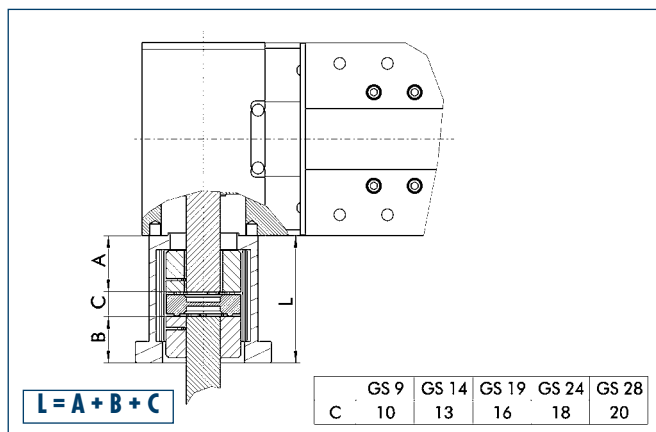


- ⑬ Mounting strip

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS4	0331407
T-nut	NS10	0331422
T-nut	NS11	0331429
T-nut	RM2	0331425
T-nut	RM6	0331427
Mounting strip	BL2	0331401

## Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

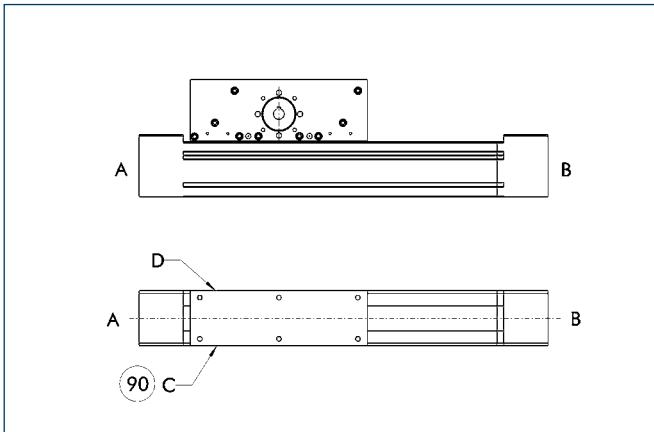
For dimension A refer to drive journal connection dimensions, for dimension B refer to corresponding motor dimension sheet, dimension L may differ in individual cases.

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- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

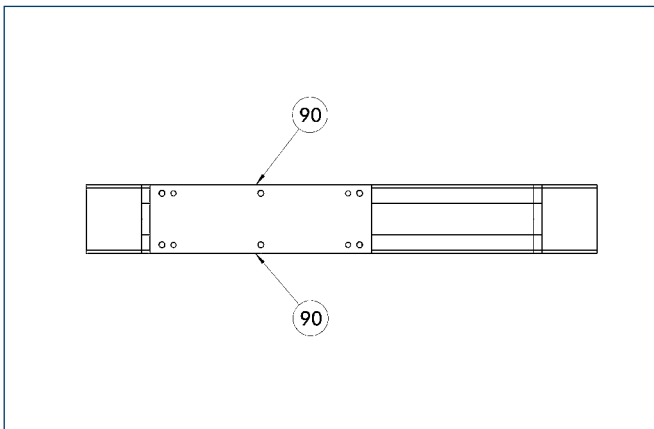
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



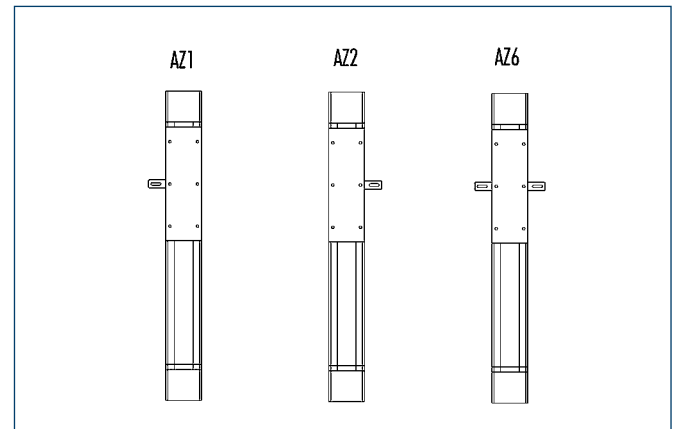
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

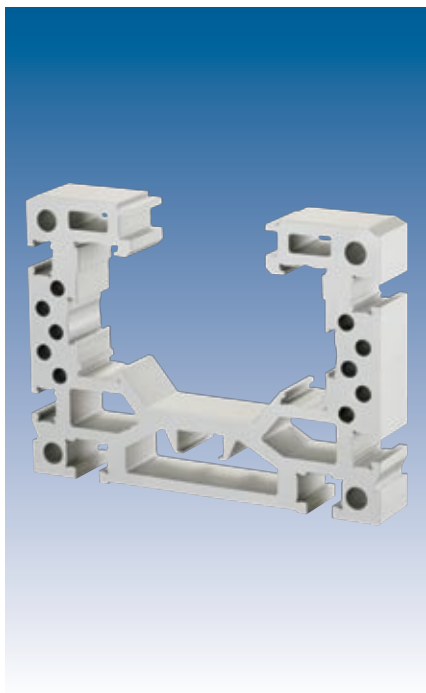
If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.





### Advantages of roller guide

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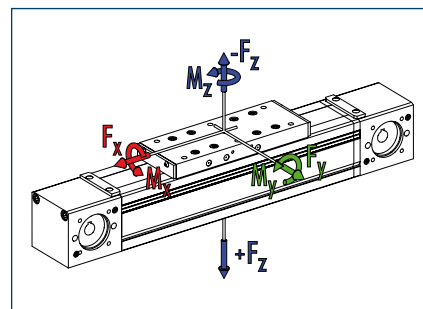
### Advantages of profiled rail guide

**High load bearing capacity**

**Long lifetime**

**High precision**

### Loads and load torques



Load		ZRS dynamic	ZSS dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	4000	4000
<span style="color: green;">■</span> $F_y$	[N]	2500	3000
<span style="color: blue;">■</span> $F_z$	[N]	6000	8000
<span style="color: blue;">■</span> $-F_z$	[N]	3000	4000
Load torques		ZRS dynamic	ZSS dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	350	400
<span style="color: green;">■</span> $M_y$	[Nm]	700 (1000)	1200 (1500)
<span style="color: blue;">■</span> $M_z$	[Nm]	700 (1000)	600 (800)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	156.0	156.0

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 120-ZRS	B 120-ZSS
Max. travel speed	[m/s]	8	5
Repeat accuracy	[mm]	± 0.08	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60	60
Idle torque	[Nm]	3.2	3.2
<b>Drive</b>			
Drive element	Toothed belt	50 ATL 10	50 ATL 10
Travel per revolution	[mm]	240	240
Maximum stroke	[mm]	7520	7520
Max. total length	[mm]	8100	8100
Moment of inertia	[kgm <sup>2</sup> ]	0.015	0.016
<b>Weights</b>			
Basic without travel	[kg]	12.5	13.0
Travel per 100 mm	[kg]	1.3	1.7
Slide plate 320 mm	[kg]	6.0	6.5
Slide plate 500 mm	[kg]	9.4	10.2

- |                        |                               |
|------------------------|-------------------------------|
| ② Assembly connection  | ②7 Mounting groove for T-nuts |
| ⑥ Drive connection     | ⑦2 Bolt pitch circle          |
| ⑧ Feather key DIN 6885 |                               |
| ⑨ Useful stroke        |                               |

Technical drawing of the 760 + H 9 linear actuator. The drawing includes a side view (top) and a front view (bottom).

**Side View (Top):**

- Overall length: 760 + H
- Stroke length: 500
- Mounting bracket height: 130
- Model designation: 9

**Front View (Bottom):**

- Overall width: 380
- Stroke length: 380 ± 0.02
- Mounting bracket width: 450

- ⑨ Useful stroke

40

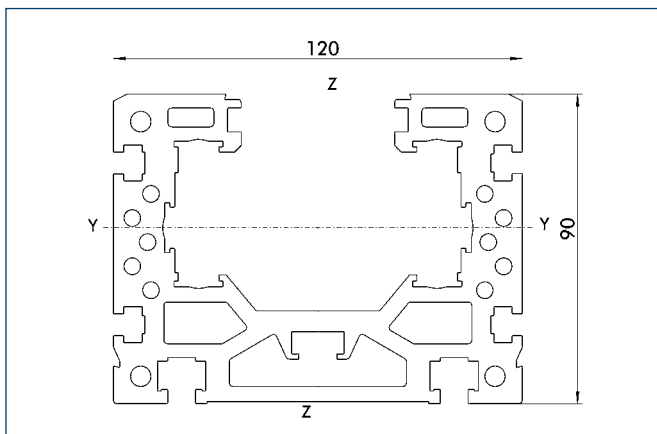
DIN 6885/1  
8x7x25

Ø25 h6

8

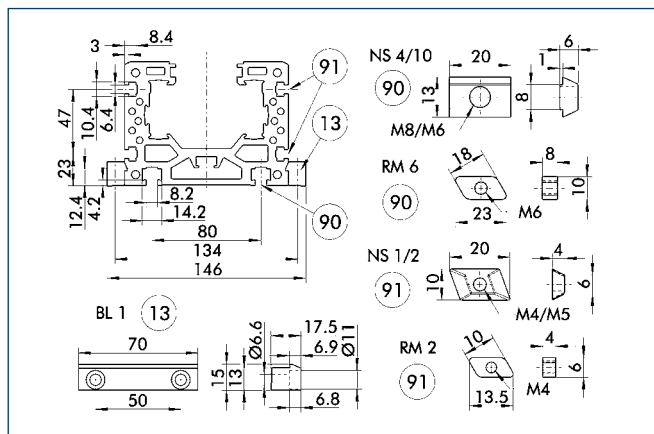
- ⑧ Feather key

### Profile ZRS/ZSS



Specific mass	[kg/m]	10.47
Planar dimension	[mm <sup>2</sup> ]	3876
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	3095671
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	7114115
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	62753
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	118478

### Mounting



⑬ Mounting strip

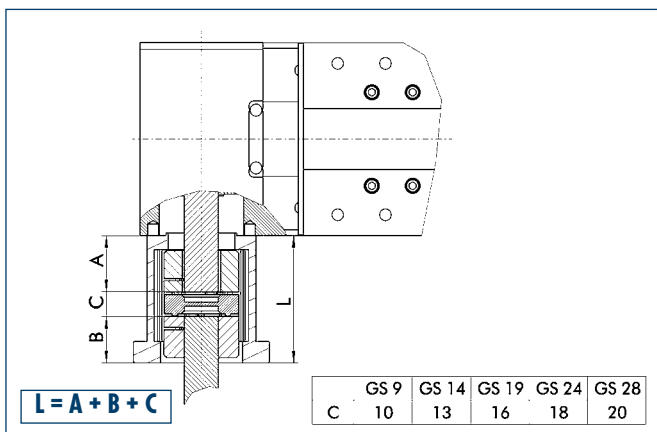
⑨⑩ T-nut on base side

⑨① Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS1	0331404
T-nut	NS2	0331405
T-nut	NS4	0331407
T-nut	NS10	0331422
T-nut	RM2	0331425
T-nut	RM6	0331427
Mounting strip	BL1	0331400

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

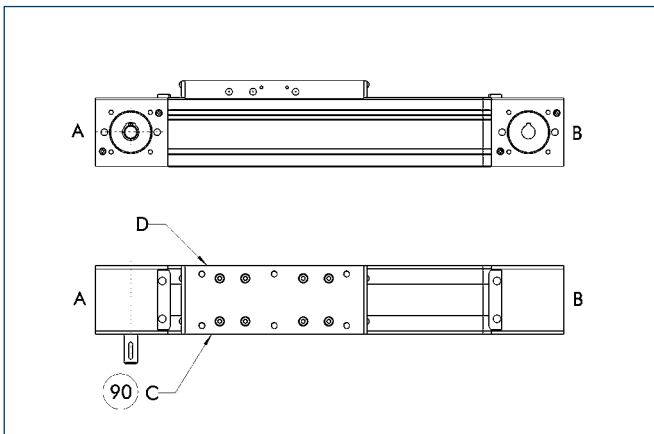
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

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### Limit switch position



90 Limit switch standard position

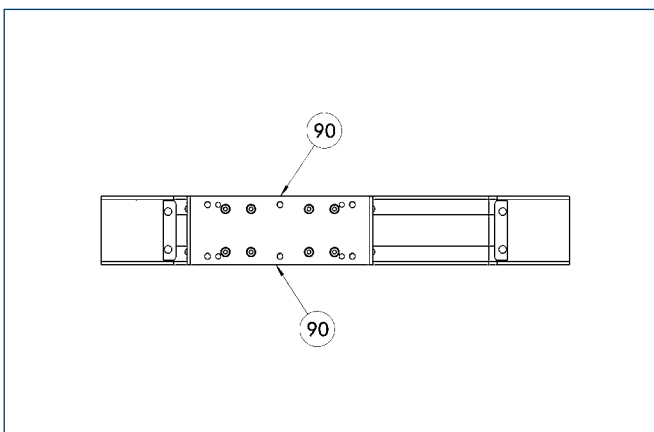
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



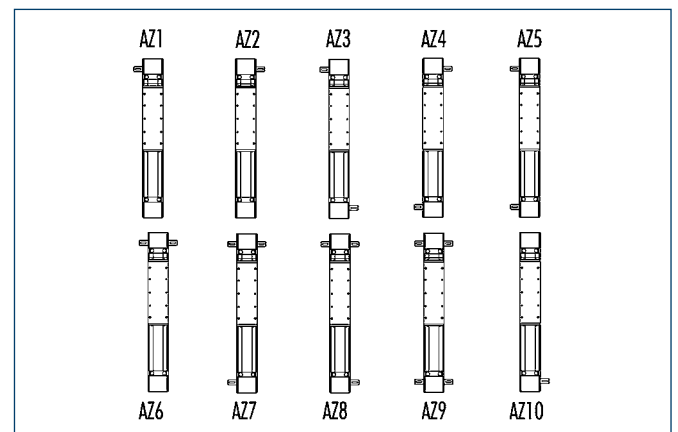
90 Standard lubrication connection

#### Standard connection

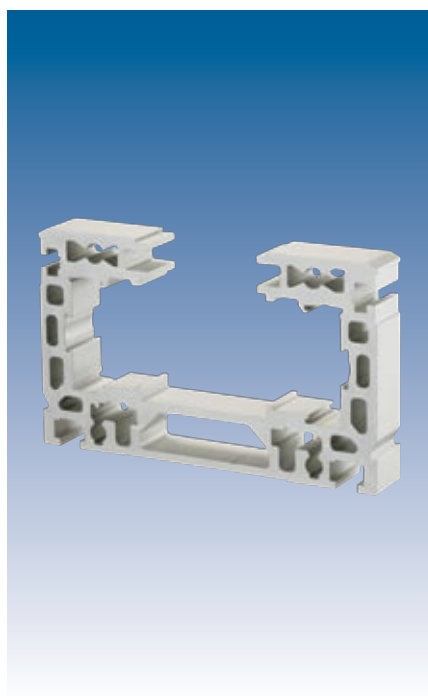
Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



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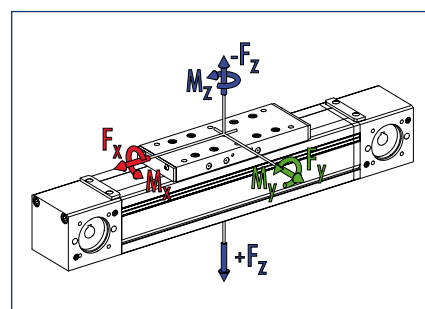
### Advantages of profiled rail guide

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**Long lifetime**

**High precision**

### Loads and load torques



Load		ZRS dynamic	ZSS dynamic
$F_x^{**}$	[N]	4000	4000
$F_y$	[N]	2500	2500
$F_z$	[N]	5000	6000
$-F_z$	[N]	3000	4000
Load torques		ZRS dynamic	ZSS dynamic
$M_x$	[Nm]	350	500
$M_y$	[Nm]	700 (900)	1000 (1300)
$M_z$	[Nm]	700 (900)	1000 (1300)
$M_{z_{max}}$	[Nm]	143.6	143.6

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 140-ZRS	B 140-ZSS
Max. travel speed	[m/s]	8	5
Repeat accuracy	[mm]	± 0.08	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60	60
Idle torque	[Nm]	3.5	3.5
<b>Drive</b>			
Drive element	Toothed belt	50 AT 10-E	50 AT 10-E
Travel per revolution	[mm]	220	220
Maximum stroke	[mm]	7540	7540
Max. total length	[mm]	8100	8100
Moment of inertia	[kgm <sup>2</sup> ]	0.019	0.020
<b>Weights</b>			
Basic without travel	[kg]	13.5	15.0
Travel per 100 mm	[kg]	1.3	1.7
Slide plate 320 mm	[kg]	7.0	7.5
Slide plate 500 mm	[kg]	11.0	11.7

Technical drawing of a mechanical assembly, showing three views: a top view, a side view, and a detail view of a corner.

**Top View:**

- Overall length:  $560 + H$  (where  $H$  is a variable dimension, callout 9).
- End flange dimensions: 120 (radius), 4 (thickness), 4 (thickness), 120 (radius).
- End flange hole pattern:  $\varnothing 75$  (outer diameter, callout 72), 53 (inner diameter), 90 (hole spacing).
- End flange material: DIN 6885/18.
- End flange fasteners: M8/15 (16x).
- End flange hole diameter:  $\varnothing 8H7/8.5$  (16x).
- End flange hole position:  $71 \pm 0.02$  (from center line).
- End flange thickness: 88.

**Side View:**

- Overall length: 280.
- End flange thickness: 30.
- End flange hole diameter:  $\varnothing 62 F8$  (callout 6).
- End flange hole diameter:  $\varnothing 25 H7$  (callout 6).
- End flange hole diameter: M10/15 (10x).
- End flange hole diameter:  $\varnothing 8H7/10$  (4x) (callout 2).
- End flange hole position:  $110 \pm 0.02$  (from center line, callout Ø8H7).
- End flange hole position:  $200$  (from center line).
- End flange hole position:  $235 \pm 0.02$  (from center line).
- End flange hole position: 270 (from center line).

**Detail View (Corner):**

- Overall width: 140.
- Overall height: 112.
- Corner radius: 13.3.
- Corner hole diameter: 4.5.
- Corner hole position: 10.5 (from center line).
- Corner hole position: 72 (from center line).
- Corner hole position: 8.2 (from center line).
- Corner hole position: 116 (from center line).

- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts
- ㉑ Bolt pitch circle

[illegible]

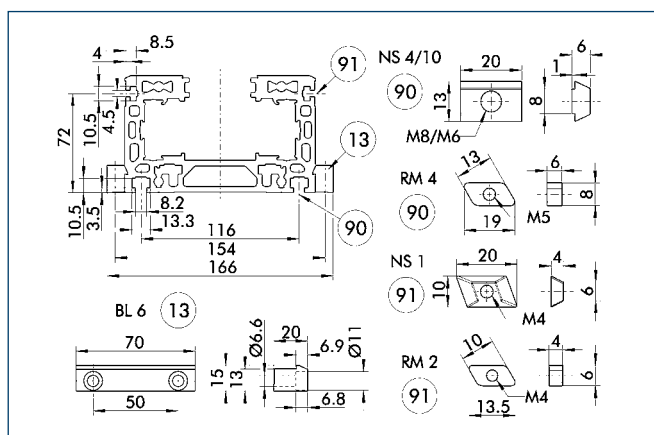
- ⑨ Useful stroke

Technical drawing of a door handle assembly. The drawing shows a side view of a door with a handle. The handle is labeled "DIN 6885/1 8x7x25" and is mounted on a base plate. The base plate has a diameter of "Ø25 h6". The handle has a length of "40".

- ⑧ Feather key

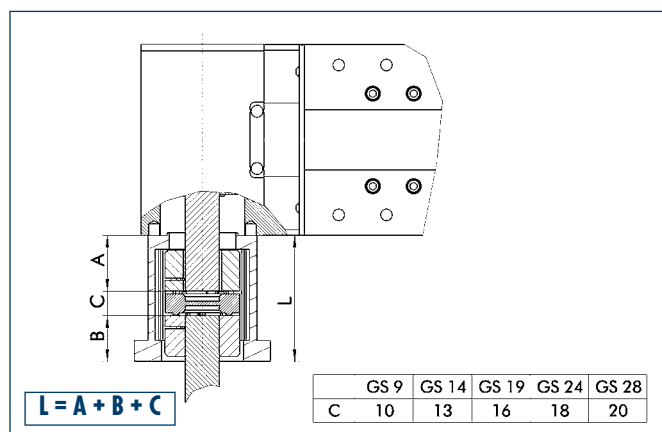
## Linear Axes • Toothed-belt Drive

## Mounting



- The profile can be secured either using T-nuts or mounting strips.

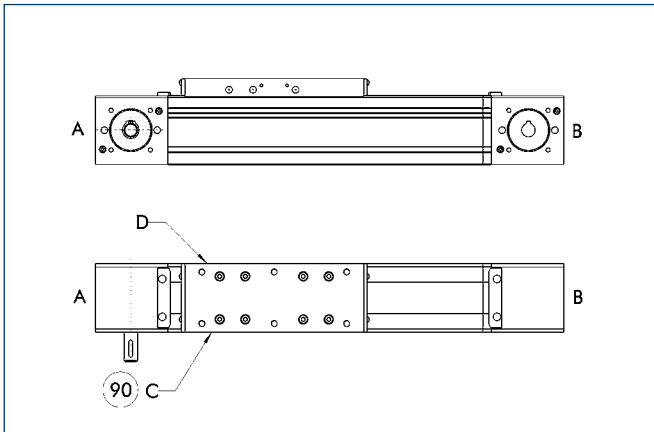
## Motor flange schematic diagram



Different drive solutions can be attached to our axes.  
SCHUNK can supply you with the right motor flange and coupling for your drive.

-  More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

### Limit switch position



90 Limit switch standard position

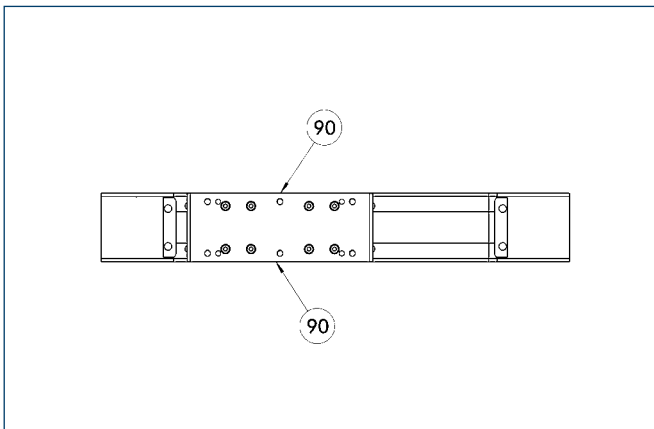
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



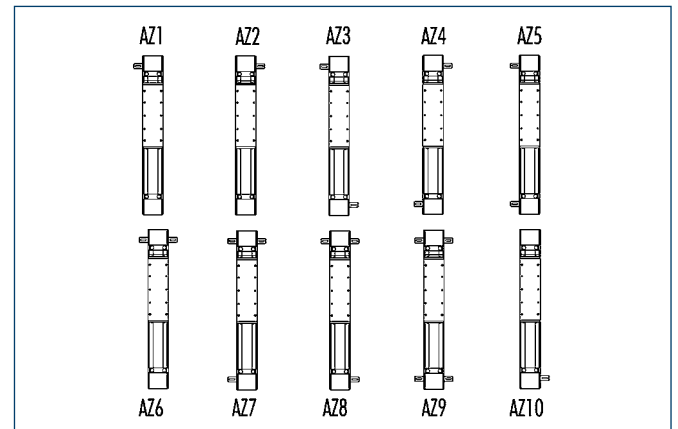
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

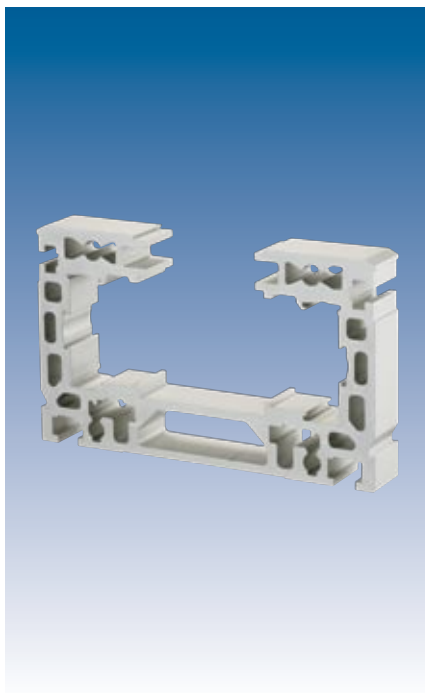
### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.





### Advantages of roller guide

**High maximum moments**  
due to optimum force transmission to the profile

**Long stroke lengths**  
can be achieved with no problems

**Life-time lubricated rollers**  
for easy maintenance use

**Smooth, low-noise running**

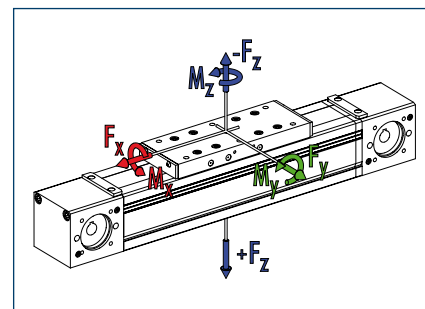
### Advantages of profiled rail guide

**High load bearing capacity**

**Long lifetime**

**High precision**

### Loads and load torques



Load		ARS dynamic	ASS dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	1800	1800
<span style="color: green;">■</span> $F_y$	[N]	2500	2500
<span style="color: blue;">■</span> $F_z$	[N]	5000	6000
<span style="color: blue;">■</span> $-F_z$	[N]	3000	4000
Load torques		ARS dynamic	ASS dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	1800	1800
<span style="color: green;">■</span> $M_y$	[Nm]	2500	2500
<span style="color: blue;">■</span> $M_z$	[Nm]	5000	6000
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	3000	4000

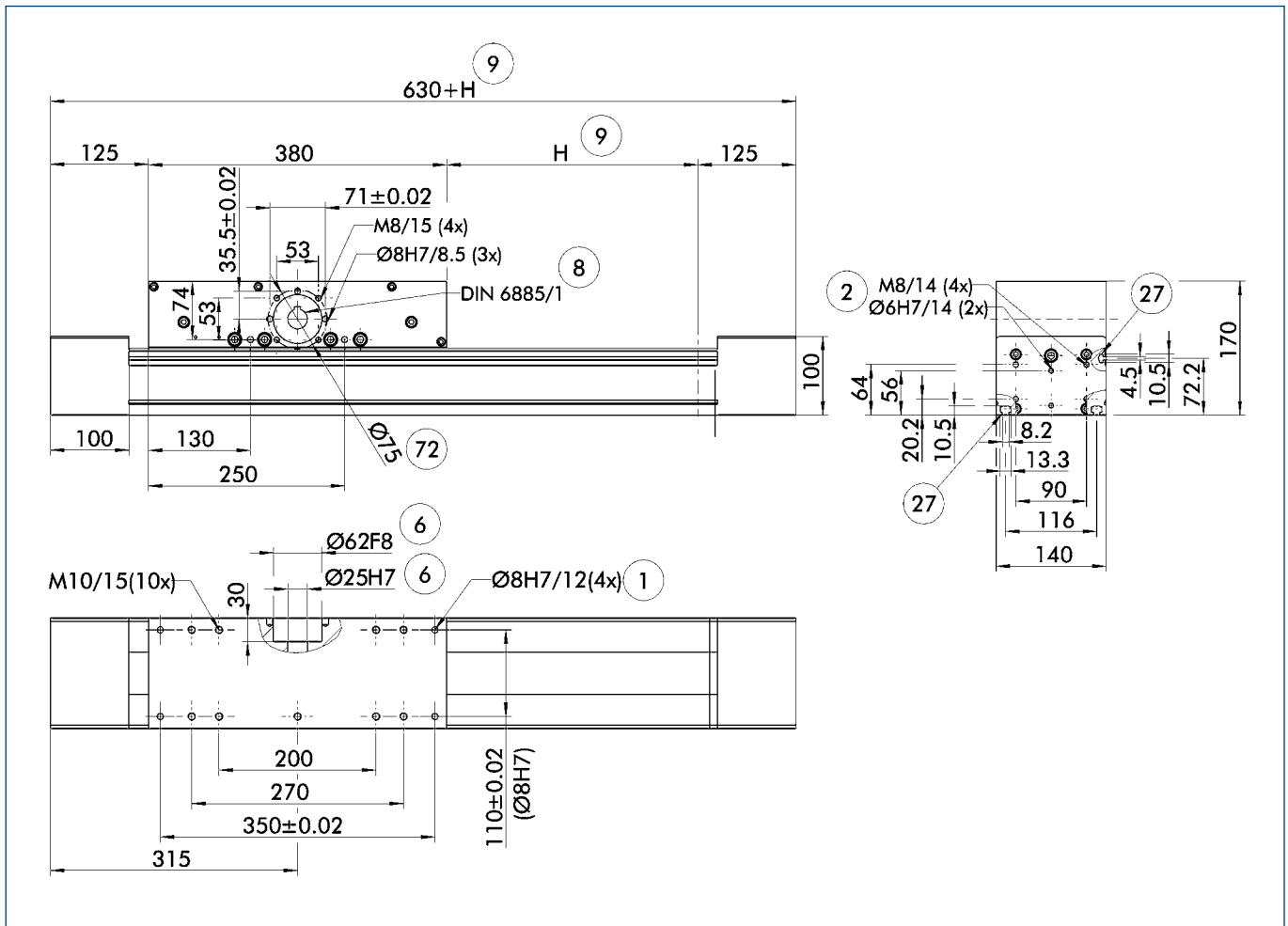
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

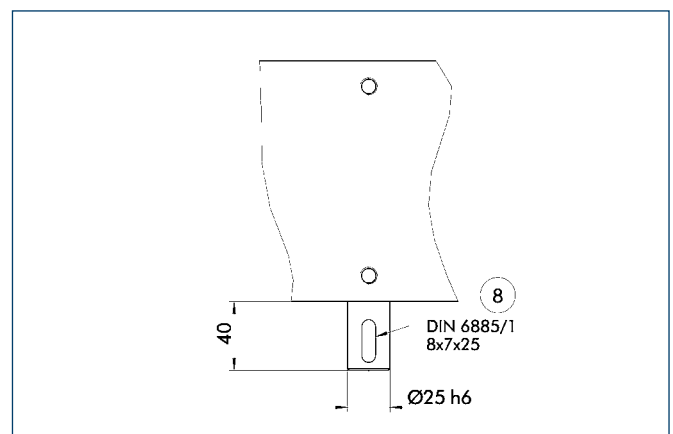
Designation		B 140-ARS	B 140-ASS
Max. travel speed	[m/s]	8	5
Repeat accuracy	[mm]	± 0.08	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60	60
Idle torque	[Nm]	3.5	3.5
<b>Drive</b>			
Drive element	Toothed belt	50 AT 10-E	50 AT 10-E
Travel per revolution	[mm]	220	220
Maximum stroke	[mm]	7470	7470
Max. total length	[mm]	8100	8100
Moment of inertia	[kgm <sup>2</sup> ]	0.035	0.037
<b>Weights</b>			
Basic without travel	[kg]	28.0	30.0
Travel per 100 mm	[kg]	1.2	1.5
Slide drive 380 mm	[kg]	13.0	14.0

### Main views

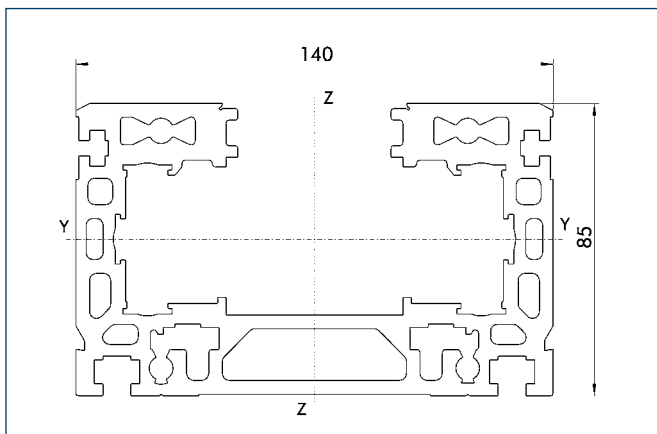


- ① Linear unit connection
- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ②⑦ Mounting groove for T-nuts
- ⑦② Bolt pitch circle

### Drive journal connection dimensions

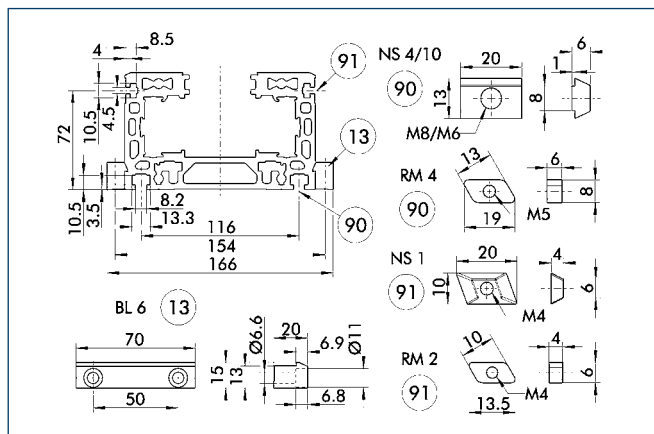


### Profile ARS/ASS



Specific mass	[kg/m]	10.68
Planar dimension	[mm <sup>2</sup> ]	3955
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	3159202
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	9975915
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	69334
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	184852

### Mounting

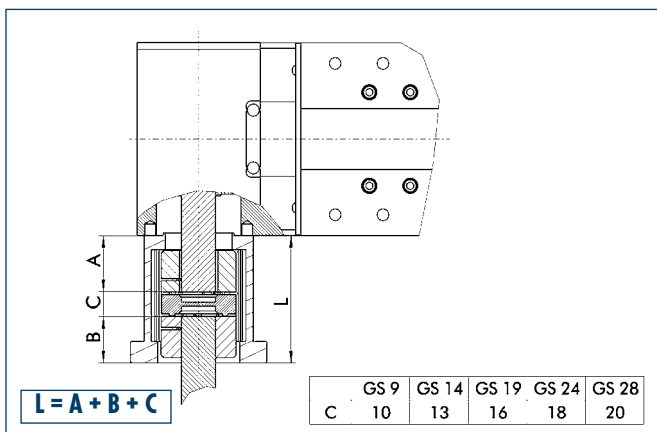


- 13 Mounting strip  
 90 T-nut on base side  
 91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS1	0331404
T-nut	NS4	0331407
T-nut	NS10	0331422
T-nut	RM2	0331425
T-nut	RM4	0331426
Mounting strip	BL6	0331428

### Motor flange schematic diagram

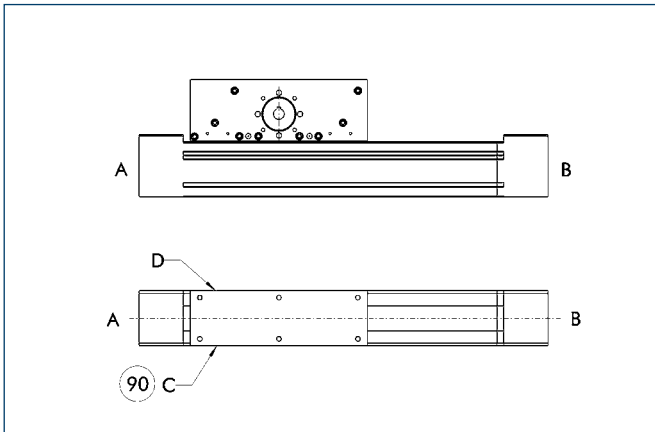


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

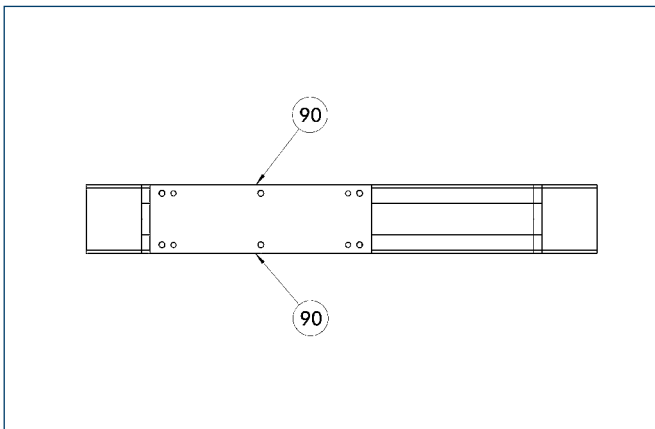
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



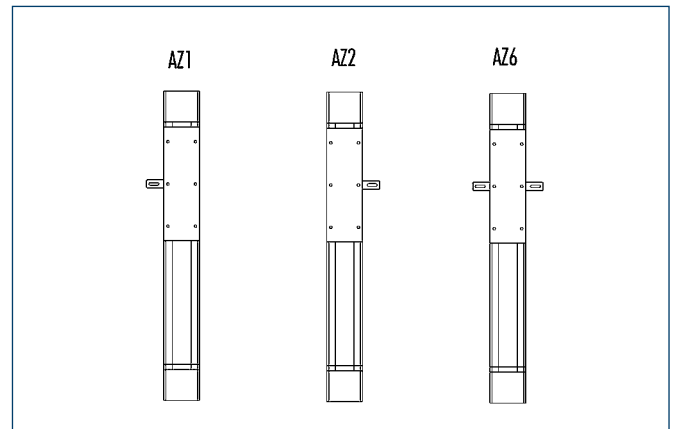
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.

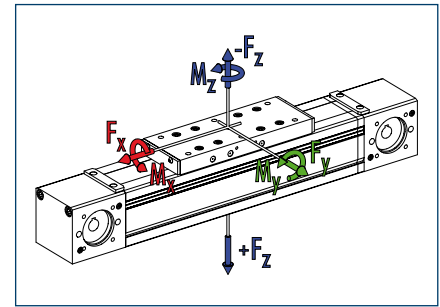
### Advantages of profiled rail guide

High load bearing capacity

Long lifetime

High precision

### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	4000
<span style="color: green;">■</span> $F_y$	[N]	3200
<span style="color: blue;">■</span> $F_z$	[N]	7500
<span style="color: blue;">■</span> $-F_z$	[N]	5000
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	600
<span style="color: green;">■</span> $M_y$	[Nm]	1200 (1700)
<span style="color: blue;">■</span> $M_z$	[Nm]	1200 (1700)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	143.6

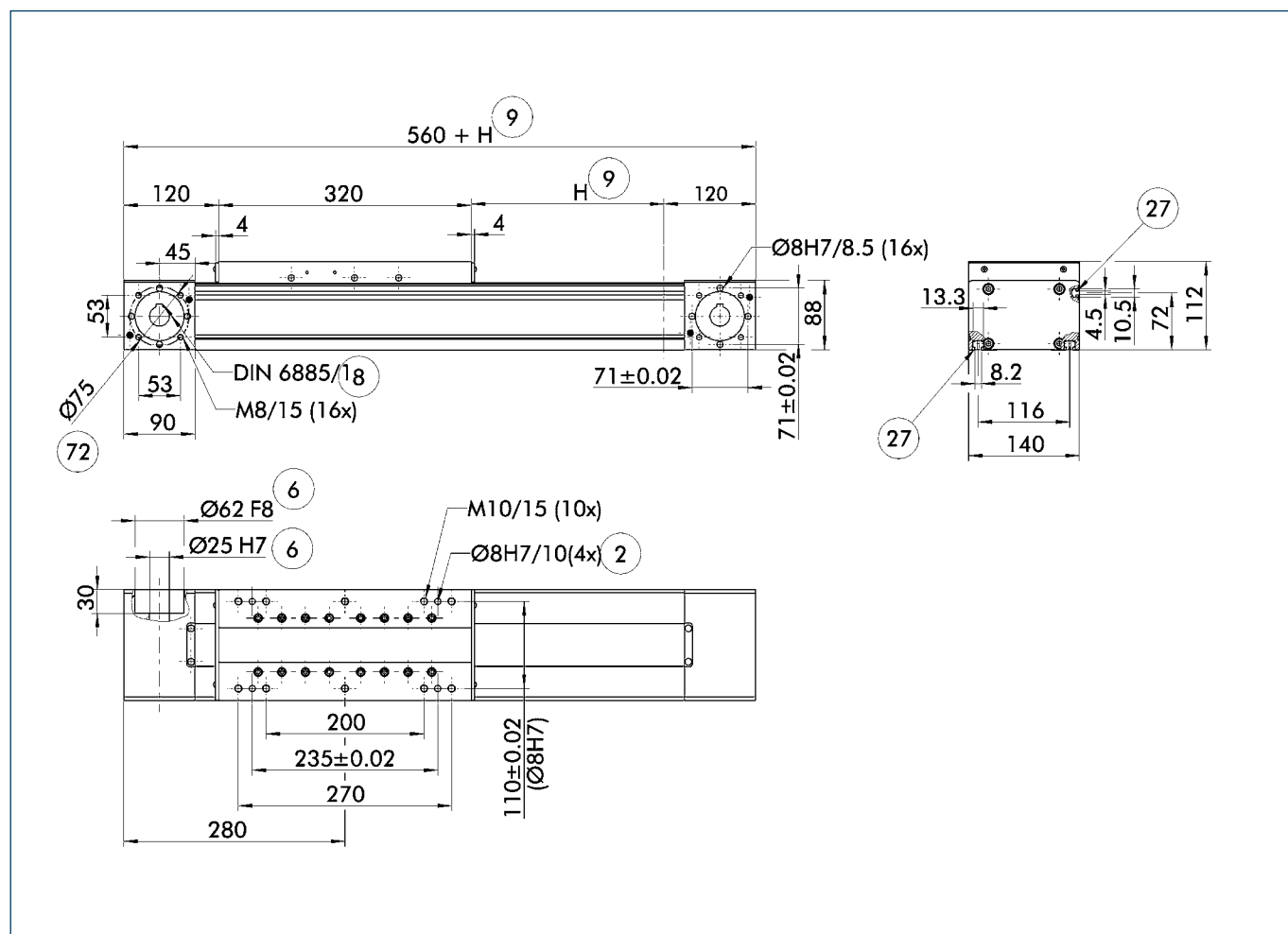
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 140C-ZSS
Max. travel speed	[m/s]	5
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60
Idle torque	[Nm]	3.5
Drive		
Drive element	Toothed belt	50 AT 10-E
Travel per revolution	[mm]	220
Maximum stroke	[mm]	7470
Max. total length	[mm]	8100
Moment of inertia	[kgm <sup>2</sup> ]	0.02
Weights		
Basic without travel	[kg]	15.0
Travel per 100 mm	[kg]	1.7
Slide plate 320 mm	[kg]	7.5
Slide plate 500 mm	[kg]	11.7

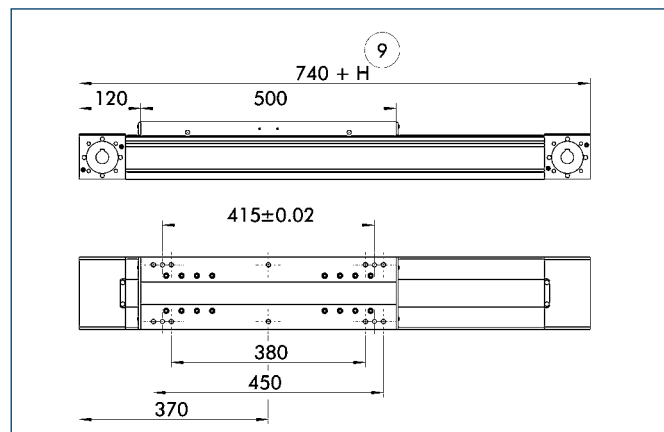
### Main views



- (2) Assembly connection
- (6) Drive connection
- (8) Feather key DIN 6885
- (9) Useful stroke

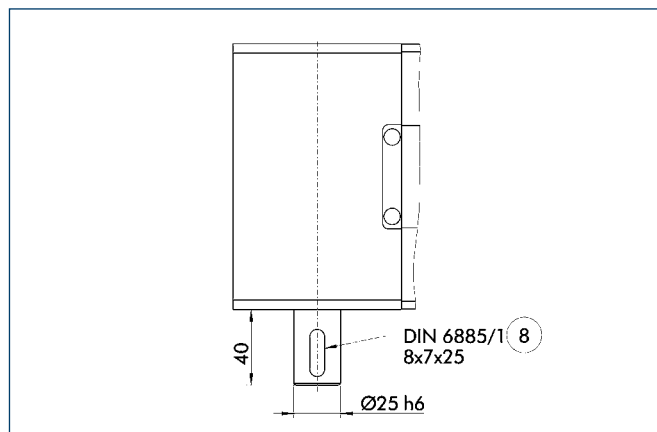
- (27) Mounting groove for T-nuts
- (72) Bolt pitch circle

### Long slide



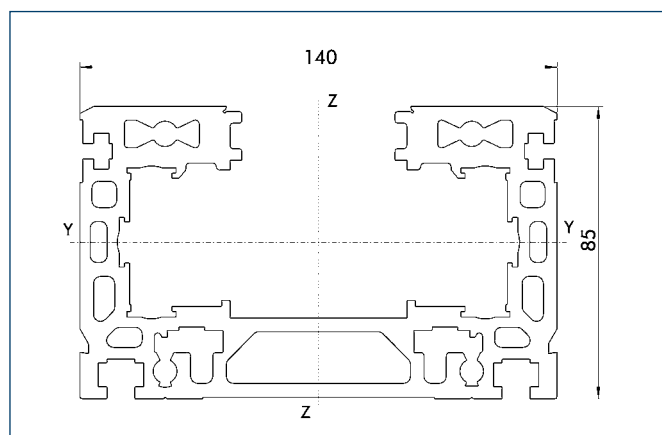
- (9) Useful stroke

### Drive journal connection dimensions



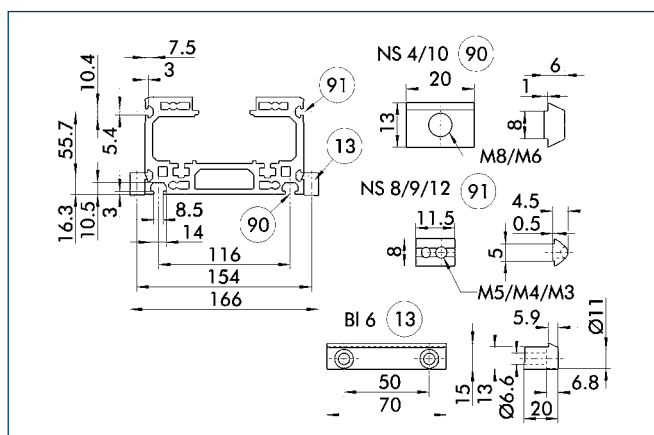
- (8) Feather key

### Profile ZSS



Specific mass	[kg/m]	10.11
Planar dimension	[mm <sup>2</sup> ]	3743
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	3127894
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	9071334
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	67067
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	129589

### Mounting

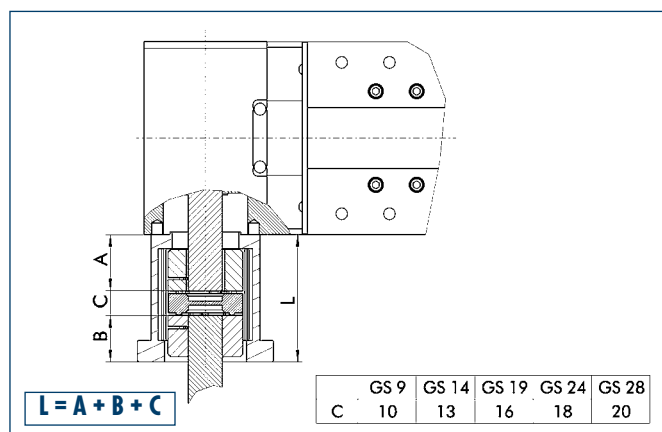


- 13 Mounting strip  
 90 T-nut on base side  
 91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS4	0331407
T-nut	NS8	0331420
T-nut	NS9	0331421
T-nut	NS10	0331422
T-nut	NS12	0331424
Mounting strip	BL6	0331428

### Motor flange schematic diagram

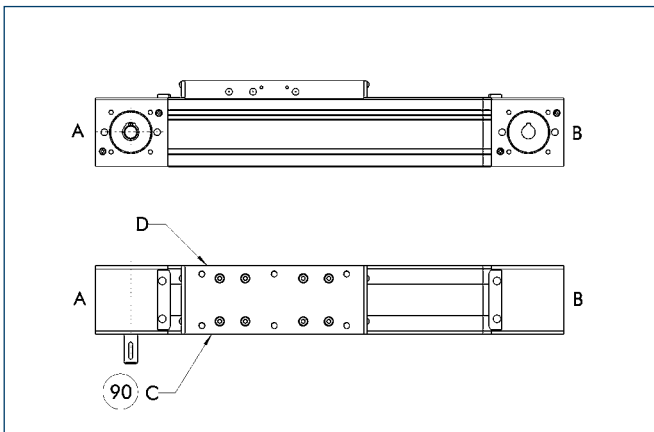


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

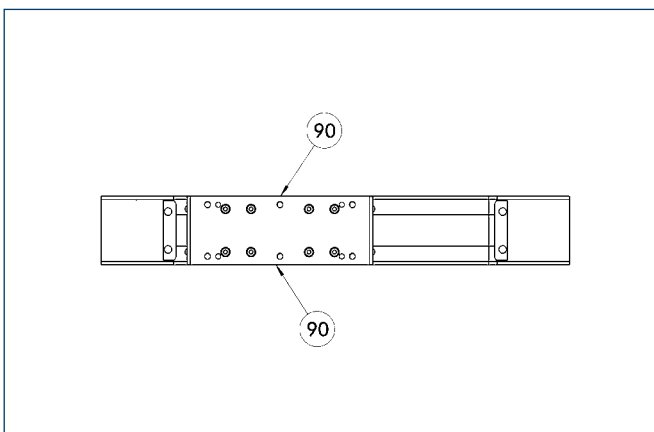
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



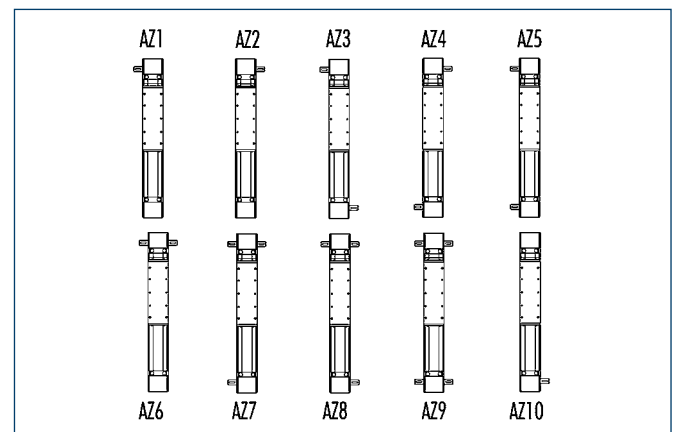
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.



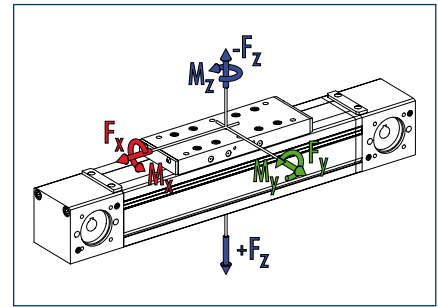
### Advantages of profiled rail guide

High load bearing capacity

Long lifetime

High precision

### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	1800
<span style="color: green;">■</span> $F_y$	[N]	3200
<span style="color: blue;">■</span> $F_z$	[N]	7500
<span style="color: blue;">■</span> $-F_z$	[N]	5000
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	600
<span style="color: green;">■</span> $M_y$	[Nm]	1200
<span style="color: blue;">■</span> $M_z$	[Nm]	1200
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	99.0

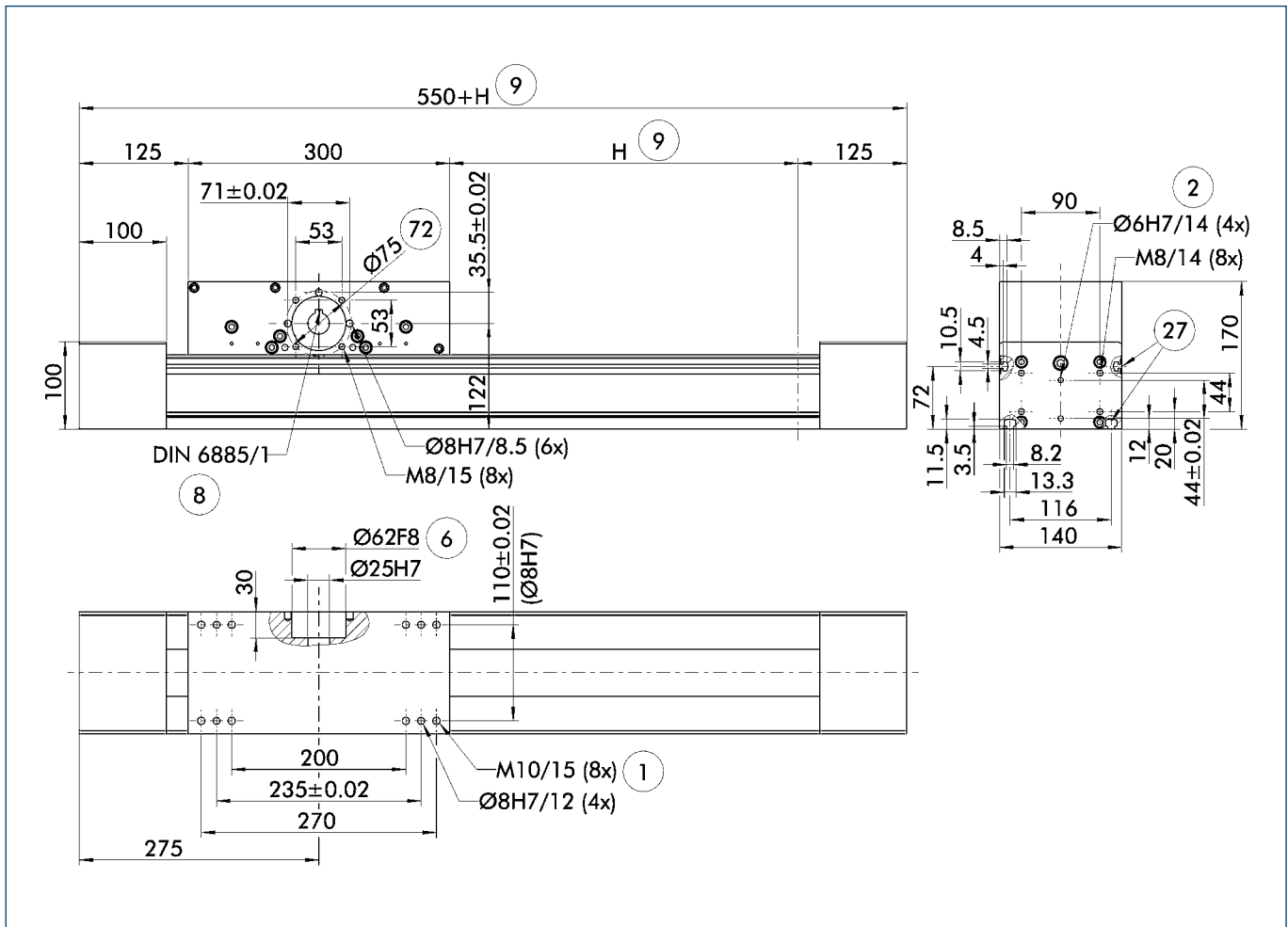
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

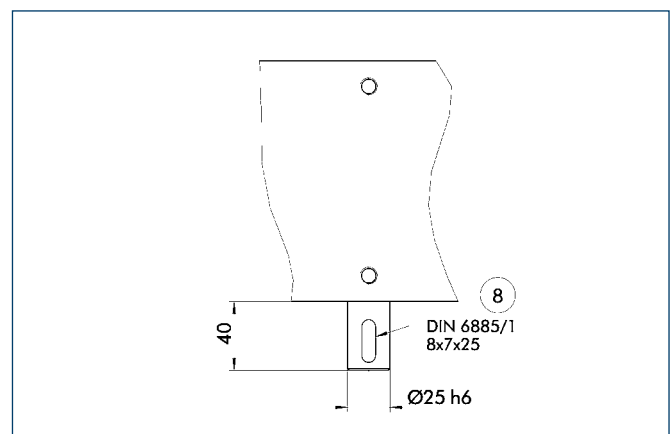
Designation		B 140C-ASS
Max. travel speed	[m/s]	5
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60
Idle torque	[Nm]	3.5
Drive		
Drive element	Toothed belt	50 AT 10-E
Travel per revolution	[mm]	220
Maximum stroke	[mm]	7470
Max. total length	[mm]	8100
Moment of inertia	[kgm <sup>2</sup> ]	0.037
Weights		
Basic without travel	[kg]	30.0
Travel per 100 mm	[kg]	1.5
Slide drive 380 mm	[kg]	14.0

### Main views



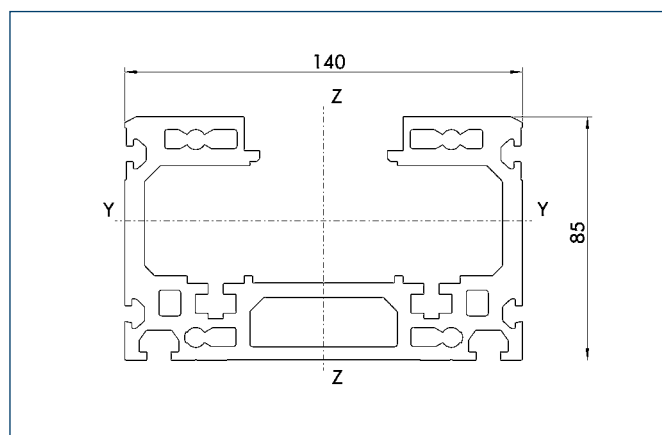
- |                          |                              |
|--------------------------|------------------------------|
| ① Linear unit connection | ② Assembly connection        |
| ⑥ Drive connection       | ⑦ Mounting groove for T-nuts |
| ⑧ Feather key DIN 6885   | ⑦ Bolt pitch circle          |
| ⑨ Useful stroke          |                              |

### Drive journal connection dimensions



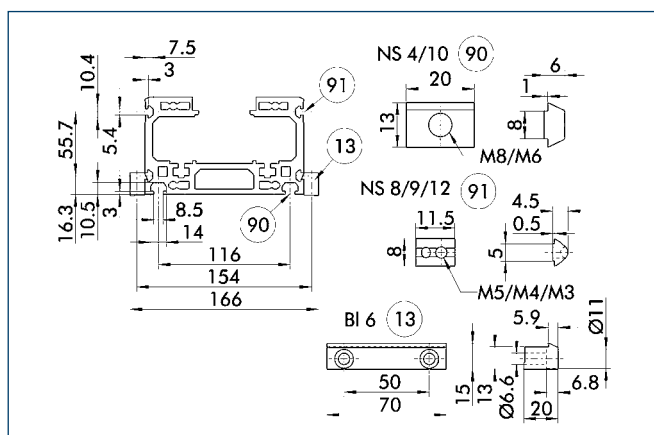
- ⑧ Feather key

### Profile ASS



Specific mass	[kg/m]	10.11
Planar dimension	[mm <sup>2</sup> ]	3743
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	3127894
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	9071334
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	67067
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	129589

### Mounting

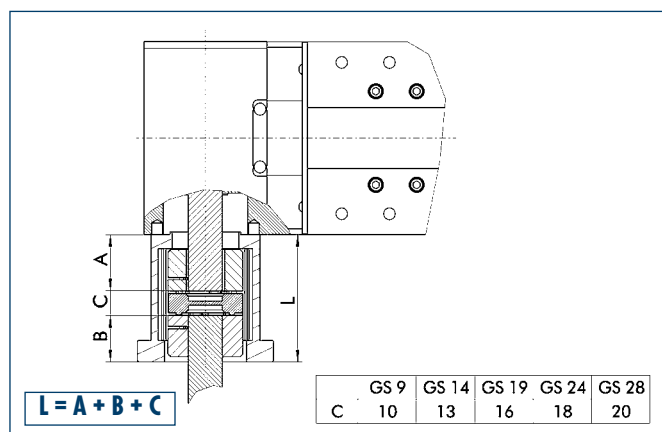


- 13 Mounting strip  
90 T-nut on base side  
91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS4	0331407
T-nut	NS8	0331420
T-nut	NS9	0331421
T-nut	NS10	0331422
T-nut	NS12	0331424
Mounting strip	BL6	0331428

### Motor flange schematic diagram

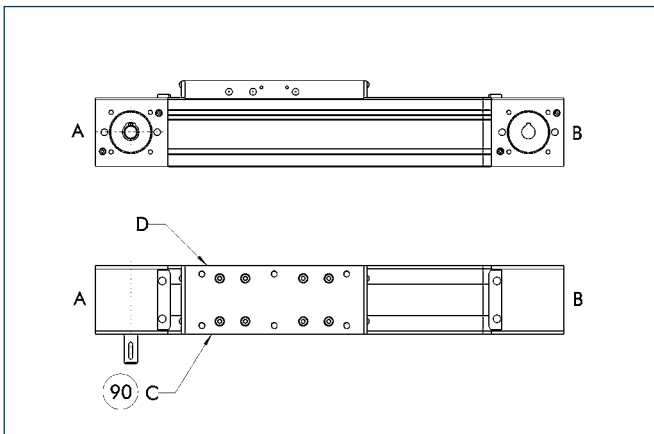


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

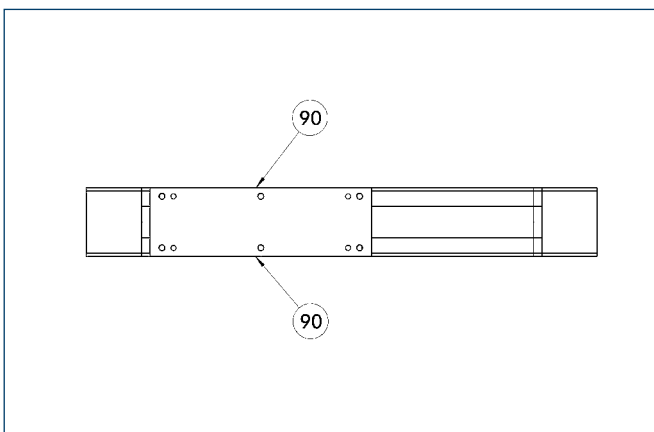
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



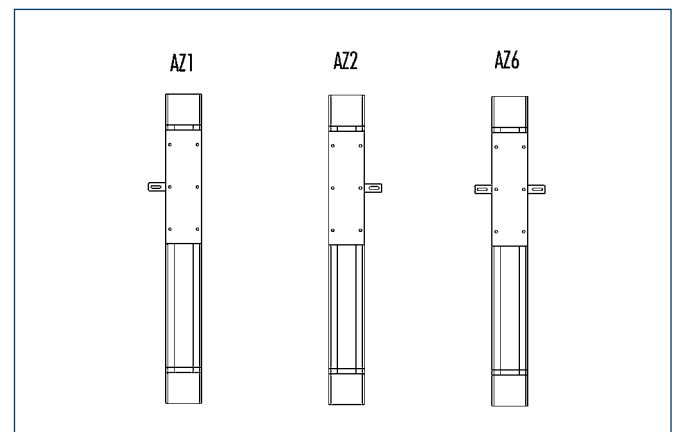
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.

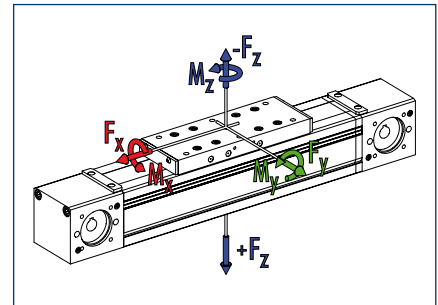
### Advantages of profiled rail guide

High load bearing capacity

Long lifetime

High precision

### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	10000
<span style="color: green;">■</span> $F_y$	[N]	5000
<span style="color: blue;">■</span> $F_z$	[N]	15000
<span style="color: blue;">■</span> $-F_z$	[N]	8000
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	700
<span style="color: green;">■</span> $M_y$	[Nm]	1400 (2000)
<span style="color: blue;">■</span> $M_z$	[Nm]	1100 (1500)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	712.3

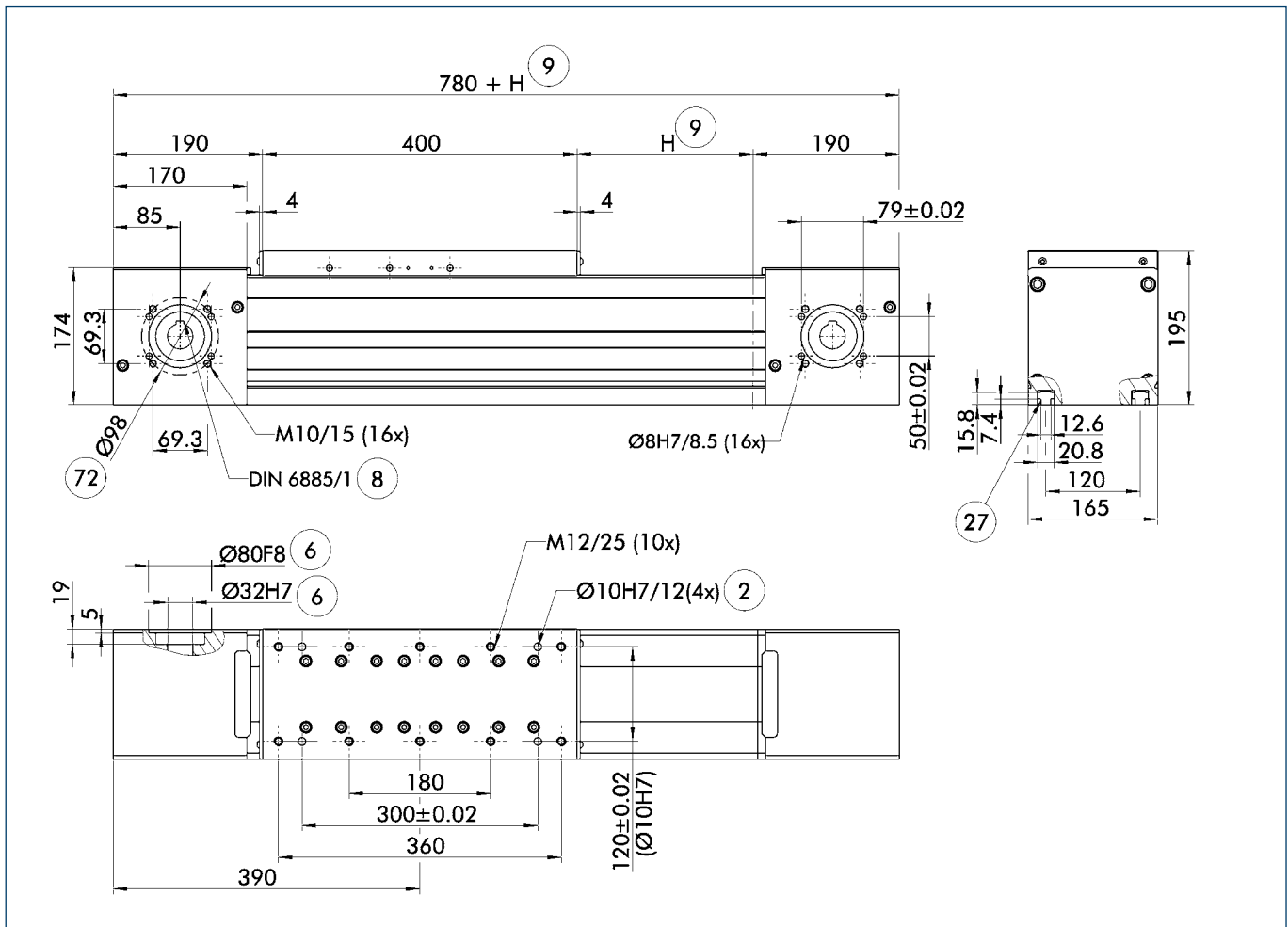
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 165-ZSS
Max. travel speed	[m/s]	5
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60
Idle torque	[Nm]	12.0
<b>Drive</b>		
Drive element	Toothed belt	75 AT 20
Travel per revolution	[mm]	440
Maximum stroke	[mm]	6920
Max. total length	[mm]	7700
Moment of inertia	[kgm <sup>2</sup> ]	0.085
<b>Weights</b>		
Basic without travel	[kg]	42.4
Travel per 100 mm	[kg]	3.5
Slide plate 400 mm	[kg]	11.9
Slide plate 600 mm	[kg]	17.9

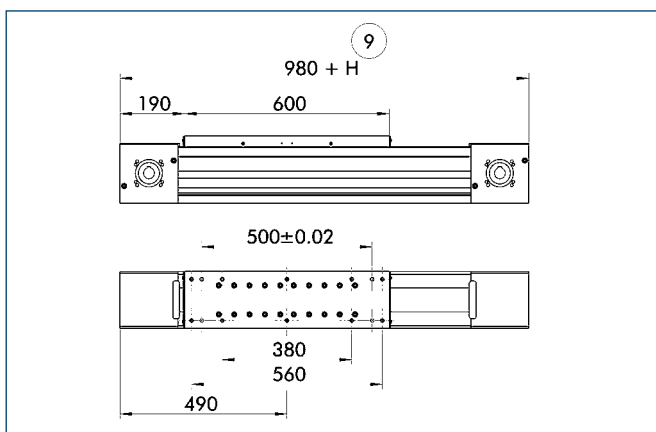
### Main views



- (2) Assembly connection
- (6) Drive connection
- (8) Feather key DIN 6885
- (9) Useful stroke

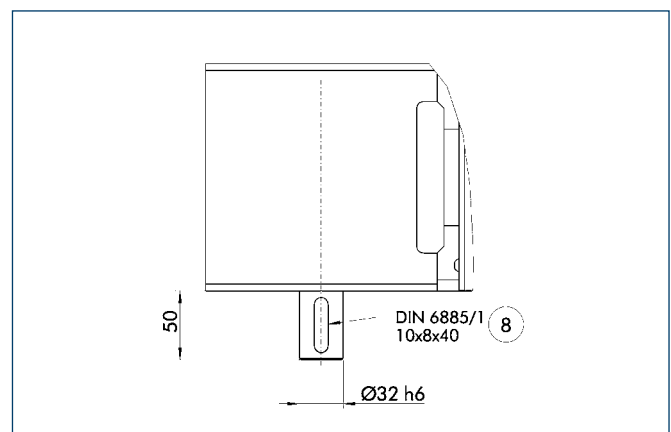
- (27) Mounting groove for T-nuts
- (72) Bolt pitch circle

### Long slide



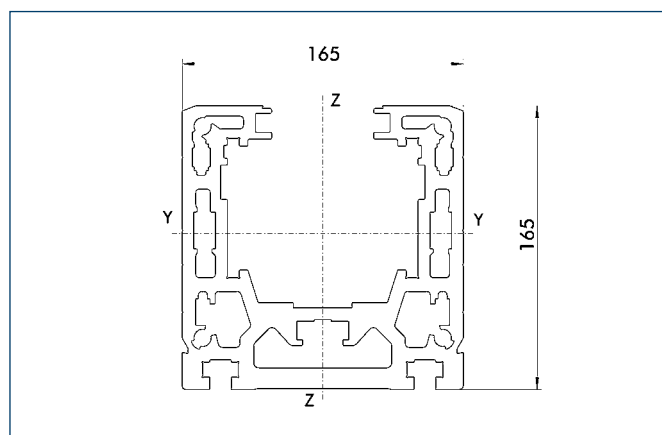
- (9) Useful stroke

### Drive journal connection dimensions



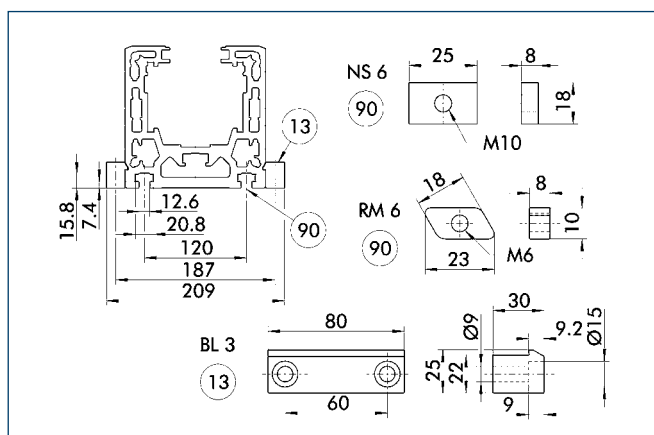
- (8) Feather key

### Profile ZSS



Specific mass	[kg/m]	25.13
Planar dimension	[mm <sup>2</sup> ]	9308
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	25391136
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	31673479
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	264686
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	383919

### Mounting



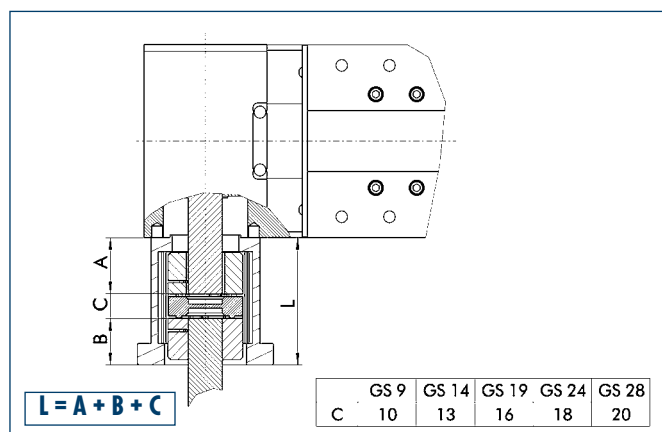
⑬ Mounting strip

⑨⑩ T-nut on base side

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS6	0331409
T-nut	RM6	0331427
Mounting strip	BL3	0331402

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

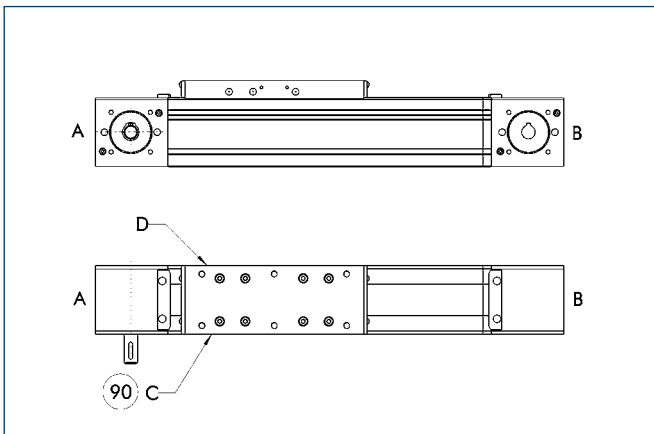
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

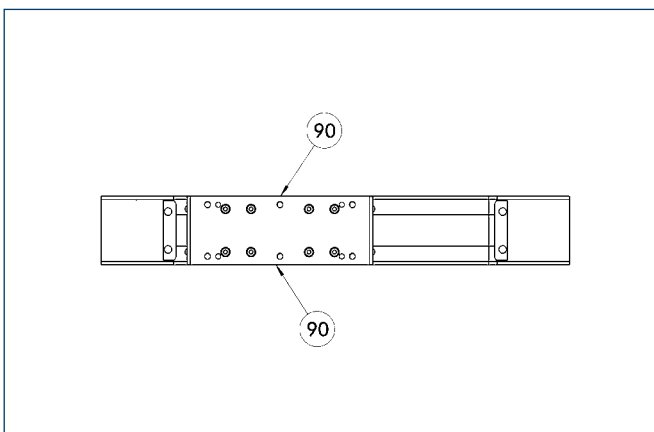
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



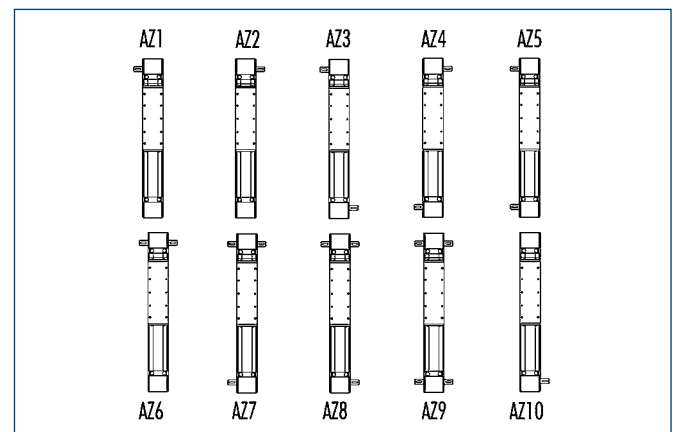
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.



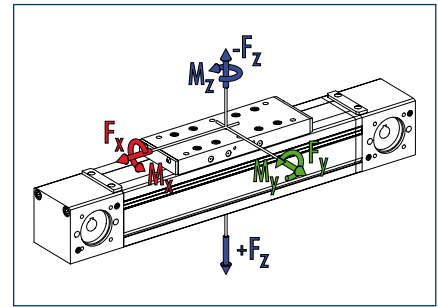
### Advantages of profiled rail guide

High load bearing capacity

Long lifetime

High precision

### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	6000
<span style="color: green;">■</span> $F_y$	[N]	6000
<span style="color: blue;">■</span> $F_z$	[N]	12000
<span style="color: blue;">■</span> $-F_z$	[N]	6000
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	1500
<span style="color: green;">■</span> $M_y$	[Nm]	3000 (4000)
<span style="color: blue;">■</span> $M_z$	[Nm]	1500 (2000)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	313.6

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 180-ZSS
Max. travel speed	[m/s]	5
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60
Idle torque	[Nm]	8.0
Drive		
Drive element	Toothed belt	75 AT 10
Travel per revolution	[mm]	320
Maximum stroke	[mm]	5500
Max. total length	[mm]	6200
Moment of inertia	[kgm <sup>2</sup> ]	0.056
Weights		
Basic without travel	[kg]	37.7
Travel per 100 mm	[kg]	2.4
Slide plate 380 mm	[kg]	11.2
Slide plate 600 mm	[kg]	15.7

[illegible]

- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts
- ㉑ Bolt pitch circle

- ⑨ Useful stroke

50

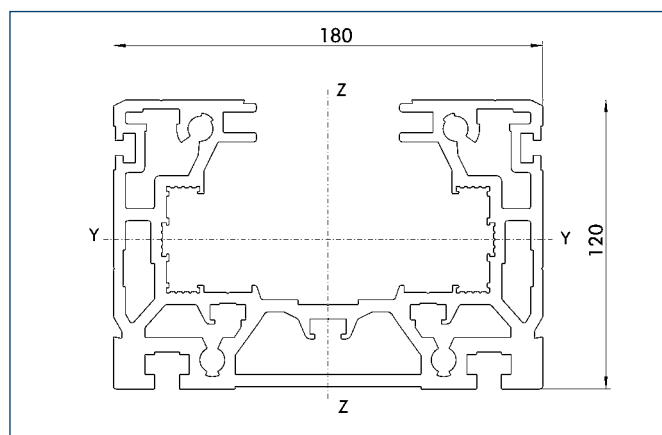
DIN 6885/1  
10x8x40

Ø32 h6

8

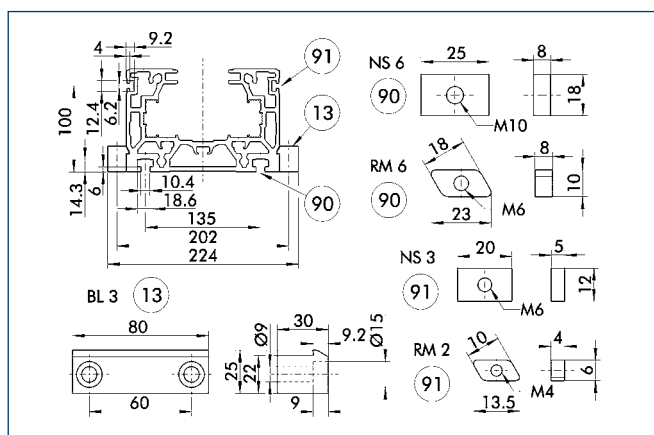
- ⑧ Feather key

### Profile ZSS



Specific mass	[kg/m]	15.49
Planar dimension	[mm <sup>2</sup> ]	5736
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	9236448
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	23586987
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	134968
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	261545

### Mounting

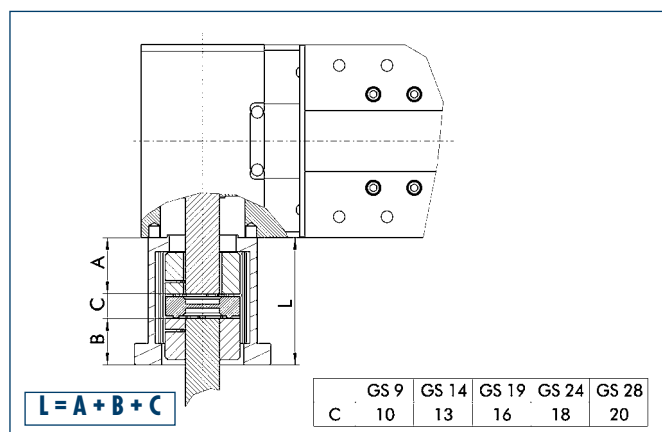


- 13 Mounting strip  
 90 T-nut on base side  
 91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	NS6	0331409
T-nut	RM2	0331425
T-nut	RM6	0331427
Mounting strip	BL3	0331402

### Motor flange schematic diagram

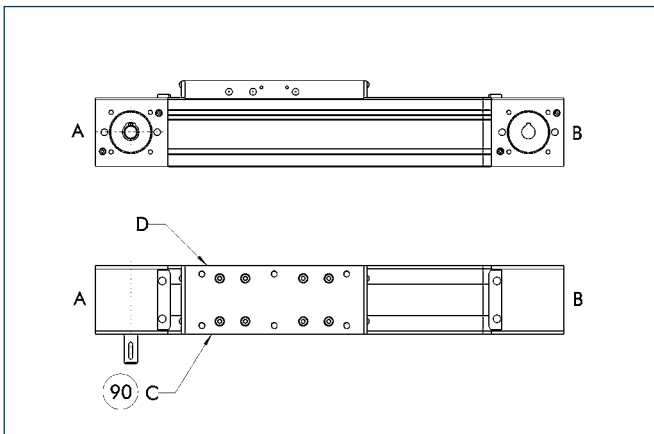


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

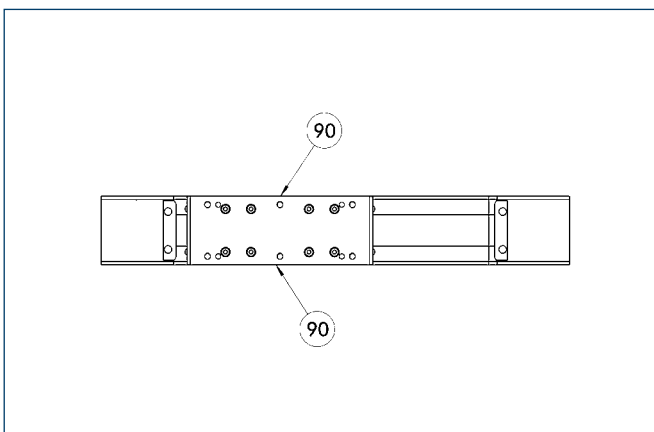
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



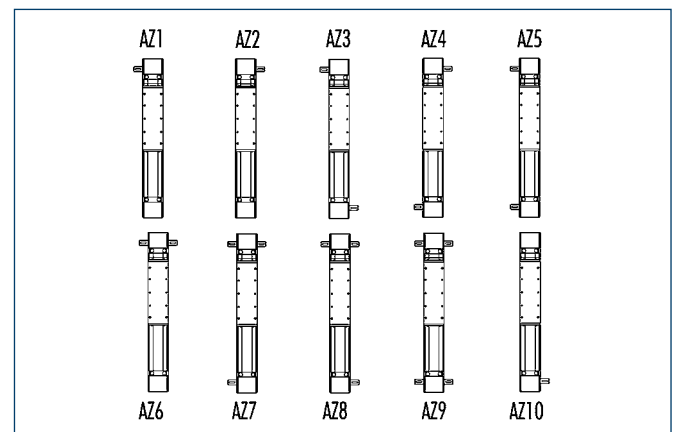
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

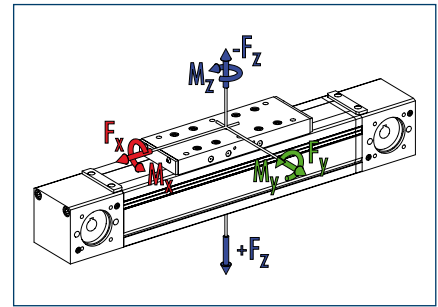
### Advantages of profiled rail guide

High load bearing capacity

Long lifetime

High precision

### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	3500
<span style="color: green;">■</span> $F_y$	[N]	6000
<span style="color: blue;">■</span> $F_z$	[N]	12000
<span style="color: blue;">■</span> $-F_z$	[N]	6000
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	1500
<span style="color: green;">■</span> $M_y$	[Nm]	3000
<span style="color: blue;">■</span> $M_z$	[Nm]	1500
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	186.3

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 180-ASS
Max. travel speed	[m/s]	5
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60
Idle torque	[Nm]	8.0
<b>Drive</b>		
Drive element	Toothed belt	75 AT 10
Travel per revolution	[mm]	320
Maximum stroke	[mm]	5470
Max. total length	[mm]	6200
Moment of inertia	[kgm <sup>2</sup> ]	0.062
<b>Weights</b>		
Basic without travel	[kg]	48.9
Travel per 100 mm	[kg]	2.8
Slide drive 400 mm	[kg]	25.6

- ① Linear unit connection
- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts
- ㉔ Bolt pitch circle

50

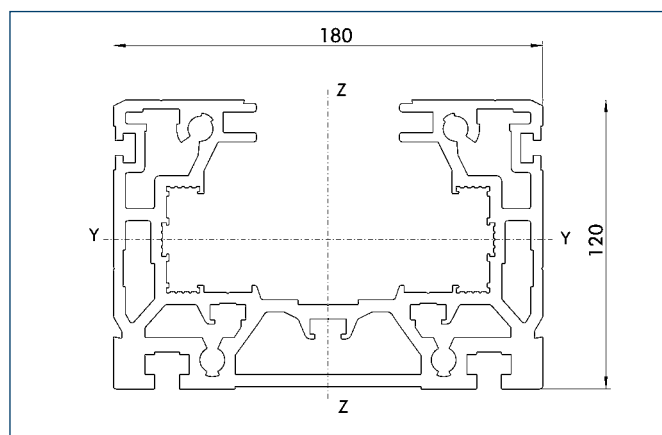
8

DIN 6885/1  
10x8x40

Ø32 h6

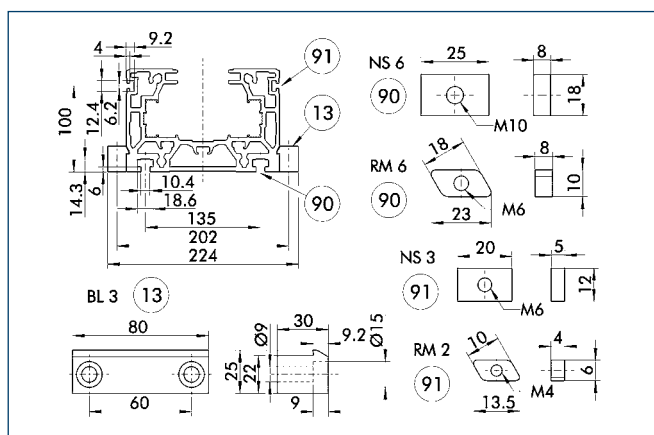
- ⑧ Feather key

### Profile ASS



Specific mass	[kg/m]	15.49
Planar dimension	[mm <sup>2</sup> ]	5736
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	9236448
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	23586987
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	134968
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	261545

### Mounting

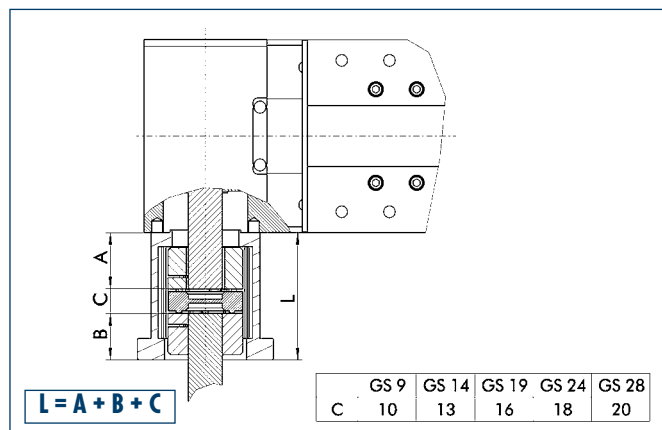


- 13 Mounting strip  
 90 T-nut on base side  
 91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	NS6	0331409
T-nut	RM2	0331425
T-nut	RM6	0331427
Mounting strip	BL3	0331402

### Motor flange schematic diagram

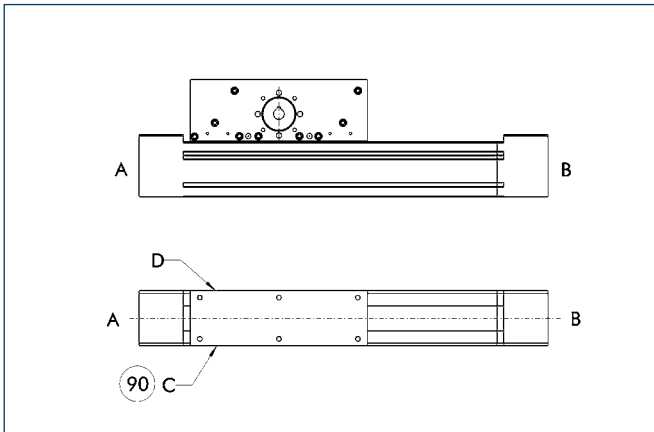


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

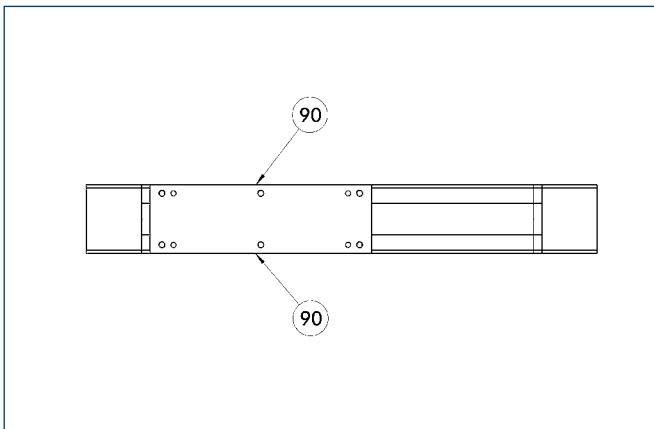
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



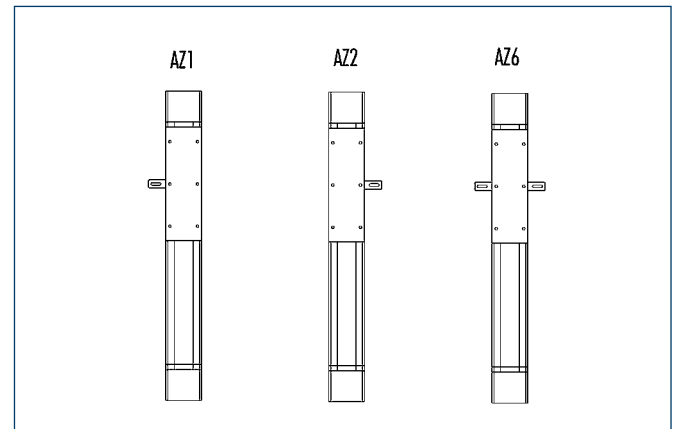
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

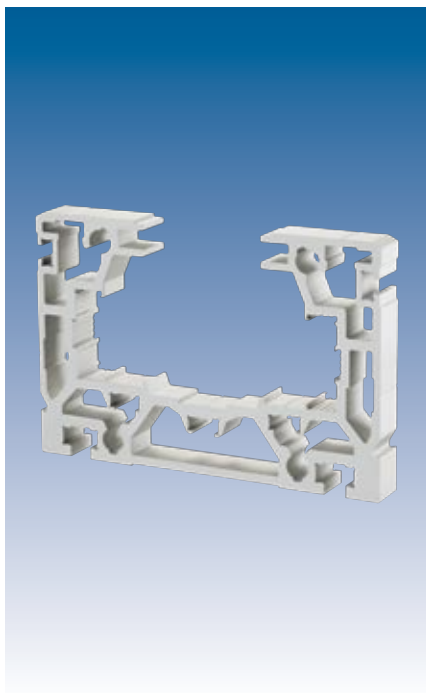
If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.





### Advantages of roller guide

**High maximum moments**  
due to optimum force transmission to the profile

**Long stroke lengths**  
can be achieved with no problems

**Life-time lubricated rollers**  
for easy maintenance use

**Smooth, low-noise running**

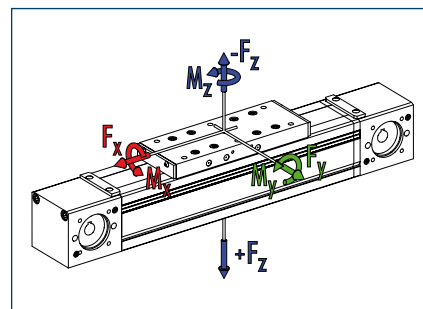
### Advantages of profiled rail guide

**High load bearing capacity**

**Long lifetime**

**High precision**

### Loads and load torques



Load		ZRS dynamic	ZSS dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	6000	6000
<span style="color: green;">■</span> $F_y$	[N]	6000	8000
<span style="color: blue;">■</span> $F_z$	[N]	10000	15000
<span style="color: blue;">■</span> $-F_z$	[N]	6000	8000
Load torques		ZRS dynamic	ZSS dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	1200	1800
<span style="color: green;">■</span> $M_y$	[Nm]	2000 (3000)	3600 (4800)
<span style="color: blue;">■</span> $M_z$	[Nm]	1200 (1800)	1800 (2400)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	313.6	313.6

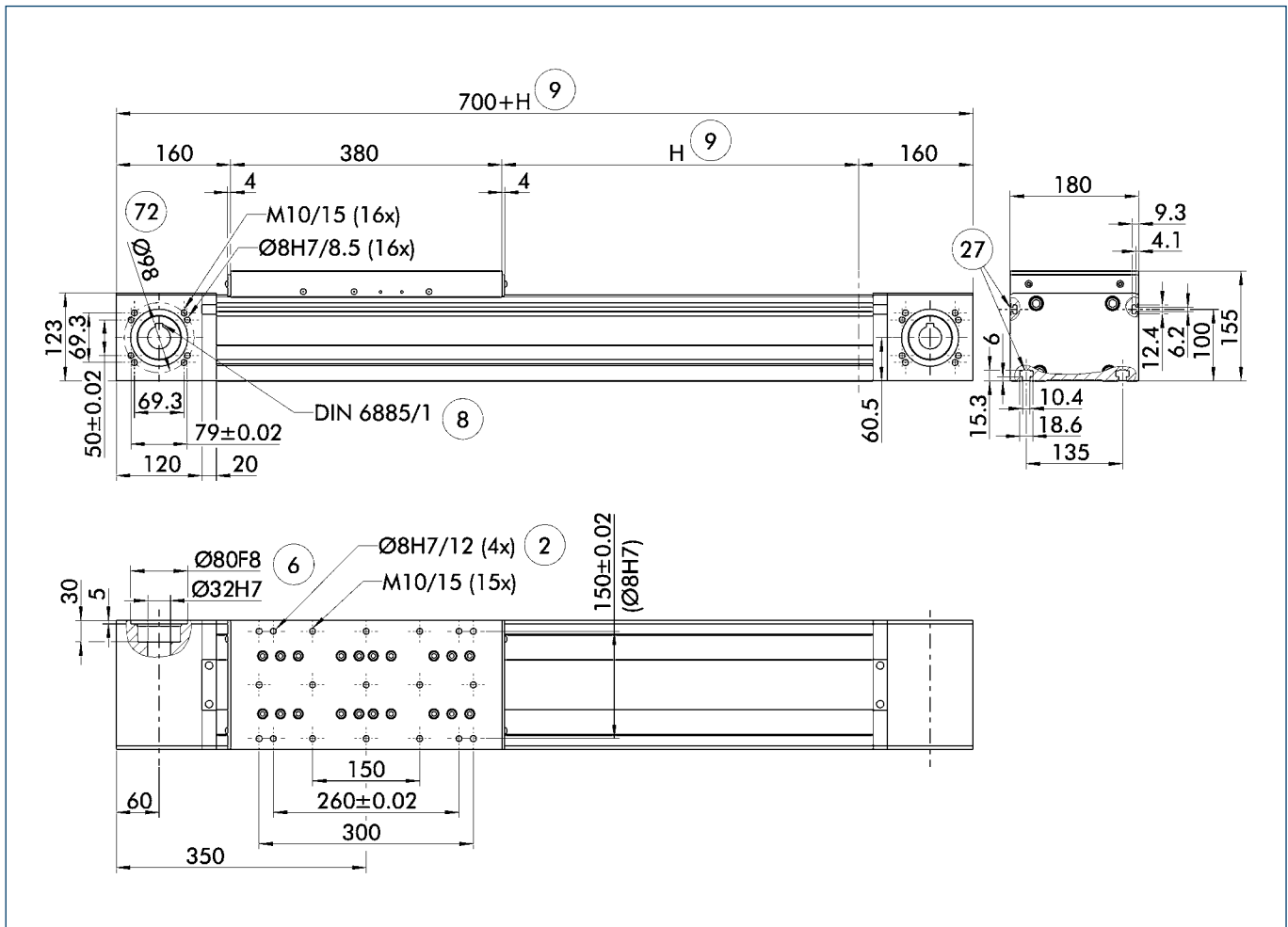
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 180C-ZRS	B 180C-ZSS
Max. travel speed	[m/s]	8	5
Repeat accuracy	[mm]	± 0.08	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60	60
Idle torque	[Nm]	8.0	8.0
<b>Drive</b>			
Drive element	Toothed belt	75 AT 10	75 AT 10
Travel per revolution	[mm]	320	320
Maximum stroke	[mm]	5500	5500
Max. total length	[mm]	6200	6200
Moment of inertia	[kgm <sup>2</sup> ]	0.0425	0.0465
<b>Weights</b>			
Basic without travel	[kg]	37.7	39.7
Travel per 100 mm	[kg]	1.9	2.6
Slide plate 380 mm	[kg]	13.5	14.65
Slide plate 600 mm	[kg]	14.6	15.75

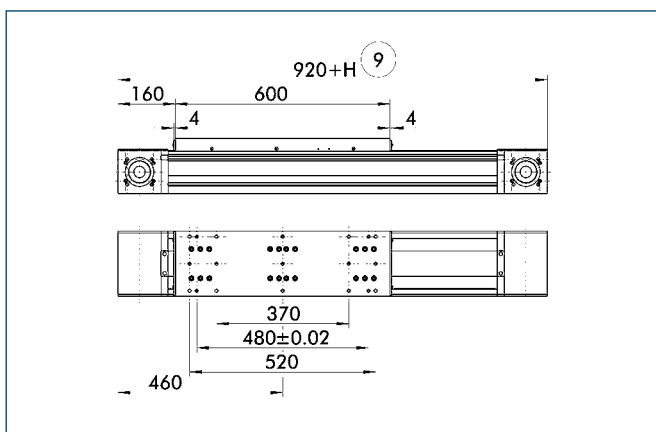
### Main views



- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke

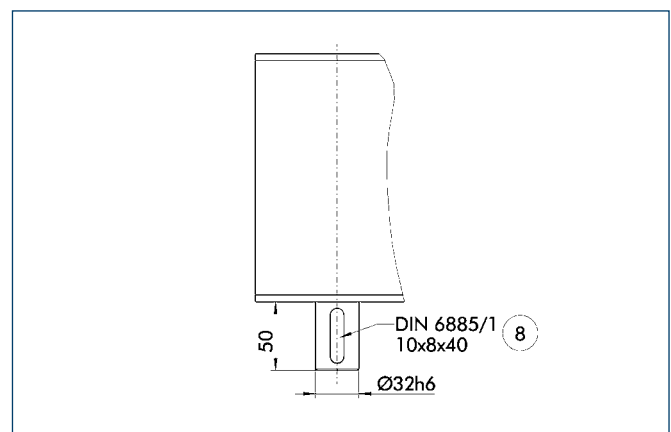
- ②⑦ Mounting groove for T-nuts
- ⑦② Bolt pitch circle

### Long slide



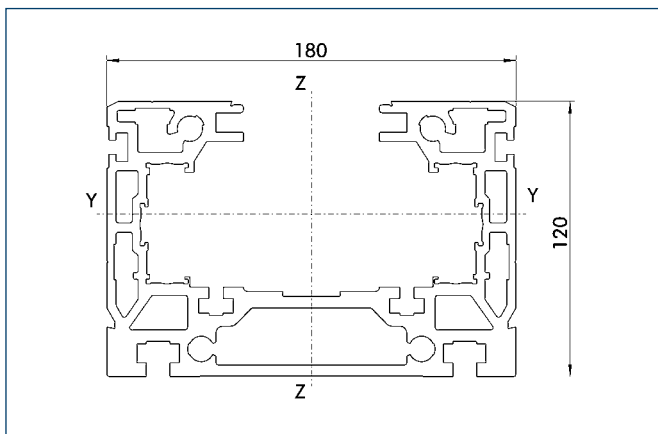
- ⑨ Useful stroke

### Drive journal connection dimensions



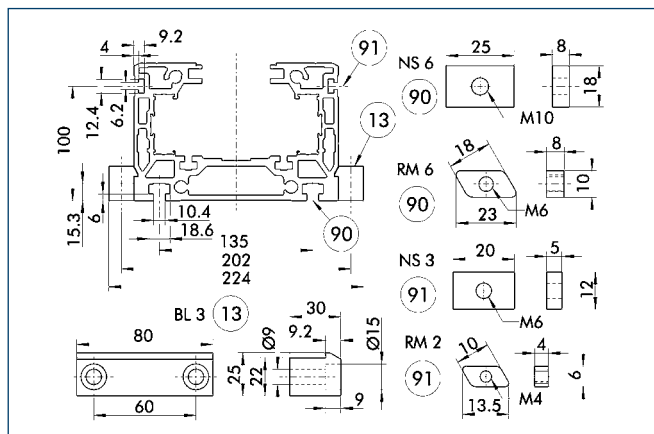
- ⑧ Feather key

### Profile ZRS/ZSS



Specific mass	[kg/m]	15.49
Planar dimension	[mm <sup>2</sup> ]	5736
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	9236448
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	23586987
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	134968
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	261545

### Mounting

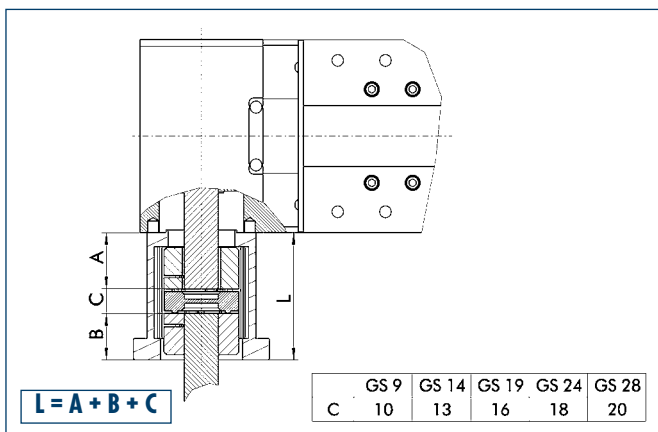


- 13 Mounting strip  
 90 T-nut on base side  
 91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	NS6	0331409
T-nut	RM2	0331425
T-nut	RM6	0331427
Mounting strip	BL3	0331402

### Motor flange schematic diagram

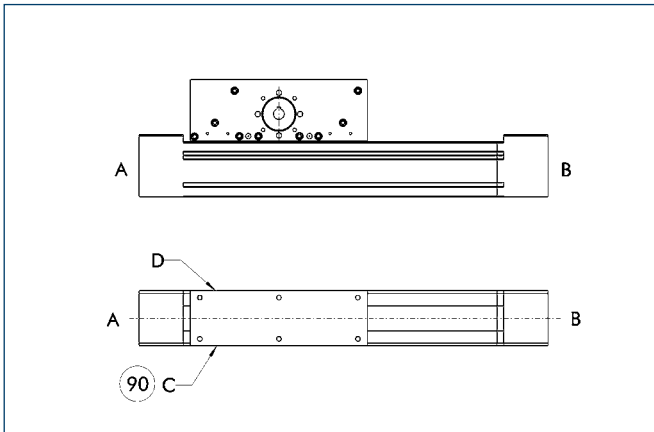


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

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### Limit switch position



90 Limit switch standard position

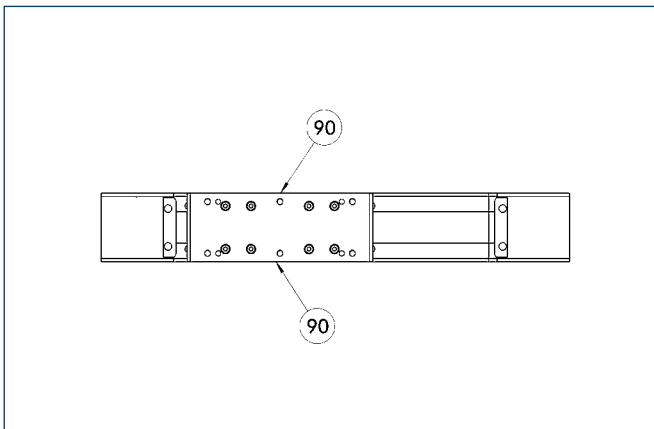
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



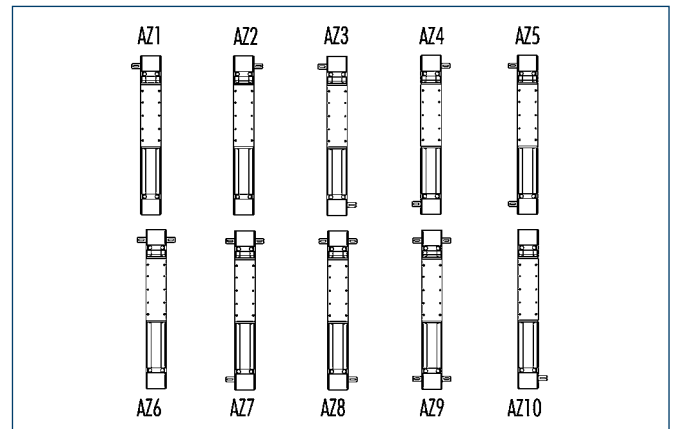
90 Standard lubrication connection

#### Standard connection

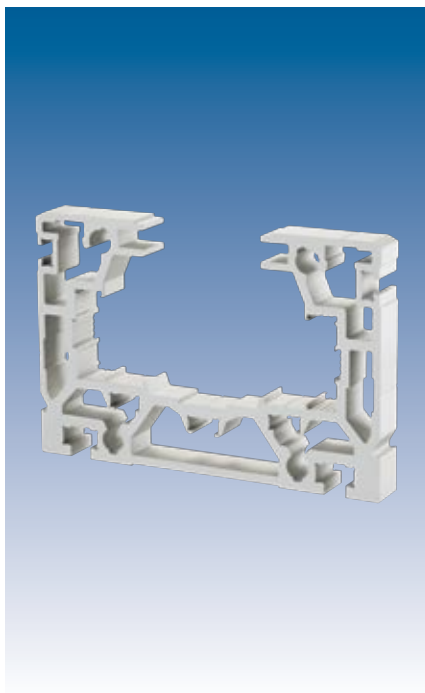
Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

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for easy maintenance use

**Smooth, low-noise running**

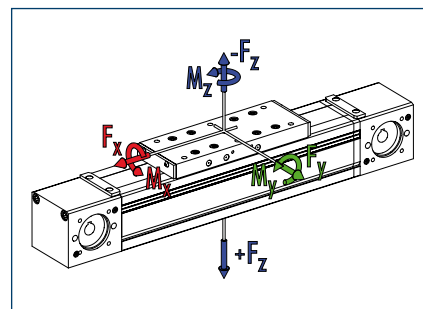
### Advantages of profiled rail guide

**High load bearing capacity**

**Long lifetime**

**High precision**

### Loads and load torques



Load		ARS dynamic	ASS dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	3500	3500
<span style="color: green;">■</span> $F_y$	[N]	6000	8000
<span style="color: blue;">■</span> $F_z$	[N]	10000	15000
<span style="color: blue;">■</span> $-F_z$	[N]	6000	8000
Load torques		ARS dynamic	ASS dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	1200	1800
<span style="color: green;">■</span> $M_y$	[Nm]	2000 (3000)	3600 (4800)
<span style="color: blue;">■</span> $M_z$	[Nm]	1200 (1800)	1800 (2400)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	186.3	186.3

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		B 180C-ARS	B 180C-ASS
Max. travel speed	[m/s]	8	5
Repeat accuracy	[mm]	± 0.08	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60	60
Idle torque	[Nm]	8.0	8.0
<b>Drive</b>			
Drive element	Toothed belt	75 AT 10	75 AT 10
Travel per revolution	[mm]	320	320
Maximum stroke	[mm]	5470	5470
Max. total length	[mm]	6200	6200
Moment of inertia	[kgm <sup>2</sup> ]	0.0715	0.0775
<b>Weights</b>			
Basic without travel	[kg]	49.5	51.5
Travel per 100 mm	[kg]	2.8	3.6
Slide drive 400 mm	[kg]	26.2	27.35

- ① Linear unit connection
- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts
- ㉔ Bolt pitch circle

50

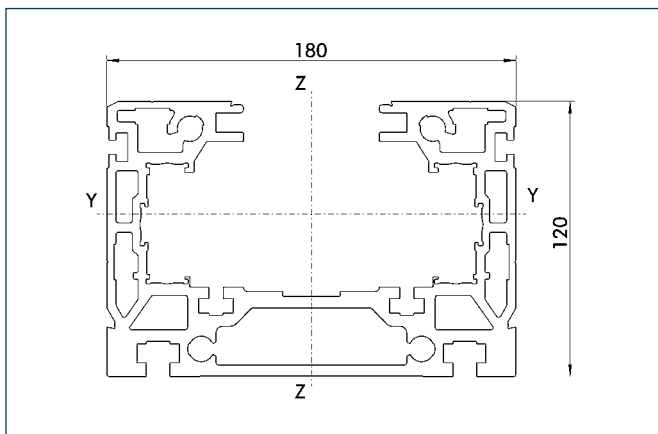
Ø32h6

DIN 6885/1  
10x8x40

8

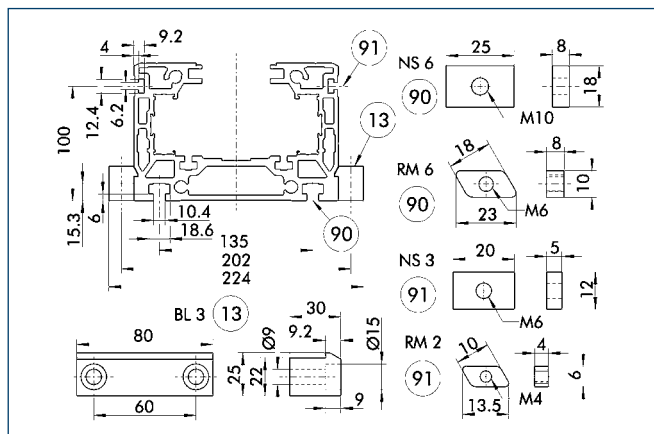
- ⑧ Feather key

### Profile ARS/ASS



Specific mass	[kg/m]	15.49
Planar dimension	[mm <sup>2</sup> ]	5736
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	9236448
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	23586987
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	134968
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	261545

### Mounting

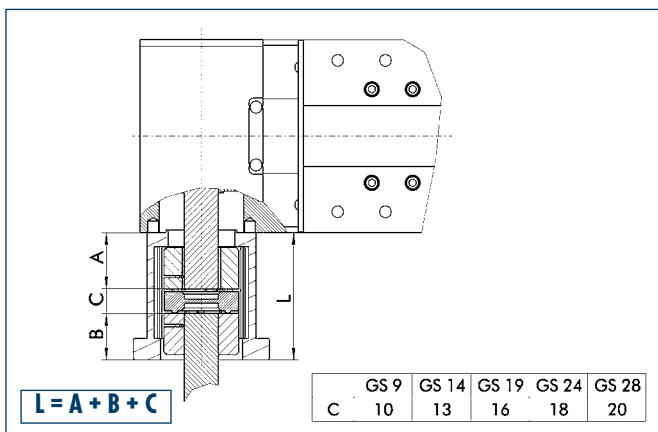


- 13 Mounting strip  
 90 T-nut on base side  
 91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	NS6	0331409
T-nut	RM2	0331425
T-nut	RM6	0331427
Mounting strip	BL3	0331402

### Motor flange schematic diagram

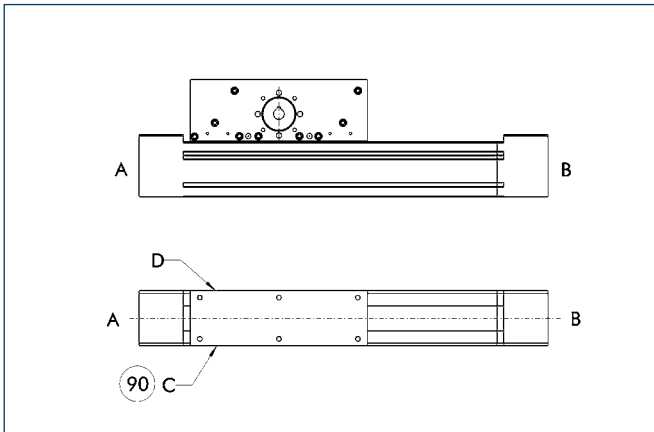


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

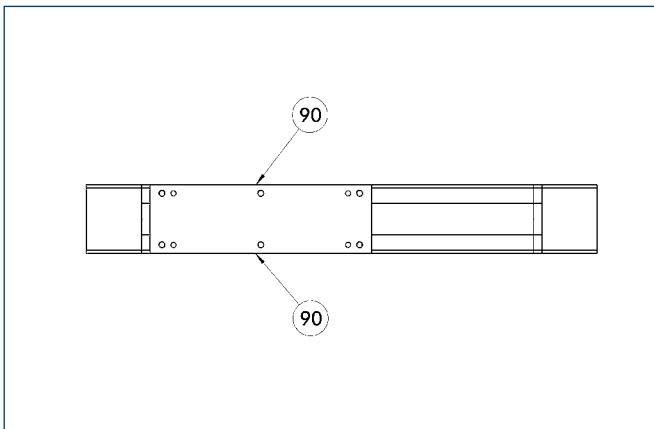
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



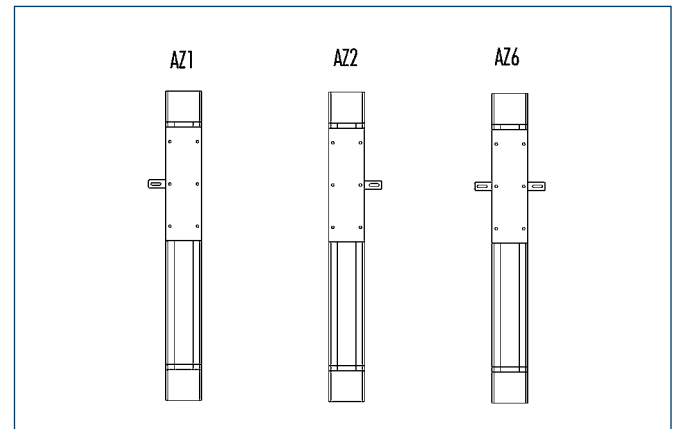
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.



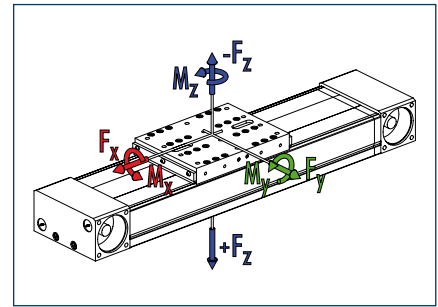
### Advantages of profiled rail guide

High load bearing capacity

Long lifetime

High precision

### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	750
<span style="color: green;">■</span> $F_y$	[N]	1200
<span style="color: blue;">■</span> $F_z$	[N]	3000
<span style="color: blue;">■</span> $-F_z$	[N]	1500
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	500
<span style="color: green;">■</span> $M_y$	[Nm]	650 (1100)
<span style="color: blue;">■</span> $M_z$	[Nm]	650 (1100)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	12.3

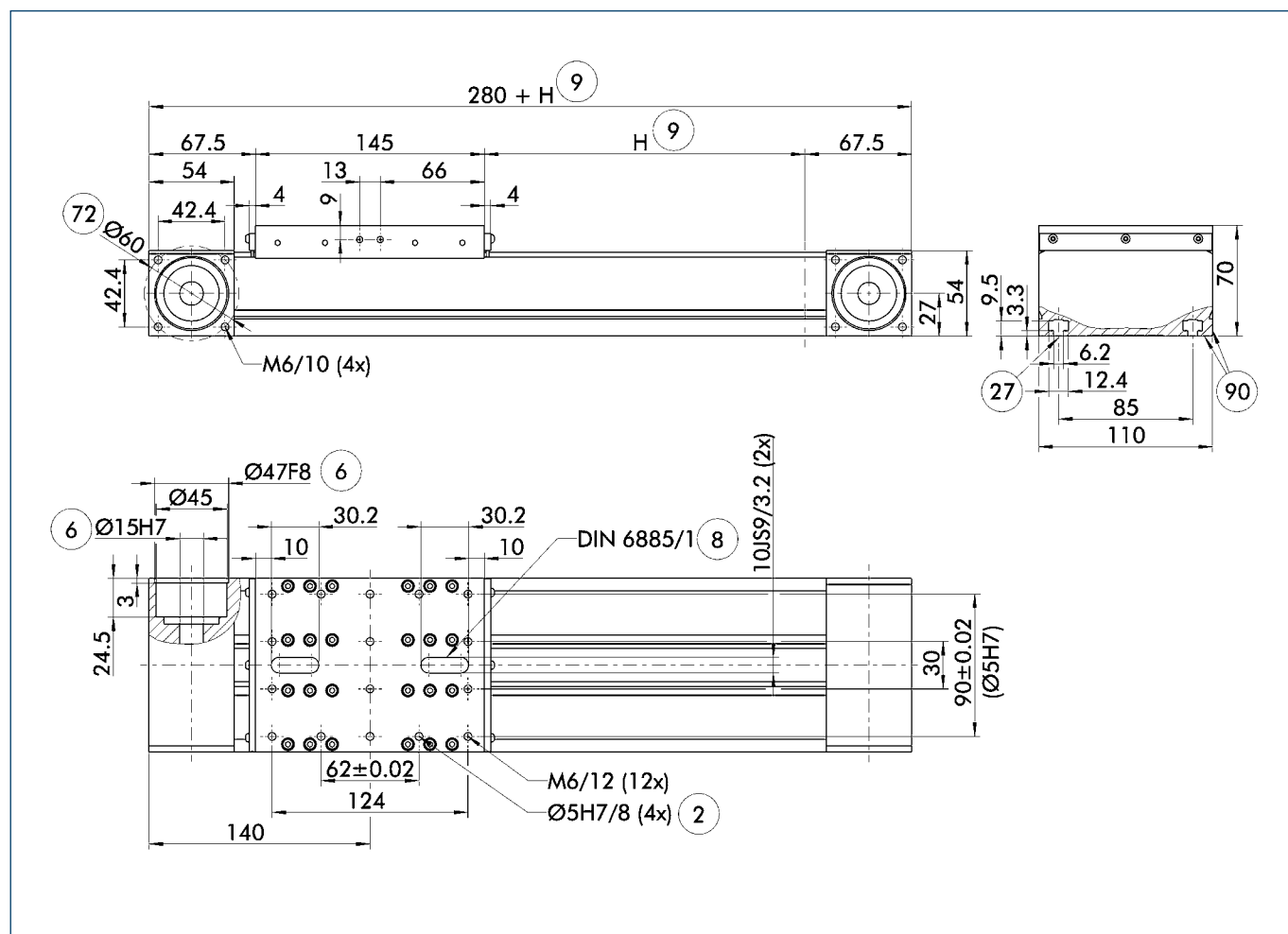
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

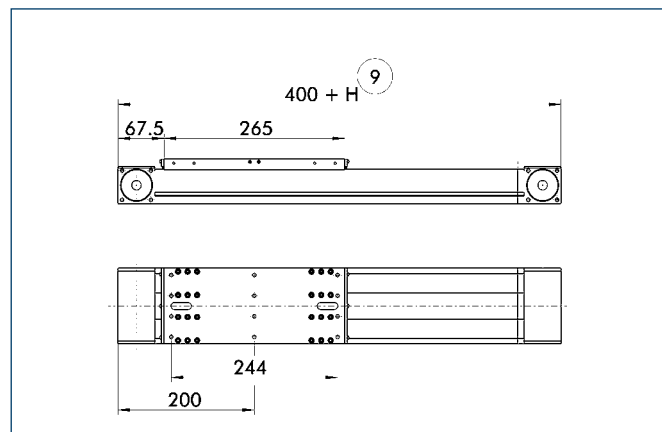
Designation		D 110-ZSS
Max. travel speed	[m/s]	5
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	40
Idle torque	[Nm]	1.6
Drive		
Drive element	Toothed belt	25 AT 5-E
Travel per revolution	[mm]	90
Maximum stroke	[mm]	1220
Max. total length	[mm]	1500
Moment of inertia	[kgm <sup>2</sup> ]	0.0003
Weights		
Basic without travel	[kg]	6.8
Travel per 100 mm	[kg]	1.0
Slide plate 145 mm	[kg]	2.8
Slide plate 265 mm	[kg]	5.1

### Main views



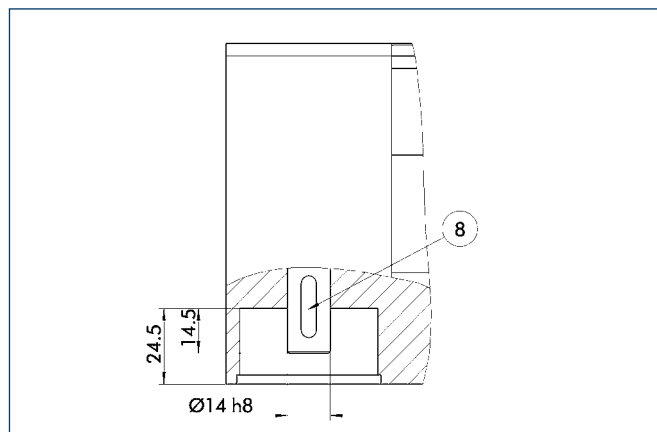
- |                          |                                       |
|--------------------------|---------------------------------------|
| (2) Assembly connection  | (27) Mounting groove for T-nuts       |
| (6) Drive connection     | (72) Bolt pitch circle                |
| (8) Feather key DIN 6885 | (90) Stop angle for alignment of axis |
| (9) Useful stroke        |                                       |

### Long slide



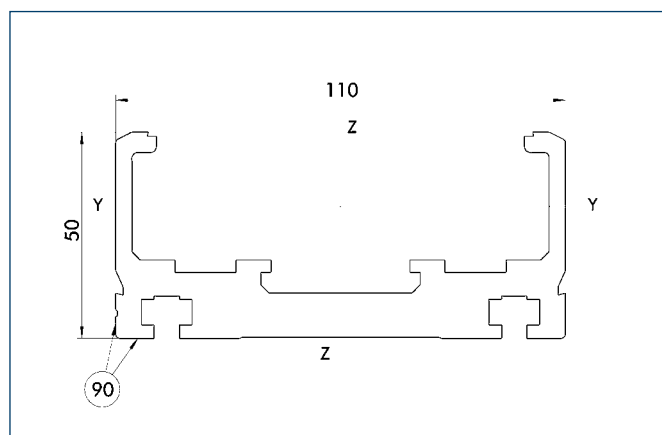
- (9) Useful stroke

### Drive journal connection dimensions



- (8) Feather key

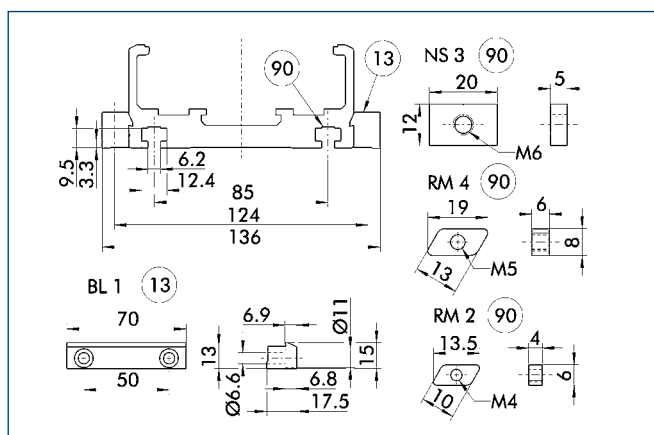
### Profile ZSS



90° Stop angle standard side

Specific mass	[kg/m]	5.06
Planar dimension	[mm <sup>2</sup> ]	1875
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	267967
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	2519555
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	7219
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	45110

### Mounting



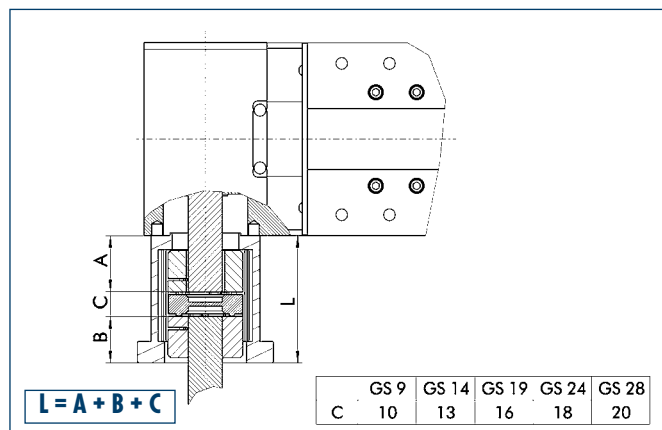
13 Mounting strip

90° T-nut on base side

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	RM2	0331425
T-nut	RM4	0331426
Mounting strip	BL1	0331400

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

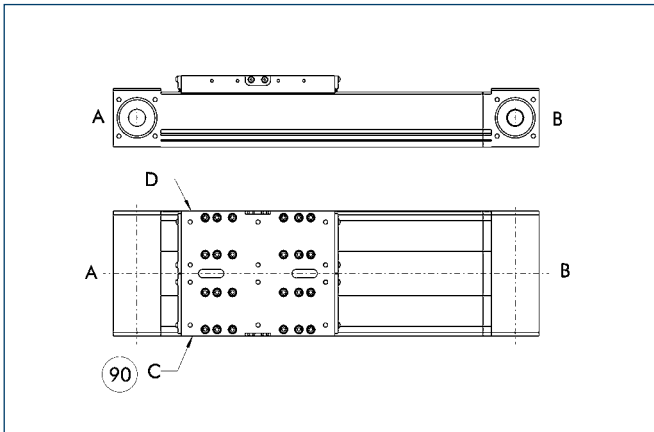
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

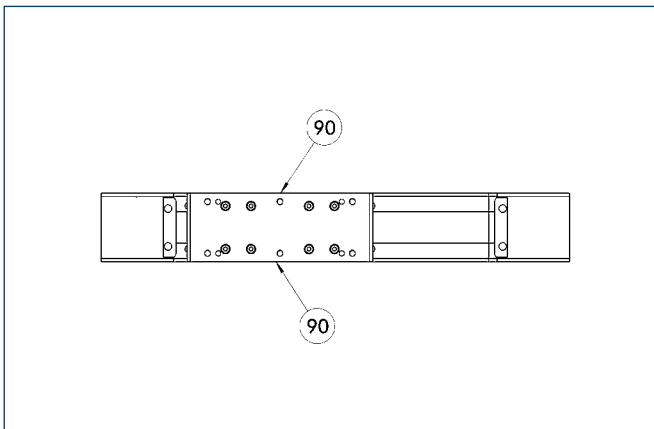
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



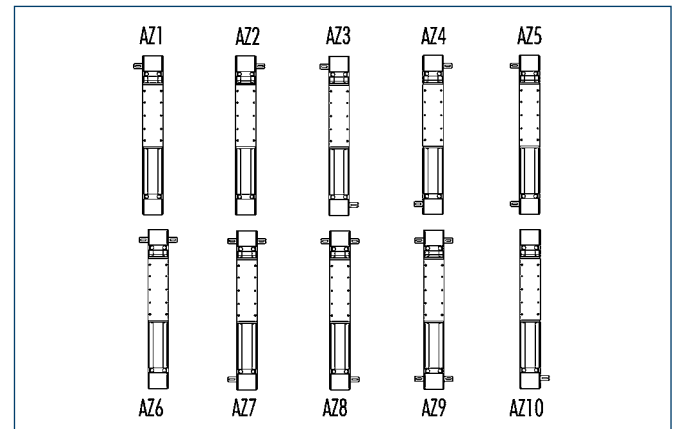
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.

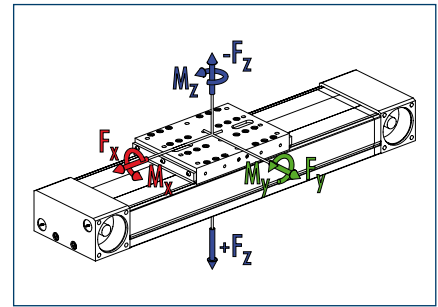
### Advantages of profiled rail guide

High load bearing capacity

Long lifetime

High precision

### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	1900
<span style="color: green;">■</span> $F_y$	[N]	2500
<span style="color: blue;">■</span> $F_z$	[N]	5000
<span style="color: blue;">■</span> $-F_z$	[N]	3000
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	800
<span style="color: green;">■</span> $M_y$	[Nm]	1000 (1600)
<span style="color: blue;">■</span> $M_z$	[Nm]	1000 (1600)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	35.5

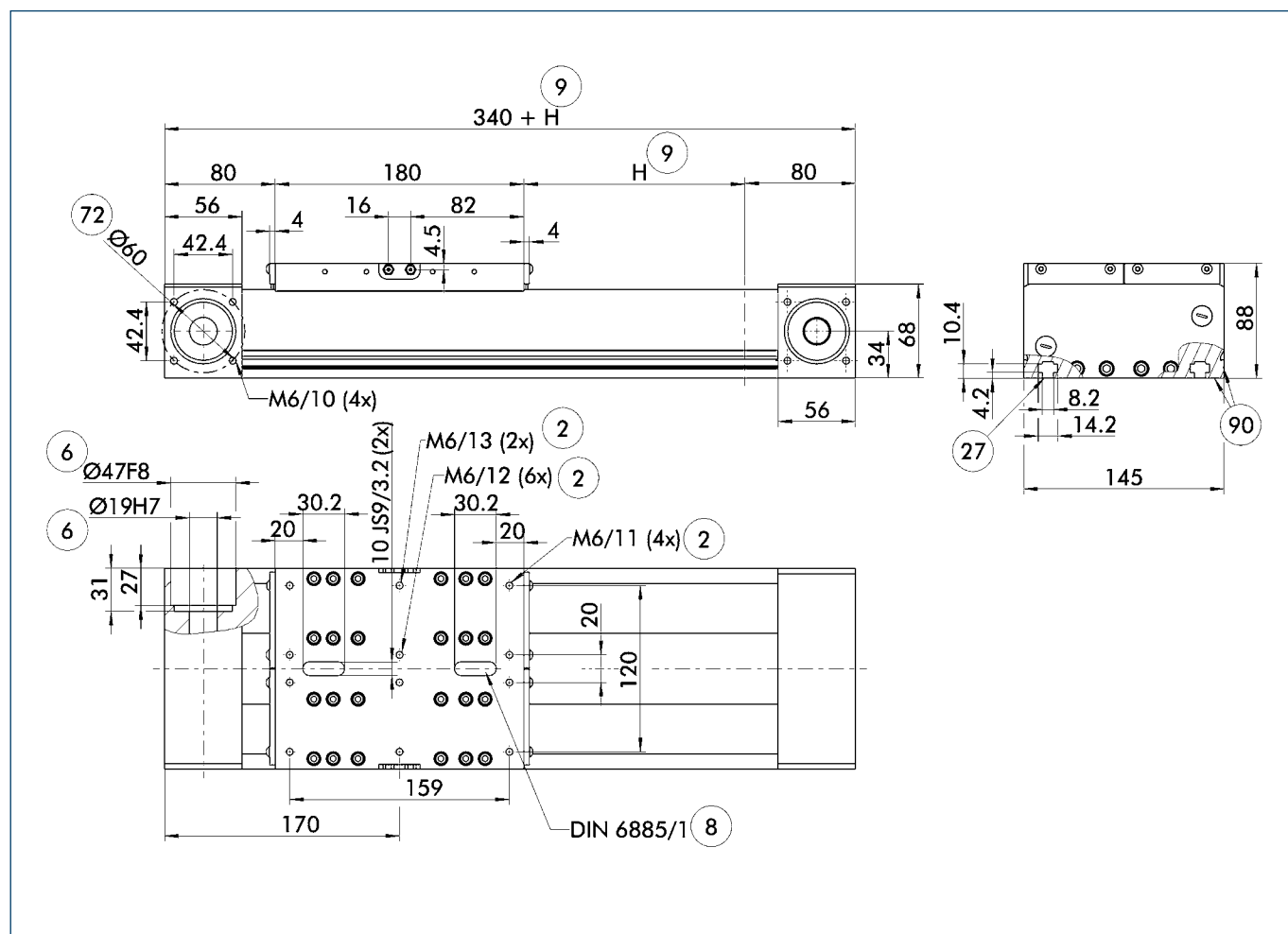
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

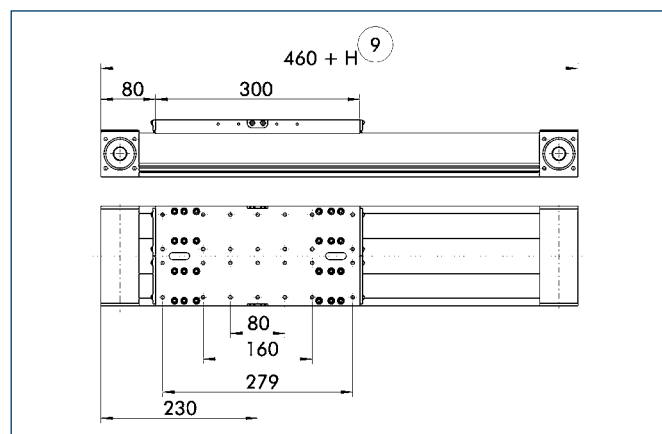
Designation		D 145-ZSS
Max. travel speed	[m/s]	5
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	40
Idle torque	[Nm]	2.2
<b>Drive</b>		
Drive element	Toothed belt	50 AT 5-E
Travel per revolution	[mm]	110
Maximum stroke	[mm]	1660
Max. total length	[mm]	2000
Moment of inertia	[kgm <sup>2</sup> ]	0.0003
<b>Weights</b>		
Basic without travel	[kg]	13.2
Travel per 100 mm	[kg]	1.4
Slide plate 180 mm	[kg]	4.9
Slide plate 300 mm	[kg]	8.2

### Main views



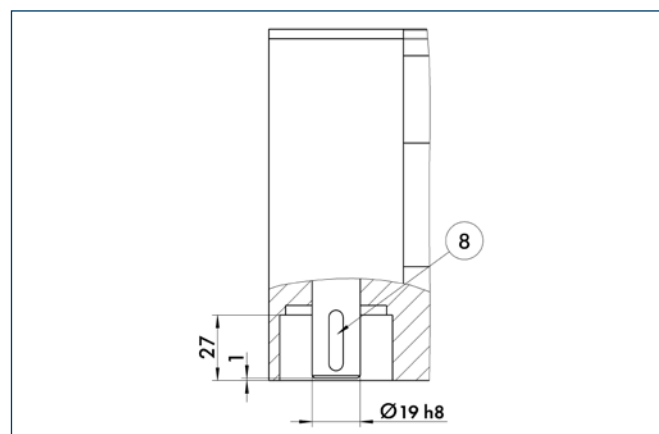
- (2) Assembly connection
- (6) Drive connection
- (8) Feather key DIN 6885
- (9) Useful stroke
- (27) Mounting groove for T-nuts
- (72) Bolt pitch circle
- (90) Stop angle for alignment of axis

### Long slide



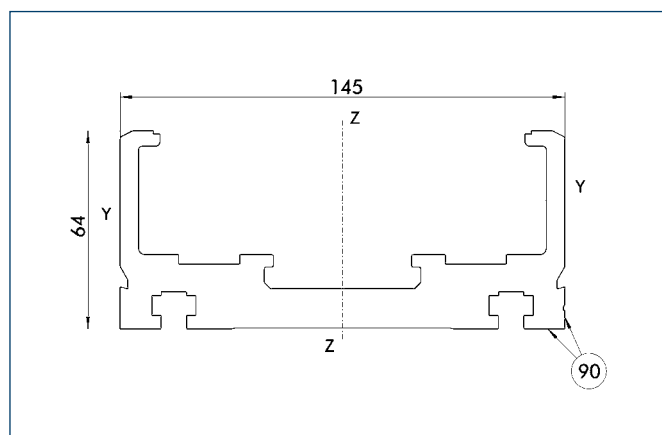
- (9) Useful stroke

### Drive journal connection dimensions



- (8) Feather key

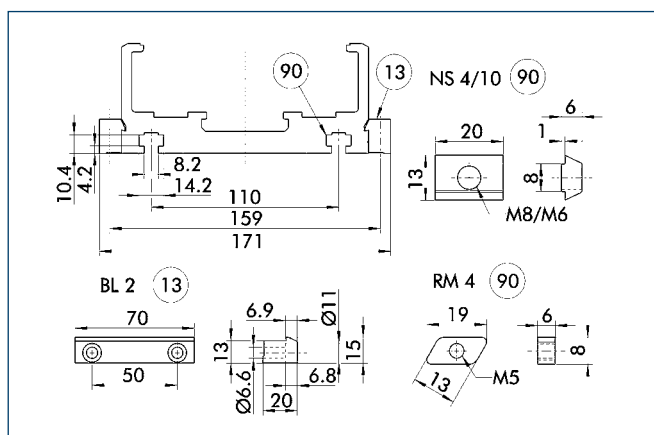
### Profile ZSS



90 Stop angle standard side

Specific mass	[kg/m]	8.54
Planar dimension	[mm <sup>2</sup> ]	3163
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	747431
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	7649112
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	15814
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	104251

### Mounting



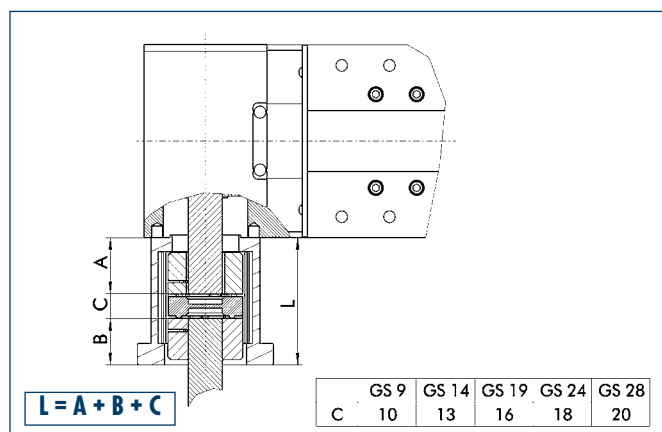
13 Mounting strip

90 T-nut on base side

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS4	0331407
T-nut	NS10	0331422
T-nut	RM4	0331426
Mounting strip	BL2	0331401

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

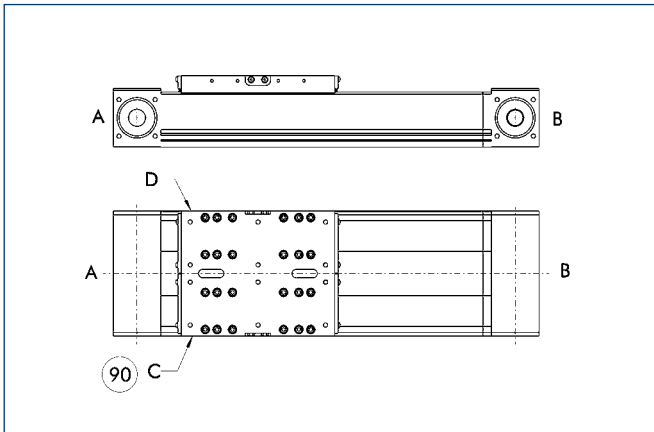
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

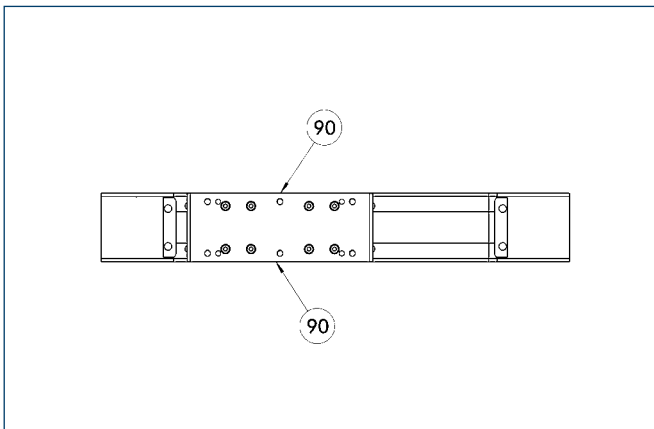
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



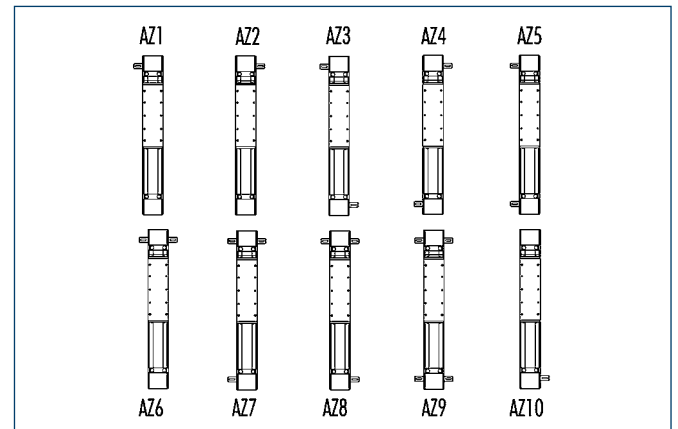
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.



More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.



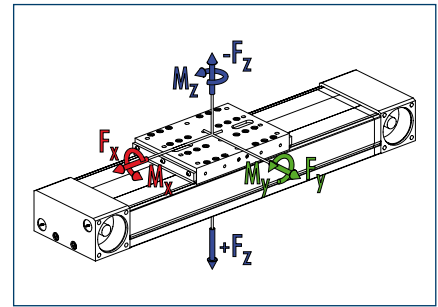
### Advantages of profiled rail guide

High load bearing capacity

Long lifetime

High precision

### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	6000
<span style="color: green;">■</span> $F_y$	[N]	5000
<span style="color: blue;">■</span> $F_z$	[N]	8000
<span style="color: blue;">■</span> $-F_z$	[N]	5000
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	3500
<span style="color: green;">■</span> $M_y$	[Nm]	4300 (6000)
<span style="color: blue;">■</span> $M_z$	[Nm]	3200 (4500)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	143.9

\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		D 200-ZSS
Max. travel speed	[m/s]	5
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60
Idle torque	[Nm]	3.8
Drive		
Drive element	Toothed belt	75 AT 10-E
Travel per revolution	[mm]	220
Maximum stroke	[mm]	3520
Max. total length	[mm]	4000
Moment of inertia	[kgm <sup>2</sup> ]	0.012
Weights		
Basic without travel	[kg]	25.0
Travel per 100 mm	[kg]	2.0
Slide plate 250 mm	[kg]	8.2
Slide plate 400 mm	[kg]	10.5

[illegible]

- |                        |                                     |
|------------------------|-------------------------------------|
| ② Assembly connection  | ②7 Mounting groove for T-nuts       |
| ⑥ Drive connection     | ⑦2 Bolt pitch circle                |
| ⑧ Feather key DIN 6885 | ⑨0 Stop angle for alignment of axis |
| ⑨ Useful stroke        |                                     |

- ⑨ Useful stroke

10.5

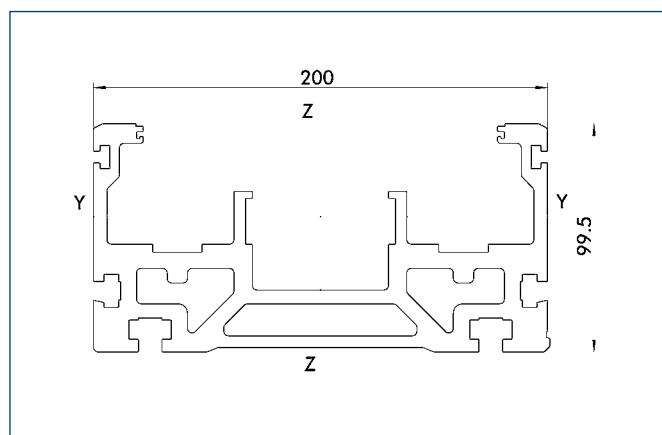
Ø25h6

DIN 6558/1  
8x7x25

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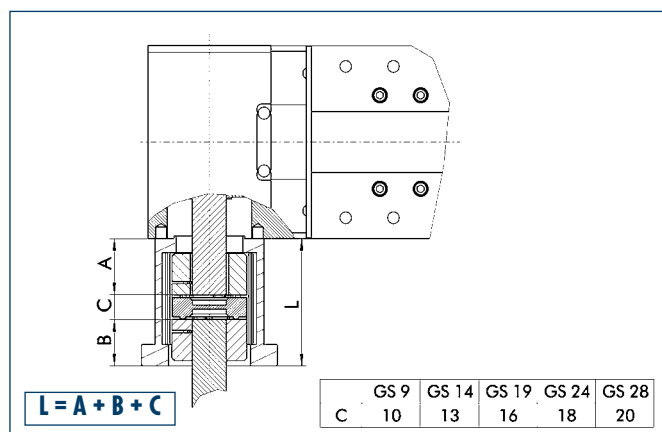
- ⑧ Feather key

### Profile ZSS



Specific mass	[kg/m]	15.64
Planar dimension	[mm <sup>2</sup> ]	5791
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	3868726
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	28046412
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	58520
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	277190

### Motor flange schematic diagram

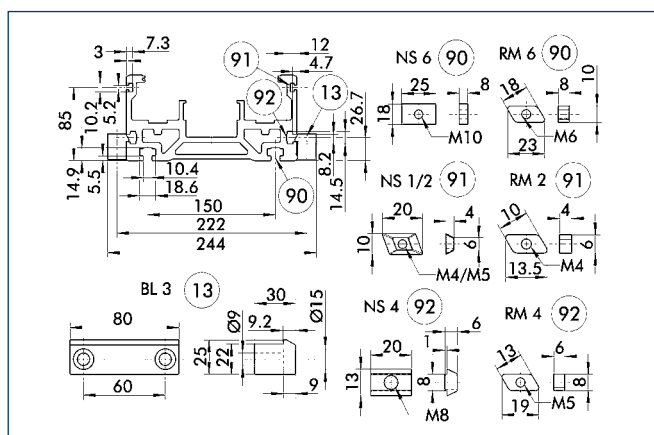


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Mounting

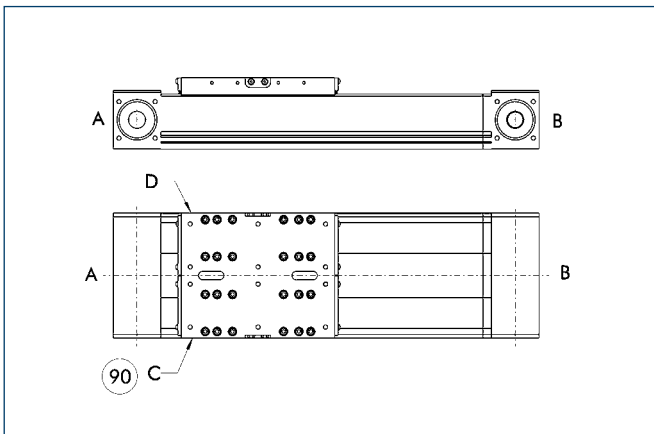


- ⑬ Mounting strip
- ⑨⑩ T-nut on base side
- ⑨① T-nut, side upper
- ⑨② T-nut, side lower

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS1	0331404
T-nut	NS2	0331405
T-nut	NS4	0331407
T-nut	NS6	0331409
T-nut	RM2	0331425
T-nut	RM4	0331426
T-nut	RM6	0331427
Mounting strip	BL3	0331402

### Limit switch position



90 Limit switch standard position

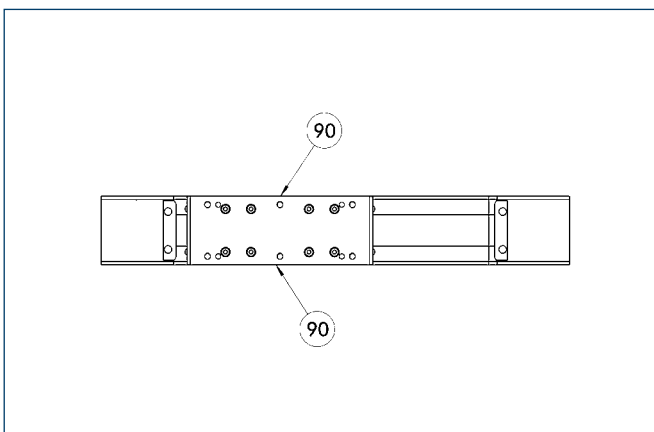
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



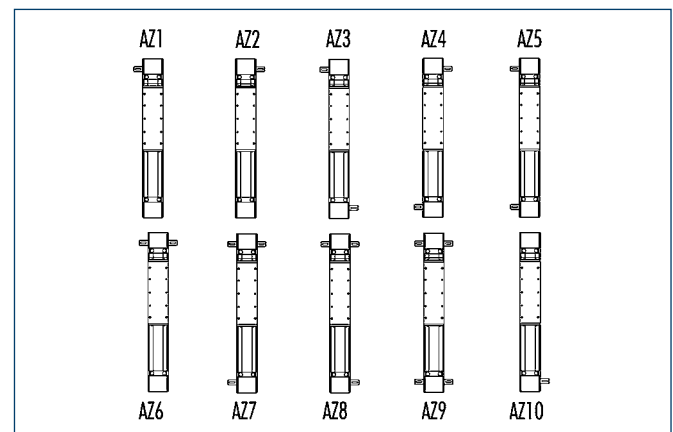
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

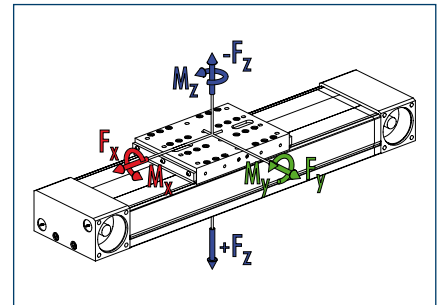
### Advantages of profiled rail guide

High load bearing capacity

Long lifetime

High precision

### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	2500
<span style="color: green;">■</span> $F_y$	[N]	6000
<span style="color: blue;">■</span> $F_z$	[N]	12000
<span style="color: blue;">■</span> $-F_z$	[N]	8000
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	4500
<span style="color: green;">■</span> $M_y$	[Nm]	6000 (8500)
<span style="color: blue;">■</span> $M_z$	[Nm]	4500 (6400)
<span style="color: blue;">■</span> $M_{z_{max}}$	[Nm]	63.2

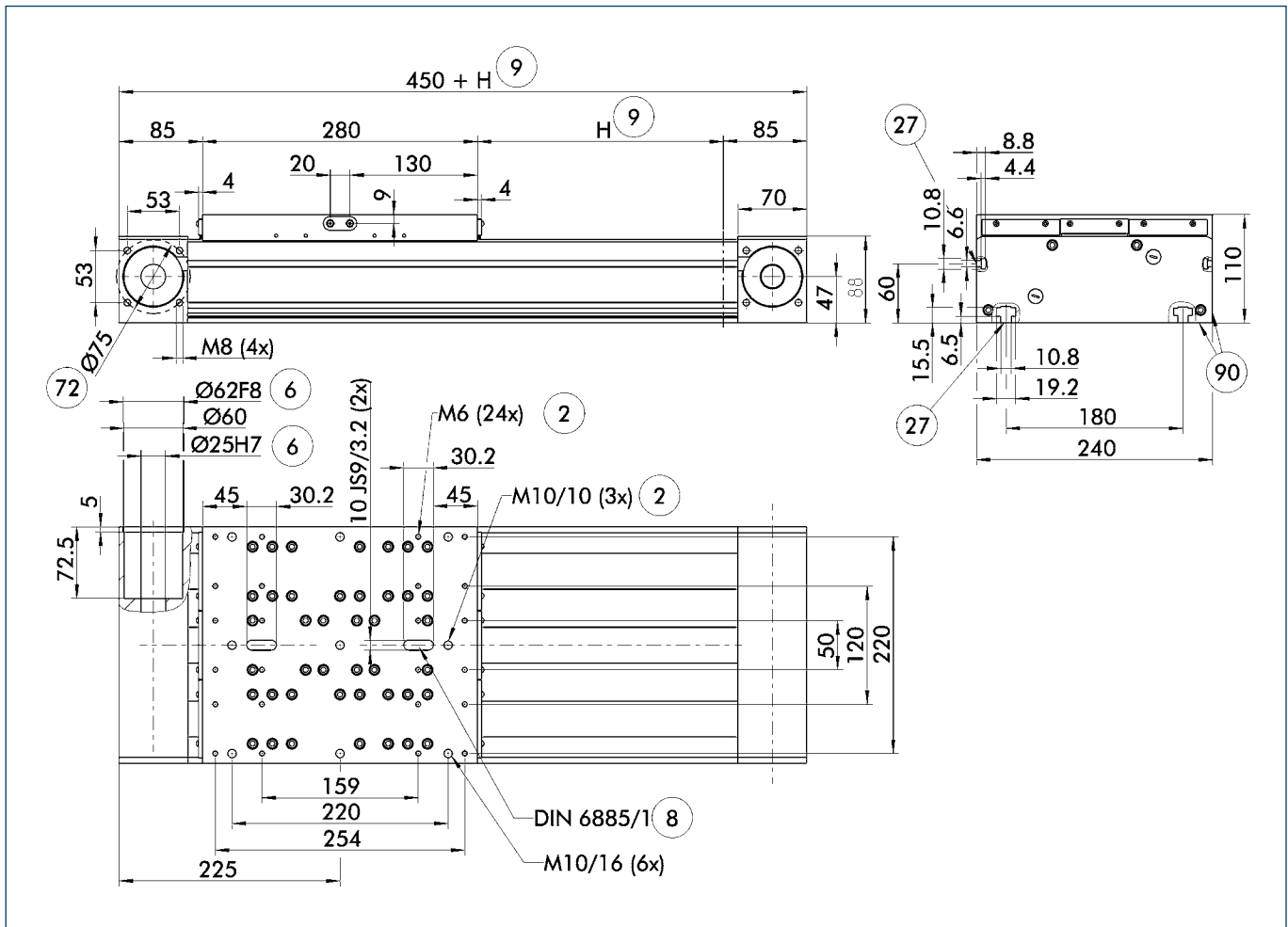
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

Designation		D 240-ZSS
Max. travel speed	[m/s]	5
Repeat accuracy	[mm]	± 0.08
Max. acceleration	[m/s <sup>2</sup> ]	60
Idle torque	[Nm]	3.5
Drive		
Drive element	Toothed belt	50 AT 10-E
Travel per revolution	[mm]	150
Maximum stroke	[mm]	2550
Max. total length	[mm]	3000
Moment of inertia	[kgm <sup>2</sup> ]	0.02
Weights		
Basic without travel	[kg]	27.0
Travel per 100 mm	[kg]	3.2
Slide plate 280 mm	[kg]	9.8
Slide plate 400 mm	[kg]	14.0

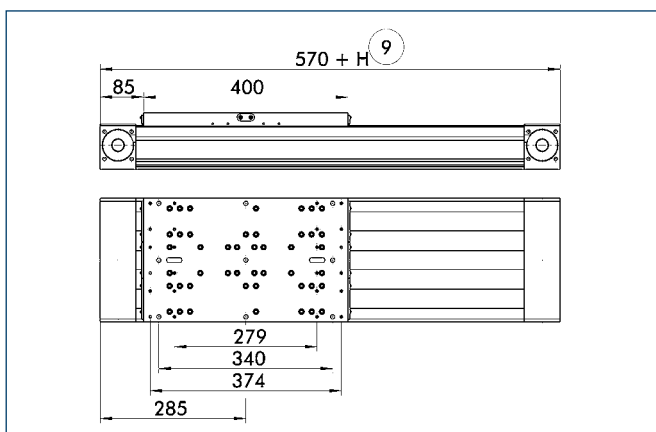
### Main views



- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke

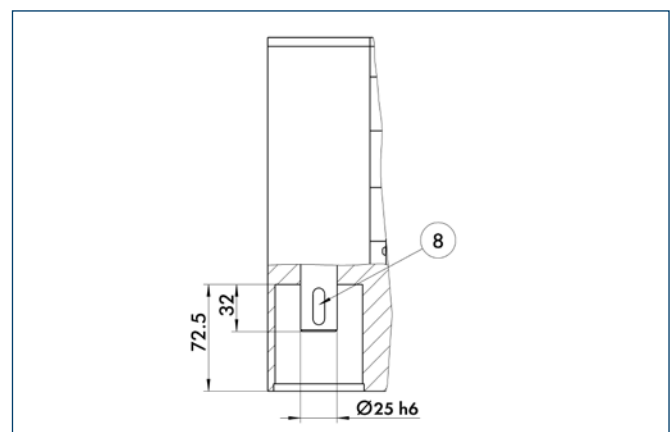
- ②⑦ Mounting groove for T-nuts
- ⑦② Bolt pitch circle
- ⑨② Stop angle for alignment of axis

### Long slide



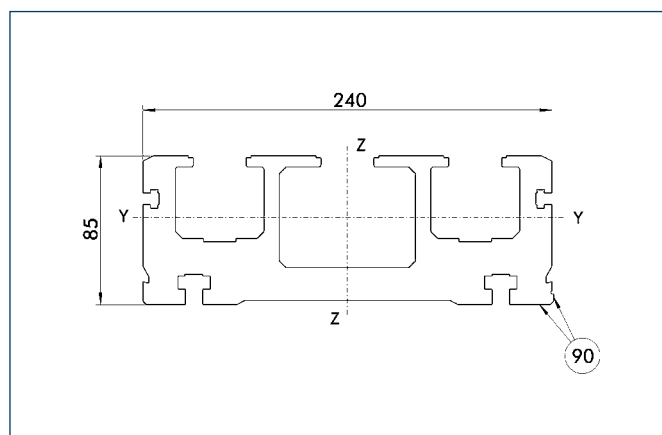
- ⑨ Useful stroke

### Drive journal connection dimensions



- ⑧ Feather key

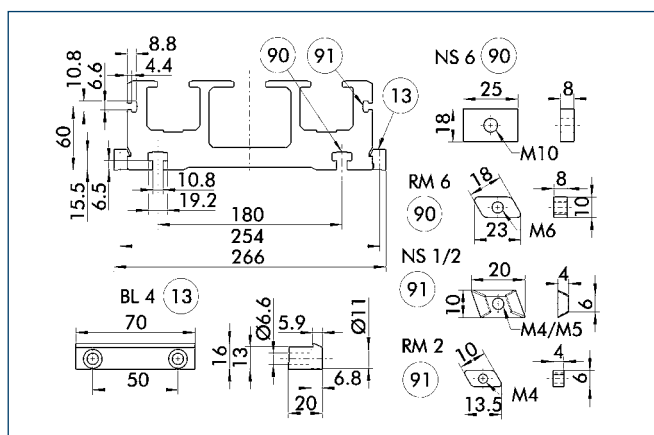
### Profile ZSS



90° Stop angle standard side

Specific mass	[kg/m]	27.2
Planar dimension	[mm <sup>2</sup> ]	10074
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	6382473
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	61720897
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	119554
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	511233

### Mounting



13 Mounting strip

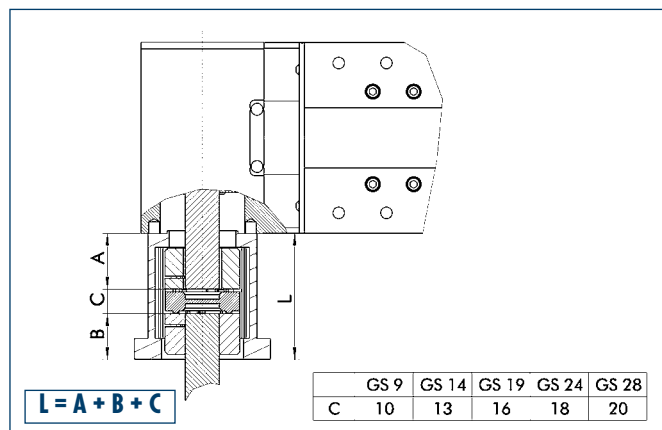
90 T-nut on base side

91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS1	0331404
T-nut	NS2	0331405
T-nut	NS6	0331409
T-nut	RM2	0331425
T-nut	RM6	0331427
Mounting strip	BL4	0331403

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

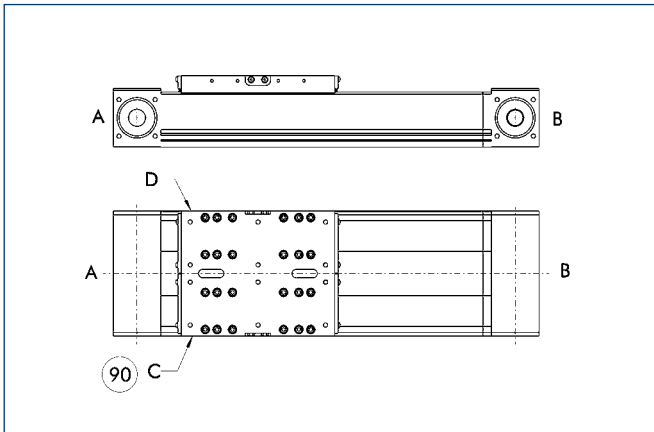
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

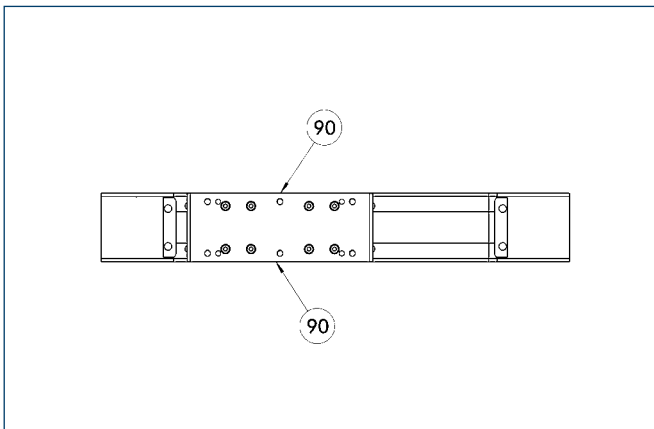
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



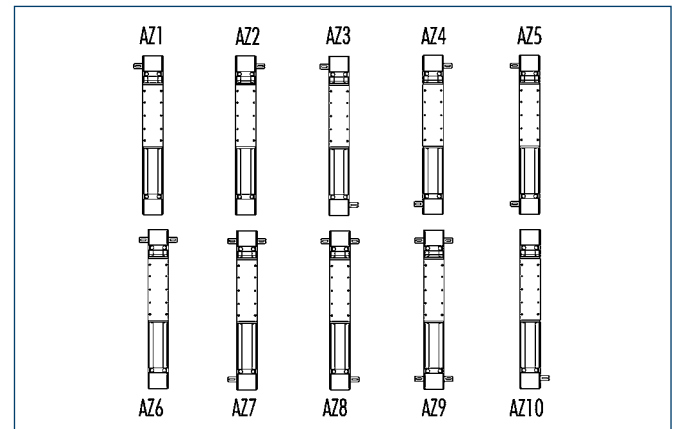
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

### Drive shafts

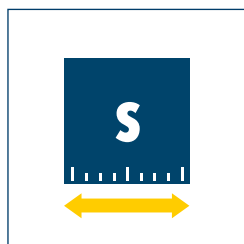


Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.



# System HSB Rack and Pinion Drive

## Linear Axes • Rack and Pinion Drive



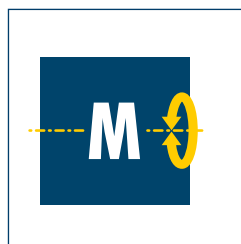
### Range of stroke

up to 5,400 mm



### Driving force

up to 4,500 N



### Moment load

up to 4,000 Nm



### Repeat accuracy

$\pm 0.05$  mm



### Max. speed

Up to 1.5 m/s

## Application example



### Line gantry for handling crankshafts

- 1** Toothed belt axis B 80-ZRS driving
- 2** Toothed belt axis B 80-ZRS synchronized
- 3** Connection shaft with claw coupling for synchronization
- 4** Servo motors with flange connection
- 5** Vertical axis with rack and pinion drive B 180-AZS
- 6** 2-finger parallel gripper, PGN plus 160

### Linear axis with rack and pinion drive

Boom module for which the motor is on the slide

### Area of application

Applications for which it is necessary to secure waste; for example, for vertical uses

### Your advantages and benefits

#### Reduced mass moved

due to stationary drive

#### Closed system

for maximum dirt resistance

#### Double profiled rail guide

for high moment load

#### Economical system

due to low maintenance and optimum size - performance ratio



### General information about the series

#### Drive

free from play, sturdy rack and pinion drive

#### Profile guide

Aluminum press-drawn section with plastic tape cover and double profiled rail guide

#### Material

Natural anodized aluminum parts

#### Operating temperature

From 10°C to 80°C

#### Warranty

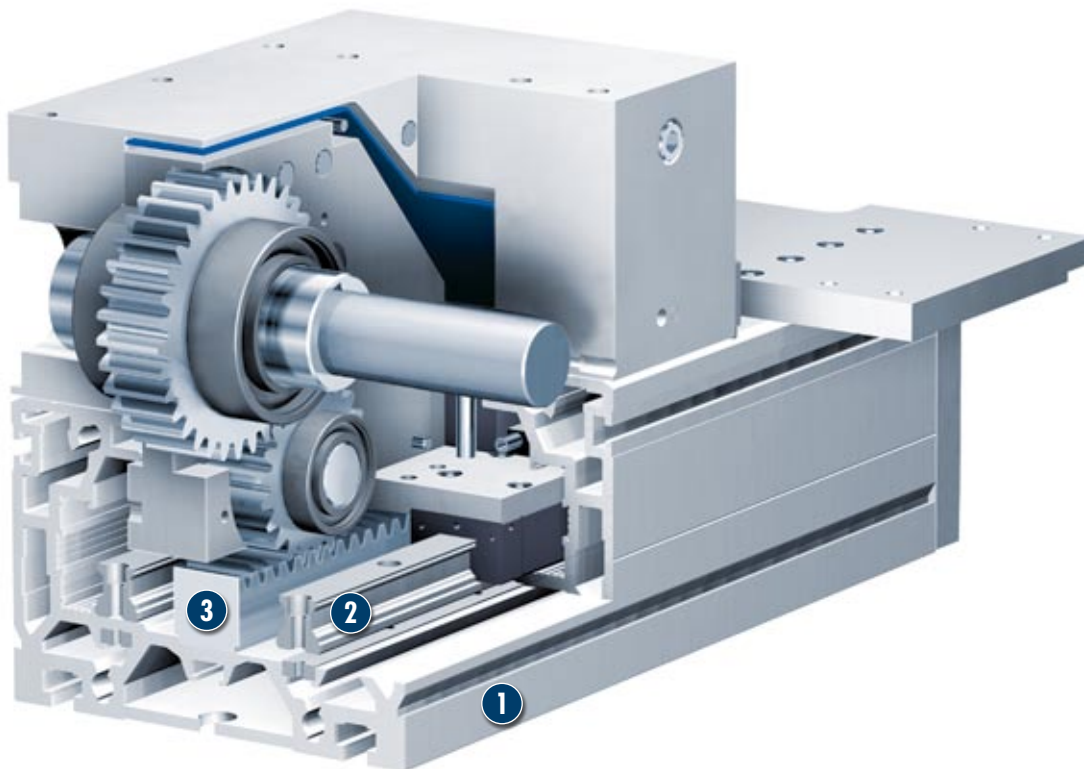
24 months

For production reasons, the colors may vary from those shown in the catalog.

# System HSB Rack and Pinion Drive

Linear Axes • Rack and Pinion Drive

## Sectional diagram of function



- 1 Axis body as the support profile
- 2 Profiled rail guide
- 3 Rack and pinion over pinion

## Description of function

The axis carriage is driven by a pinion on the rack and precisely guided by a double profiled rail guide. The covering tape runs through the axis carriage.

## Options and special information

The servo motor can be connected to the pinion shaft by a motor flange and a coupling.

① On request, SCHUNK can supply complete drive solutions including motor, gears, controller, and cables.

### Accessories

Accessories from SCHUNK – the suitable companion for the best functionality, reliability, and controlled production for all automation components.

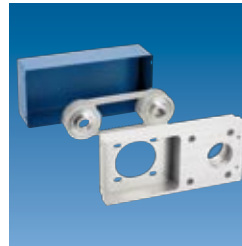
#### Motor flanges



#### Motors



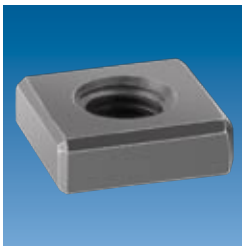
#### Angle belt drive



#### Bevel gear



#### T-nut



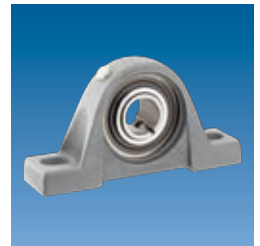
#### Mounting strips



#### Connection shafts



#### Pedestal bearing



#### Inductive proximity switch



#### Mechanical roller switches



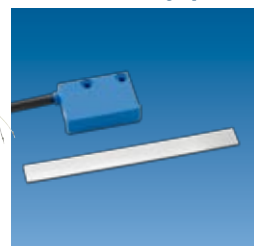
#### Drive controller



#### Cable set



#### Stroke measuring system



① Please see the side views at the end of the respective size for information concerning specific sizes, availability, designation, and ID numbers. Further information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

### General information about the series

#### Static and dynamic basic load ratings

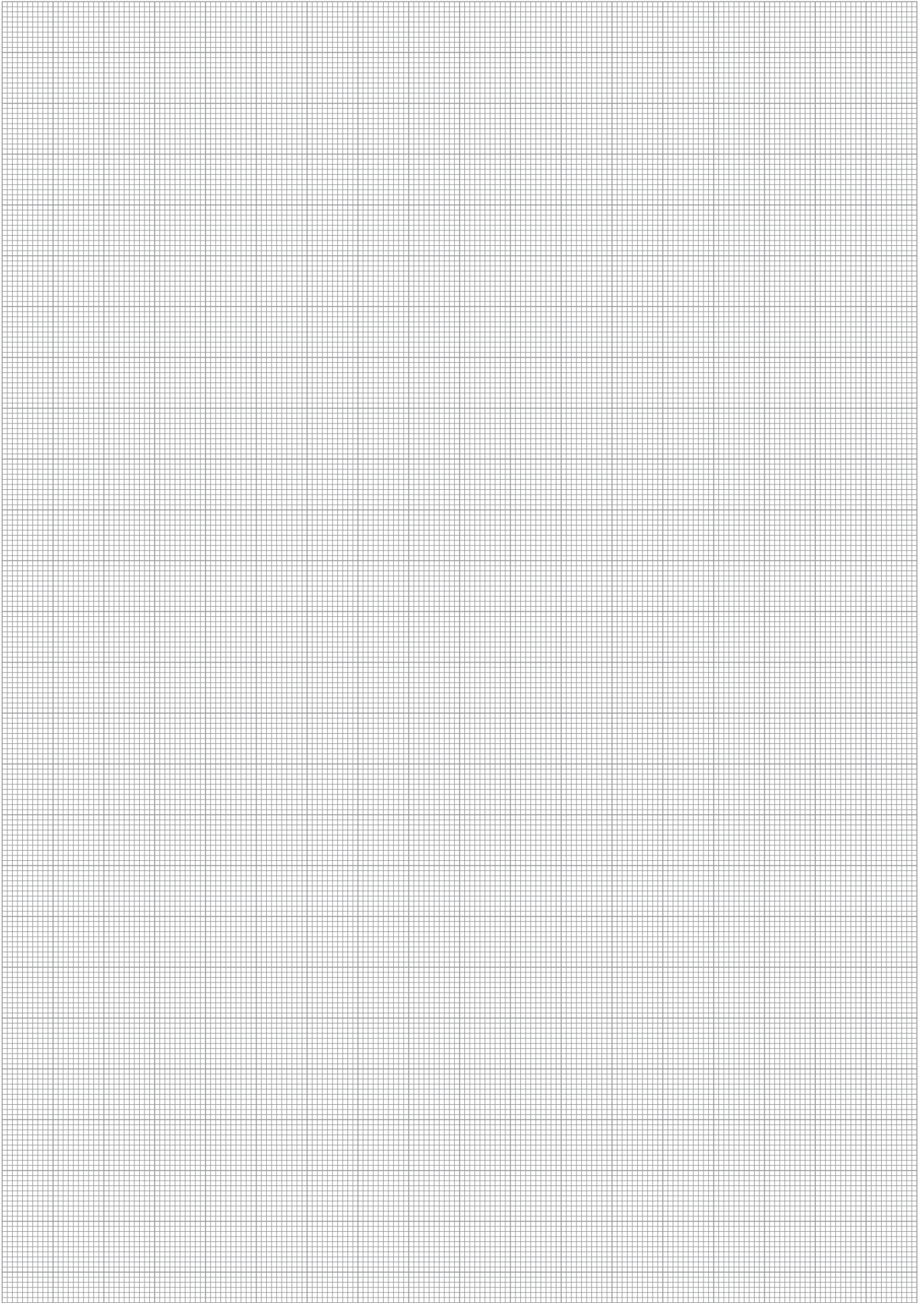
An overview of the static and dynamic basic load ratings for the systems can be found in the "Technical data for installed guides" tables in the introduction to this chapter.

# System HSB Rack and Pinion Drive

## Linear Axes • Rack and Pinion Drive

### How to order - Rack and pinion drive

	B	180	-	A Z S	-	M 3	-	320	-	1000	-	1600	-	AK	-	AZ1	-	1
<b>Product series</b>	-----																	
<b>Size (version)</b>	-----																	
<b>Drive</b>	-----																	
A = Driven slide																		
Z = Rack and pinion drive																		
<b>Guidance system</b>	-----																	
S = Rail guide																		
<b>Drive version</b>	-----																	
Module = 3																		
<b>Stroke per pinion revolution</b>	-----																	
<b>Distance traveled</b>	-----																	
<b>Overall length</b>	-----																	
<b>Cover</b>	-----																	
AK= Cover tape																		
<b>Accessories</b>	-----																	
BL3 = Mounting strip																		
EMS / EMB = Mechanical limit switch attached (S - Siemens, B - Balluff)																		
EO2 / EO10 = Inductive limit switch, opener with 2m / 10 m cable attached																		
ES2 / ES10 = Inductive limit switch, closer with 2m / 10 m cable attached																		
NS (3) = T-nut M6																		
NS (6) = T-nut M10																		
RM 2 = T-nut M4																		
RM 6 = T-nut M10																		
AZ 1 = Short drive shaft, attachment side C																		
AZ 2 = Short drive shaft, attachment side D																		
AZ 6 = Long drive shaft, attachment side C and D																		
<b>Special design</b>	-----																	
0 = Standard																		
1 = Special (specification in plain text)																		
<b>Additional accessories (separate item)</b>	-----																	
MGK = Motor flange and coupling (from dimension sheet)																		



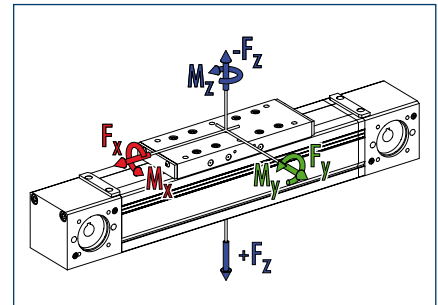
### Advantages of profiled rail guide

High load bearing capacity

Long lifetime

High precision

### Loads and load torques



Load		Dynamic
<span style="color: red;">■</span> $F_x^{**}$	[N]	4500
<span style="color: green;">■</span> $F_y$	[N]	8000
<span style="color: blue;">■</span> $F_z$	[N]	16000
<span style="color: blue;">■</span> $-F_z$	[N]	8000
Load torques		Dynamic
<span style="color: red;">■</span> $M_x$	[Nm]	2000
<span style="color: green;">■</span> $M_y$	[Nm]	4000
<span style="color: blue;">■</span> $M_z$	[Nm]	2000
<span style="color: blue;">■</span> $M_{z_{\text{max}}}$	[Nm]	239.5

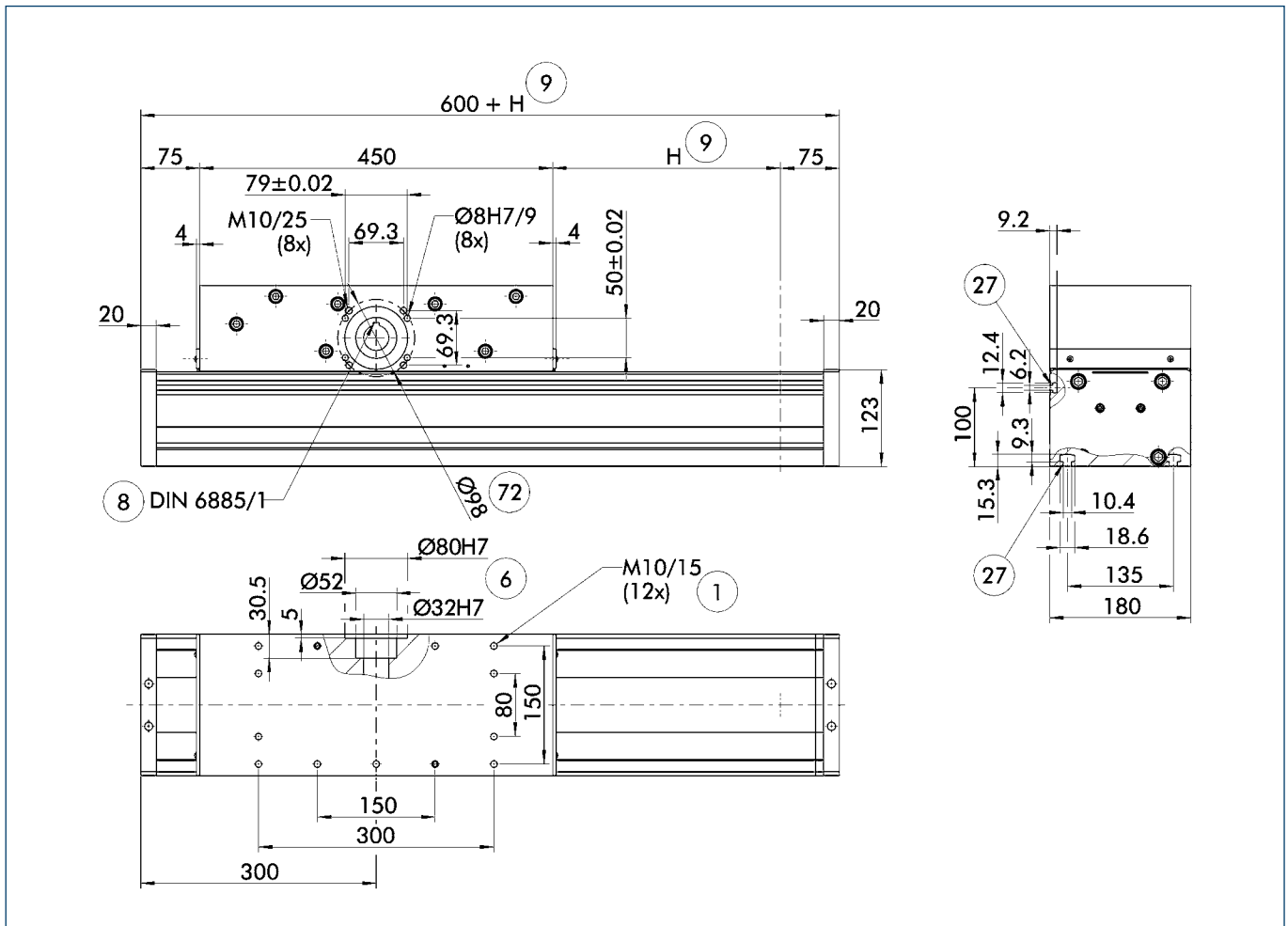
\*\* Maximum value = Depending on speed

① Values in brackets relate to the long slide.

### Technical data

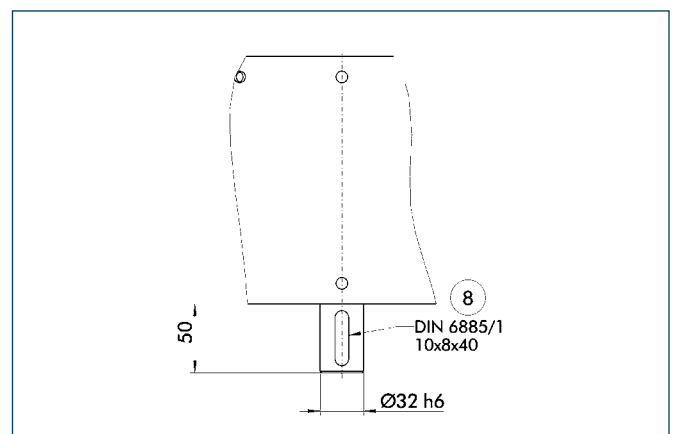
Designation		B 180-AZSS
Max. travel speed	[m/s]	1.5
Repeat accuracy	[mm]	± 0.05
Max. acceleration	[m/s <sup>2</sup> ]	5
Idle torque	[Nm]	10.0
Drive		
Drive element	Rack	m=3; L=999
Travel per revolution	[mm]	320,4425
Maximum stroke	[mm]	5400
Max. total length	[mm]	6000
Moment of inertia	[kgm <sup>2</sup> ]	0.105
Weights		
Basic without travel	[kg]	56.0
Travel per 100 mm	[kg]	2.9
Slide drive 450 mm	[kg]	37.2

### Main views



- ① Linear unit connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ②⑦ Mounting groove for T-nuts
- ⑦② Bolt pitch circle

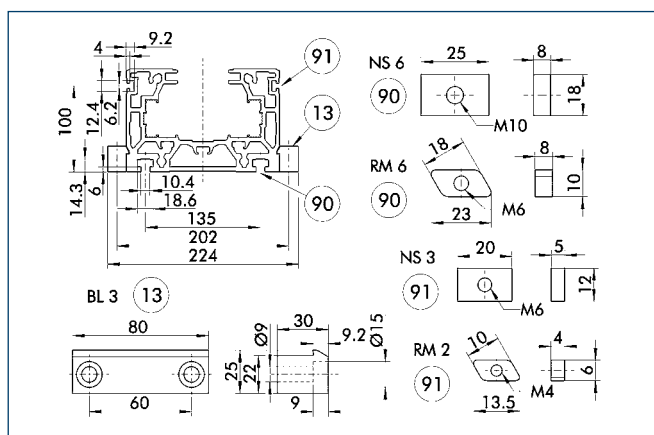
### Drive journal connection dimensions



- ⑧ Feather key



## Mounting



⑬ Mounting strip

The profile can be secured either using T-nuts or mounting strips.

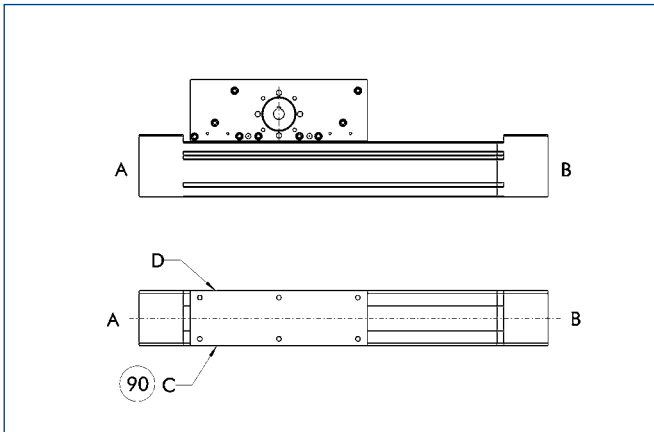
Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	NS6	0331409
T-nut	RM2	0331425
T-nut	RM6	0331427
Mounting strip	BL3	0331402

	GS 9	GS 14	GS 19	GS 24	GS 28
C	10	13	16	18	20

Different drive solutions can be attached to our axes.  
SCHUNK can supply you with the right motor flange and coupling for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

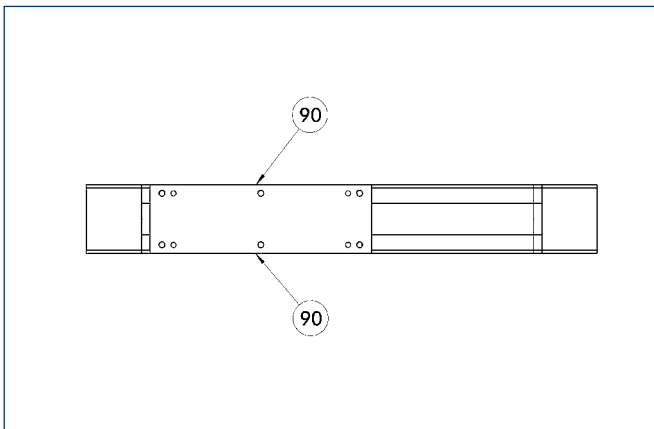
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



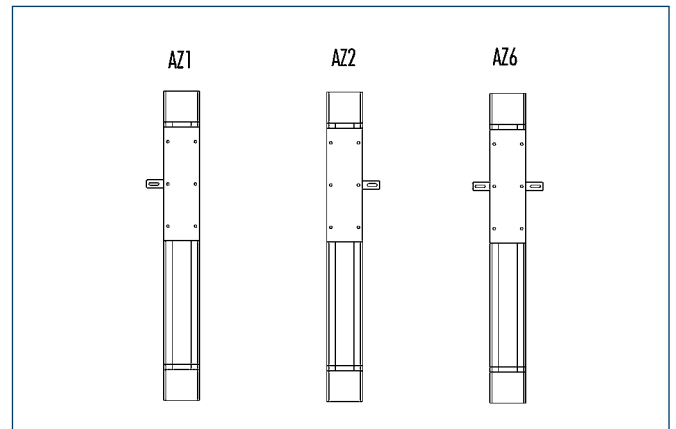
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

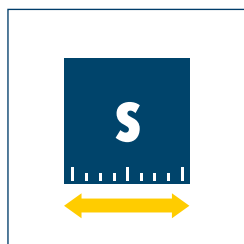
### Drive shafts



Depending on the axis application, the drive shaft seat may need to be defined in the order text. Particularly with axis combinations and mechanical synchronization, multiple drive shafts - some of them continuous shafts - are required.

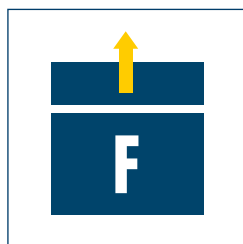
# System HSB Ball Screw Drive

## Linear Axes • Ball Screw Drive



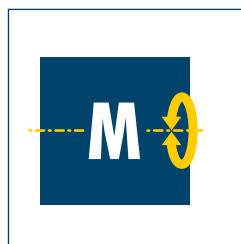
### Range of stroke

up to 5,120 mm



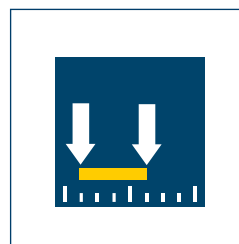
### Driving force

up to 18,000 N



### Moment load

up to 12,000 Nm



### Repeat accuracy

± 0.03 mm



### Max. speed

Up to 2.5 m/s

## Application example



### Positioning system for sinter blank processing

- 1 Toothed belt axis B 80-ZRS driving
- 2 Toothed belt axis B 80-ZRS synchronized
- 3 Connection shaft with claw coupling for synchronization
- 4 Servo motors with flange connection
- 5 Vertical axis with ball screw spindle B 110-SSS
- 6 2-finger parallel gripper, PGN plus 80

### Linear axis with ball screw drive

The range includes 17 sizes. Depending on use, it is possible to choose between roller guide and profiled rail guide.

### Area of application

Axis applications with high demands for precision and driving force.

### Your advantages and benefits

#### Complete modular system

with standard components for maximum availability

#### Closed system

for maximum dirt resistance

#### Ball screw supports

allow higher moving speeds with longer stroke lengths

#### Profiled rail or roller guide

for optimum adaptation to the application

#### Economical system

due to low maintenance and optimum size - performance ratio



### General information about the series

#### Drive

Ball screw spindle drives with one-piece nut with clearance and large spindle pin for maximum force transmission. Optionally available with limited clearance, pre-loaded with no clearance by ball sorting or double nut pre-loaded without clearance and also trapezoidal threaded spindles

#### Profile guide

Aluminum press-drawn section with plastic tape cover, from module type B choice of profile rail or roller guide

#### Material

Natural anodized aluminum parts

#### Operating temperature

From 10°C to 80°C

#### Warranty

24 months

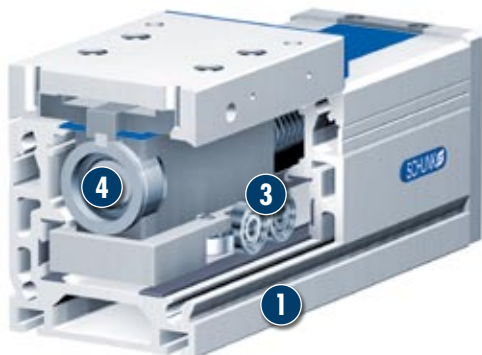
For production reasons, the colors may vary from those shown in the catalog.

# System HSB Ball Screw Drive

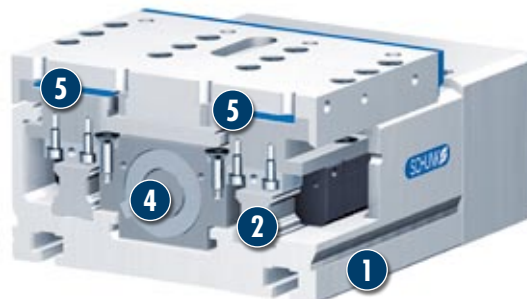
Linear Axes • **Ball Screw Drive**

## Sectional functional diagrams

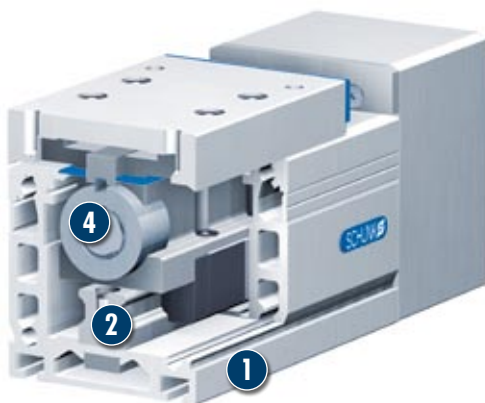
HSB beta® system  
SRS



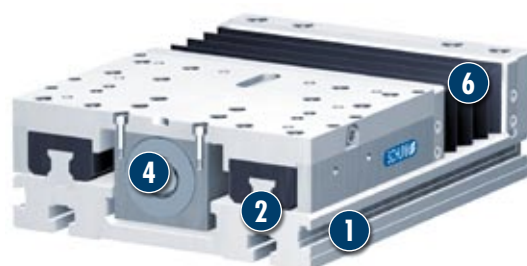
HSB delta® system  
SSS



HSB beta® system  
SSS



HSB alpha® system



1 Axis body as the support profile

2 Profiled rail guide

3 Roller guide

4 Ball screw spindle/  
Trapezoidal threaded spindle

5 Covering tape made of plastic

6 Bellow cover, plastic

## Description of function

The axis carriage is driven by a ball screw spindle and precisely guided by a roller or profiled rail guide. The covering tape runs through the axis carriage.

## Options and special information

The servo motor can be connected to the pinion shaft by a motor flange and a coupling.

① On request, SCHUNK can supply complete drive solutions including motor, gears, controller, and cables.

### Accessories

Accessories from SCHUNK – the suitable companion for the best functionality, reliability, and controlled production for all automation components.

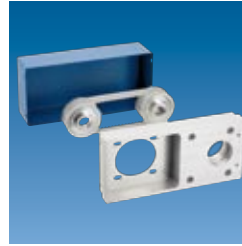
#### Motor flanges



#### Motors



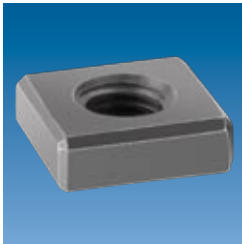
#### Angle belt drive



#### Bevel gear



#### T-nut



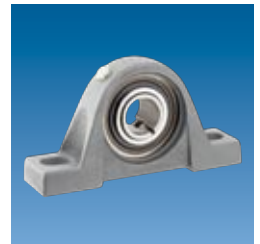
#### Mounting strips



#### Connection shafts



#### Pedestal bearing



#### Inductive proximity switch



#### Mechanical roller switches



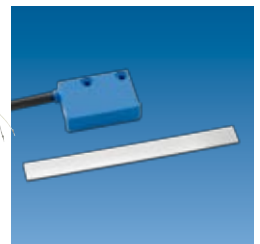
#### Drive controller



#### Cable set



#### Stroke measuring system



① Please see the side views at the end of the respective size for information concerning specific sizes, availability, designation, and ID numbers. Further information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

### General information about the series

An overview of the static and dynamic basic load ratings for the systems can be found in the "Technical data for installed guides" tables in the introduction to this chapter.

# System HSB Ball Screw Drive

## Linear Axes • Ball Screw Drive

### How to order - Ball screw spindle drive

B 80 - S R S - M - 2020 - 1000 - 1430 - 2SA - 2ES2 - 0

**Product series B = Beta, D = Delta**

**Size**

**Drive**

S = Spindle

**Guidance system**

R = Roller guide: type B

S = Rail guide

G = (Auxiliary) sliding guide: type B

**Design version**

S = Standard

**Drive type**

M = Single nut (ball screw)

MM = Double nut (ball screw)

TM = Trapezium nut; TR = Gunmetal nut

**Drive version**

Diameter and pitch (ball screw)

Diameter x pitch (trapezoidal thread)

**Distance traveled**

**Overall length**

**Spindle supports (SA)**

(Number)

**Accessories**

BL3 = Mounting strip

EMS / EMB = Mechanical limit switch attached (S - Siemens, B - Balluff)

E02 / E010 = Inductive limit switch, opener with 2m / 10 m cable attached

ES2 / ES10 = Inductive limit switch, closer with 2m / 10 m cable attached

NS ③ = T-nut M6

NS ⑥ = T-nut M10

RM 2 = T-nut M4

RM 6 = T-nut M10

AZ 1 = Short drive shaft, attachment side C

AZ 2 = Short drive shaft, attachment side D

AZ 6 = Long drive shaft, attachment side C and D

**Special design**

0 = Standard

1 = Special (specification in plain text)

**Additional accessories (separate item)**

MGK = Motor flange and coupling (from dimension sheet)

URT = Angle belt drive (from dimension sheet)

KRG = Directly attached bevel gears

Cover tape is standard for ball screw spindle drive.

### How to order - Linear table with ball screw spindle drive

	A	20	B	-	225	-	M	-	2505	-	1000	-	1660	-	FB	-	2EMS	-	0
<b>Product series</b>																			
<b>Size</b>																			
<b>Drive type</b>																			
M = Single nut (ball screw) MM = Double nut (ball screw) TR = Gunmetal nut (trapezium thread)																			
<b>Drive version</b>																			
Diameter and pitch (ball screw) Diameter x pitch (trapezoidal thread)																			
<b>Distance traveled</b>																			
<b>Overall length</b>																			
<b>Cover</b>																			
FB = Bellow; ALPHA type only																			
<b>Accessories</b>																			
EMS / EMB = Mechanical limit switch attached (S - Siemens, B - Balluff) EO2 / EO10 = Inductive limit switch, opener with 2m / 10 m cable attached ES2 / ES10 = Inductive limit switch, closer with 2m / 10 m cable attached																			
<b>Special design</b>																			
0 = Standard 1 = Special (specification in plain text)																			

MGK = Motor flange and coupling (from dimension sheet)  
URT = Angle belt drive (from dimension sheet)

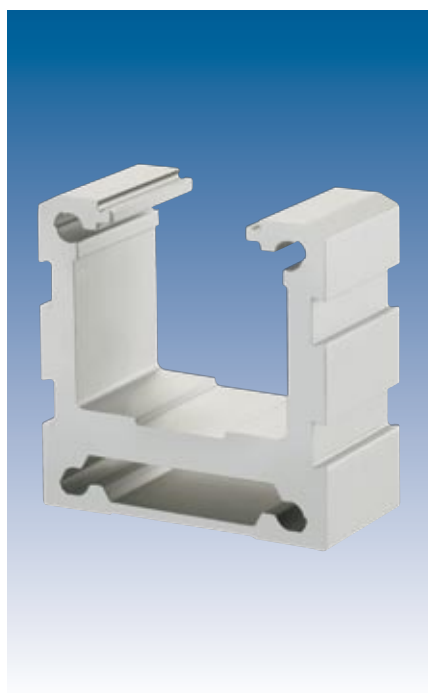


### Advantages of profiled rail guide

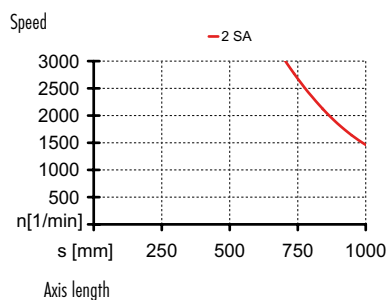
High load bearing capacity

Long lifetime

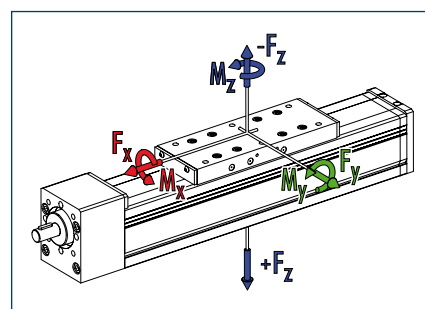
High precision



### Spindle supports SA



### Loads and load torques



Load		Dynamic
$F_x^{**}$	[N]	500
$F_y$	[N]	500
$F_z$	[N]	600
$-F_z$	[N]	300
Load torques		Dynamic
$M_x$	[Nm]	12
$M_y$	[Nm]	30 (50)
$M_z$	[Nm]	30 (50)
$M_{z_{max}}$	[Nm]	0.9 (p=4); 1.1 (p=5)

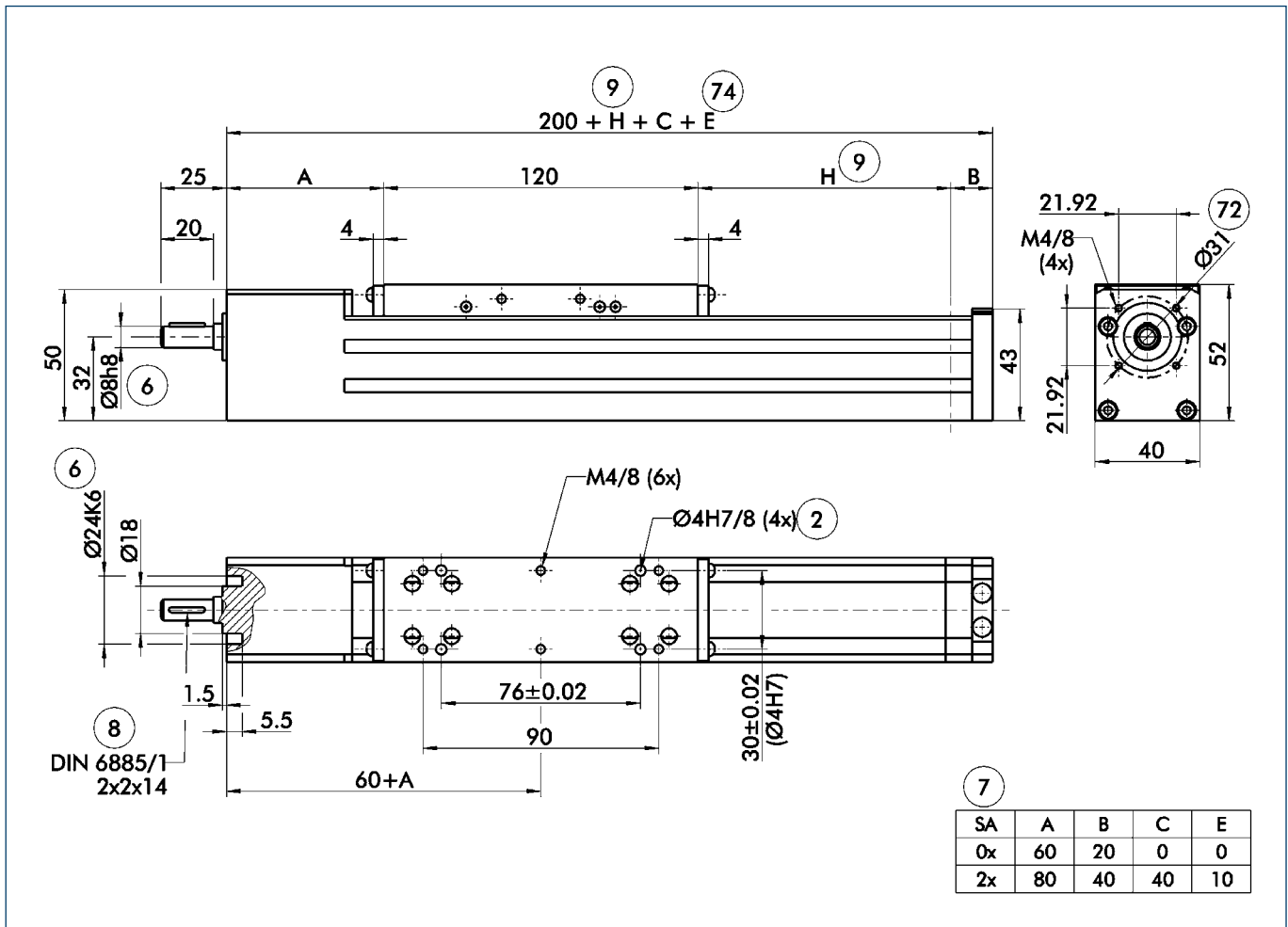
\*\* Depends on speed and pitch  $n_{max}$   
KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

### Technical data

Designation		B 40-SSS
Max. travel speed	[m/s]	0.25
Repeat accuracy	[mm]	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20
Idle torque	[Nm]	0.4
Maximum stroke	[mm]	890
Max. total length	[mm]	1090
Moment of inertia	[kgm <sup>2</sup> ]	0.000012
Drive element		Ball screw spindle drive
Max. spindle speed	[rpm]	3000
Diameter	[mm]	12
Pitch	[mm]	4 / 5
Drive element		Trapezoidal threaded drive
Max. spindle speed	[rpm]	1500
Diameter	[mm]	12
Pitch	[mm]	3
Weights		
Basic without travel	[kg]	1.7
Travel per 100 mm	[kg]	0.4
Slide plate 120 mm	[kg]	0.4
Slide plate 200 mm	[kg]	0.65

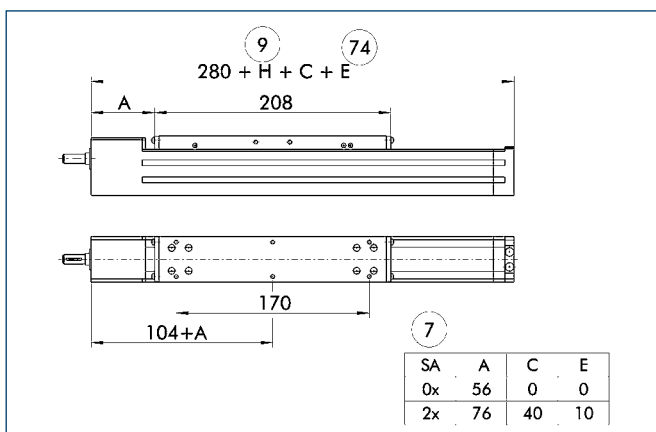
### Main views



- ② Assembly connection
- ⑥ Drive connection
- ⑦ Number of spindle supports
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑦② Bolt pitch circle

- ⑦④ E for spindle supports with insulated noise emissions

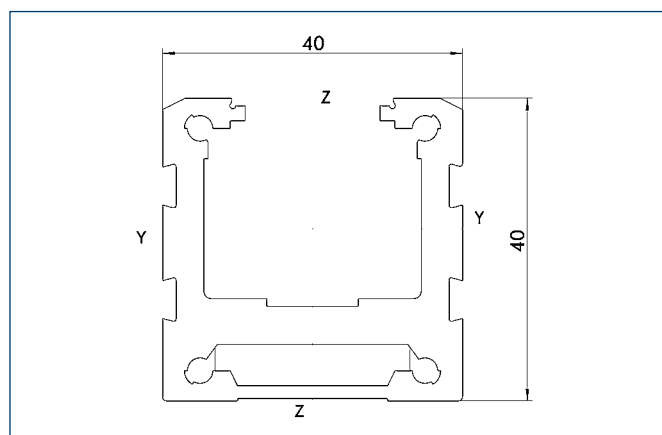
### Long slide



- ⑦ Number of spindle supports
- ⑨ Useful stroke

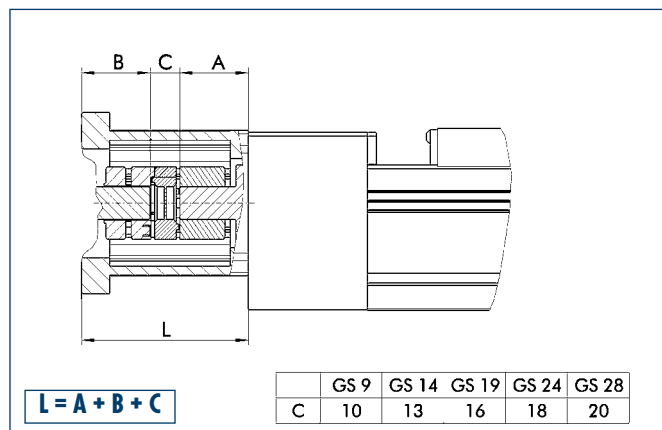
- ⑦④ E for spindle supports with insulated noise emissions

## Profile SSS



Specific mass	[kg/m]	1.71
Planar dimension	[mm <sup>2</sup> ]	635
Planar moment of inertia $I_y$	[mm <sup>4</sup> ]	88917
Planar moment of inertia $I_z$	[mm <sup>4</sup> ]	133350
Load torque $W_y$	[mm <sup>3</sup> ]	3757
Load torque $W_z$	[mm <sup>3</sup> ]	6665

## Motor flange schematic diagram



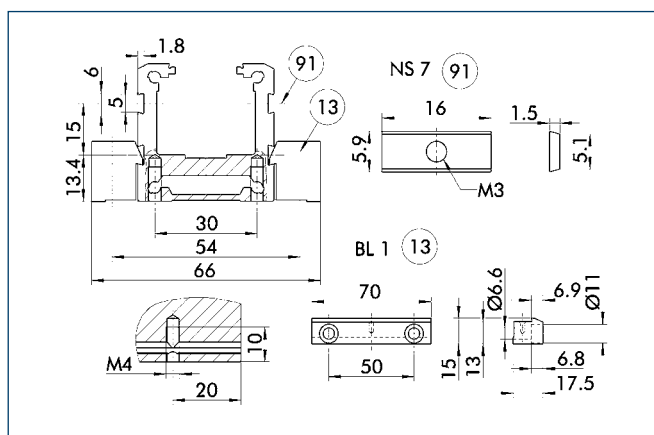
The table shows the relevant dimension **C** of the standard couplings.  
For dimension A refer to drive journal connection dimensions, for dimension B refer to corresponding motor dimension sheet, dimension L may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

## Mounting

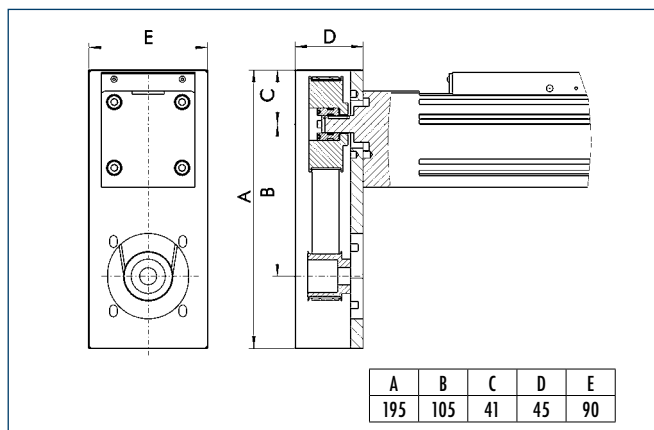


- ⑬ Mounting strip

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS7	0331423
Mounting strip	BL1	0331400

### Angle gear schematic diagram



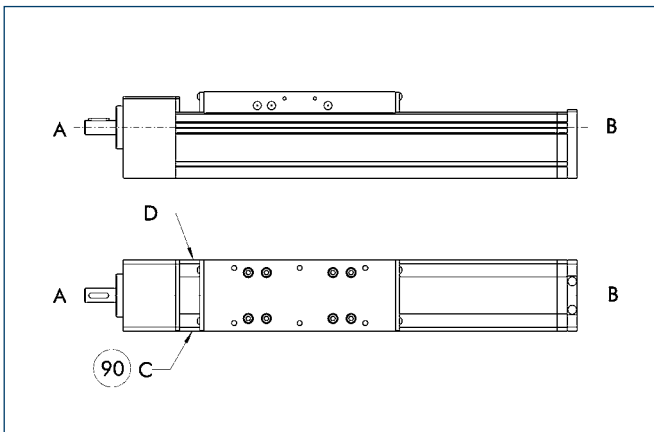
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension C can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

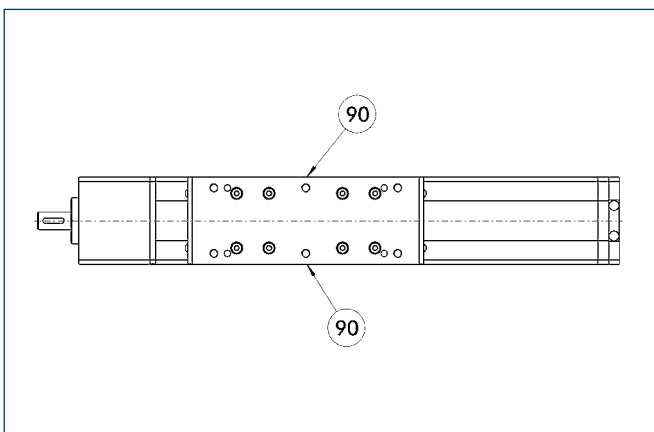
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



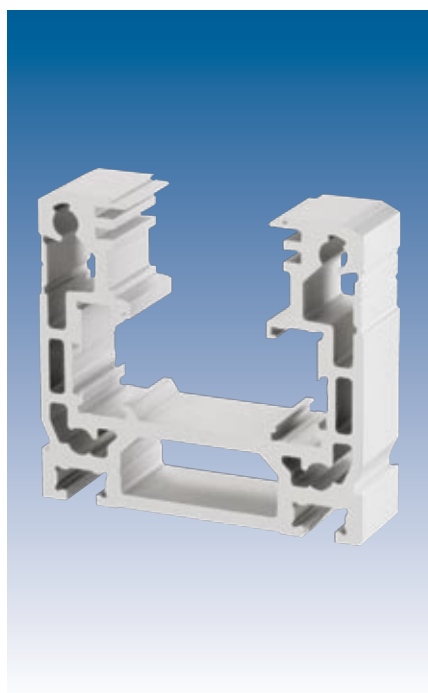
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.



### Advantages of roller guide

#### High maximum moments

due to optimum force transmission to the profile

#### Long stroke lengths

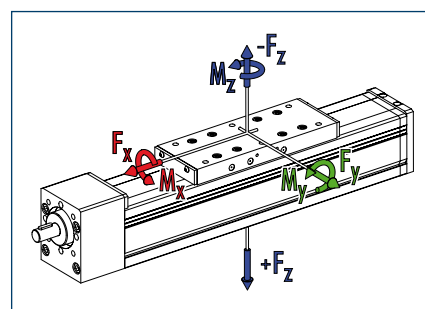
can be achieved with no problems

#### Life-time lubricated rollers

for easy maintenance use

#### Smooth, low-noise running

### Loads and load torques



Load		Dynamic
$F_x^{**}$	[N]	1000
$F_y$	[N]	300
$F_z$	[N]	600
$-F_z$	[N]	400
Load torques		Dynamic
$M_x$	[Nm]	30
$M_y$	[Nm]	50 (65)
$M_z$	[Nm]	50 (65)
$M_{z_{max}}$	[Nm]	0.9 (p=4); 1.1 (p=5)

\*\* Depends on speed and pitch  $n_{max}$   
KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

### Technical data

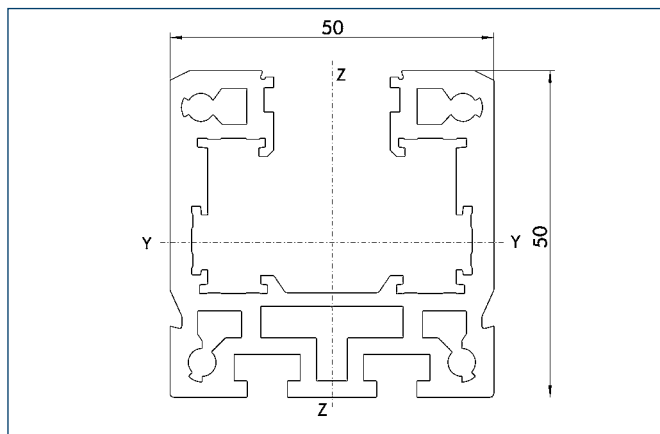
Designation		B 50C-SRS
Max. travel speed	[m/s]	0.25
Repeat accuracy	[mm]	0.03
Max. acceleration	[m/s <sup>2</sup> ]	20
Idle torque	[Nm]	0.3
Maximum stroke	[mm]	860
Max. total length	[mm]	1090
Moment of inertia	[kgm <sup>2</sup> ]	0.000012
Drive element		Ball screw spindle drive
Max. spindle speed	[rpm]	3000
Diameter	[mm]	12
Pitch	[mm]	4 / 5
Drive element		Trapezoidal threaded drive
Max. spindle speed	[rpm]	1500
Diameter	[mm]	12
Pitch	[mm]	3
Weights		
Basic without travel	[kg]	1.5
Travel per 100 mm	[kg]	0.4
Slide plate 150 mm	[kg]	0.45
Slide plate 200 mm	[kg]	0.6

[illegible]

- 
- Technical drawing of a 1000mm long profile. The drawing shows a side view and a top view. The side view dimensions are: 56 (width of the left flange), 208 (length of the main body), and 280+H (total length including the right flange). A callout circle with the number 9 is located above the 280+H dimension. The top view dimensions are: 160 (width of the main body), 114 (width of the left flange), and 170 (width of the right flange).

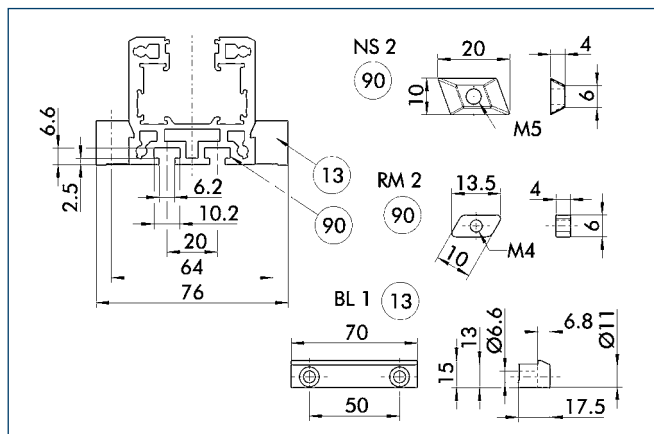
295

### Profile SRS



Specific mass	[kg/m]	2.45
Planar dimension	[mm <sup>2</sup> ]	908
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	236683
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	295187
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	8622
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	11804

### Mounting



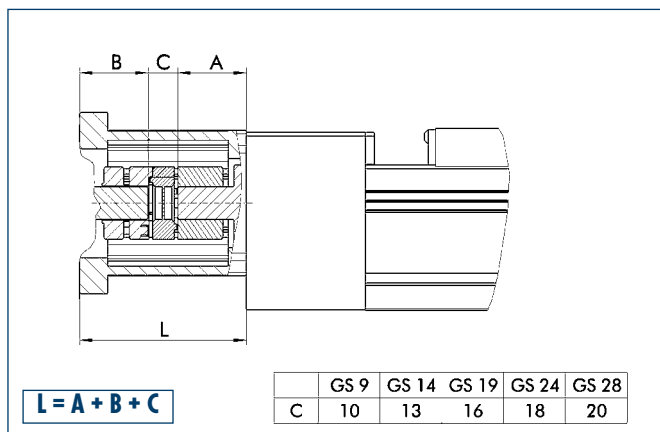
⑬ Mounting strip

⑨ Base side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS2	0331405
T-nut	RM2	0331425
Mounting strip	BL1	0331400

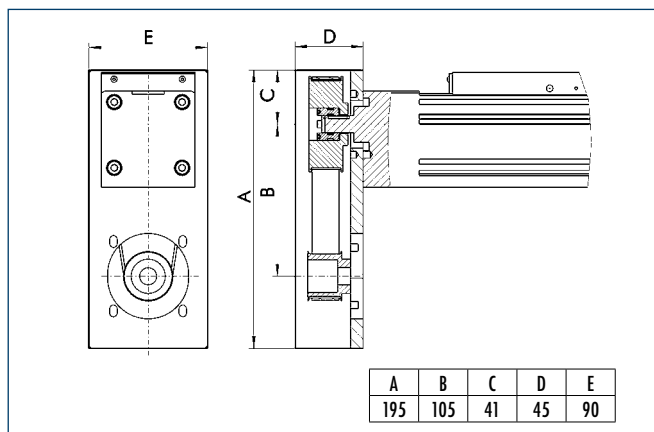
### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases. Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Angle gear schematic diagram



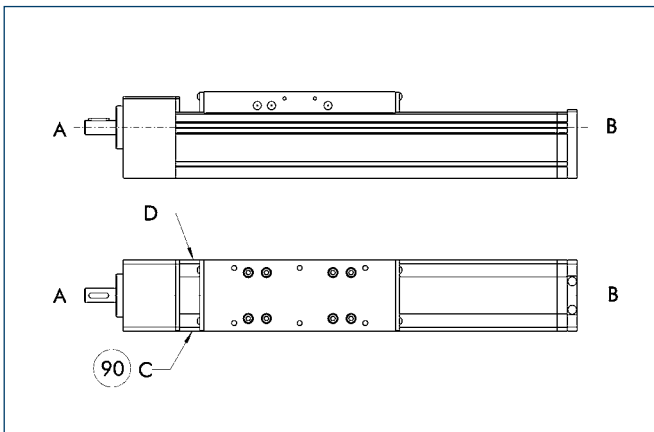
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension C can change at  $i \neq 1 : 1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

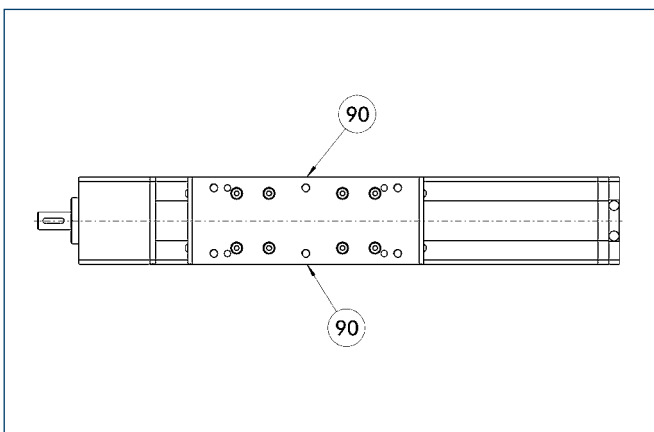
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

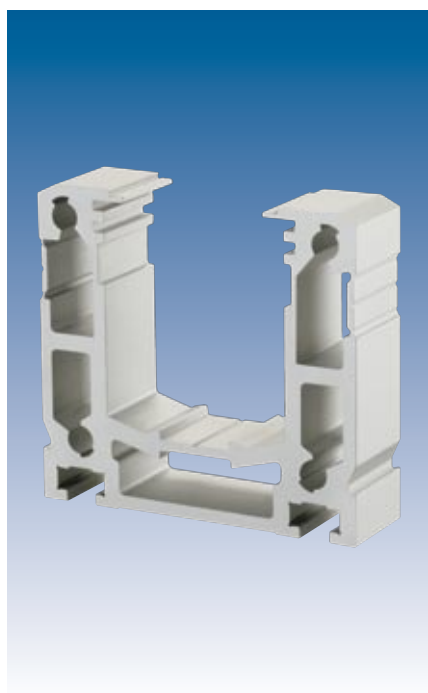


### Advantages of profiled rail guide

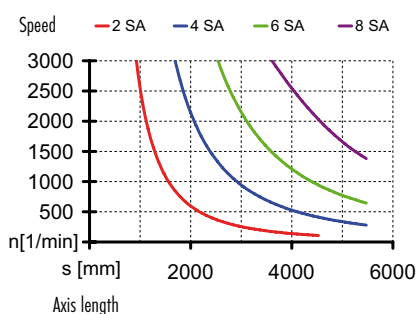
High load bearing capacity

Long lifetime

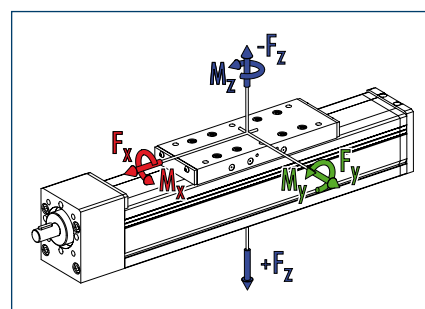
High precision



### Spindle supports SA



### Loads and load torques



Load	Dynamic
$F_x^{**}$ [N]	4000
$F_y$ [N]	600
$F_z$ [N]	1800
$-F_z$ [N]	1200
Load torques	Dynamic
$M_x$ [Nm]	60
$M_y$ [Nm]	180 (220)
$M_z$ [Nm]	120 (150)
$M_{z_{max}}$ [Nm]	3.9 (p=5); 13.4 (p=20); 32.5 (p=50)

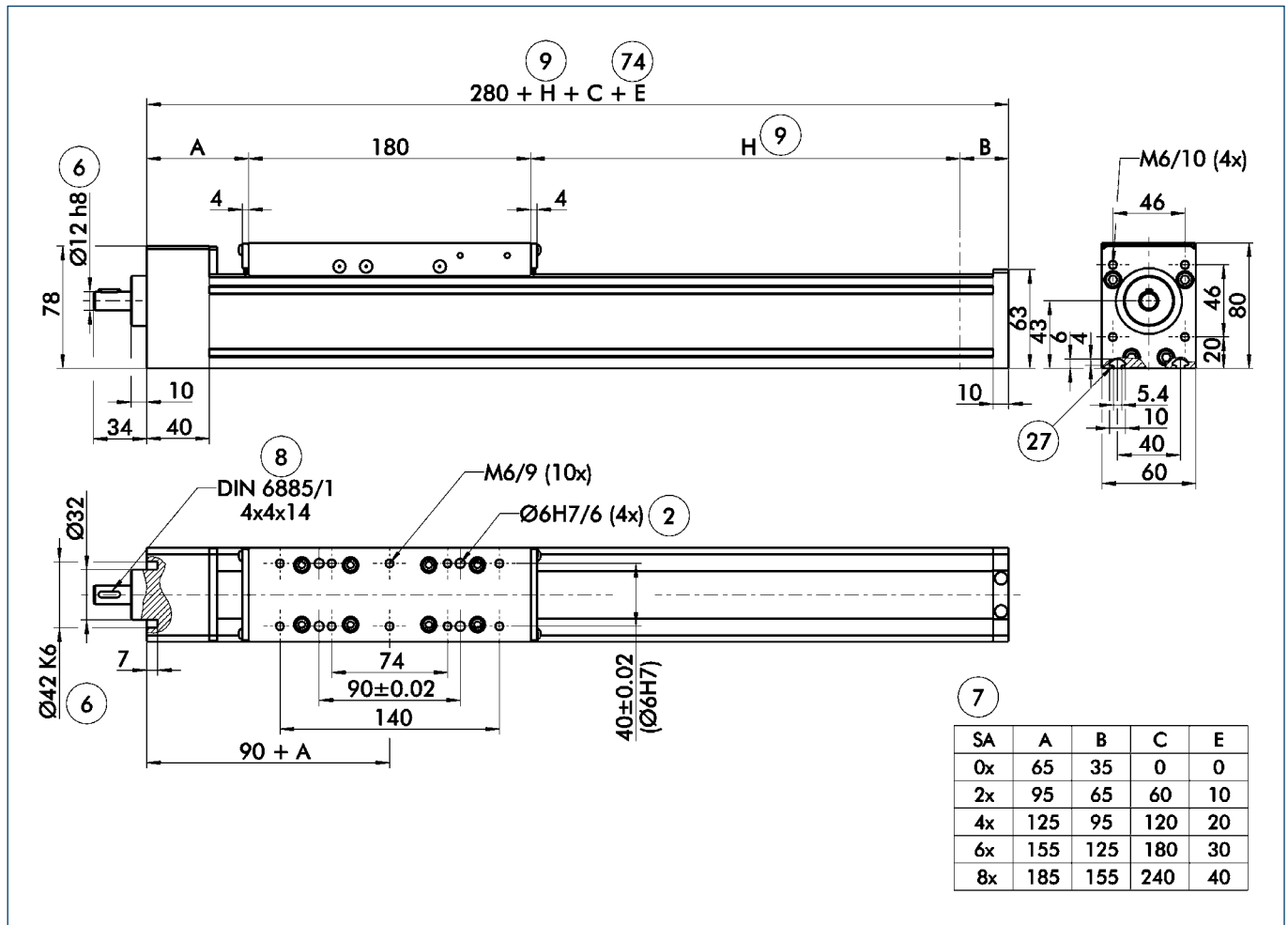
\*\* Depends on speed and pitch  $n_{max}$   
KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

### Technical data

Designation	B 60-SSS	
Max. travel speed	[m/s]	2.5
Repeat accuracy	[mm]	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20
Idle torque	[Nm]	0.7
Maximum stroke	[mm]	5120
Max. total length	[mm]	5400
Moment of inertia	[kgm <sup>2</sup> ]	0.000085
Drive element	Ball screw spindle drive	
Max. spindle speed	[rpm]	3000
Diameter	[mm]	20
Pitch	[mm]	5 / 20 / 50
Drive element	Trapezoidal threaded drive	
Max. spindle speed	[rpm]	1500
Diameter	[mm]	20
Pitch	[mm]	4 / 8 / 16
Weights		
Basic without travel	[kg]	4.3
Travel per 100 mm	[kg]	0.8
Slide plate 180 mm	[kg]	1.5
Slide plate 230 mm	[kg]	1.8

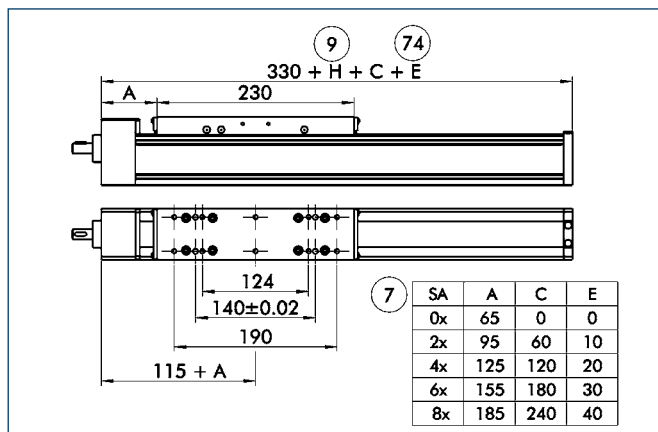
### Main views



- (2) Assembly connection
- (6) Drive connection
- (7) Number of spindle supports
- (8) Feather key DIN 6885
- (9) Useful stroke
- (27) Mounting groove for T-nuts

- (74) Additional E for spindle supports with insulated noise emissions

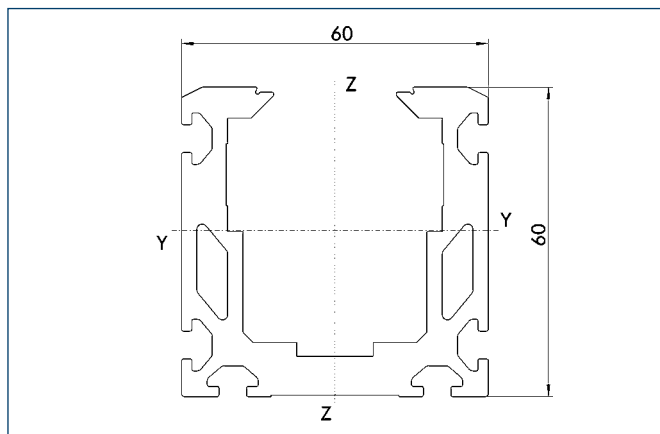
### Long slide



- (7) Number of spindle supports
- (9) Useful stroke

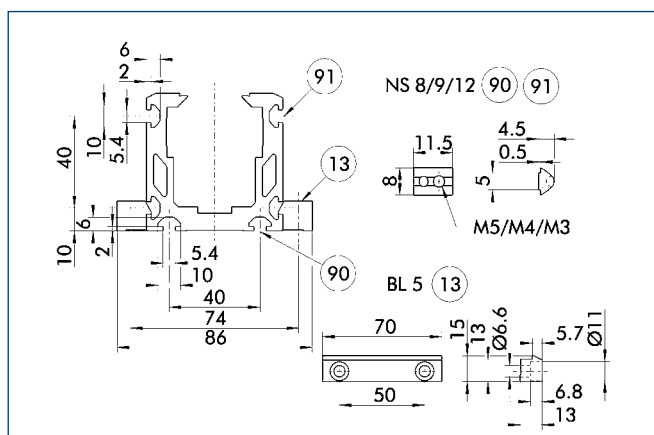
- (74) E for spindle supports with insulated noise emissions

### Profile SSS



Specific mass	[kg/m]	3.35
Planar dimension	[mm <sup>2</sup> ]	1242
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	473055
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	577258
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	13624
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	19236

### Mounting



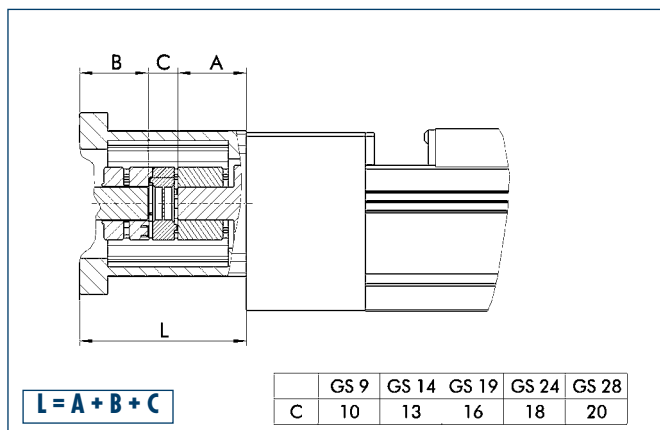
- 13 Mounting strip  
90 Base side T-nut

- 91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS8	0331420
T-nut	NS9	0331421
T-nut	NS12	0331424
Mounting strip	BL5	0331419

### Motor flange schematic diagram

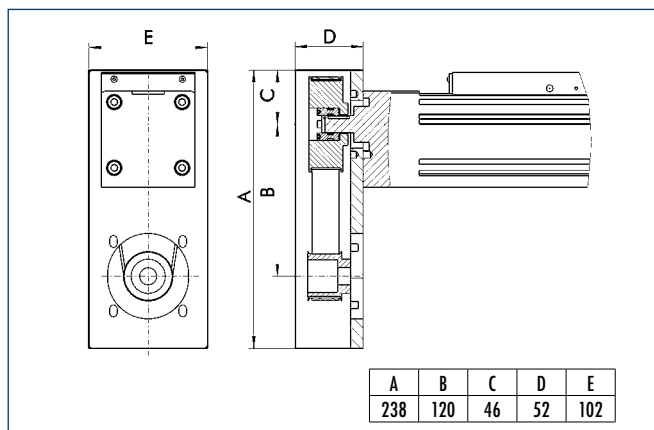


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Angle gear schematic diagram



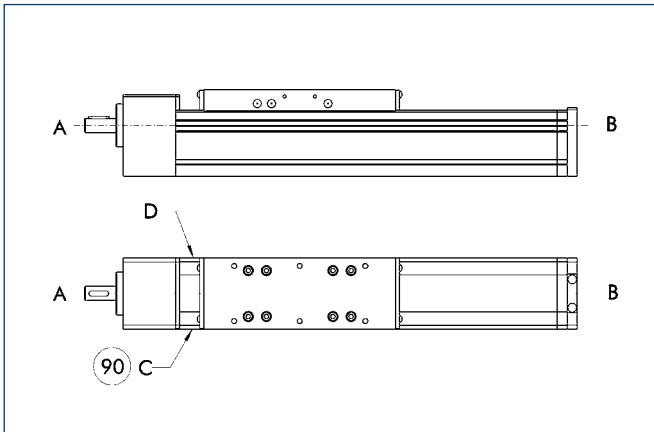
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension **C** can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

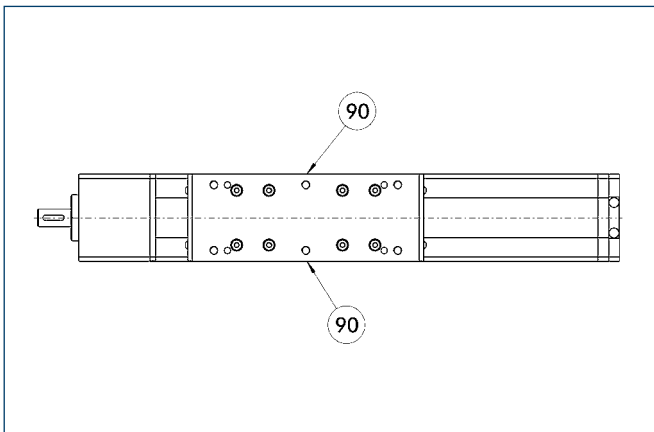
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



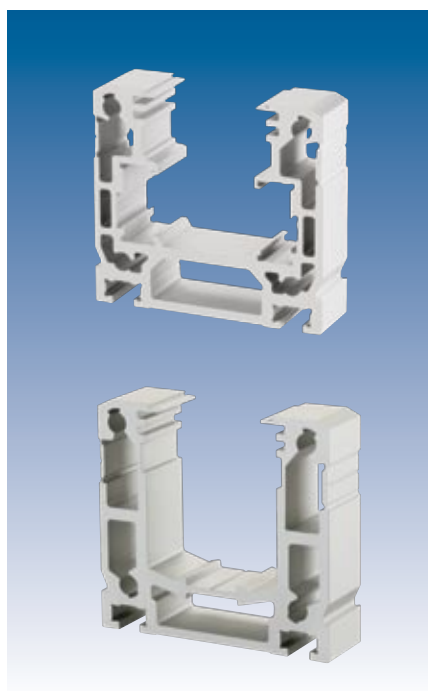
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.



### Advantages of roller guide

#### High maximum moments

due to optimum force transmission to the profile

#### Long stroke lengths

can be achieved with no problems

#### Life-time lubricated rollers

for easy maintenance use

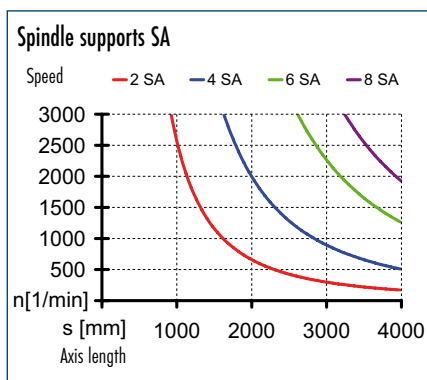
#### Smooth, low-noise running

### Advantages of profiled rail guide

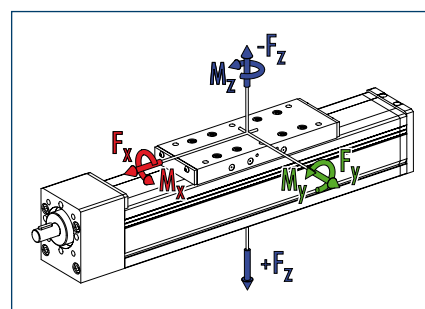
#### High load bearing capacity

#### Long lifetime

#### High precision



### Loads and load torques



Load	SRS dynamic	SSS dynamic
$F_x^{**}$ [N]	2000	2000
$F_y$ [N]	300	600
$F_z$ [N]	1000	1800
$-F_z$ [N]	400	1200
Load torques	SRS dynamic	SSS dynamic
$M_x$ [Nm]	35	60
$M_y$ [Nm]	120 (150)	180 (220)
$M_z$ [Nm]	60 (70)	120 (150)
$M_{Amax}$ [Nm]	1.9 (p=5) 3.5 (p=10) 6.7 (p=20)	2.0 (p=5) 3.6 (p=10) 6.8 (p=20)

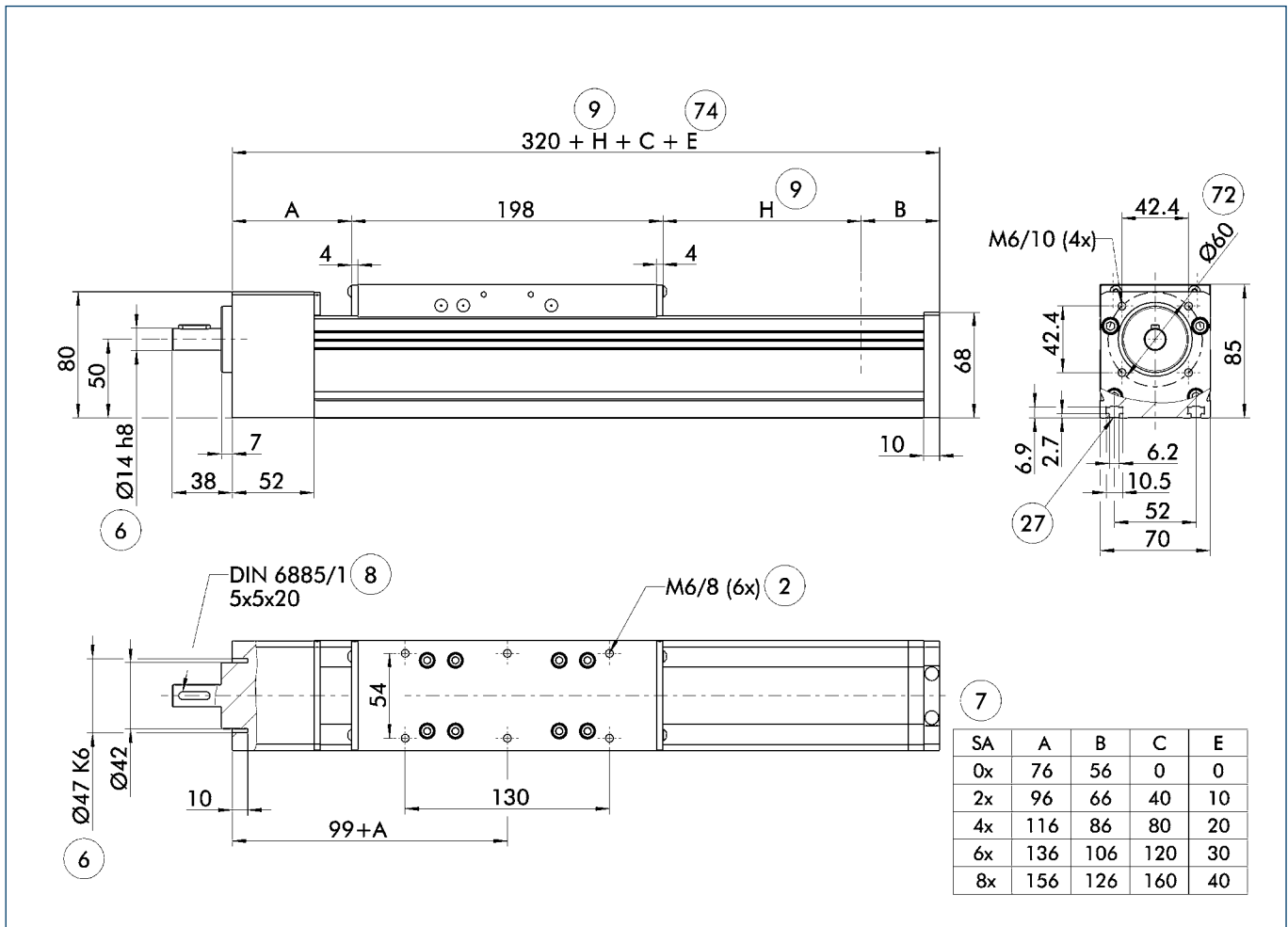
\*\* Depends on speed and pitch  $n_{max}$   
KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

## Technical data

Designation		B 70C-SRS	B 70C-SSS
Max. travel speed	[m/s]	1.0	1.0
Repeat accuracy	[mm]	± 0.03	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20	20
Idle torque	[Nm]	0.35	0.4
Maximum stroke	[mm]	2730	2730
Max. total length	[mm]	3050	3050
Moment of inertia	[kgm <sup>2</sup> ]	0.0000325	0.0000325
Drive element		Ball screw spindle drive	Ball screw spindle drive
Max. spindle speed	[rpm]	3000	3000
Diameter	[mm]	16	16
Pitch	[mm]	5 / 10 / 20	5 / 10 / 20
Drive element		Trapezoidal threaded drive	Trapezoidal threaded drive
Max. spindle speed	[rpm]	1500	1500
Diameter	[mm]	16	16
Pitch	[mm]	4 / 8	4 / 8
Weights			
Basic without travel	[kg]	3.65	3.5
Travel per 100 mm	[kg]	0.45	0.6
Slide plate 190 mm	[kg]	1.6	1.25
Slide plate 240 mm	[kg]	2.02	1.6

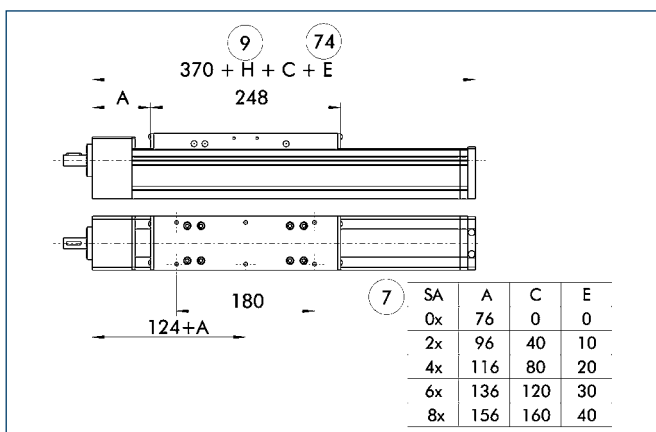
### Main views



- ② Assembly connection
- ⑥ Drive connection
- ⑦ Number of spindle supports
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ②⑦ Mounting groove for T-nuts
- ⑦② Bolt pitch circle

- ⑦④ E for spindle supports with insulated noise emissions

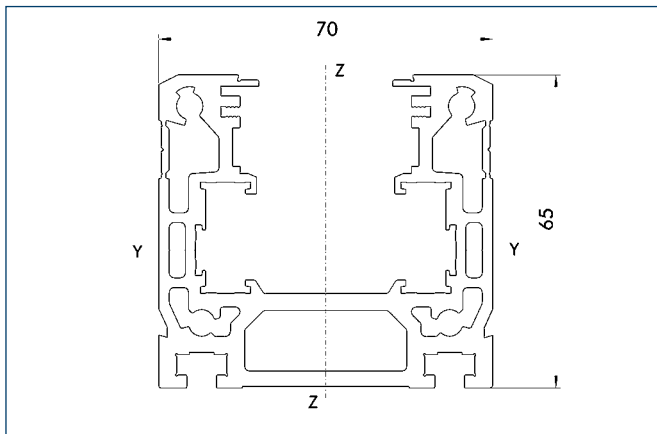
### Long slide



- ⑦ Number of spindle supports
- ⑨ Useful stroke

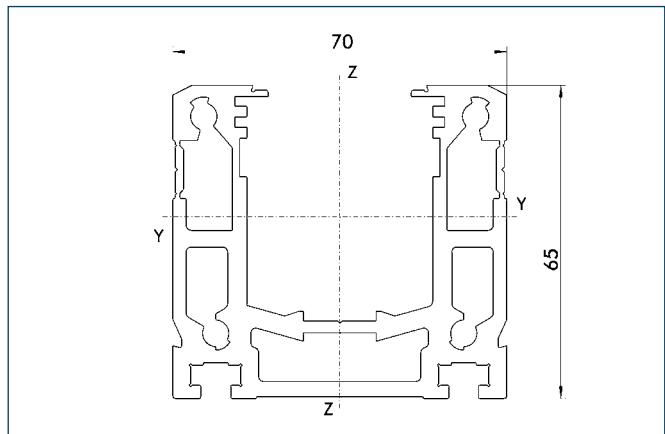
- ⑦④ E for spindle supports with insulated noise emissions

### Profile SRS



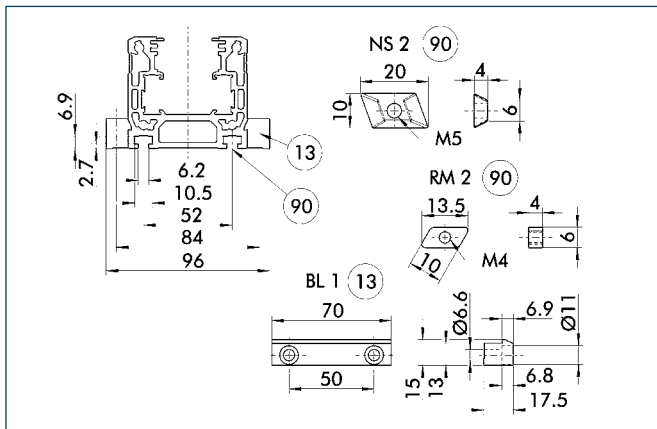
Specific mass	[kg/m]	3.7
Planar dimension	[mm <sup>2</sup> ]	1370
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	585283
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	854713
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	15835
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	24410

### Profile SSS



Specific mass	[kg/m]	3.7
Planar dimension	[mm <sup>2</sup> ]	1370
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	563059
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	852507
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	14743
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	24335

### Mounting



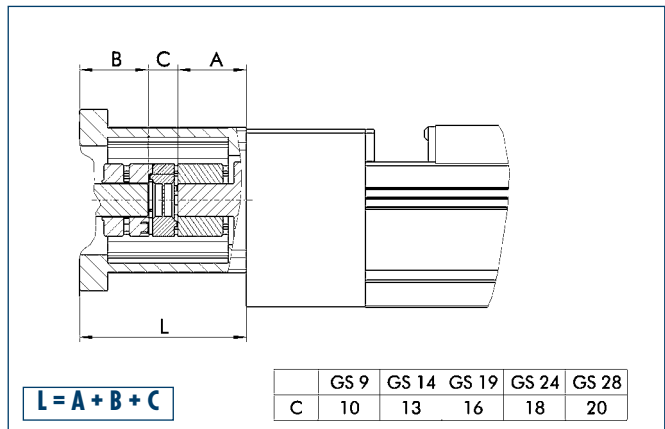
13 Mounting strip

90 Base side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS2	0331405
T-nut	RM2	0331425
Mounting strip	BL1	0331400

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

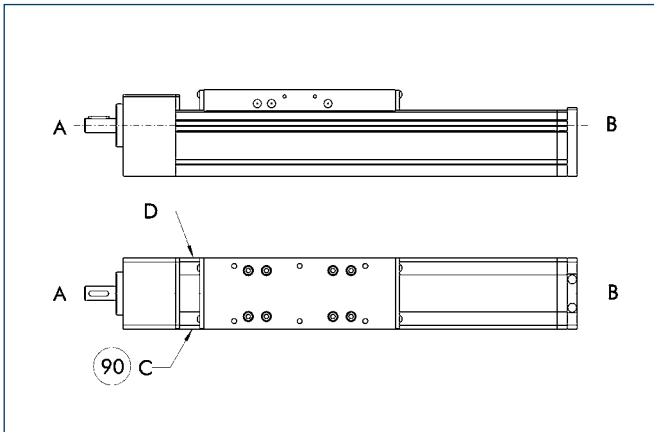
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

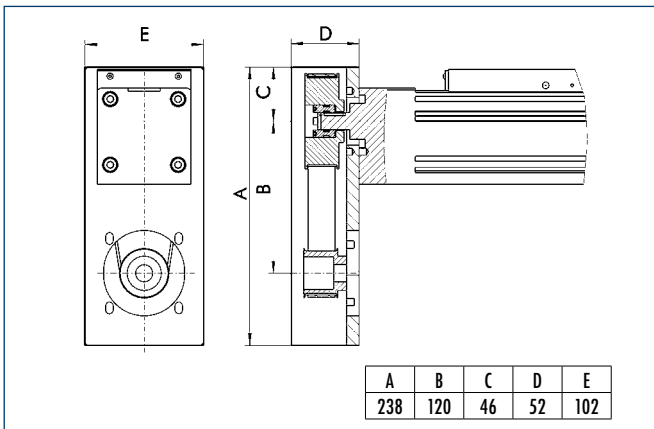
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Angle gear schematic diagram



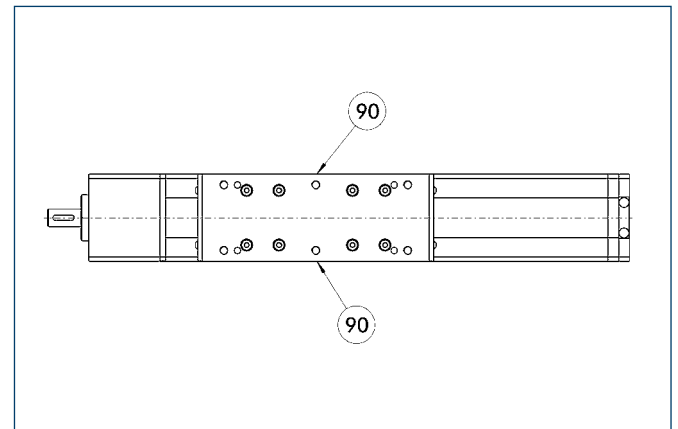
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension C can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

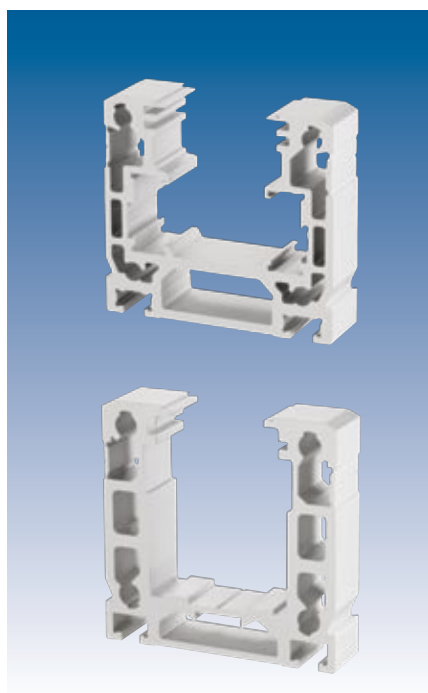
Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.



# B 70C-SRS-RL/-SSS-RL

## Linear Axes • Ball Screw Drive



### Advantages of roller guide

**High maximum moments**  
due to optimum force transmission to the profile

**Long stroke lengths**  
can be achieved with no problems

**Life-time lubricated rollers**  
for easy maintenance use

**Smooth, low-noise running**

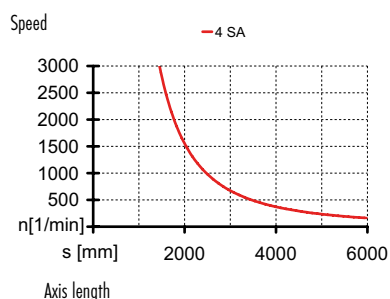
### Advantages of profiled rail guide

**High load bearing capacity**

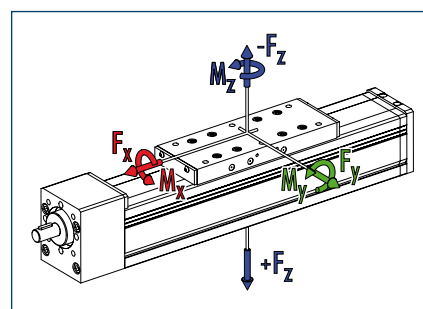
**Long lifetime**

**High precision**

#### Spindle supports SA



### Loads and load torques



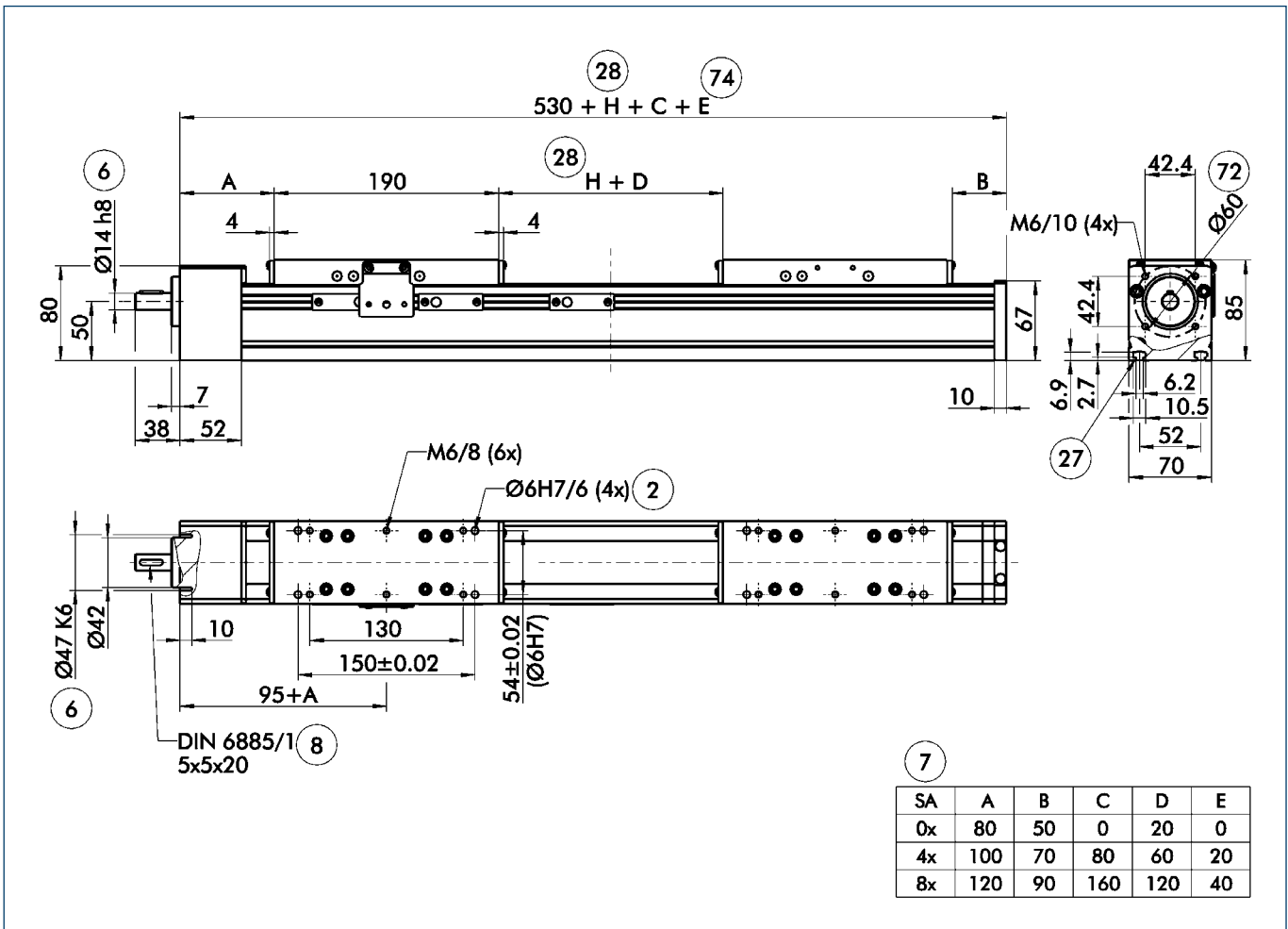
Load	SRS-RL dynamic	SSS-RL dynamic
$F_x^{**}$ [N]	2000	2000
$F_y$ [N]	300	600
$F_z$ [N]	1000	1800
$-F_z$ [N]	400	1200
Load torques	SRS-RL dynamic	SSS-RL dynamic
$M_x$ [Nm]	35	60
$M_y$ [Nm]	120 (150)	180 (220)
$M_z$ [Nm]	60 (70)	120 (150)
$M_{Amax}$ [Nm]	On request	On request

\*\* Depends on speed and pitch  $n_{max}$   
KGT = 3000 rpm; TGT = 1500 rpm  
① Values in brackets relate to the long slide.

## Technical data

Designation		B 70C-SRS-RL	B 70C-SSS-RL
Max. travel speed	[m/s]	0.1	1.0
Repeat accuracy	[mm]	± 0.03	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20	20
Idle torque	[Nm]	0.35	0.4
Maximum stroke	[mm]	1255 per slide	1255 per slide
Max. total length	[mm]	3050	3050
Moment of inertia	[kgm <sup>2</sup> ]	0.0000325	0.0000325
Drive element		Trapezoidal threaded drive	Trapezoidal threaded drive
Max. spindle speed	[rpm]	1500	1500
Diameter	[mm]	16	16
Pitch	[mm]	4 right/left	4 right/left
Weights			
Basic without travel	[kg]	3.65	3.5
Travel per 100 mm	[kg]	0.45	0.6
Slide plate 190 mm	[kg]	1.6	1.25
Slide plate 240 mm	[kg]	2.02	1.6

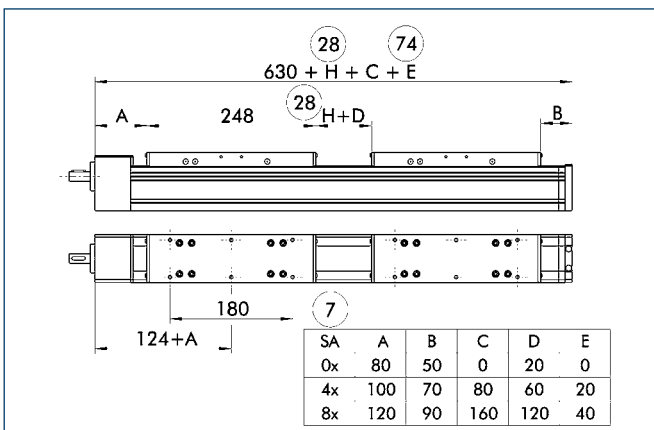
### Main views



- ② Assembly connection
- ⑥ Drive connection
- ⑦ Number of spindle supports
- ⑧ Feather key DIN 6885
- ②⑦ Mounting groove for T-nuts
- ②⑧ Total stroke = 2 x stroke per slide
- ⑦② Bolt pitch circle

- ⑦② E for spindle supports with insulated noise emissions

### Long slide



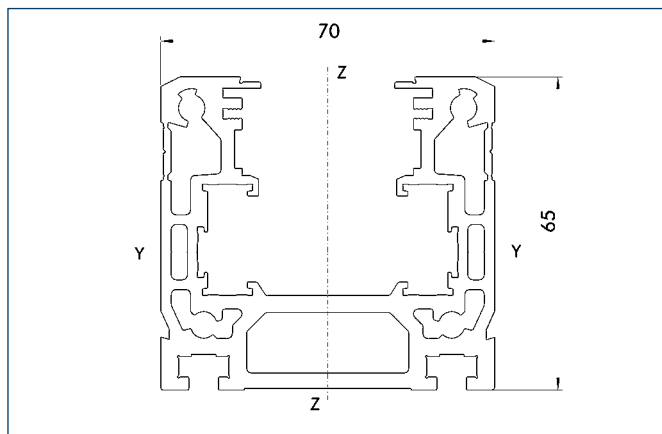
- ⑦ Number of spindle supports
- ②⑧ Total stroke = 2 x stroke per slide

- ⑦② E for spindle supports with insulated noise emissions

# B 70C-SRS-RL/-SSS-RL

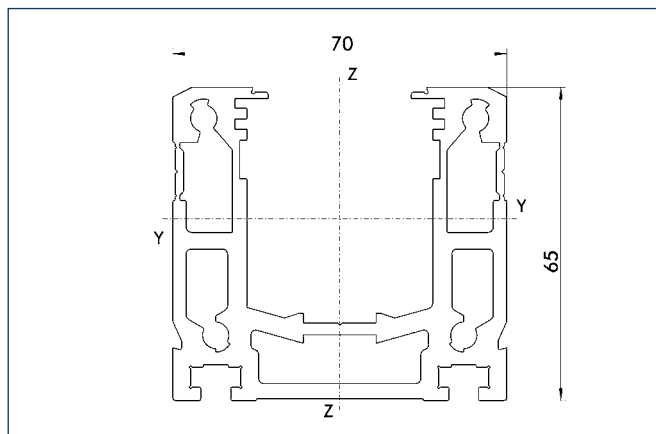
## Linear Axes • Ball Screw Drive

### Profile SRS



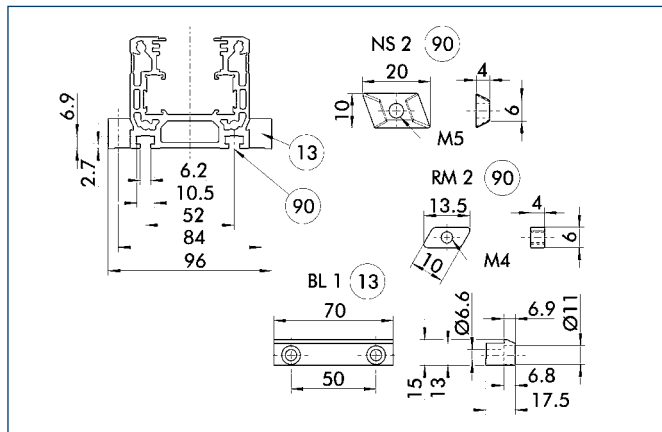
Specific mass	[kg/m]	3.7
Planar dimension	[mm <sup>2</sup> ]	1370
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	585283
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	854713
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	15835
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	24410

### Profile SSS



Specific mass	[kg/m]	3.7
Planar dimension	[mm <sup>2</sup> ]	1370
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	563059
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	852507
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	14743
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	24335

### Mounting



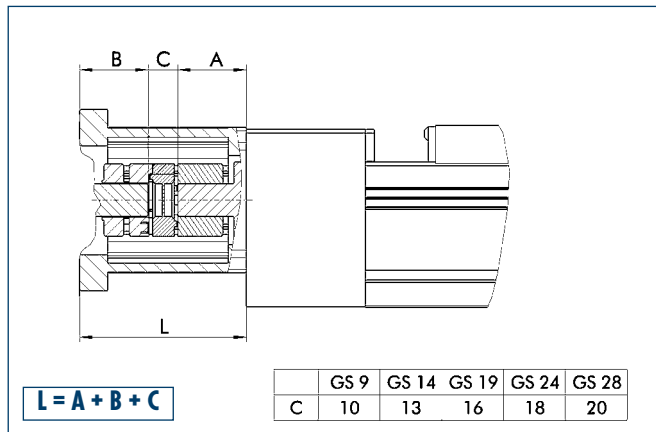
13 Mounting strip

90 Base side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS2	0331405
T-nut	RM2	0331425
Mounting strip	BL1	0331400

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

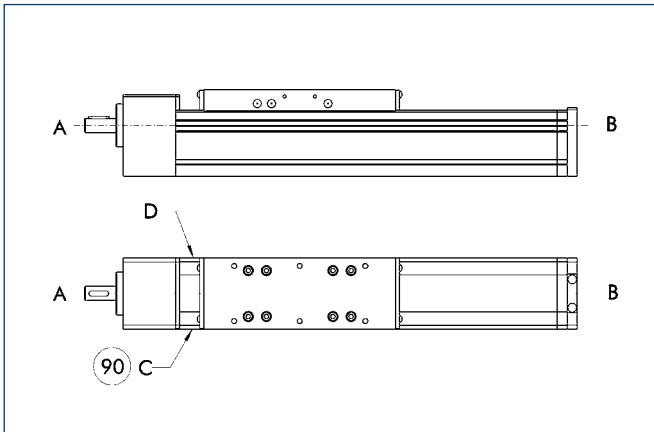
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

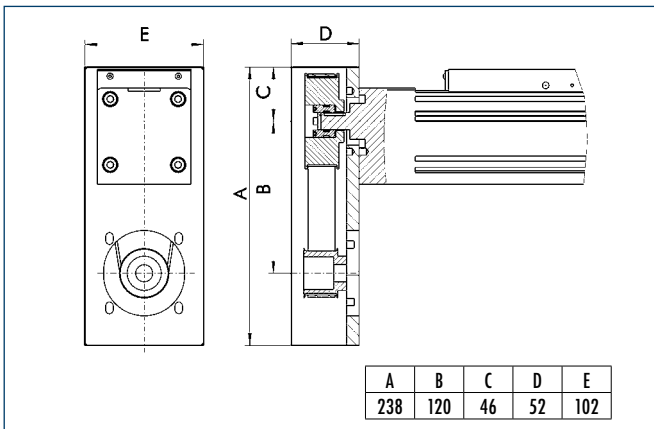
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Angle gear schematic diagram



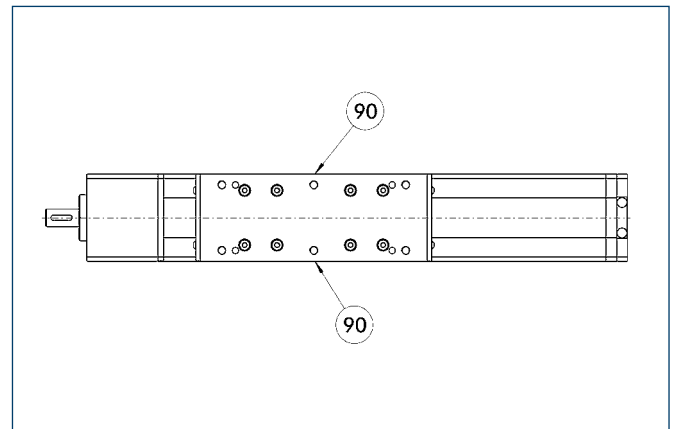
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension C can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Lubrication connections

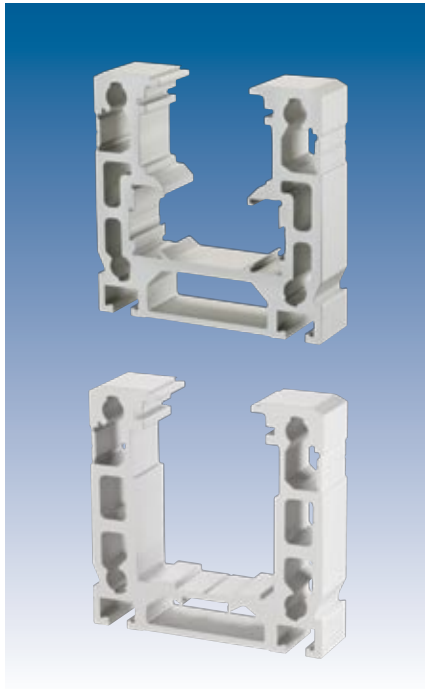


90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.



### Advantages of roller guide

**High maximum moments**  
due to optimum force transmission to the profile

**Long stroke lengths**  
can be achieved with no problems

**Life-time lubricated rollers**  
for easy maintenance use

**Smooth, low-noise running**

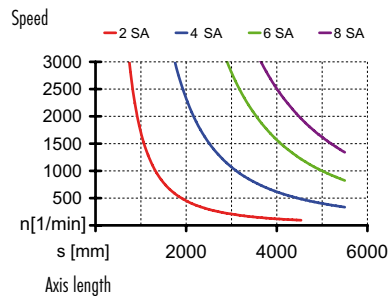
### Advantages of profiled rail guide

**High load bearing capacity**

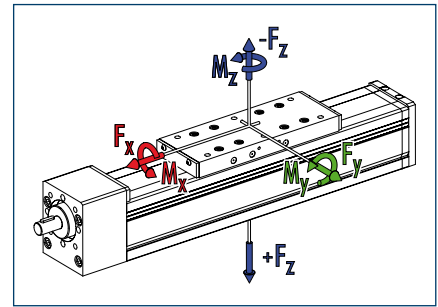
**Long lifetime**

**High precision**

#### Spindle supports SA



### Loads and load torques



Load	SRS dynamic	SSS dynamic
$F_x^{**}$ [N]	4000	4000
$F_y$ [N]	500	800
$F_z$ [N]	1500	3000
$-F_z$ [N]	800	2000
Load torques	SRS dynamic	SSS dynamic
$M_x$ [Nm]	50	100
$M_y$ [Nm]	180 (270)	250 (300)
$M_z$ [Nm]	100 (130)	250 (300)
$M_{Amax}$ [Nm]	3.8 (p=5)	4.0 (p=5)
	13.3 (p=20)	13.5 (p=20)
	32.4 (p=50)	32.6 (p=50)

\*\* Depends on speed and pitch  $n_{max}$   
KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

## Technical data

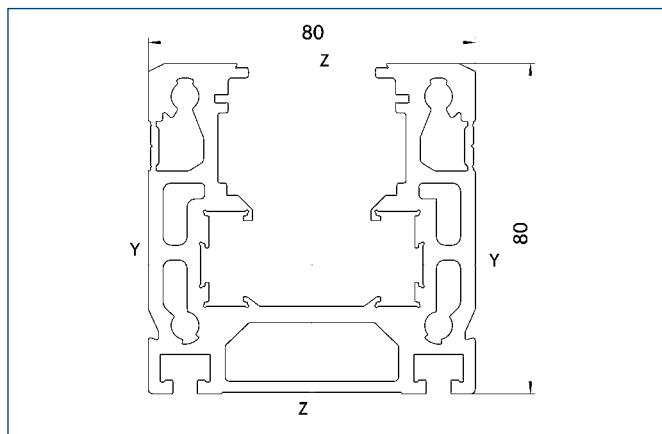
Designation		B 80-SRS	B 80-SSS
Max. travel speed	[m/s]	2.5	2.5
Repeat accuracy	[mm]	± 0.03	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20	20
Idle torque	[Nm]	0.6	0.8
Maximum stroke	[mm]	5020	5020
Max. total length	[mm]	5400	5400
Moment of inertia	[kgm <sup>2</sup> ]	0.000085	0.000085
Drive element		Ball screw spindle drive	Ball screw spindle drive
Max. spindle speed	[rpm]	3000	3000
Diameter	[mm]	20	20
Pitch	[mm]	5 / 20 / 50	5 / 20 / 50
Drive element		Trapezoidal threaded drive	Trapezoidal threaded drive
Max. spindle speed	[rpm]	1500	1500
Diameter	[mm]	20	20
Pitch	[mm]	4 / 8 / 16	4 / 8 / 16
Weights			
Basic without travel	[kg]	5.4	6.2
Travel per 100 mm	[kg]	0.7	1.1
Slide plate 210 mm	[kg]	2.2	1.9
Slide plate 270 mm	[kg]	2.8	2.4

	SA	A	B	C	E
0x	101	61	0	0	0
2x	126	86	50	10	10
4x	151	111	100	20	20
6x	176	136	150	30	30
8x	201	164	200	40	40

- 
- Technical drawing of the 74 series ball bearing unit. The drawing includes a side view and a front view. The side view shows a total length of  $440 + H + C + E$ , with a 278mm section for the bearing housing. The front view shows a total length of  $139 + A$ , with a 230mm section for the bearing housing. A table below the drawing provides dimensions for different bearing types (SA, 0x, 2x, 4x, 6x, 8x) and their corresponding A, C, and E values.
- | SA | A   | C   | E  |
|----|-----|-----|----|
| 0x | 101 | 0   | 0  |
| 2x | 126 | 50  | 10 |
| 4x | 151 | 100 | 20 |
| 6x | 176 | 150 | 30 |
| 8x | 201 | 200 | 40 |

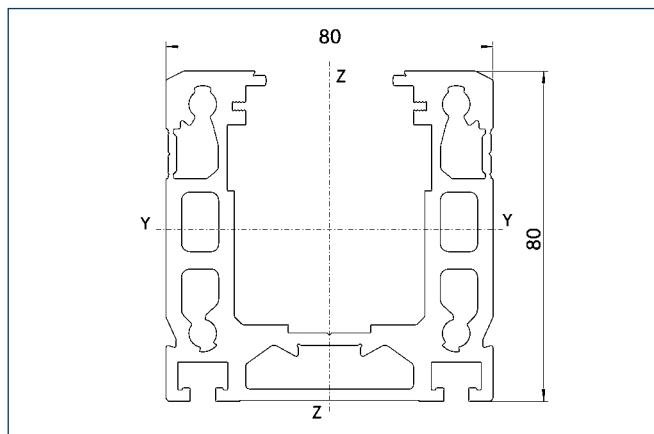
- 311

### Profile SRS



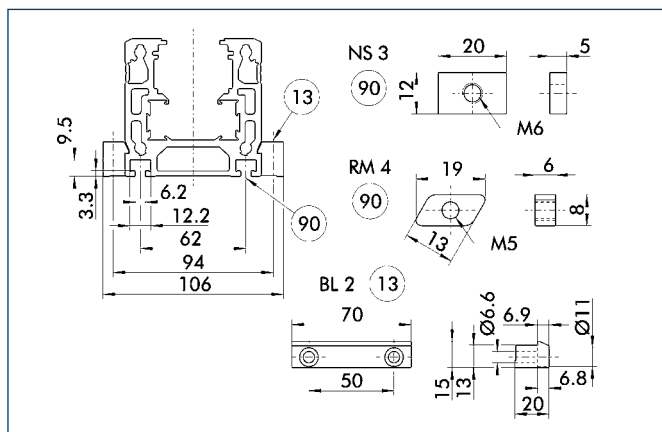
Specific mass	[kg/m]	5.64
Planar dimension	[mm <sup>2</sup> ]	2090
Planar moment of inertia I <sub>Y</sub>	[mm <sup>4</sup> ]	1294343
Planar moment of inertia I <sub>Z</sub>	[mm <sup>4</sup> ]	1732340
Load torque W <sub>Y</sub>	[mm <sup>3</sup> ]	30263
Load torque W <sub>Z</sub>	[mm <sup>3</sup> ]	43258

### Profile SSS



Specific mass	[kg/m]	5.6
Planar dimension	[mm <sup>2</sup> ]	2057
Planar moment of inertia I <sub>Y</sub>	[mm <sup>4</sup> ]	1372019
Planar moment of inertia I <sub>Z</sub>	[mm <sup>4</sup> ]	1677956
Load torque W <sub>Y</sub>	[mm <sup>3</sup> ]	30572
Load torque W <sub>Z</sub>	[mm <sup>3</sup> ]	41846

### Mounting



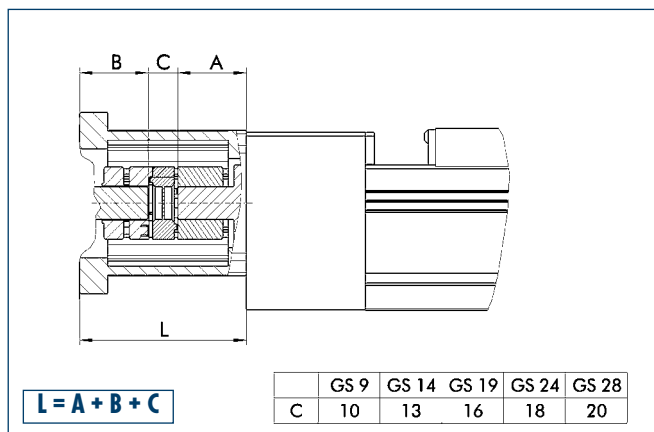
13 Mounting strip

90 Base side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	RM4	0331426
Mounting strip	BL2	0331401

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

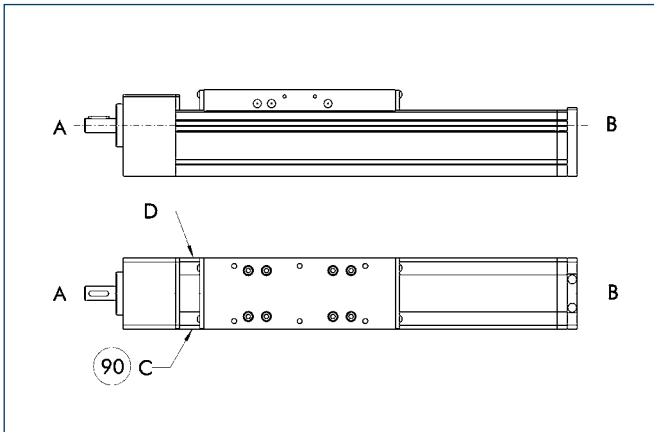
For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

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① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

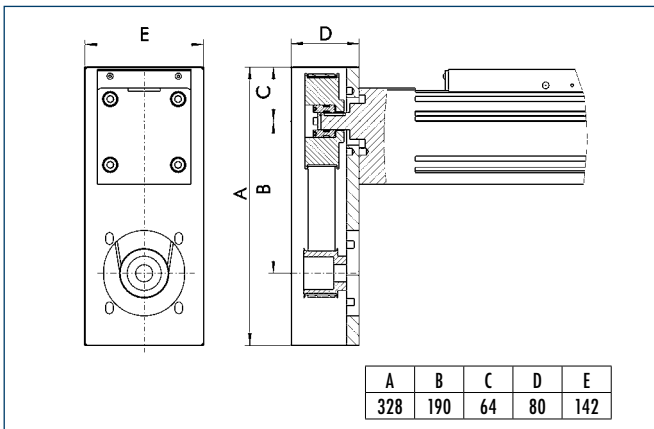
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Angle gear schematic diagram



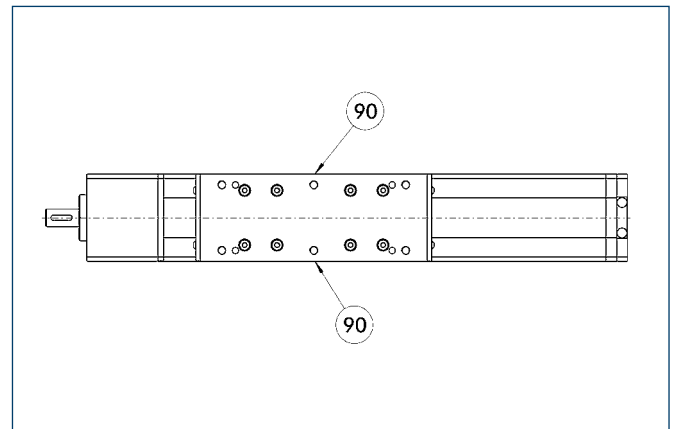
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension C can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

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① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Lubrication connections



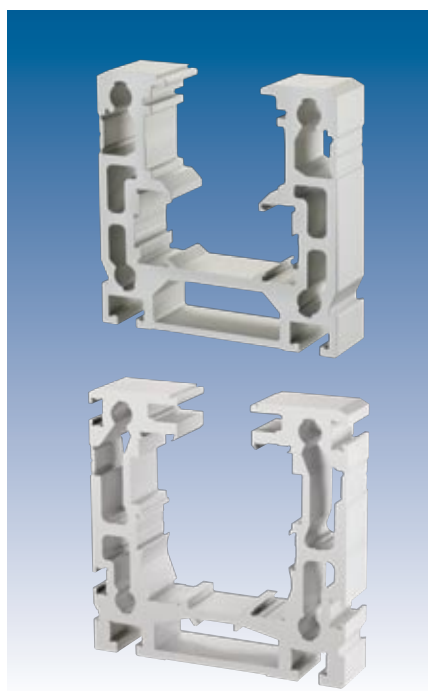
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.





### Advantages of roller guide

#### High maximum moments

due to optimum force transmission to the profile

#### Long stroke lengths

can be achieved with no problems

#### Life-time lubricated rollers

for easy maintenance use

#### Smooth, low-noise running

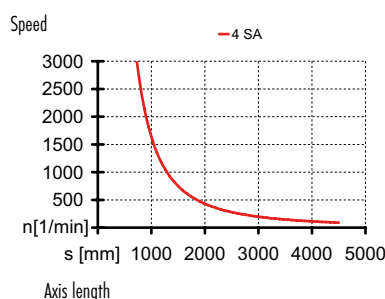
### Advantages of profiled rail guide

#### High load bearing capacity

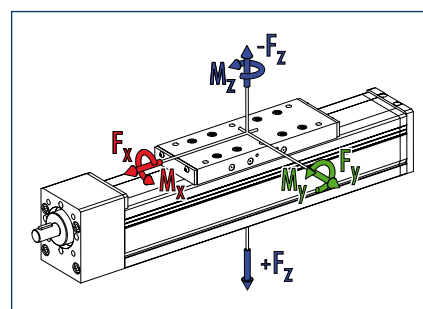
#### Long lifetime

#### High precision

#### Spindle supports SA



### Loads and load torques



Load	SRS dynamic	SSS dynamic
$F_x^{**}$ [N]	4000	4000
$F_y$ [N]	500	800
$F_z$ [N]	1500	3000
$-F_z$ [N]	800	2000
Load torques	SRS dynamic	SSS dynamic
$M_x$ [Nm]	50	100
$M_y$ [Nm]	180 (270)	250 (300)
$M_z$ [Nm]	100 (130)	250 (300)
$M_{Amax}$ [Nm]	On request	On request

\*\* Depends on speed and pitch  $n_{max}$

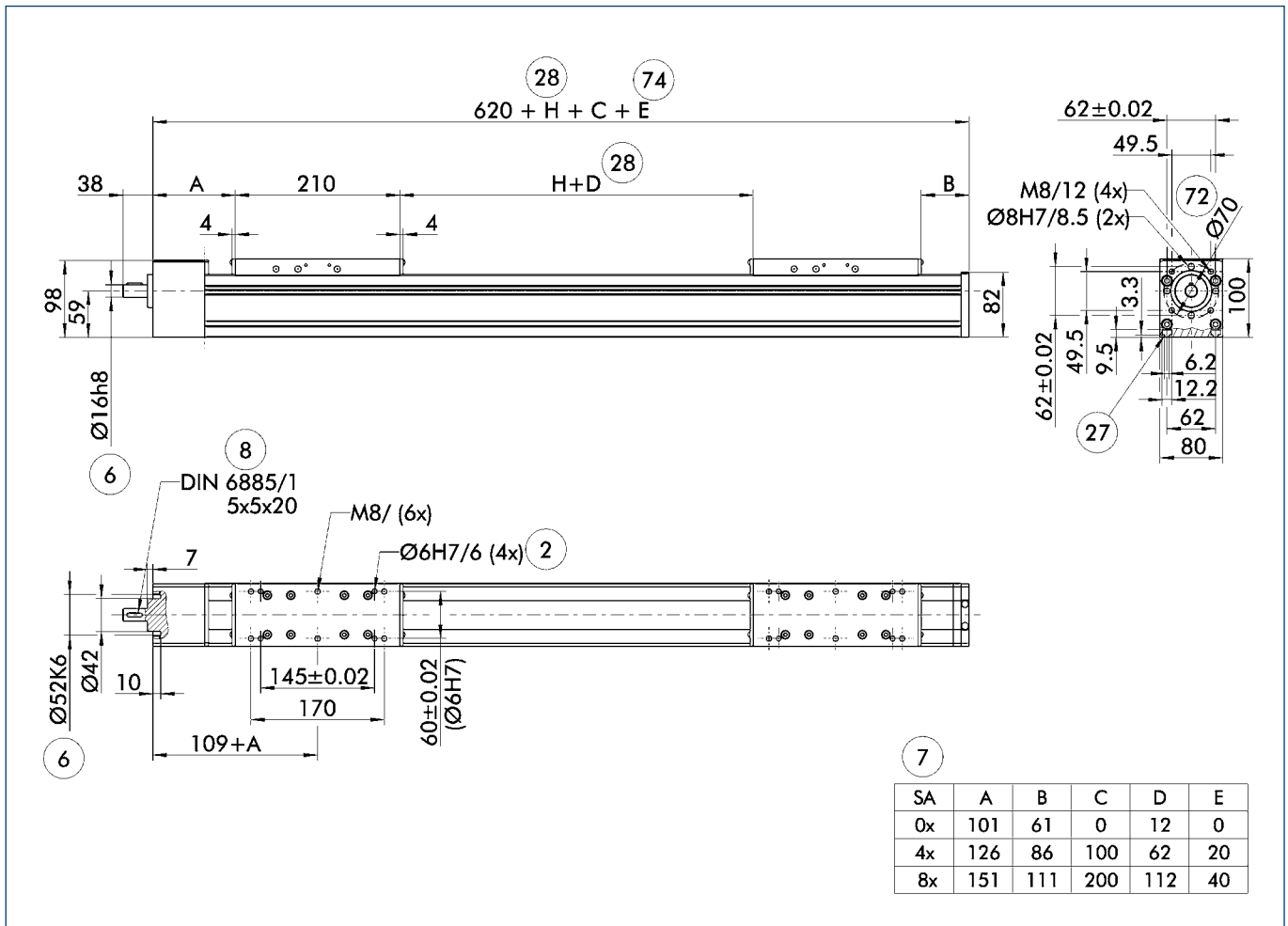
KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

## Technical data

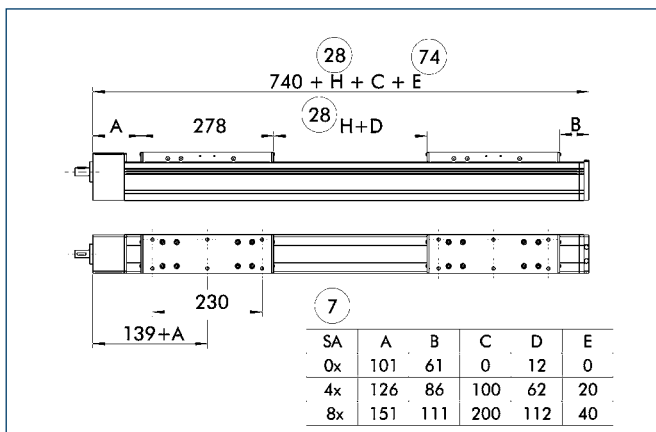
Designation	B 80-SRS-RL	B 80-SSS-RL
Max. travel speed	[m/s]	0.25
Repeat accuracy	[mm]	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20
Idle torque	[Nm]	0.6
Maximum stroke	[mm]	2390 per slide
Max. total length	[mm]	5400
Moment of inertia	[kgm <sup>2</sup> ]	0.000085
Drive element	Ball screw spindle drive	Ball screw spindle drive
Max. spindle speed	[rpm]	3000
Diameter	[mm]	20
Pitch	[mm]	5 right/left
Drive element	Trapezoidal threaded drive	Trapezoidal threaded drive
Max. spindle speed	[rpm]	1500
Diameter	[mm]	20
Pitch	[mm]	4 right/left
Weights		
Basic without travel	[kg]	5.4
Travel per 100 mm	[kg]	0.7
Slide plate 210 mm	[kg]	2.2
Slide plate 270 mm	[kg]	2.8

### Main views



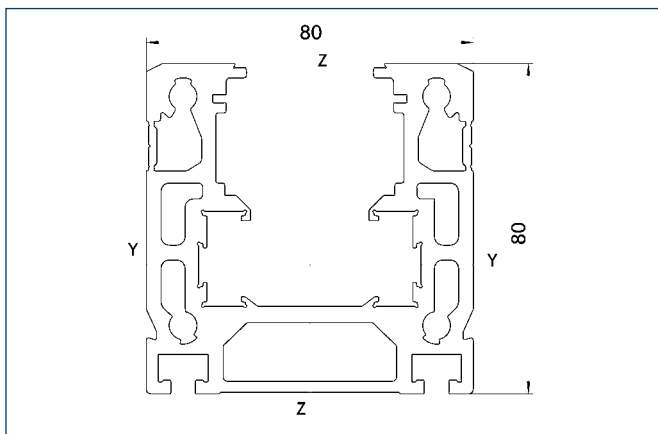
- 2 Assembly connection
- 6 Drive connection
- 7 Number of spindle supports
- 8 Feather key DIN 6885
- 27 Mounting groove for T-nuts
- 28 Total stroke = 2 x stroke per slide
- 72 Bolt pitch circle
- 74 E for spindle supports with insulated noise emissions

### Long slide



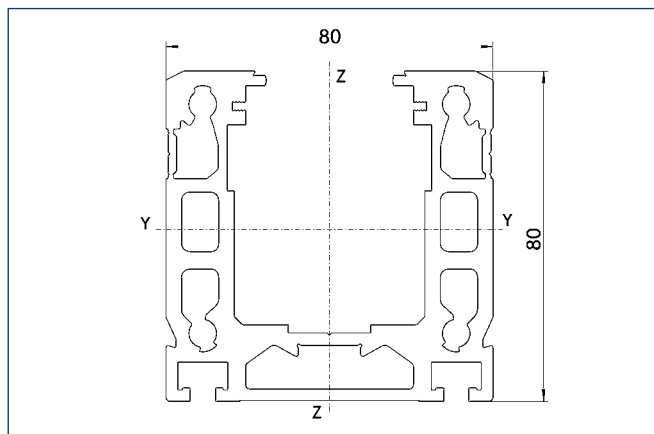
- 7 Number of spindle supports
- 28 Total stroke = 2 x stroke per slide
- 74 E for spindle supports with insulated noise emissions

### Profile SRS



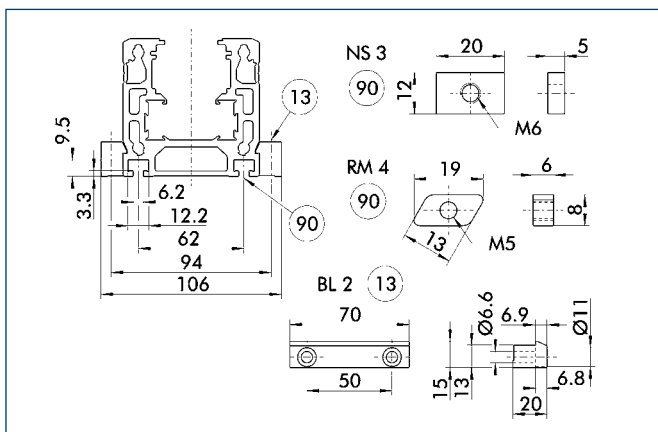
Specific mass	[kg/m]	5.64
Planar dimension	[mm <sup>2</sup> ]	2090
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	1294343
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	1732340
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	30263
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	43258

### Profile SSS



Specific mass	[kg/m]	5.6
Planar dimension	[mm <sup>2</sup> ]	2057
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	1372019
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	1677956
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	30572
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	41846

### Mounting



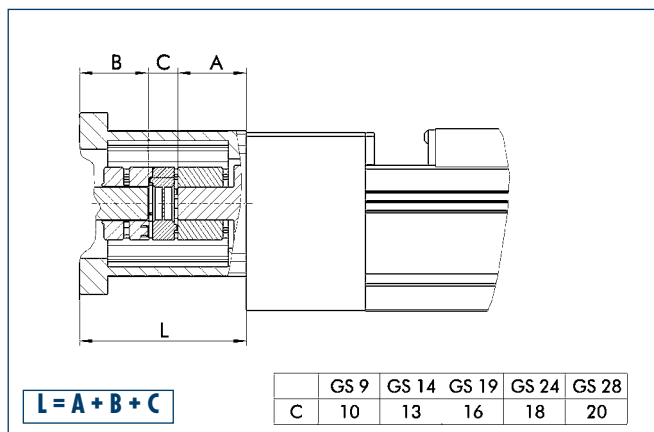
13 Mounting strip

90 Base side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	RM4	0331426
Mounting strip	BL2	0331401

### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings.

For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

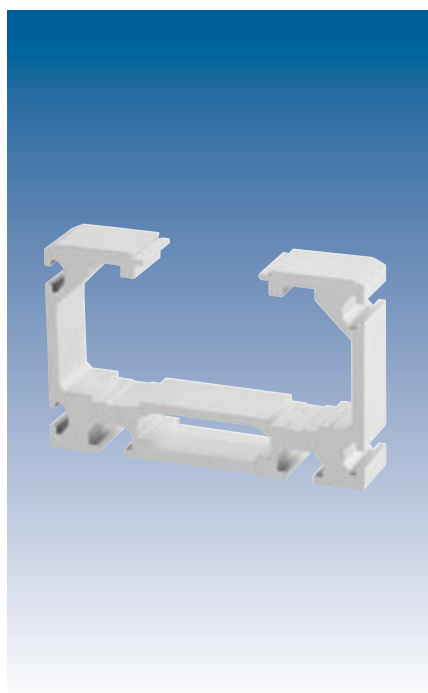


### Advantages of profiled rail guide

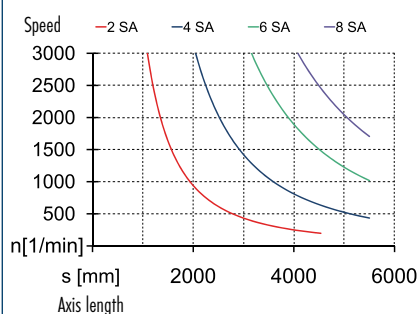
High load bearing capacity

Long lifetime

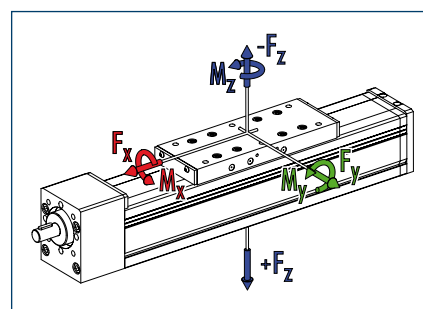
High precision



### Spindle supports SA



### Loads and load torques



Load	Dynamic
$F_x^{**}$ [N]	4000
$F_y$ [N]	1800
$F_z$ [N]	4000
$-F_z$ [N]	3000
Load torques	Dynamic
$M_x$ [Nm]	350
$M_y$ [Nm]	750 (1000)
$M_z$ [Nm]	750 (1000)
$M_{Amax}$ [Nm]	4.5 (p=5)
	14.0 (p=20)
	33.1 (p=50)

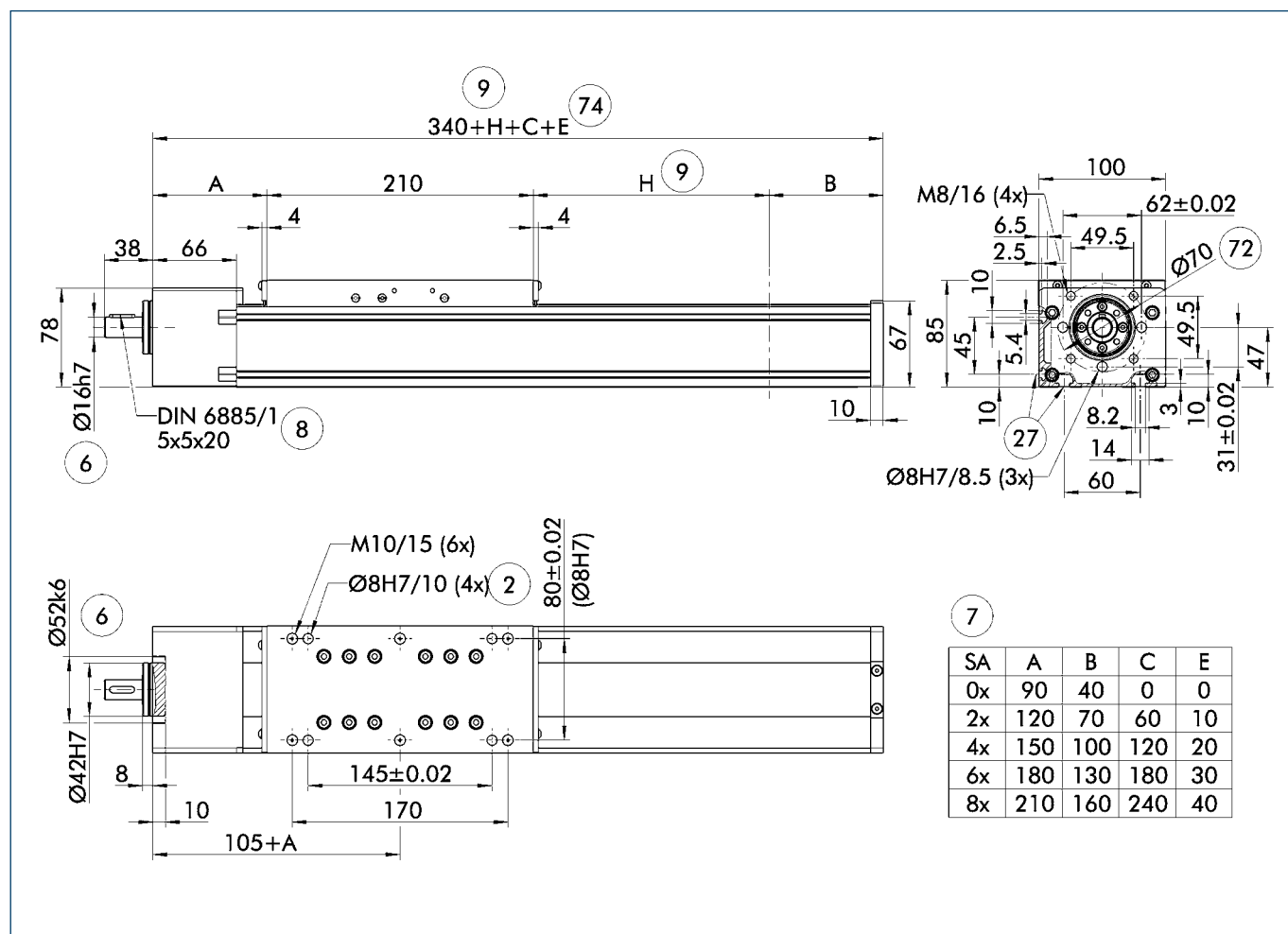
\*\* Depends on speed and pitch  $n_{max}$   
 KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

## Technical data

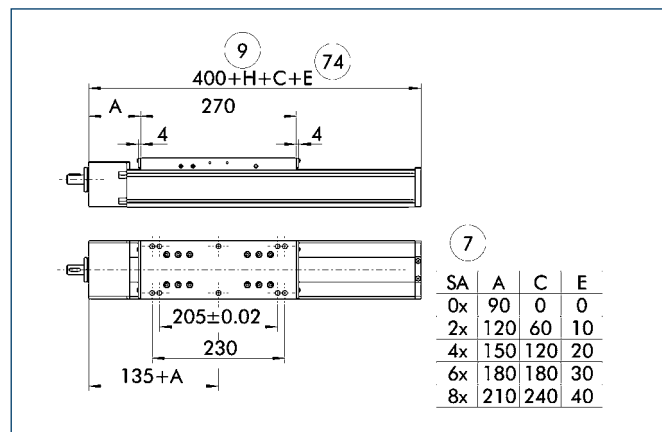
Designation	B 100D-SSS	
Max. travel speed	[m/s]	2.5
Repeat accuracy	[mm]	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20
Idle torque	[Nm]	1.3
Maximum stroke	[mm]	5060
Max. total length	[mm]	5400
Moment of inertia	[kgm <sup>2</sup> ]	0.000085
Drive element	Ball screw spindle drive	
Max. spindle speed	[rpm]	3000
Diameter	[mm]	20
Pitch	[mm]	5 / 20 / 50
Drive element	Trapezoidal threaded drive	
Max. spindle speed	[rpm]	1500
Diameter	[mm]	20
Pitch	[mm]	4 / 8
Weights		
Basic without travel	[kg]	6.2
Travel per 100 mm	[kg]	0.75
Slide plate 210 mm	[kg]	3.4
Slide plate 270 mm	[kg]	4.0

### Main views



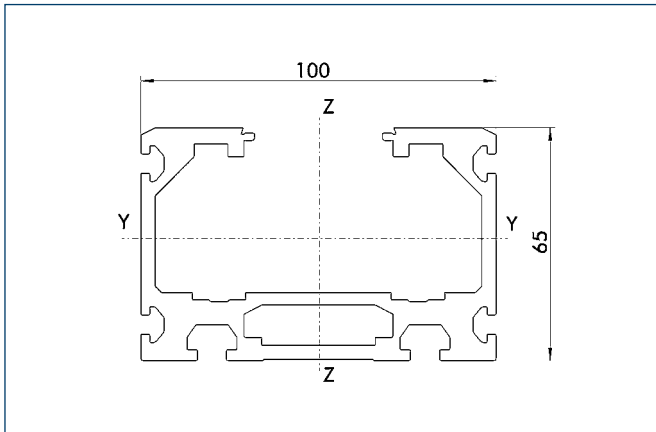
- ② Assembly connection
- ⑥ Drive connection
- ⑦ Number of spindle supports
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ②⑦ Mounting groove for T-nuts
- ⑦② Bolt pitch circle
- ⑦④ Additional E for spindle supports with insulated noise emissions

### Long slide



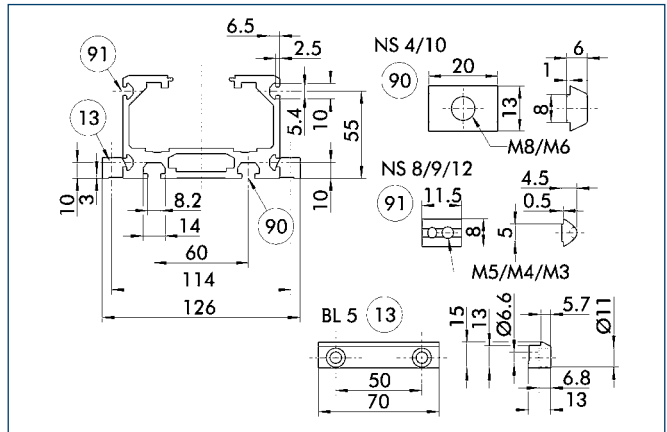
- ⑦ Number of spindle supports
- ⑨ Useful stroke
- ⑦④ E for spindle supports with insulated noise emissions

### Profile SSS



Specific mass	[kg/m]	4.87
Planar dimension	[mm <sup>2</sup> ]	1804
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	917779
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	2328911
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	23869
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	46578

### Mounting



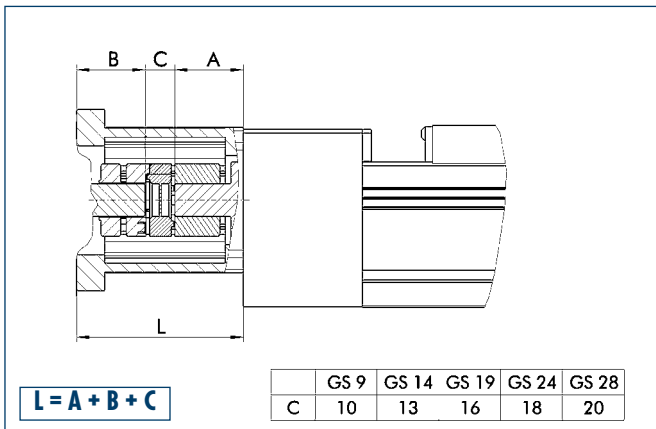
- 13 Mounting strip  
90 T-nut on base side

- 91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS4	0331407
T-nut	NS8	0331420
T-nut	NS9	0331421
T-nut	NS10	0331422
T-nut	NS12	0331424
Mounting strip	BL5	0331419

### Motor flange schematic diagram



$$L = A + B + C$$

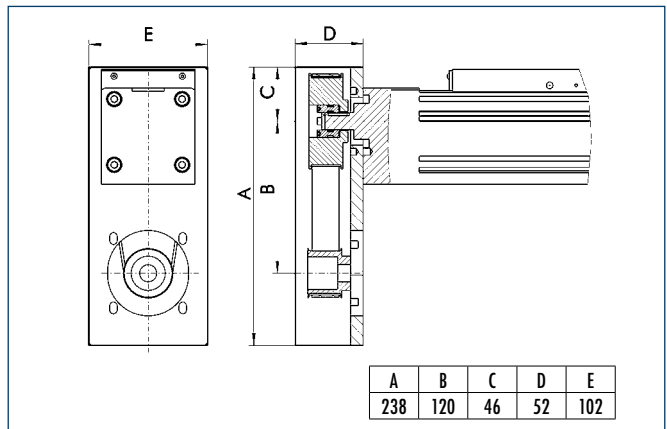
	GS 9	GS 14	GS 19	GS 24	GS 28
C	10	13	16	18	20

The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Angle gear schematic diagram



A	B	C	D	E
238	120	46	52	102

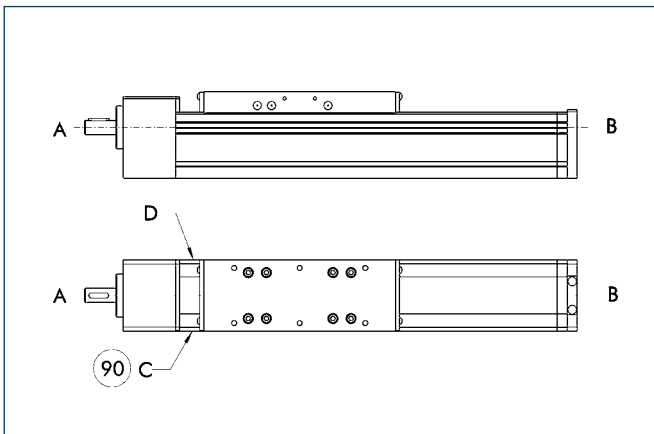
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension **C** can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

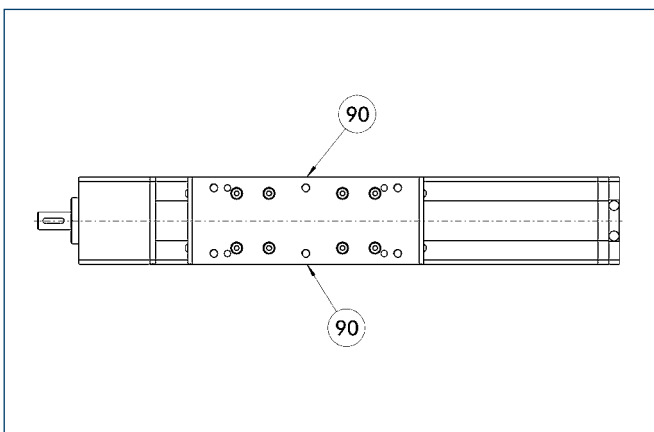
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



90 Standard lubrication connection

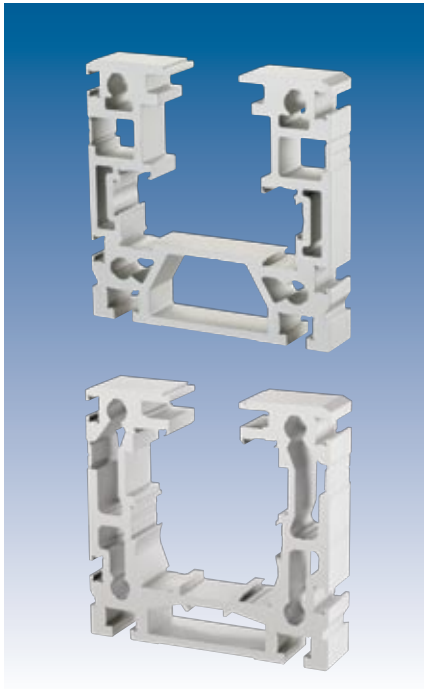
#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.





### Advantages of roller guide

**High maximum moments**  
due to optimum force transmission to the profile

**Long stroke lengths**  
can be achieved with no problems

**Life-time lubricated rollers**  
for easy maintenance use

**Smooth, low-noise running**

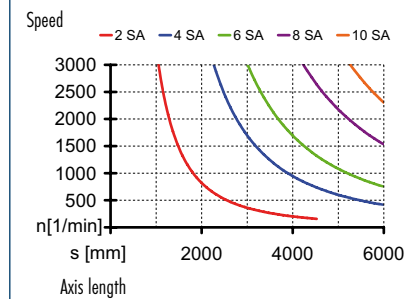
### Advantages of profiled rail guide

**High load bearing capacity**

**Long lifetime**

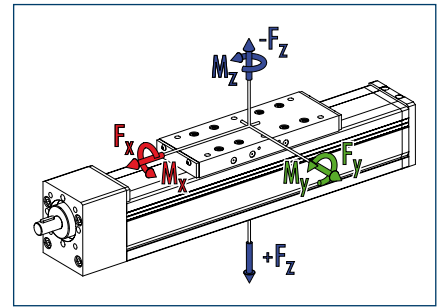
**High precision**

#### Spindle supports SA



① SRS version: Max. 8 SA

### Loads and load torques



Load	SRS dynamic	SSS dynamic
$F_x^{**}$ [N]	6000	6000
$F_y$ [N]	2000	3000
$F_z$ [N]	5000	8000
$-F_z$ [N]	2500	4000
Load torques	SRS dynamic	SSS dynamic
$M_x$ [Nm]	300	400
$M_y$ [Nm]	600 (800)	800 (1200)
$M_z$ [Nm]	450 (550)	600 (800)
$M_{Amax}$ [Nm]	5.8 (p=5)	6.3 (p=5)
	10.5 (p=10)	11.0 (p=10)
	24.9 (p=25)	25.4 (p=25)
	48.7 (p=50)	49.2 (p=50)

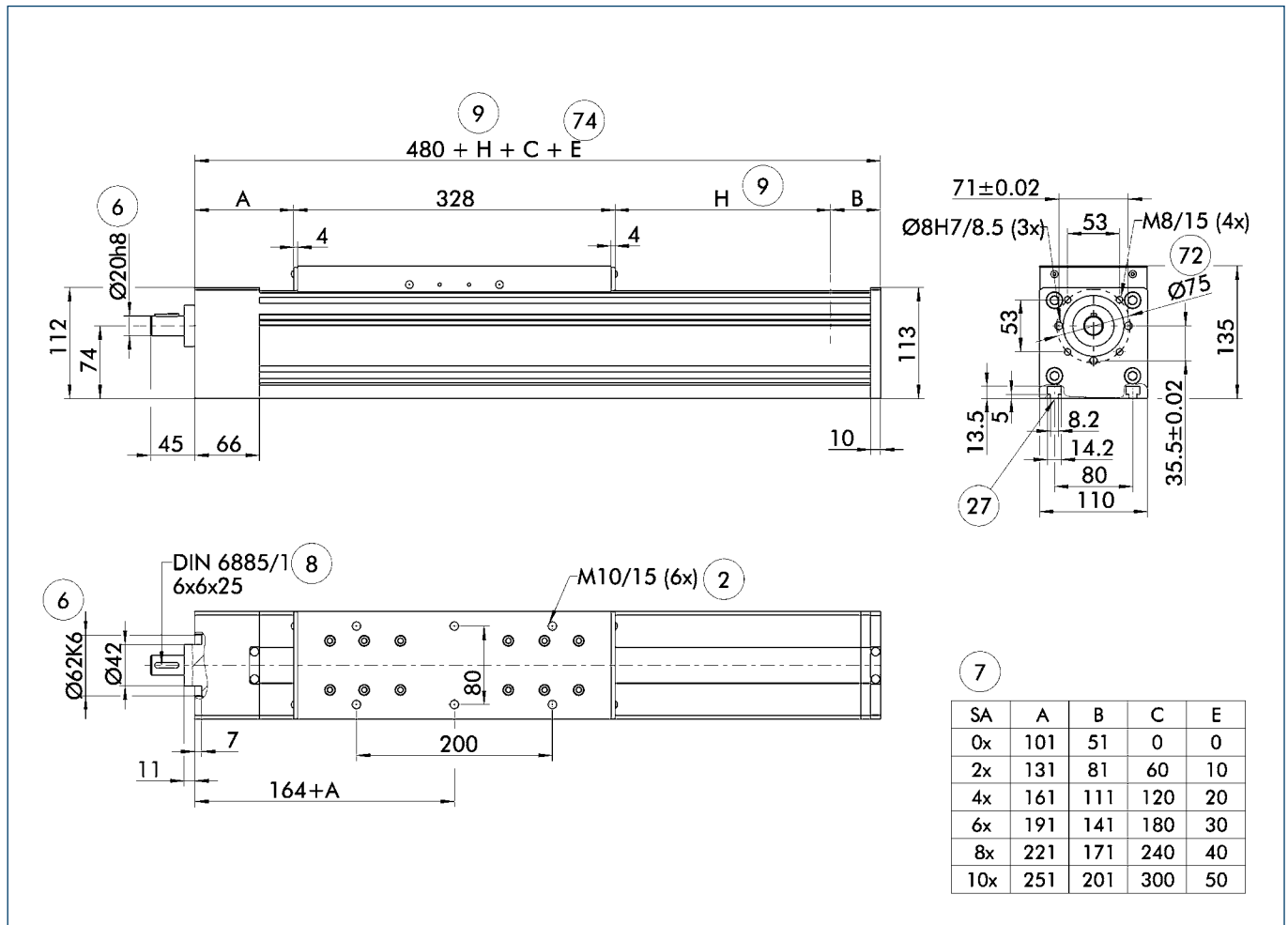
\*\* Depends on speed and pitch  $n_{max}$   
KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

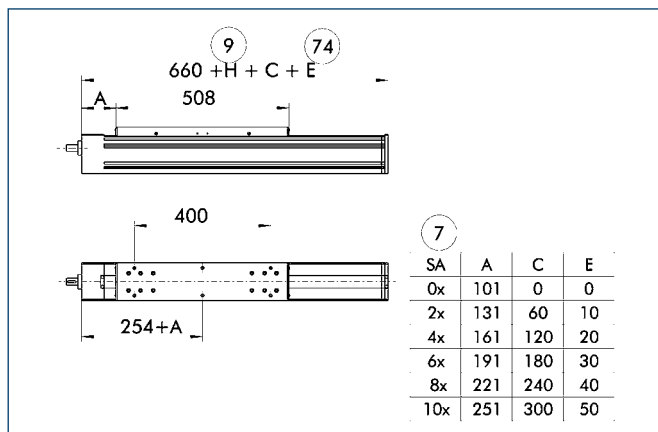
### Technical data

Designation	B 110-SRS	B 110-SSS
Max. travel speed	[m/s] 2.5	2.5
Repeat accuracy	[mm] $\pm 0.03$	$\pm 0.03$
Max. acceleration	[m/s <sup>2</sup> ] 20	20
Idle torque	[Nm] 1.0	1.5
Maximum stroke	[mm] 4920	4920
Max. total length	[mm] 5400	5400
Moment of inertia	[kgm <sup>2</sup> ] 0.000225	0.000225
Drive element	Ball screw spindle drive	Ball screw spindle drive
Max. spindle speed	[rpm] 3000	3000
Diameter	[mm] 25	25
Pitch	[mm] 5 / 10 / 25 / 50	5 / 10 / 25 / 50
Drive element	Trapezoidal threaded drive	Trapezoidal threaded drive
Max. spindle speed	[rpm] 1500	1500
Diameter	[mm] 24	24
Pitch	[mm] 5 / 10	5 / 10
Weights		
Basic without travel	[kg] 12.5	13.5
Travel per 100 mm	[kg] 1.4	1.7
Slide plate 320 mm	[kg] 5.8	5.3
Slide plate 500 mm	[kg] 9.1	8.3

### Main views



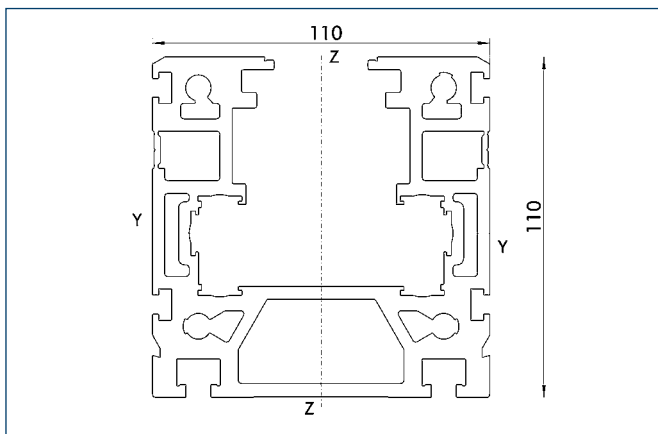
### Long slide



⑦ Number of spindle supports  
⑨ Useful stroke

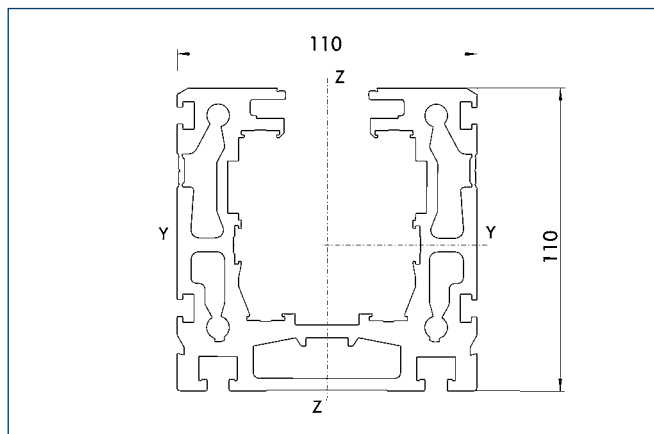
⑦④ E for spindle supports with insulated noise emissions

### Profile SRS



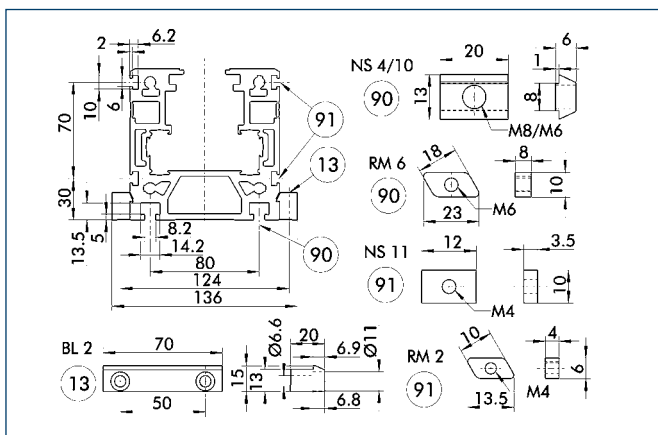
Specific mass	[kg/m]	10.69
Planar dimension	[mm <sup>2</sup> ]	3961
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	5114812
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	6177042
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	87307
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	111528

### Profile SSS



Specific mass	[kg/m]	10.54
Planar dimension	[mm <sup>2</sup> ]	3902
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	4974348
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	5898662
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	79469
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	106973

### Mounting



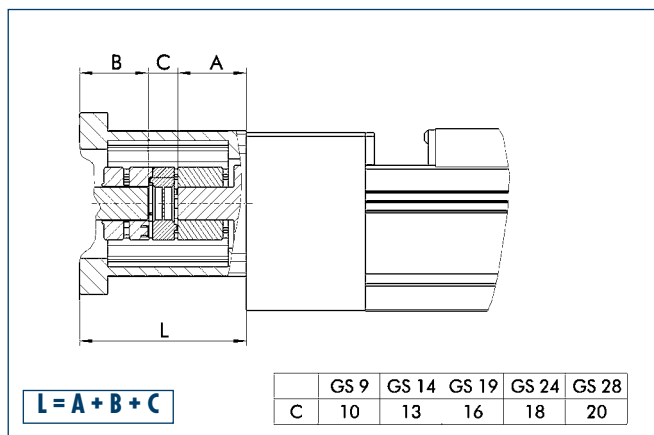
- 13 Mounting strip  
90 T-nut on base side

- 91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS4	0331407
T-nut	NS10	0331422
T-nut	NS11	0331429
T-nut	RM2	0331425
T-nut	RM6	0331427
Mounting strip	BL2	0331401

### Motor flange schematic diagram



The table shows the relevant dimension C of the standard couplings.

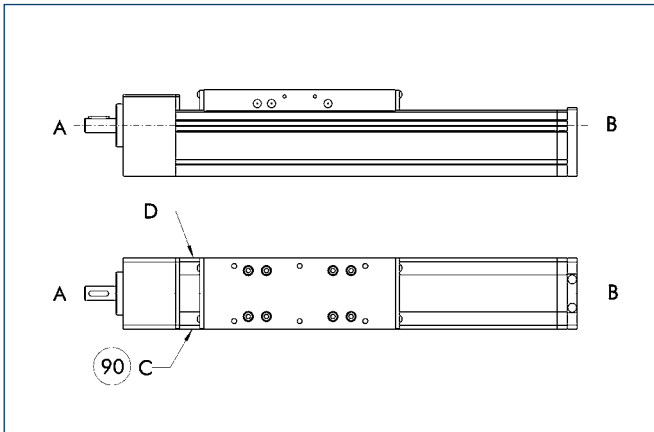
For dimension A refer to drive journal connection dimensions, for dimension B refer to corresponding motor dimension sheet, dimension L may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position

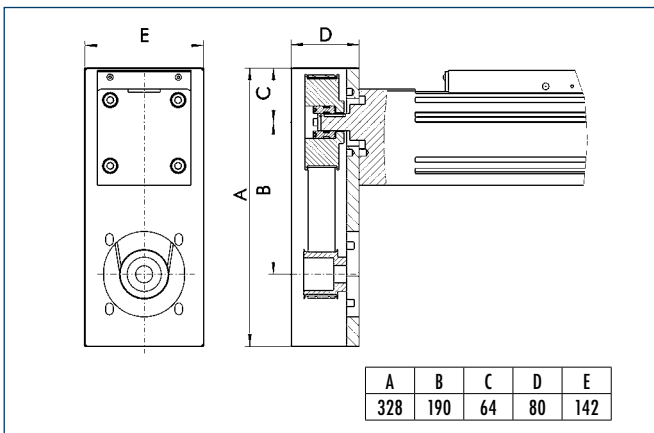


90 Limit switch standard position

Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Angle gear schematic diagram



Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension C can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

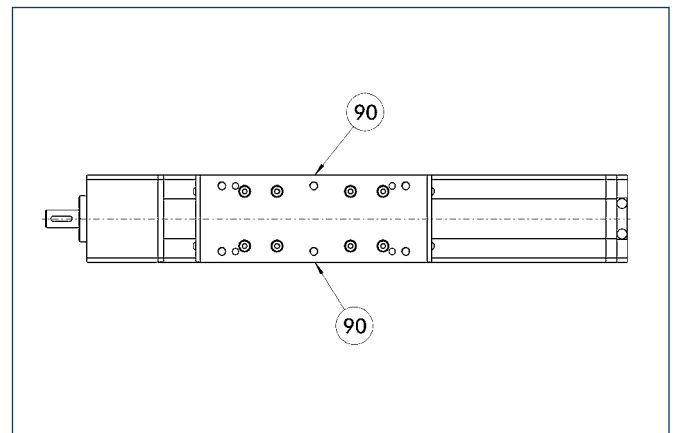
Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections

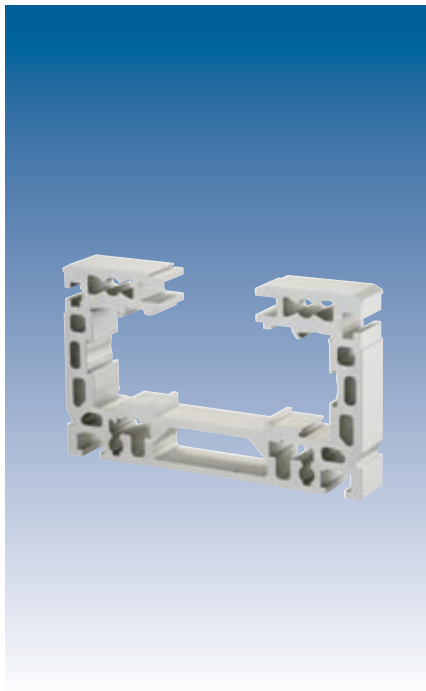


90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.



### Advantages of roller guide

**High maximum moments**  
due to optimum force transmission to the profile

**Long stroke lengths**  
can be achieved with no problems

**Life-time lubricated rollers**  
for easy maintenance use

**Smooth, low-noise running**

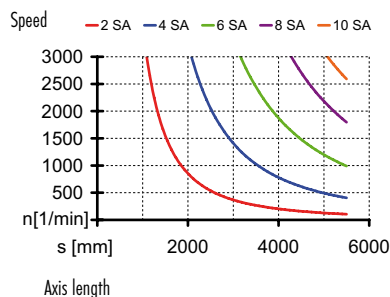
### Advantages of profiled rail guide

**High load bearing capacity**

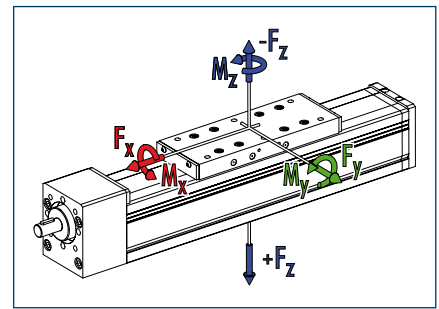
**Long lifetime**

**High precision**

### Spindle supports SA



### Loads and load torques



Load	SRS dynamic	SSS dynamic
$F_x^{**}$ [N]	6000	6000
$F_y$ [N]	2500	2500
$F_z$ [N]	5000	6000
$-F_z$ [N]	3000	4000
Load torques	SRS dynamic	SSS dynamic
$M_x$ [Nm]	350	500
$M_y$ [Nm]	700 (900)	1000 (1400)
$M_z$ [Nm]	700 (900)	1000 (1400)
$M_{Amax}$ [Nm]	5.8 (p=5)	6.3 (p=5)
	10.5 (p=10)	11.0 (p=10)
	24.9 (p=25)	25.4 (p=25)
	48.7 (p=50)	49.2 (p=50)

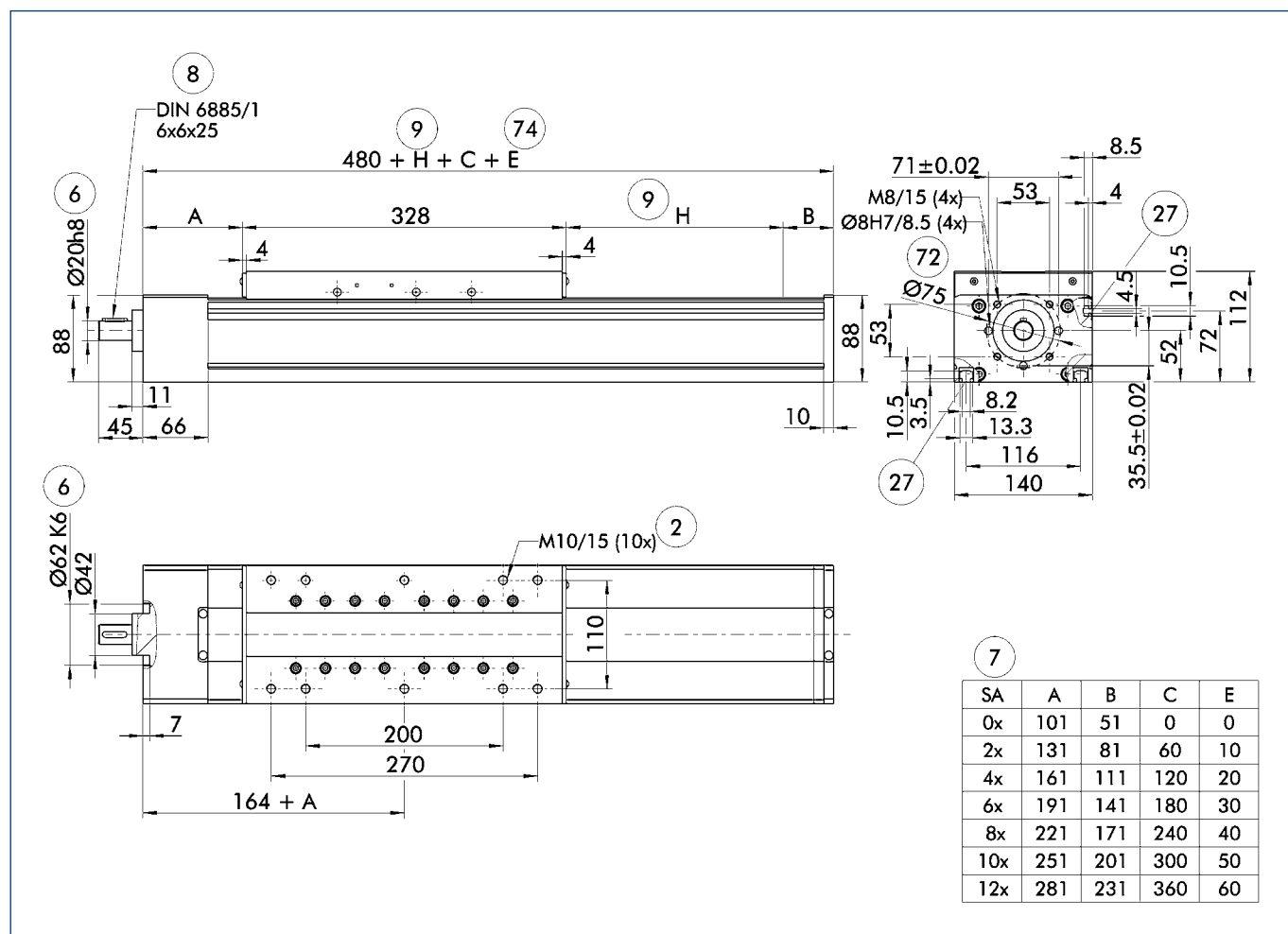
\*\* Depends on speed and pitch  $n_{max}$   
KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

## Technical data

Designation		B 140-SRS	B 140-SSS
Max. travel speed	[m/s]	2.5	2.5
Repeat accuracy	[mm]	± 0.03	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20	20
Idle torque	[Nm]	1.0	1.5
Maximum stroke	[mm]	4920	4920
Max. total length	[mm]	5400	5400
Moment of inertia	[kgm <sup>2</sup> ]	0.000225	0.000225
Drive element		Ball screw spindle drive	Ball screw spindle drive
Max. spindle speed	[rpm]	3000	3000
Diameter	[mm]	25	25
Pitch	[mm]	5 / 10 / 25 / 50	5 / 10 / 25 / 50
Drive element		Trapezoidal threaded drive	Trapezoidal threaded drive
Max. spindle speed	[rpm]	1500	1500
Diameter	[mm]	24	24
Pitch	[mm]	5 / 10	5 / 10
Weights			
Basic without travel	[kg]	14.0	15.0
Travel per 100 mm	[kg]	1.4	1.9
Slide plate 320 mm	[kg]	6.2	7.0
Slide plate 500 mm	[kg]	9.7	10.9

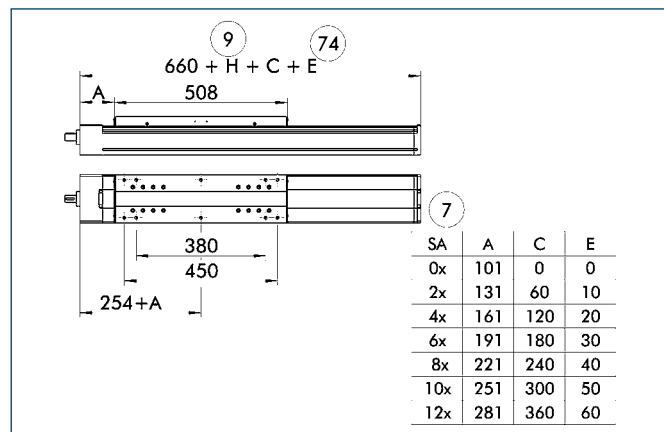
### Main views



- ② Assembly connection
- ⑥ Drive connection
- ⑦ Number of spindle supports
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts
- ㉑ Bolt pitch circle

- ㉒ E for spindle supports with insulated noise emissions

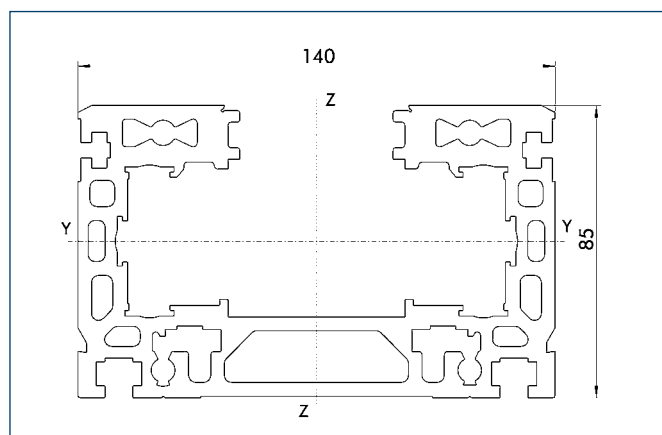
### Long slide



- ⑦ Number of spindle supports
- ⑨ Useful stroke

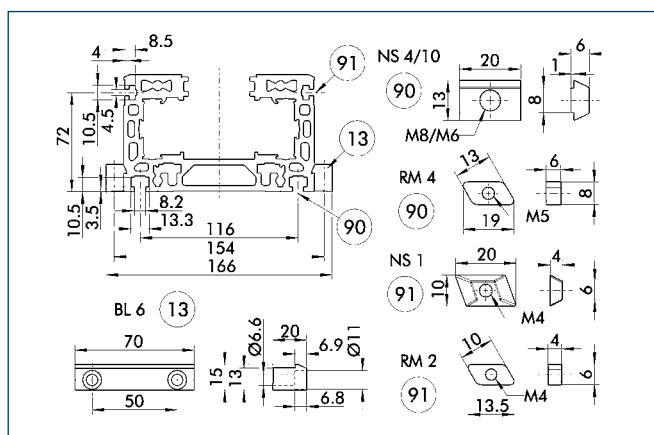
- ㉒ E for spindle supports with insulated noise emissions

### Profile SRS/SSS



Specific mass	[kg/m]	10.68
Planar dimension	[mm <sup>2</sup> ]	3955
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	3159202
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	9975915
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	69334
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	184852

### Mounting



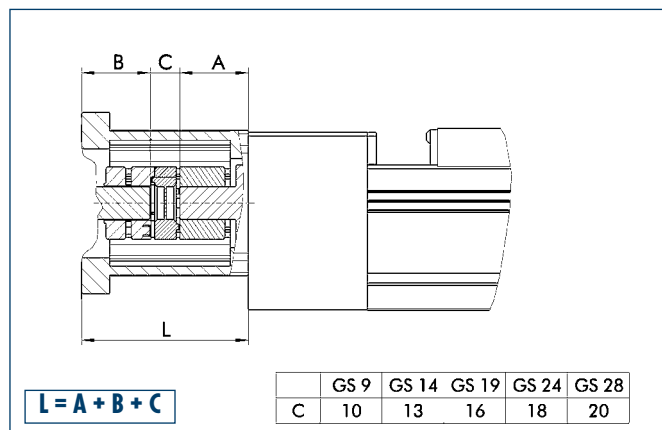
- 13 Mounting strip  
 90 T-nut on base side

- 91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS1	0331404
T-nut	NS4	0331407
T-nut	NS10	0331422
T-nut	RM2	0331425
T-nut	RM4	0331426
Mounting strip	BL6	0331428

### Motor flange schematic diagram

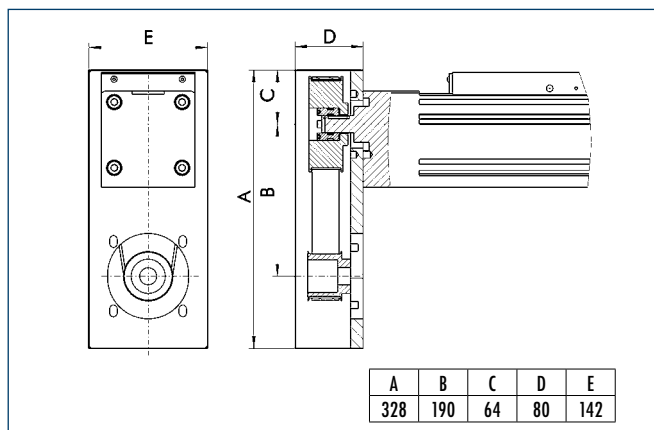


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Angle gear schematic diagram



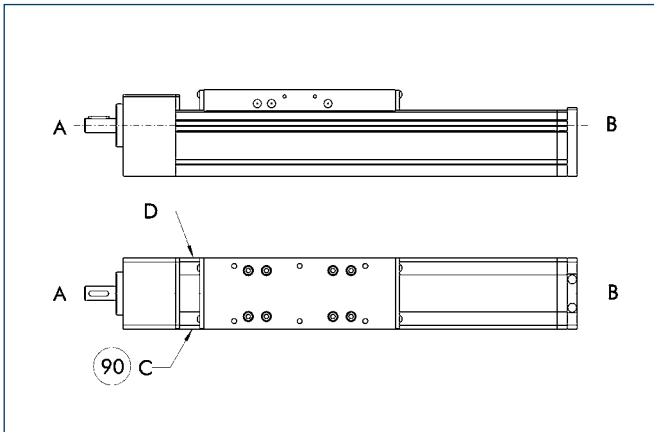
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension **C** can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

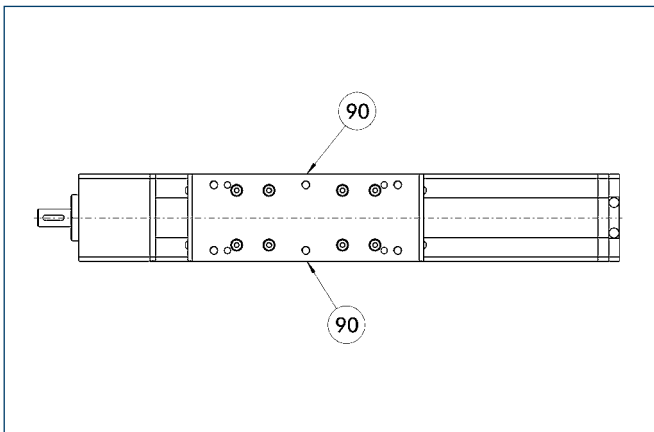
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

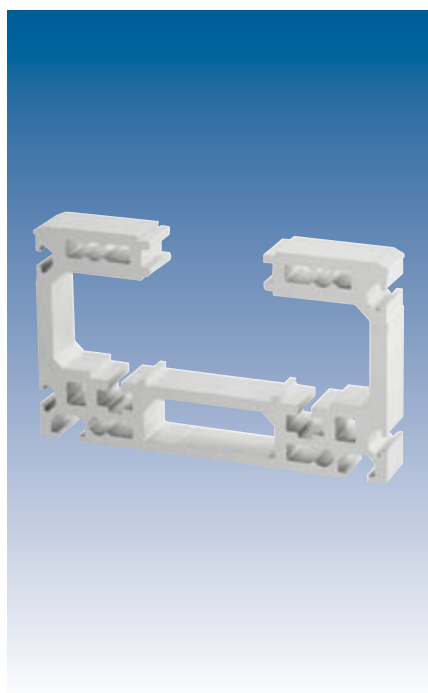


### Advantages of profiled rail guide

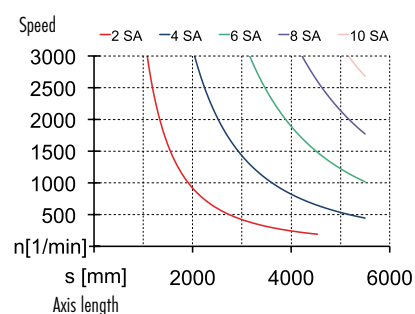
High load bearing capacity

Long lifetime

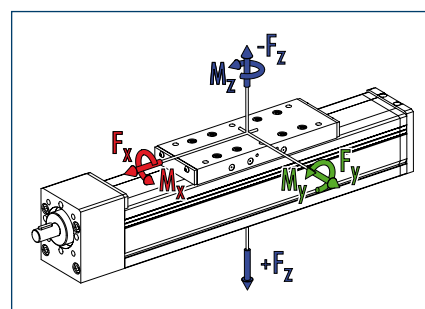
High precision



### Spindle supports SA



### Loads and load torques



Load	Dynamic
$F_x^{**}$ [N]	6000
$F_y$ [N]	3200
$F_z$ [N]	7500
$-F_z$ [N]	5000
Load torques	Dynamic
$M_x$ [Nm]	600
$M_y$ [Nm]	1200 (1700)
$M_z$ [Nm]	1200 (1700)
$M_{Amax}$ [Nm]	6.3 (p=5)
	11.0 (p=10)
	25.4 (p=25)
	49.2 (p=50)

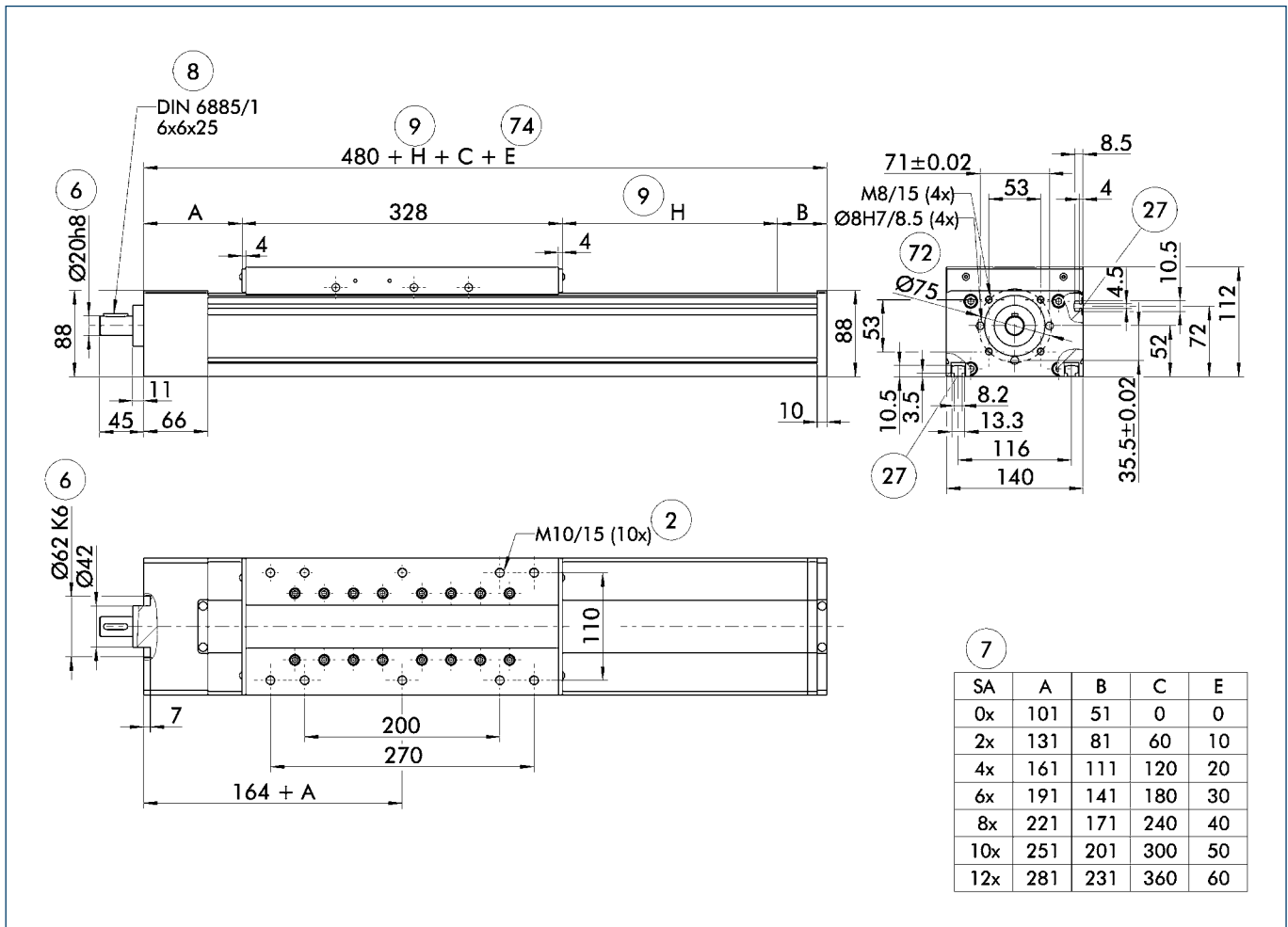
\*\* Depends on speed and pitch  $n_{max}$   
 KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

## Technical data

Designation	B 140C-SSS	
Max. travel speed	[m/s]	2.5
Repeat accuracy	[mm]	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20
Idle torque	[Nm]	1.5
Maximum stroke	[mm]	4920
Max. total length	[mm]	5400
Moment of inertia	[kgm <sup>2</sup> ]	0.000225
Drive element	Ball screw spindle drive	
Max. spindle speed	[rpm]	3000
Diameter	[mm]	25
Pitch	[mm]	5 / 10 / 25 / 50
Drive element	Trapezoidal threaded drive	
Max. spindle speed	[rpm]	1500
Diameter	[mm]	24
Pitch	[mm]	5 / 10
Weights		
Basic without travel	[kg]	15.0
Travel per 100 mm	[kg]	1.9
Slide plate 320 mm	[kg]	7.0
Slide plate 500 mm	[kg]	10.9

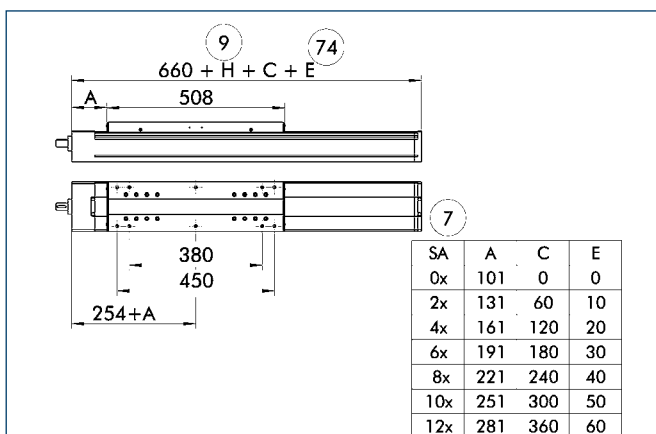
### Main views



- ② Assembly connection
- ⑥ Drive connection
- ⑦ Number of spindle supports
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts

- ⑦② Bolt pitch circle
- ⑦④ Additional E for spindle supports with insulated noise emissions

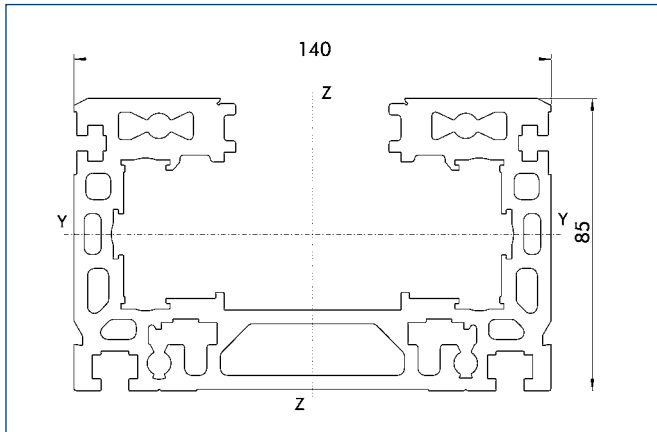
### Long slide



- ⑦ Number of spindle supports
- ⑨ Useful stroke

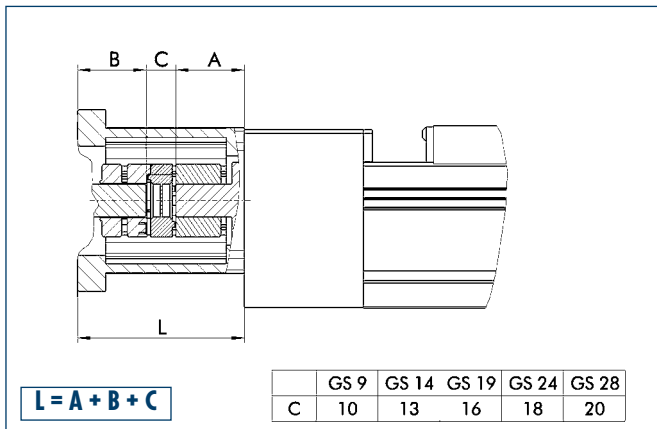
- ⑦④ E for spindle supports with insulated noise emissions

### Profile SSS



Specific mass	[kg/m]	10.11
Planar dimension	[mm <sup>2</sup> ]	3743
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	3127894
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	9071334
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	67067
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	129589

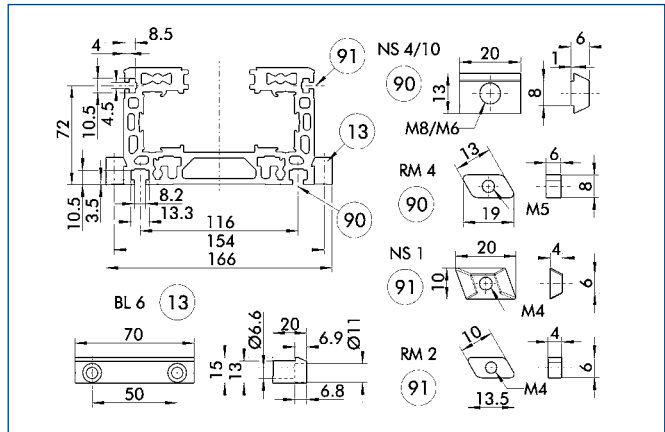
### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases. Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Mounting



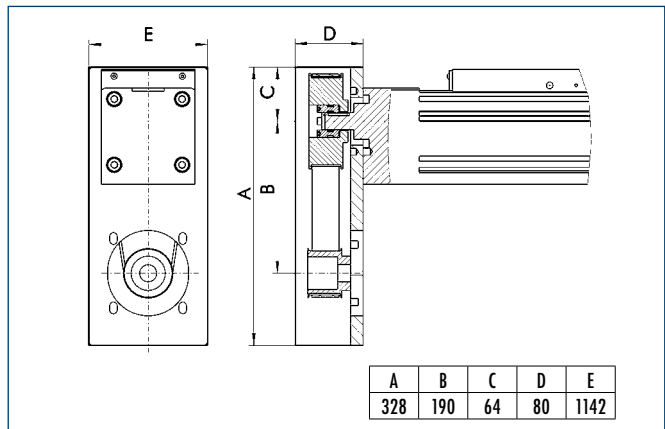
13 Mounting strip  
90 T-nut on base side

91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS1	0331404
T-nut	NS4	0331407
T-nut	NS10	0331422
T-nut	RM2	0331425
T-nut	RM4	0331426
Mounting strip	BL6	0331428

### Angle gear schematic diagram



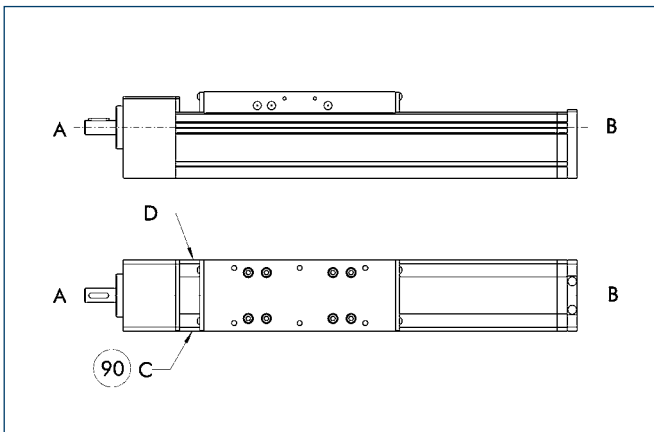
Possible transmission ratios:  $i = 1:1$ ,  $i = 2:1$ ,  $i = 3:1$

Caution: Dimension **C** can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

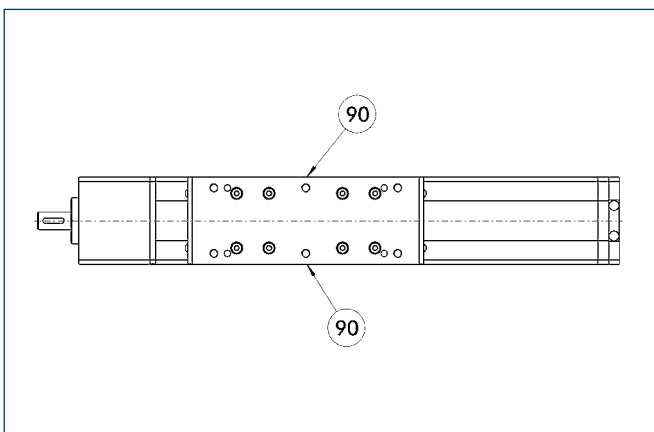
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

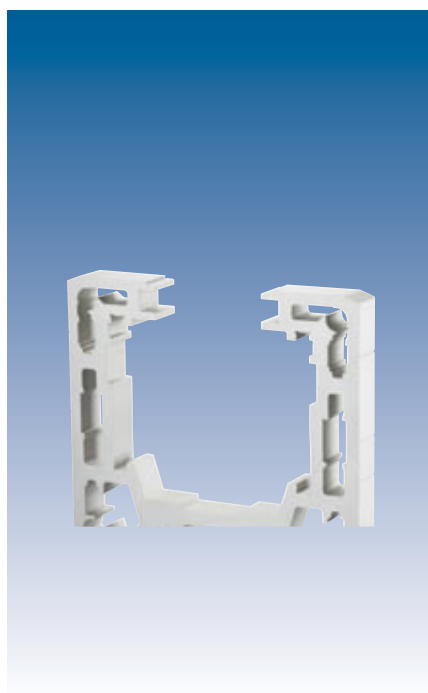
More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

### Advantages of profiled rail guide

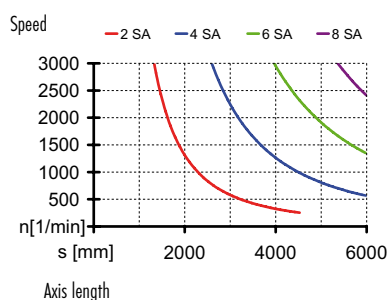
High load bearing capacity

Long lifetime

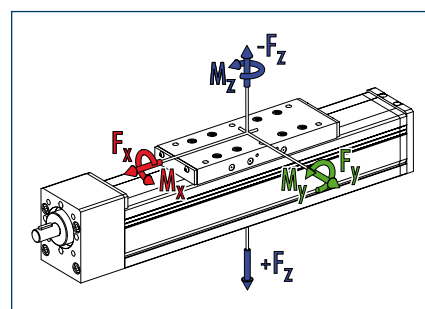
High precision



Spindle supports SA



### Loads and load torques



Load	Dynamic
$F_x^{**}$ [N]	18000
$F_y$ [N]	5000
$F_z$ [N]	15000
$-F_z$ [N]	8000
Load torques	Dynamic
$M_x$ [Nm]	700
$M_y$ [Nm]	1400 (2000)
$M_z$ [Nm]	1100 (1500)
$M_{Amax}$ [Nm]	17.3 (p=5)
	31.6 (p=10)
	60.3 (p=20)
	117.6 (p=40)

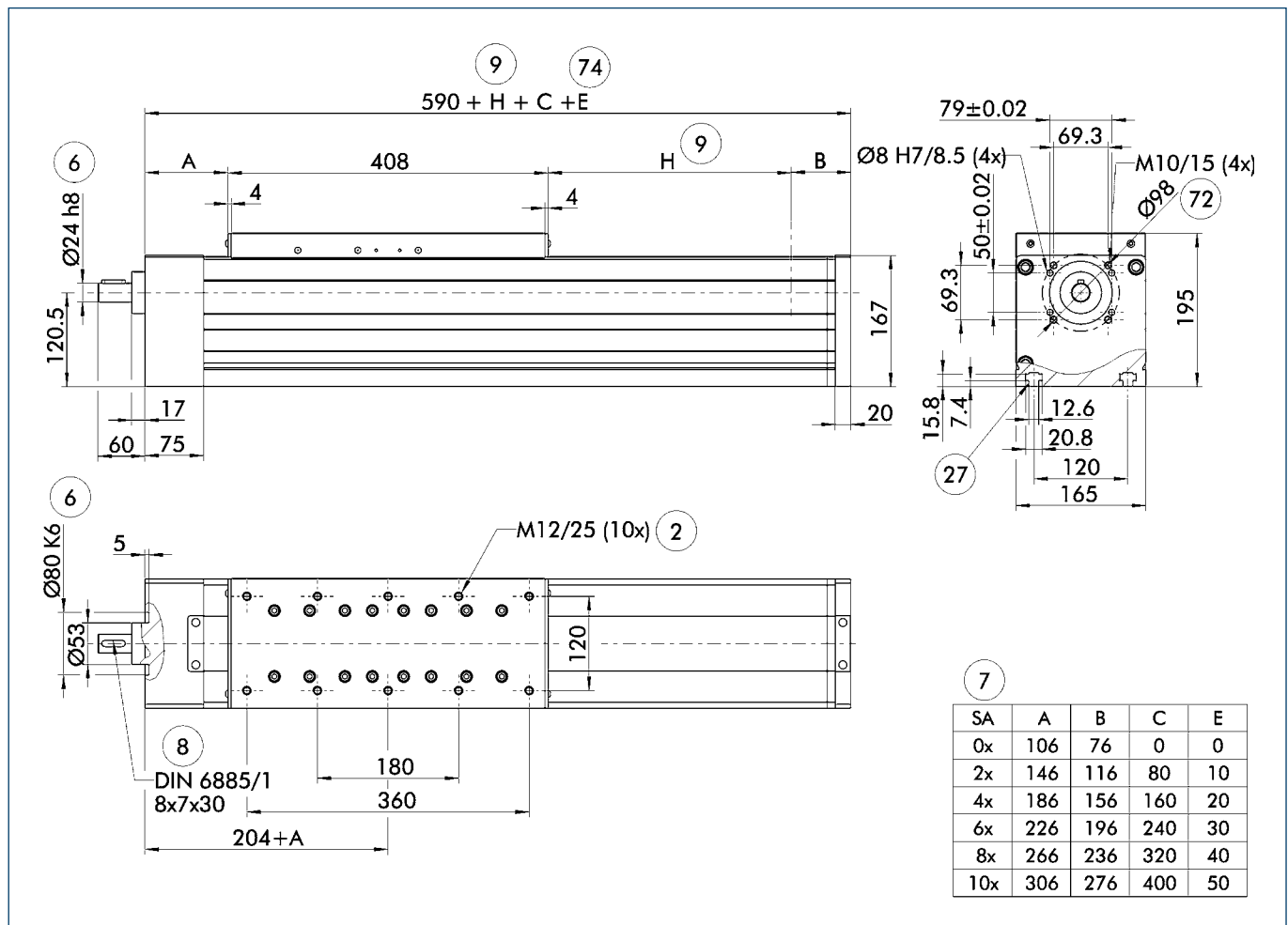
\*\* Depends on speed and pitch  $n_{max}$   
 KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

### Technical data

Designation	B 165-SSS	
Max. travel speed	[m/s]	2.0
Repeat accuracy	[mm]	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20
Idle torque	[Nm]	3.0
Maximum stroke	[mm]	4910
Max. total length	[mm]	5500
Moment of inertia	[kgm <sup>2</sup> ]	0.00165
Drive element	Ball screw spindle drive	
Max. spindle speed	[rpm]	3000
Diameter	[mm]	40
Pitch	[mm]	5 / 10 / 20 / 40
Drive element	Trapezoidal threaded drive	
Max. spindle speed	[rpm]	1500
Diameter	[mm]	40
Pitch	[mm]	7
Weights		
Basic without travel	[kg]	37.9
Travel per 100 mm	[kg]	4.2
Slide plate 400 mm	[kg]	11.5
Slide plate 600 mm	[kg]	17.25

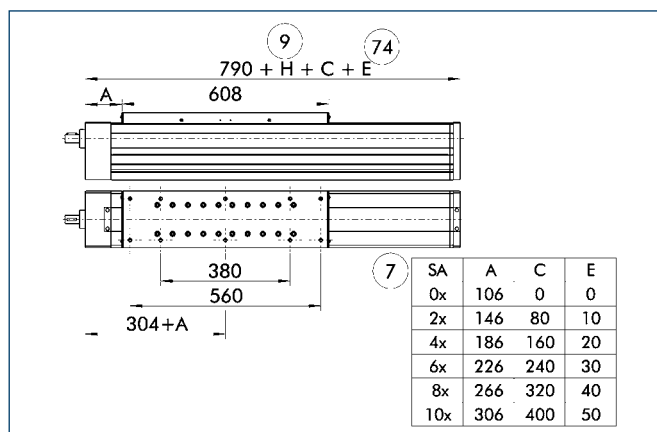
### Main views



- ② Assembly connection
- ⑥ Drive connection
- ⑦ Number of spindle supports
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ②⑦ Mounting groove for T-nuts
- ⑦② Bolt pitch circle

- ⑦④ E for spindle supports with insulated noise emissions

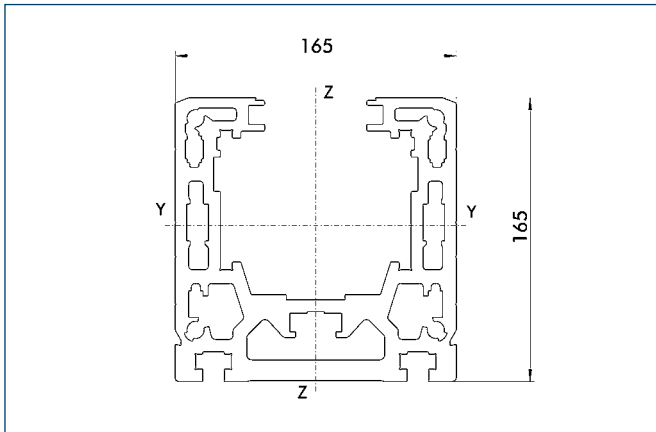
### Long slide



- ⑦ Number of spindle supports
- ⑨ Useful stroke

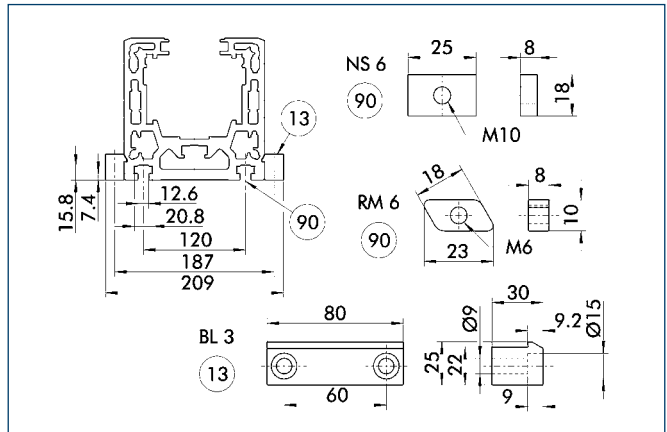
- ⑦④ E for spindle supports with insulated noise emissions

### Profile SSS



Specific mass	[kg/m]	25.13
Planar dimension	[mm <sup>2</sup> ]	9308
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	25391136
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	31673479
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	264686
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	383919

### Mounting



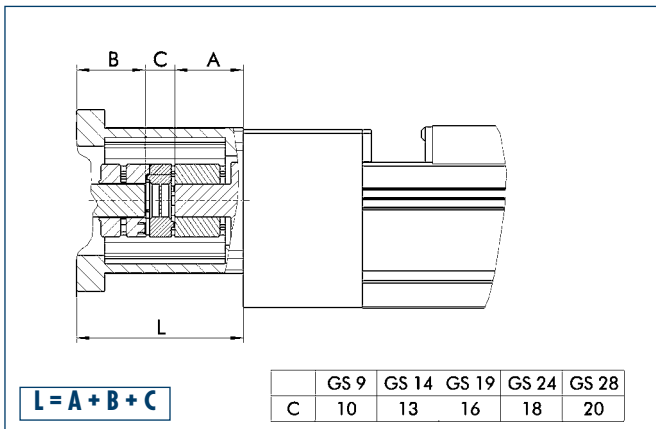
⑬ Mounting strip

⑨ T-nut on base side

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS6	0331409
T-nut	RM6	0331427
Mounting strip	BL3	0331402

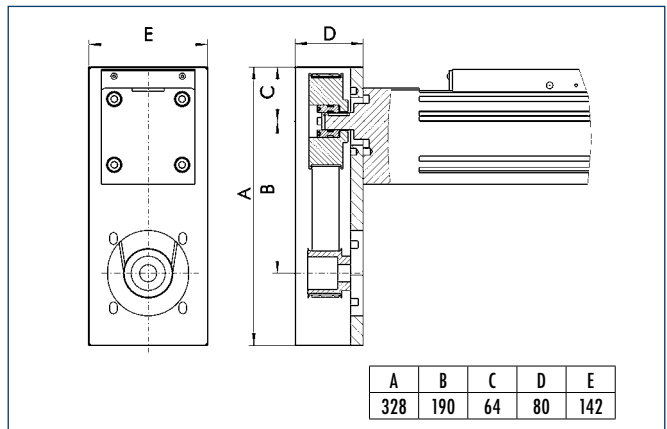
### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases. Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

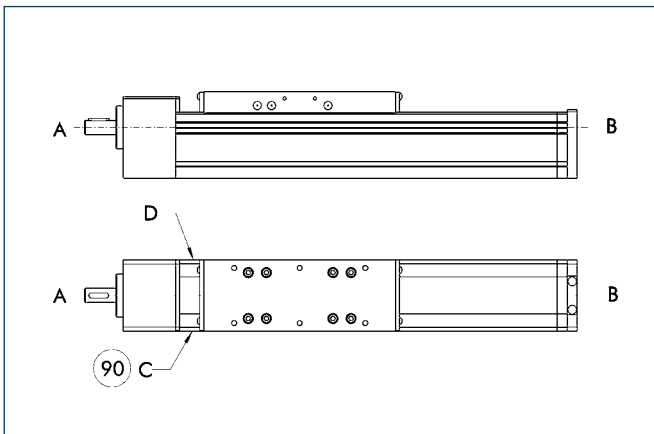
### Angle gear schematic diagram



Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$   
Caution: Dimension C can change at  $i \neq 1 : 1$  or with smooth motor shafts (without feather key). Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

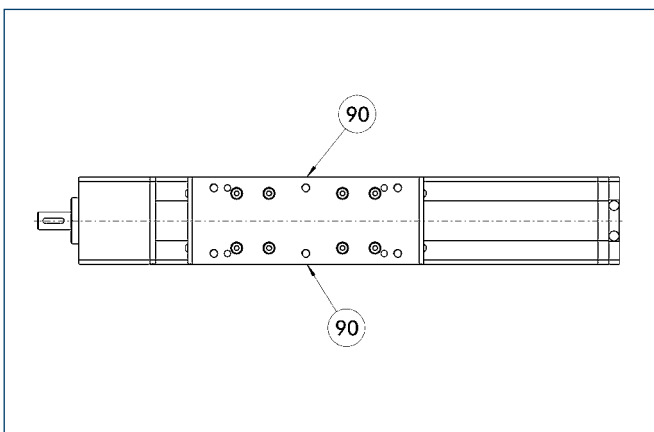
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

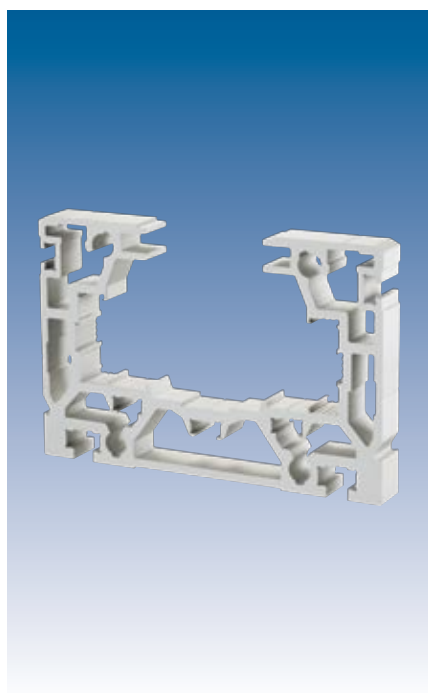


### Advantages of profiled rail guide

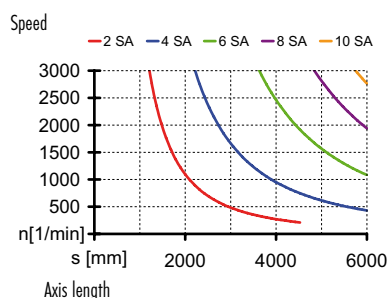
High load bearing capacity

Long lifetime

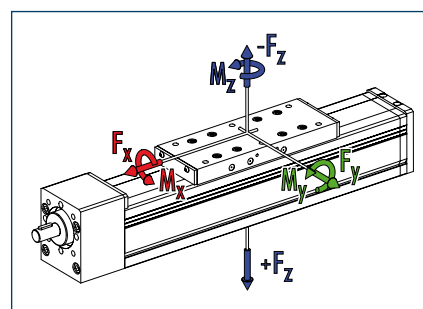
High precision



#### Spindle supports SA



### Loads and load torques



Load	Dynamic
$F_x^{**}$ [N]	12000
$F_y$ [N]	6000
$F_z$ [N]	12000
$-F_z$ [N]	6000
Load torques	Dynamic
$M_x$ [Nm]	1500
$M_y$ [Nm]	3000 (4000)
$M_z$ [Nm]	1500 (2000)
$M_{Amax}$ [Nm]	12.0 (p=5)
	21.6 (p=10)
	40.7 (p=20)
	78.9 (p=40)

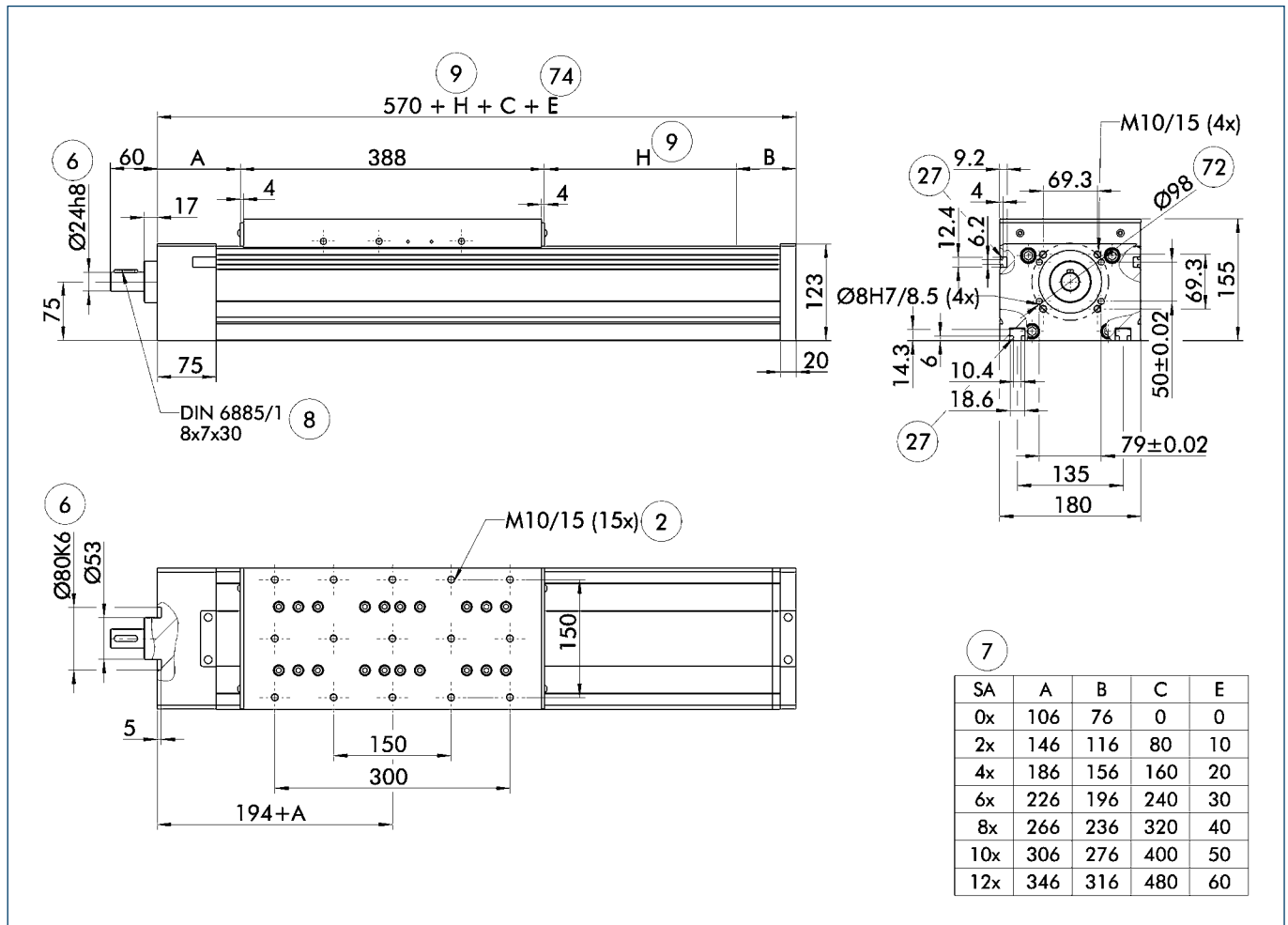
\*\* Depends on speed and pitch  $n_{max}$   
 KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

### Technical data

Designation	B 180-SSS	
Max. travel speed	[m/s]	2.0
Repeat accuracy	[mm]	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20
Idle torque	[Nm]	2.5
Maximum stroke	[mm]	4930
Max. total length	[mm]	5500
Moment of inertia	[kgm <sup>2</sup> ]	0.000645
Drive element	Ball screw spindle drive	
Max. spindle speed	[rpm]	3000
Diameter	[mm]	32
Pitch	[mm]	5 / 10 / 20 / 40
Drive element	Trapezoidal threaded drive	
Max. spindle speed	[rpm]	1500
Diameter	[mm]	32
Pitch	[mm]	6
Weights		
Basic without travel	[kg]	33.5
Travel per 100 mm	[kg]	2.8
Slide plate 380 mm	[kg]	10.8
Slide plate 600 mm	[kg]	15.5

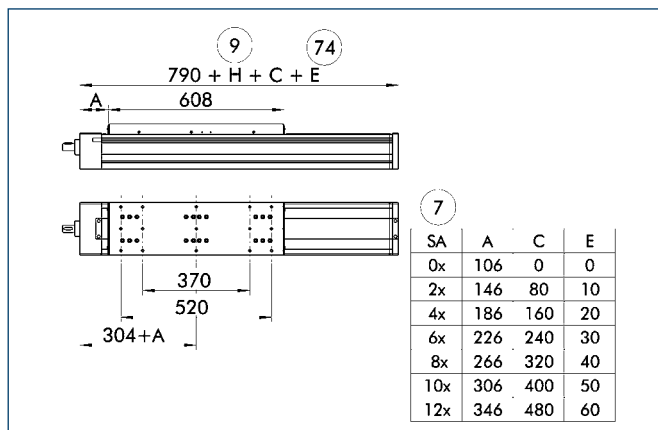
### Main views



- ② Assembly connection
- ⑥ Drive connection
- ⑦ Number of spindle supports
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑳ Mounting groove for T-nuts
- ㉑ Bolt pitch circle

- ㉒ E for spindle supports with insulated noise emissions

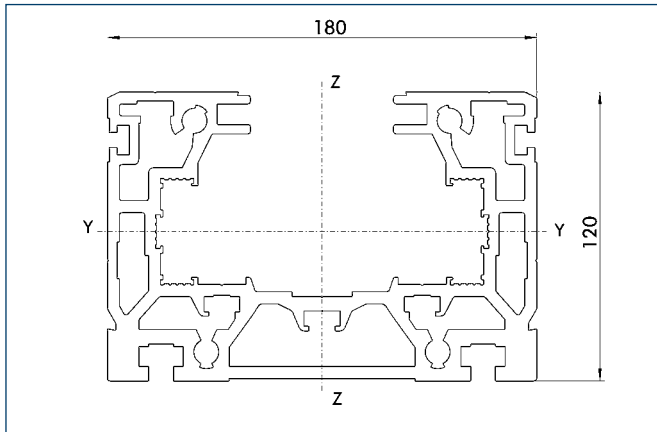
### Long slide



- ⑦ Number of spindle supports
- ⑨ Useful stroke

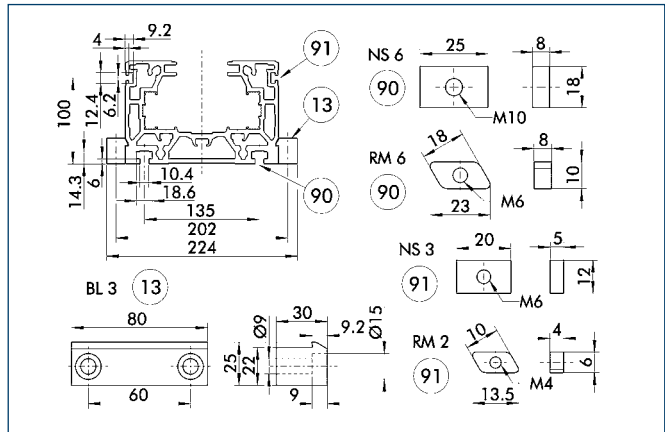
- ㉒ E for spindle supports with insulated noise emissions

### Profile SSS



Specific mass	[kg/m]	15.49
Planar dimension	[mm <sup>2</sup> ]	5736
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	9236448
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	23586987
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	134968
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	261545

### Mounting



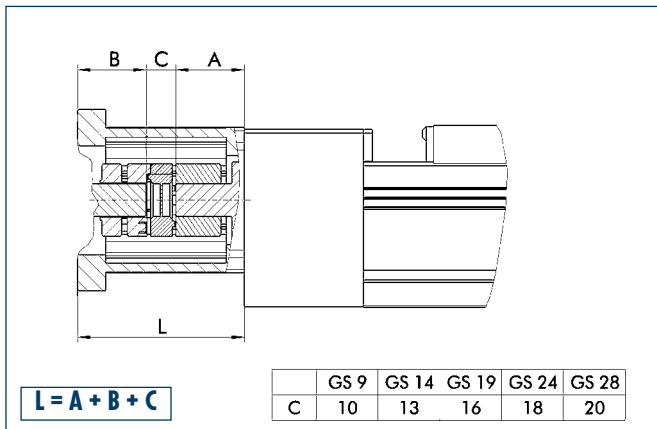
- 13 Mounting strip  
90 T-nut on base side

- 91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	NS6	0331409
T-nut	RM2	0331425
T-nut	RM6	0331427
Mounting strip	BL3	0331402

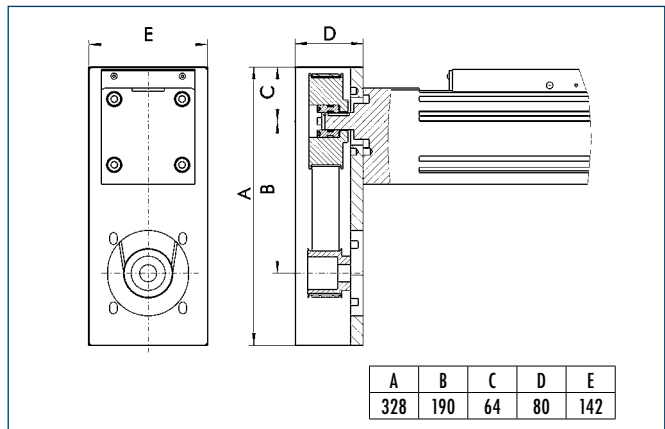
### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases. Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

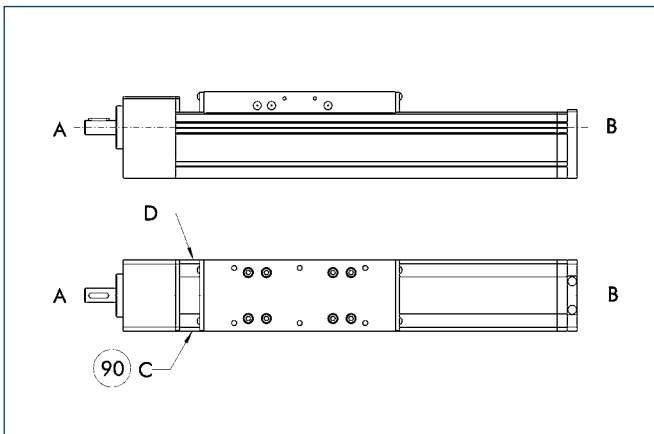
### Angle gear schematic diagram



Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$   
Caution: Dimension **C** can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key). Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

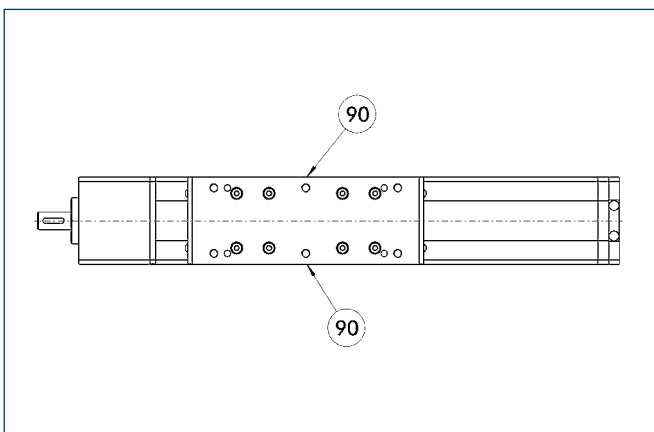
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



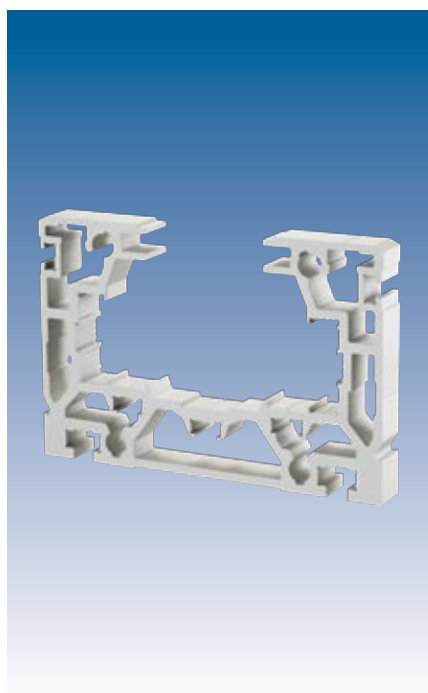
90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.



### Advantages of roller guide

#### High maximum moments

due to optimum force transmission to the profile

#### Long stroke lengths

can be achieved with no problems

#### Life-time lubricated rollers

for easy maintenance use

#### Smooth, low-noise running

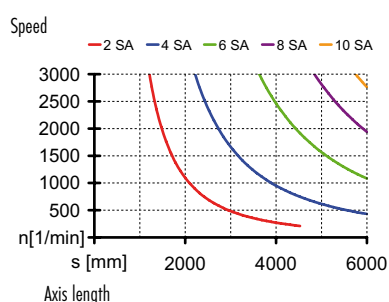
### Advantages of profiled rail guide

#### High load bearing capacity

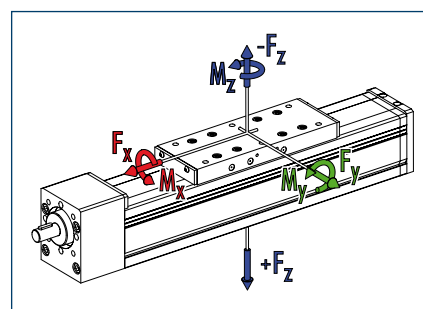
#### Long lifetime

#### High precision

#### Spindle supports SA



### Loads and load torques



Load	SRS dynamic	SSS dynamic
$F_x^{**}$ [N]	12000	12000
$F_y$ [N]	6000	8000
$F_z$ [N]	10000	15000
$-F_z$ [N]	6000	8000
Load torques	SRS dynamic	SSS dynamic
$M_x$ [Nm]	1200	1800
$M_y$ [Nm]	2000 (3000)	3600 (4800)
$M_z$ [Nm]	1200 (1800)	1800 (2400)
$M_{Amax}$ [Nm]	6.6 (p=5)	7.3 (p=5)
	11.3 (p=10)	12.0 (p=10)
	20.9 (p=20)	21.6 (p=20)
	40.0 (p=40)	40.7 (p=40)

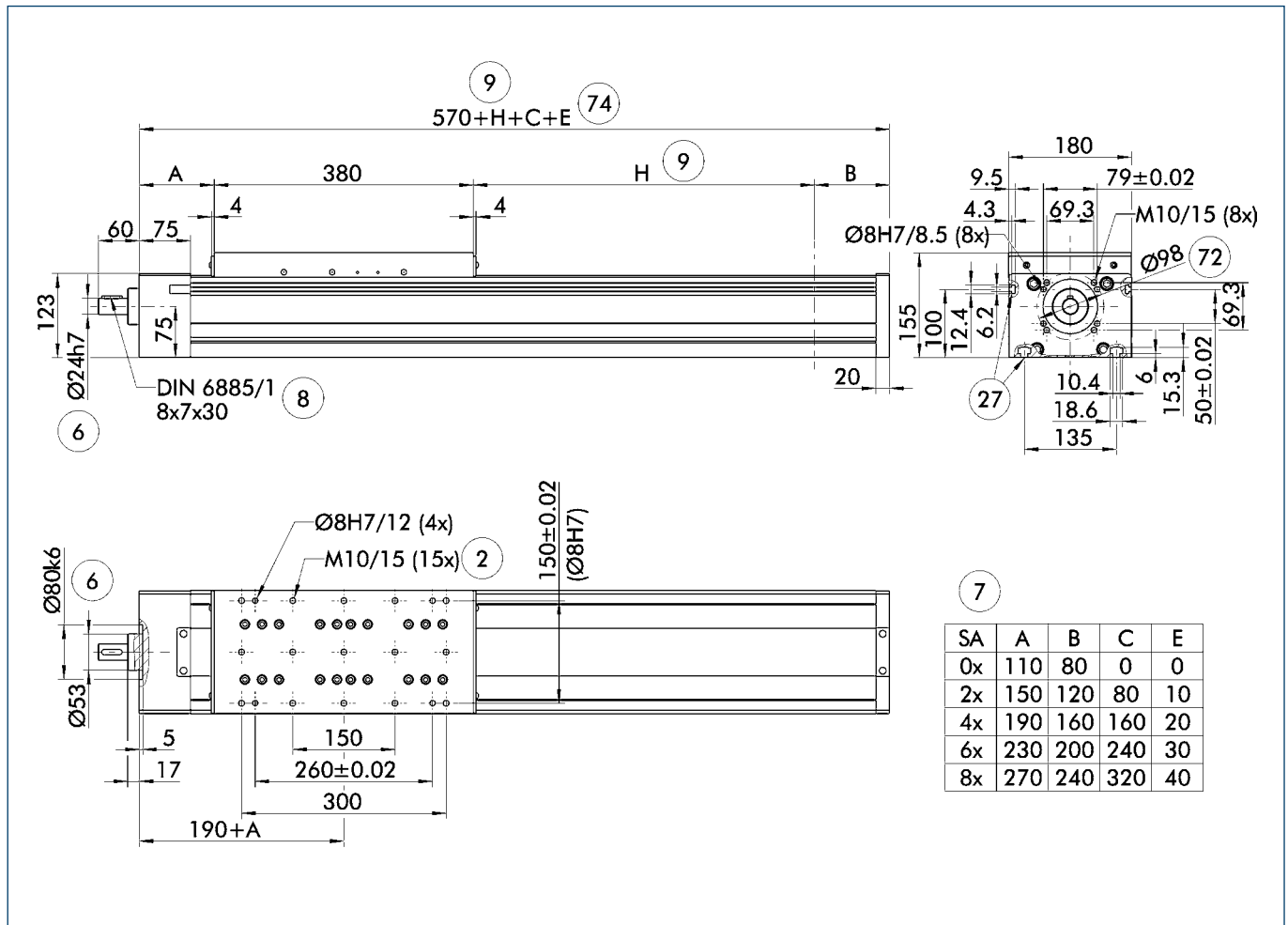
\*\* Depends on speed and pitch  $n_{max}$   
KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

## Technical data

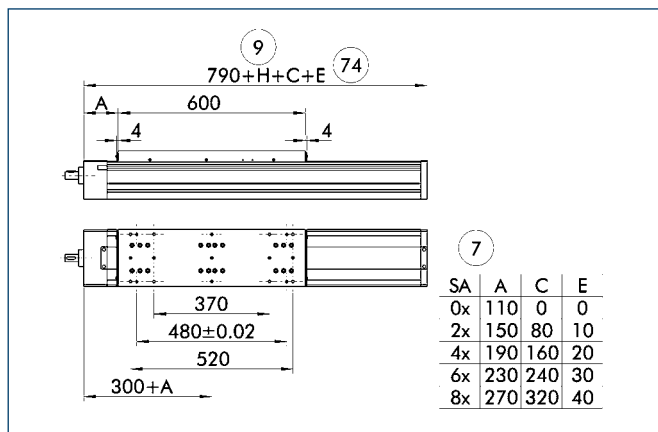
Designation		B 180C-SRS	B 180C-SSS
Max. travel speed	[m/s]	2.0	2.0
Repeat accuracy	[mm]	± 0.03	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20	20
Idle torque	[Nm]	1.8	2.5
Maximum stroke	[mm]	4930	4930
Max. total length	[mm]	5500	5500
Moment of inertia	[kgm <sup>2</sup> ]	0.000645	0.000645
Drive element		Ball screw spindle drive	Ball screw spindle drive
Max. spindle speed	[rpm]	3000	3000
Diameter	[mm]	32	32
Pitch	[mm]	5 / 10 / 20 / 40	5 / 10 / 20 / 40
Drive element		Trapezoidal threaded drive	Trapezoidal threaded drive
Max. spindle speed	[rpm]	1500	1500
Diameter	[mm]	32	32
Pitch	[mm]	6	6
Weights			
Basic without travel	[kg]	35.0	37.0
Travel per 100 mm	[kg]	2.5	3.0
Slide plate 380 mm	[kg]	13.2	14.3
Slide plate 600 mm	[kg]	14.3	15.4

### Main views



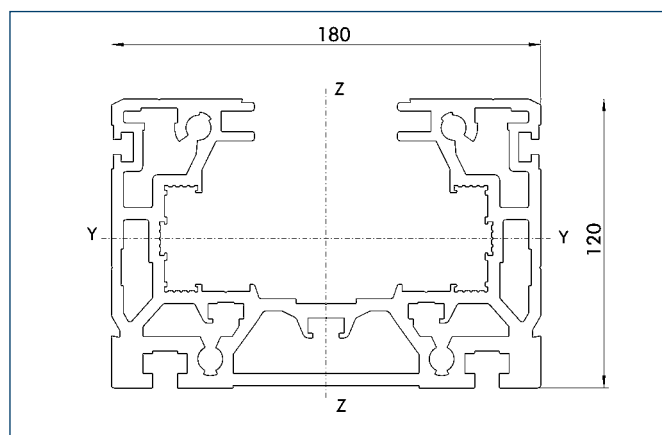
- ② Assembly connection
- ⑥ Drive connection
- ⑦ Number of spindle supports
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑪ Mounting groove for T-nuts
- ⑫ Bolt pitch circle
- ⑭ E for spindle supports with insulated noise emissions

### Long slide



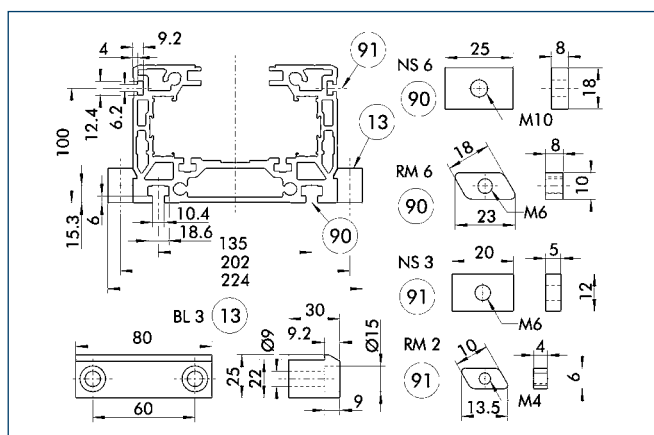
- ⑦ Number of spindle supports
- ⑨ Useful stroke
- ⑭ E for spindle supports with insulated noise emissions

### Profile SRS/SSS



Specific mass	[kg/m]	15.49
Planar dimension	[mm <sup>2</sup> ]	5736
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	9236448
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	23586987
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	134968
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	261545

### Mounting



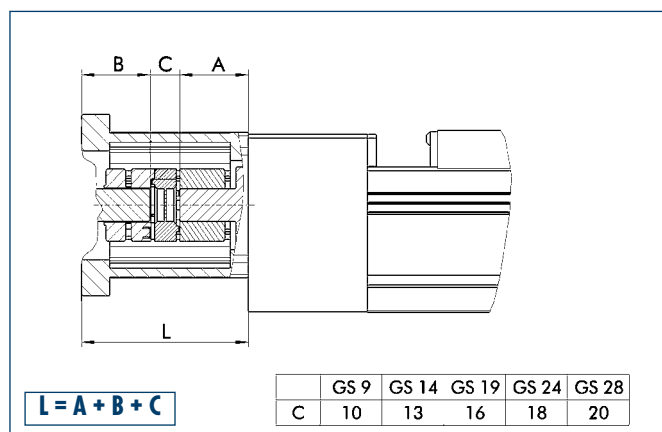
- ⑬ Mounting strip  
⑨① T-nut on base side

- ⑨① Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	NS6	0331409
T-nut	RM2	0331425
T-nut	RM6	0331427
Mounting strip	BL3	0331402

### Motor flange schematic diagram



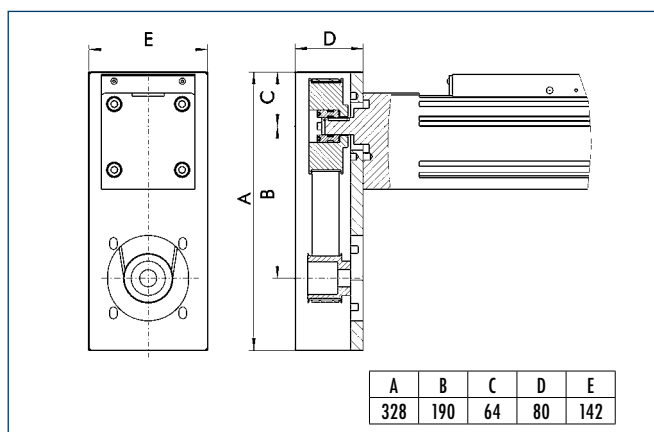
The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Angle gear schematic diagram



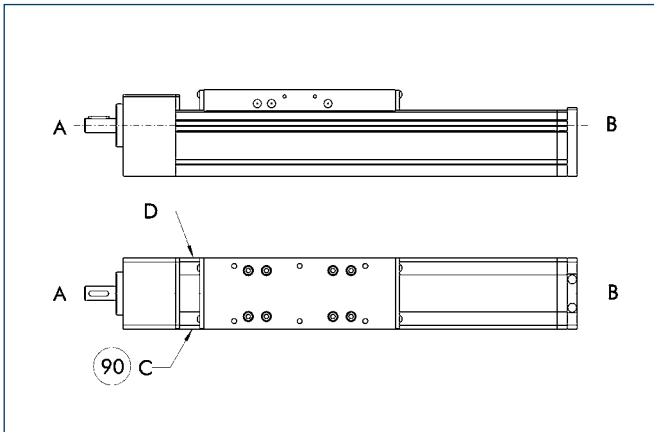
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension **C** can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

- ① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

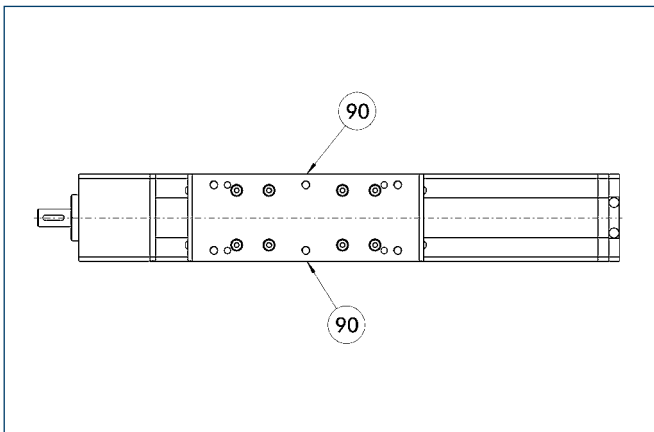
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

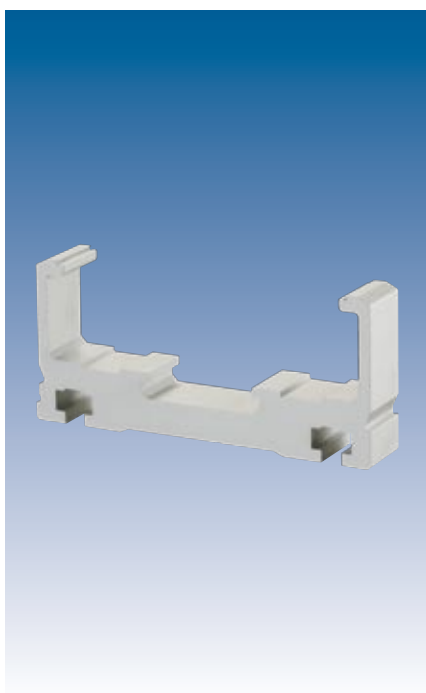


### Advantages of profiled rail guide

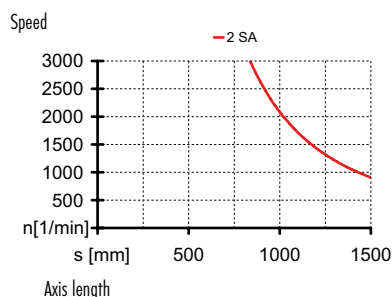
High load bearing capacity

Long lifetime

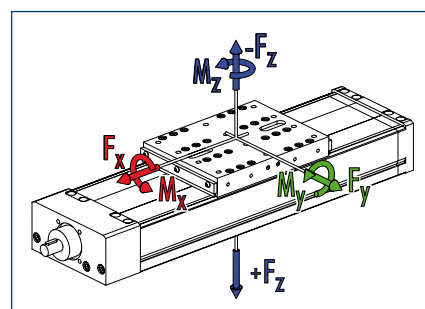
High precision



Spindle supports SA



### Loads and load torques



Load	Dynamic
$F_x^{**}$ [N]	2000
$F_y$ [N]	1200
$F_z$ [N]	3000
$-F_z$ [N]	1500
Load torques	Dynamic
$M_x$ [Nm]	500
$M_y$ [Nm]	650 (1100)
$M_z$ [Nm]	650 (1100)
$M_{Amax}$ [Nm]	2.5 (p=5)
	4.1 (p=10)
	7.3 (p=20)

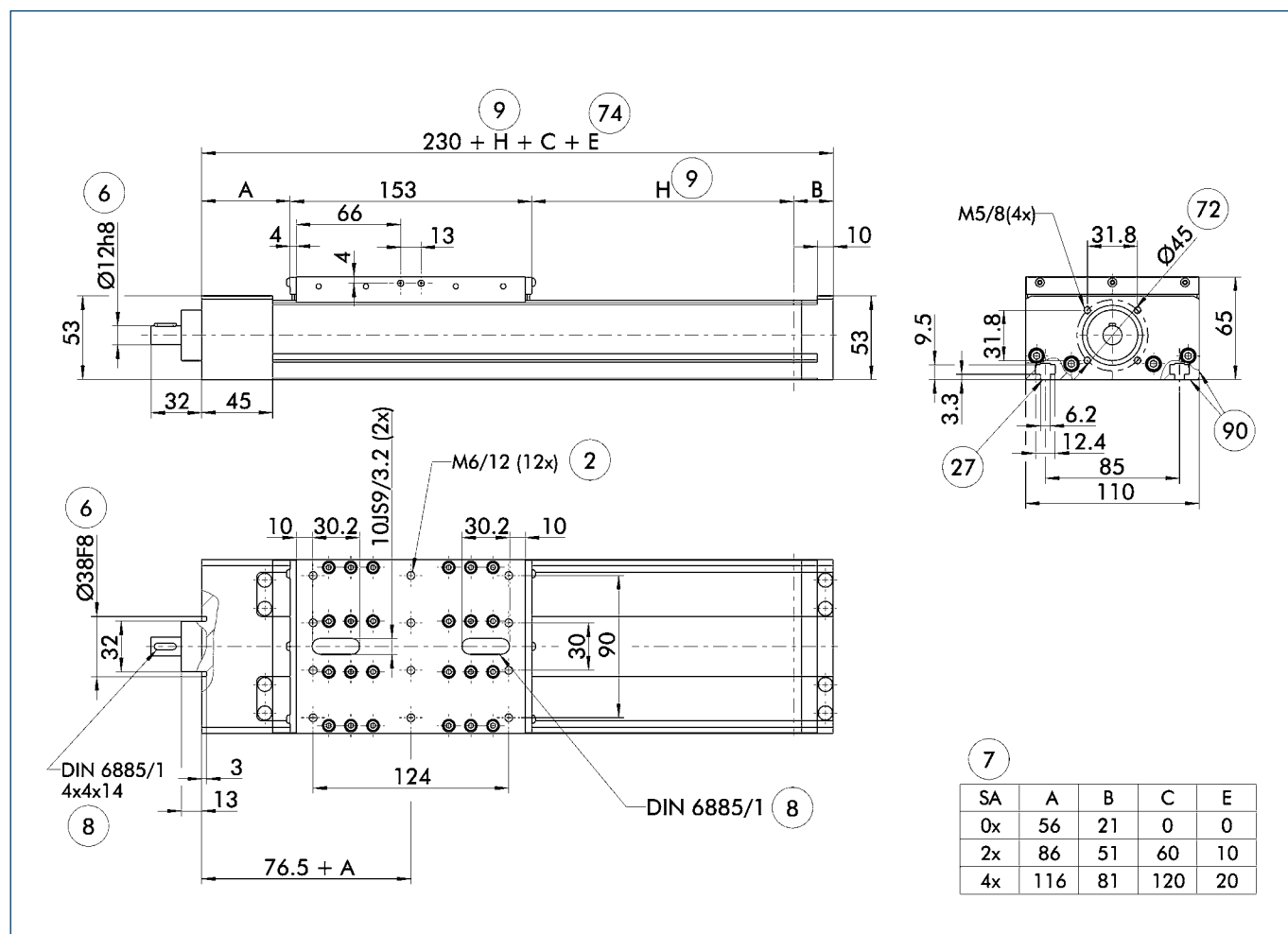
\*\* Depends on speed and pitch  $n_{max}$   
 KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

### Technical data

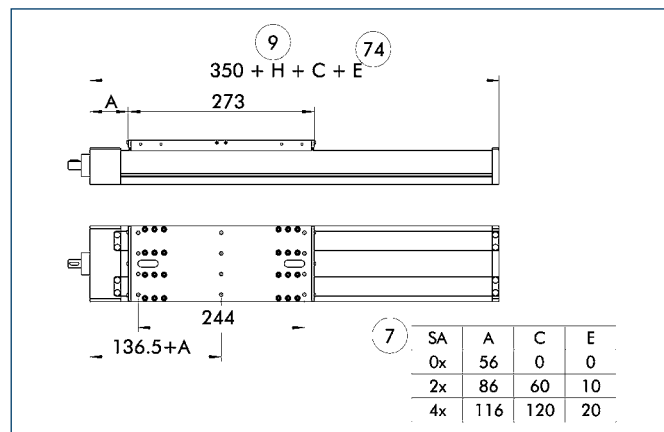
Designation		D 110-SSS
Max. travel speed	[m/s]	1.0
Repeat accuracy	[mm]	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20
Idle torque	[Nm]	0.9
Maximum stroke	[mm]	1270
Max. total length	[mm]	1500
Moment of inertia	[kgm <sup>2</sup> ]	0.0000325
Drive element		Ball screw spindle drive
Max. spindle speed	[rpm]	3000
Diameter	[mm]	16
Pitch	[mm]	5 / 10 / 20
Drive element		Trapezoidal threaded drive
Max. spindle speed	[rpm]	1500
Diameter	[mm]	16
Pitch	[mm]	4 / 8
Weights		
Basic without travel	[kg]	6.2
Travel per 100 mm	[kg]	0.75
Slide plate 145 mm	[kg]	3.2
Slide plate 265 mm	[kg]	5.85

### Main views



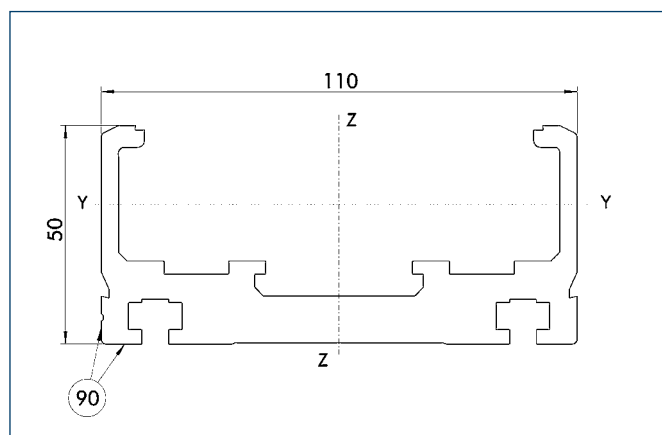
- ② Assembly connection
- ⑥ Drive connection
- ⑦ Number of spindle supports
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ⑪ Mounting groove for T-nuts
- ⑫ Bolt pitch circle
- ⑭ E for spindle supports with insulated noise emissions
- ⑮ Stop angle for alignment of axis

### Long slide



- ⑦ Number of spindle supports
- ⑨ Useful stroke
- ⑭ E for spindle supports with insulated noise emissions

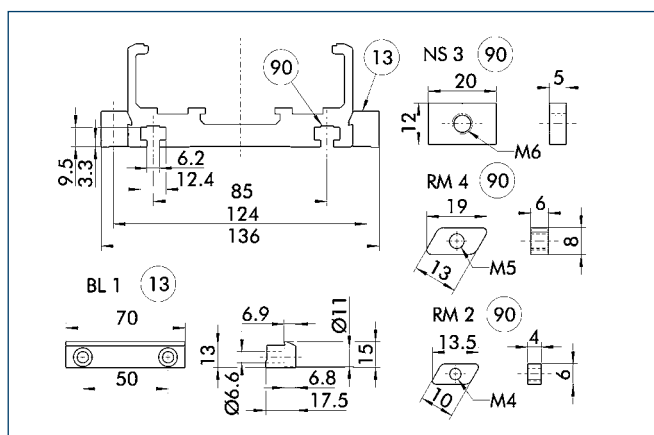
### Profile SSS



90 Stop angle standard side

Specific mass	[kg/m]	5.06
Planar dimension	[mm <sup>2</sup> ]	1875
Planar moment of inertia $I_y$	[mm <sup>4</sup> ]	267967
Planar moment of inertia $I_z$	[mm <sup>4</sup> ]	2519555
Load torque $W_y$	[mm <sup>3</sup> ]	7219
Load torque $W_z$	[mm <sup>3</sup> ]	45110

### Mounting



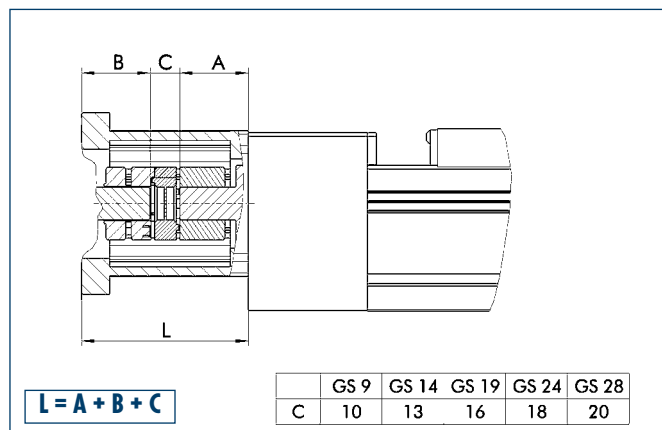
13 Mounting strip

90 T-nut on base side

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS3	0331406
T-nut	RM2	0331425
T-nut	RM4	0331426
Mounting strip	BL1	0331400

### Motor flange schematic diagram

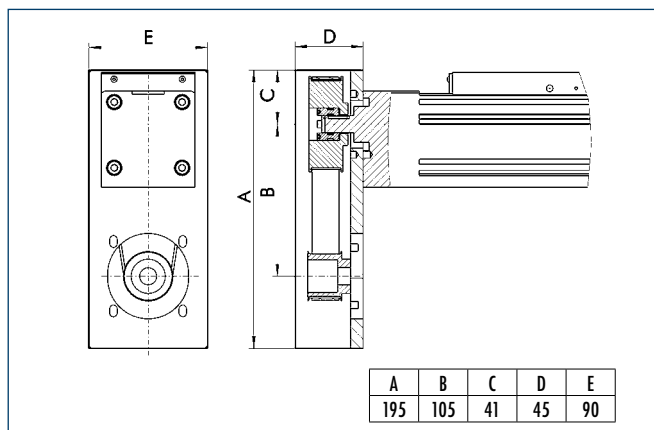


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Angle gear schematic diagram



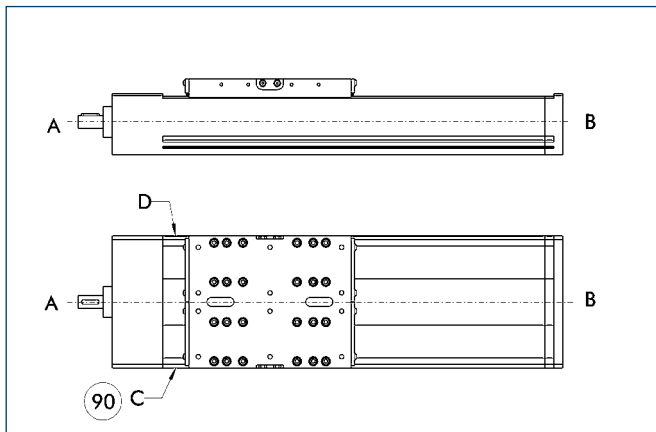
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension C can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

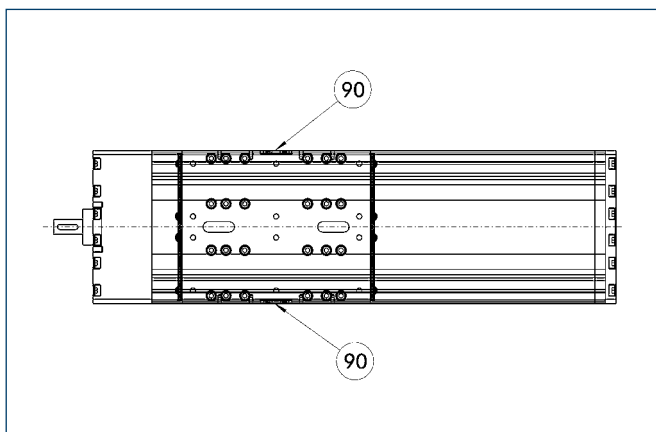
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

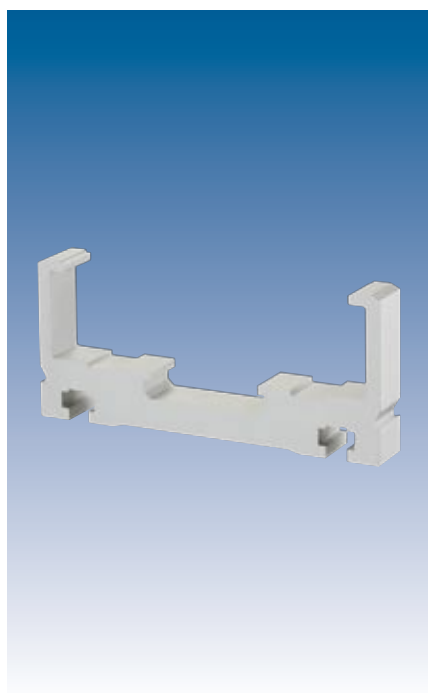
More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

### Advantages of profiled rail guide

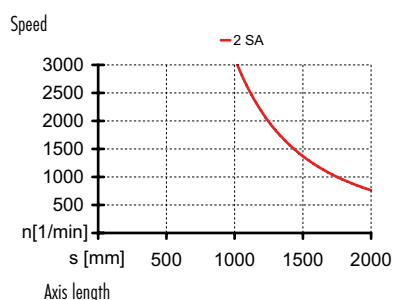
High load bearing capacity

Long lifetime

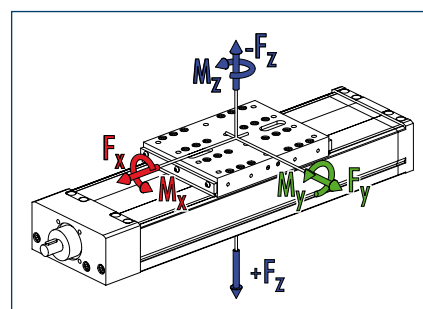
High precision



Spindle supports SA



### Loads and load torques



Load	Dynamic
$F_x^{**}$ [N]	6000
$F_y$ [N]	2500
$F_z$ [N]	5000
$-F_z$ [N]	3000
Load torques	Dynamic
$M_x$ [Nm]	800
$M_y$ [Nm]	1000 (1600)
$M_z$ [Nm]	1000 (1600)
$M_{Amax}$ [Nm]	5.9 (p=5)
	10.6 (p=10)
	25.0 (p=25)
	48.8 (p=50)

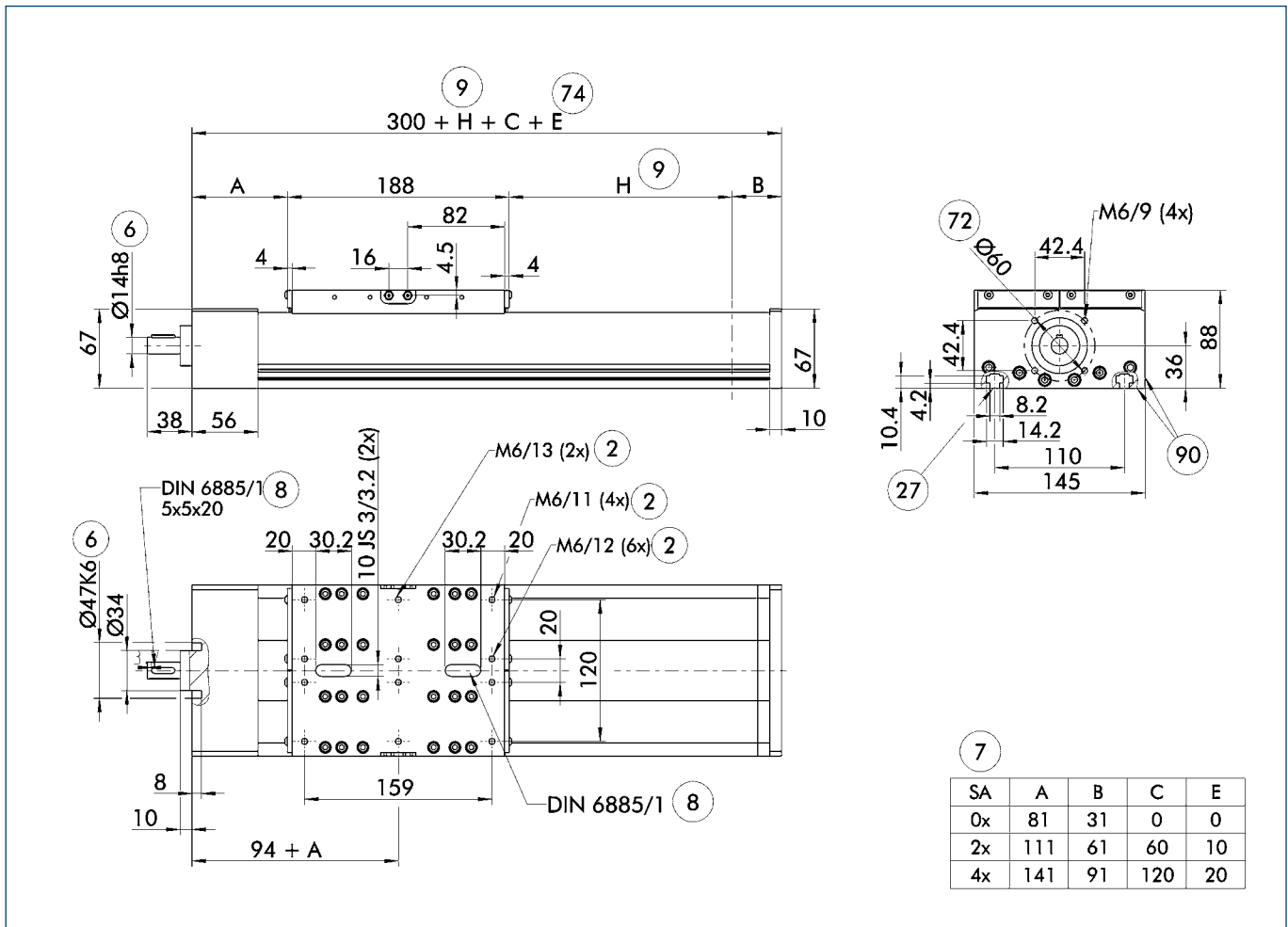
\*\* Depends on speed and pitch  $n_{max}$   
 KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

### Technical data

Designation		D 145-SSS
Max. travel speed	[m/s]	2.5
Repeat accuracy	[mm]	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20
Idle torque	[Nm]	1.1
Maximum stroke	[mm]	1700
Max. total length	[mm]	2000
Moment of inertia	[kgm <sup>2</sup> ]	0.000225
Drive element		Ball screw spindle drive
Max. spindle speed	[rpm]	3000
Diameter	[mm]	25
Pitch	[mm]	5 / 10 / 25 / 50
Drive element		Trapezoidal threaded drive
Max. spindle speed	[rpm]	1500
Diameter	[mm]	24
Pitch	[mm]	5 / 10
Weights		
Basic without travel	[kg]	13.5
Travel per 100 mm	[kg]	1.5
Slide plate 180 mm	[kg]	5.8
Slide plate 300 mm	[kg]	9.7

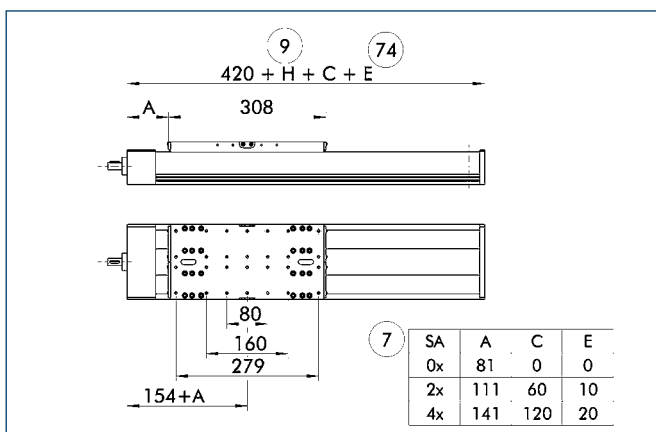
### Main views



- ② Assembly connection
- ⑥ Drive connection
- ⑦ Number of spindle supports
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ②⑦ Mounting groove for T-nuts
- ⑦② Bolt pitch circle

- ⑦④ E for spindle supports with insulated noise emissions
- ⑨② Stop angle for alignment of axis

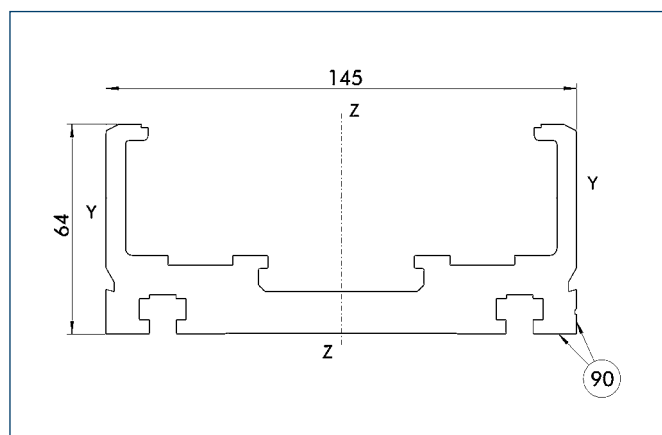
### Long slide



- ⑦ Number of spindle supports
- ⑨ Useful stroke

- ⑦④ E for spindle supports with insulated noise emissions

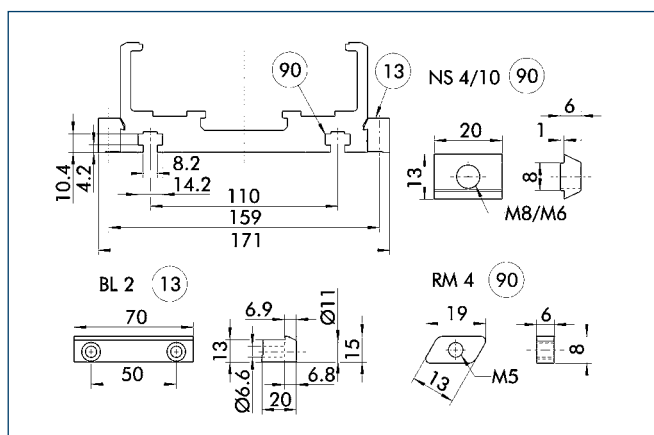
### Profile SSS



90 Stop angle standard side

Specific mass	[kg/m]	8.54
Planar dimension	[mm <sup>2</sup> ]	3163
Planar moment of inertia $I_y$	[mm <sup>4</sup> ]	747431
Planar moment of inertia $I_z$	[mm <sup>4</sup> ]	7649112
Load torque $W_y$	[mm <sup>3</sup> ]	15814
Load torque $W_z$	[mm <sup>3</sup> ]	104251

### Mounting



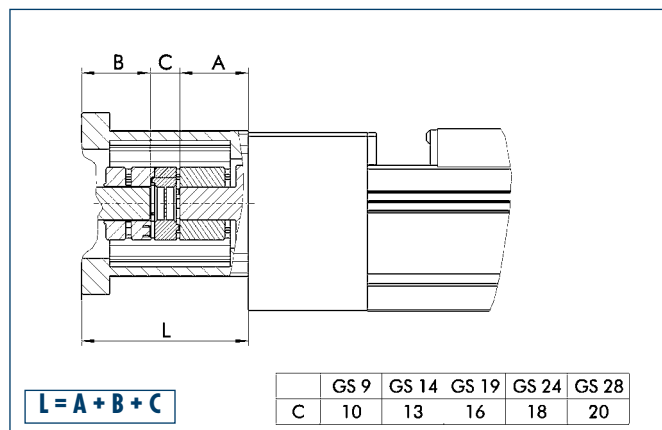
13 Mounting strip

90 T-nut on base side

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS4	0331407
T-nut	NS10	0331422
T-nut	RM4	0331426
Mounting strip	BL2	0331401

### Motor flange schematic diagram



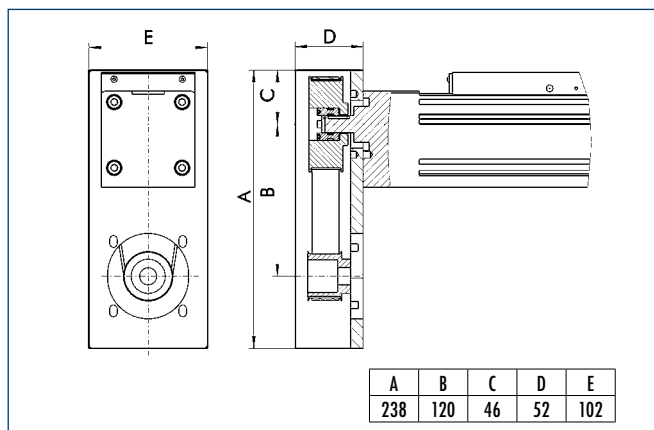
The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Angle gear schematic diagram



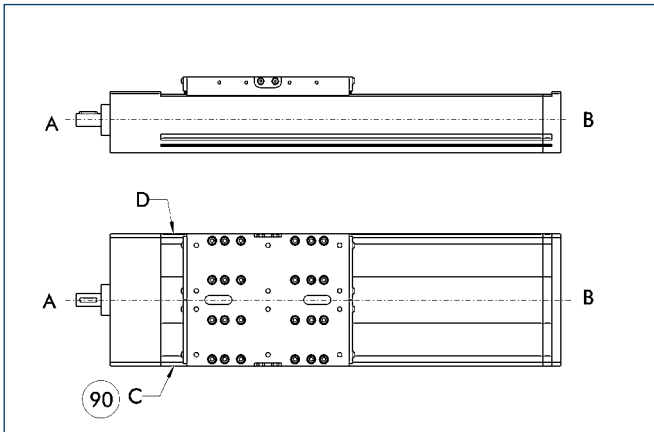
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension **C** can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

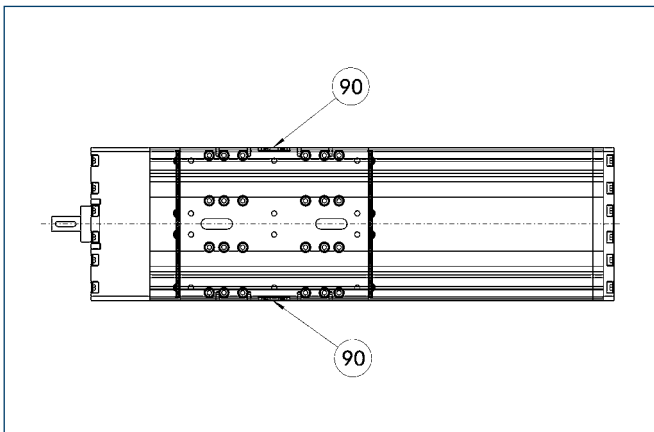
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

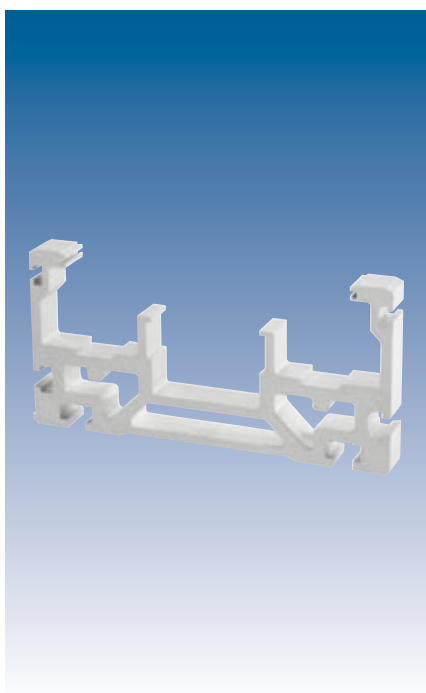


### Advantages of profiled rail guide

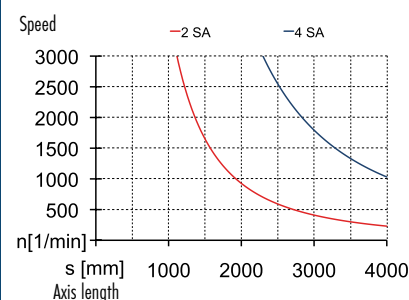
High load bearing capacity

Long lifetime

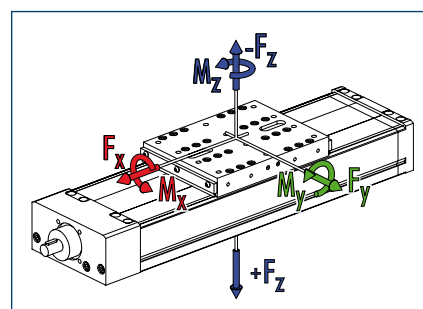
High precision



Spindle supports SA



### Loads and load torques



Load	Dynamic
$F_x^{**}$ [N]	10000
$F_y$ [N]	5000
$F_z$ [N]	8000
$-F_z$ [N]	5000
Load torques	Dynamic
$M_x$ [Nm]	3500
$M_y$ [Nm]	4300 (6000)
$M_z$ [Nm]	3200 (4500)
$M_{Amax}$ [Nm]	10.8 (p=5)
	18.7 (p=10)
	34.6 (p=20)
	66.5 (p=40)

\*\* Depends on speed and pitch  $n_{max}$   
 KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

### Technical data

Designation		D 200-SSS
Max. travel speed	[m/s]	2.0
Repeat accuracy	[mm]	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20
Idle torque	[Nm]	2.8
Maximum stroke	[mm]	3620
Max. total length	[mm]	4000
Moment of inertia	[kgm <sup>2</sup> ]	0.000645
Drive element		Ball screw spindle drive
Max. spindle speed	[rpm]	3000
Diameter	[mm]	32
Pitch	[mm]	5 / 10 / 20 / 40
Drive element		Trapezoidal threaded drive
Max. spindle speed	[rpm]	1500
Diameter	[mm]	32
Pitch	[mm]	6
Weights		
Basic without travel	[kg]	22.0
Travel per 100 mm	[kg]	2.6
Slide plate 250 mm	[kg]	8.4
Slide plate 400 mm	[kg]	11.0

**Table 7**

SA	A	B	C
0x	90	40	0
2x	90	40	0
4x	130	80	80

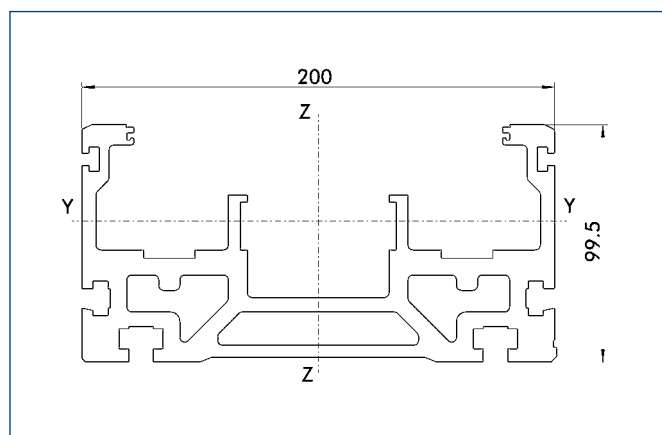
- |    |                            |    |   |
|----|----------------------------|----|---|
| ②  | Assembly connection        | ⑦4 | E for spindle supports with insulated noise emissions |
| ⑥  | Drive connection           | ⑨0 | Stop angle for alignment of axis                      |
| ⑦  | Number of spindle supports |    |   |
| ⑧  | Feather key DIN 6885       |    |   |
| ⑨  | Useful stroke              |    |   |
| ②7 | Mounting groove for T-nuts |    |   |
| ⑦2 | Bolt pitch circle          |    |   |

Technical drawing of a roller with a length of 1000mm. The drawing includes a side view and a front view. The side view shows a roller with a total length of 1000mm, divided into three sections: a central section of length 530mm and two end sections of length 235mm each. The end sections are further divided into a 40mm section and a 30.2mm section. The front view shows a roller with a total width of 265mm, divided into three sections: a central section of length 159mm and two end sections of length 53mm each. The end sections are further divided into a 40mm section and a 30.2mm section. The drawing also includes a table of options for the roller.

	A	B	C
0x	90	40	0
2x	90	40	0
4x	130	80	80

- |   |                            |    |   |
|---|----------------------------|----|---|
| ⑦ | Number of spindle supports | ⑦4 | E for spindle supports with insulated noise emissions |
| ⑨ | Useful stroke              |    |   |

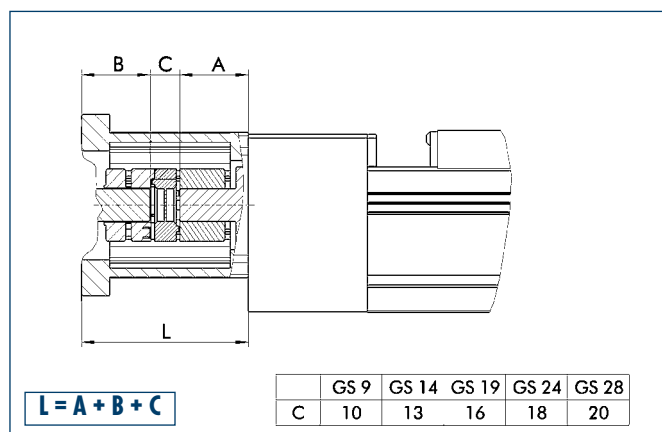
### Profile SSS



90 Stop angle standard side

Specific mass	[kg/m]	15.64
Planar dimension	[mm <sup>2</sup> ]	5791
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	3868726
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	28046412
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	58520
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	277190

### Motor flange schematic diagram

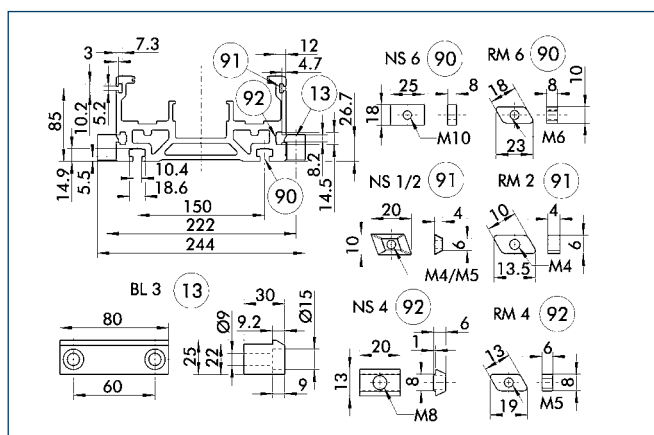


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Mounting

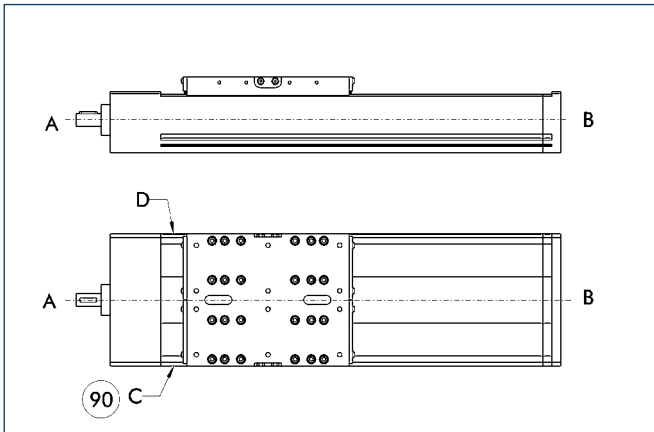


13 Mounting strip  
90 T-nut on base side  
91 T-nut, side upper  
92 T-nut, side lower

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS1	0331404
T-nut	NS2	0331405
T-nut	NS4	0331407
T-nut	NS6	0331409
T-nut	RM2	0331425
T-nut	RM4	0331426
T-nut	RM6	0331427
Mounting strip	BL3	0331402

### Limit switch position



90 Limit switch standard position

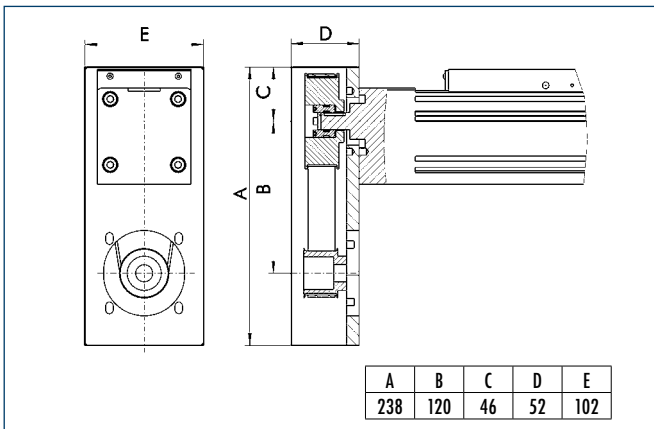
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Angle gear schematic diagram



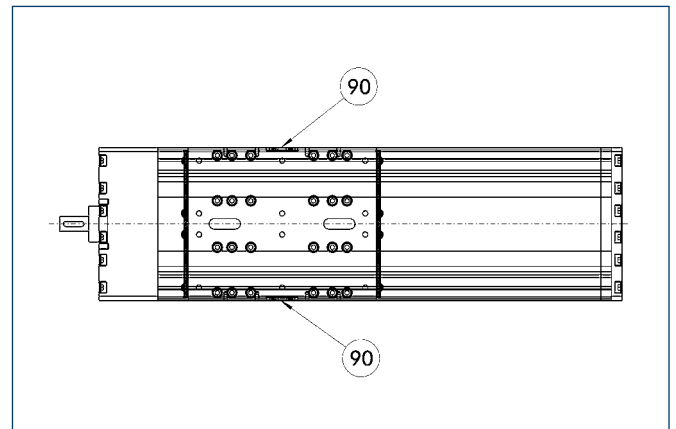
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension C can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

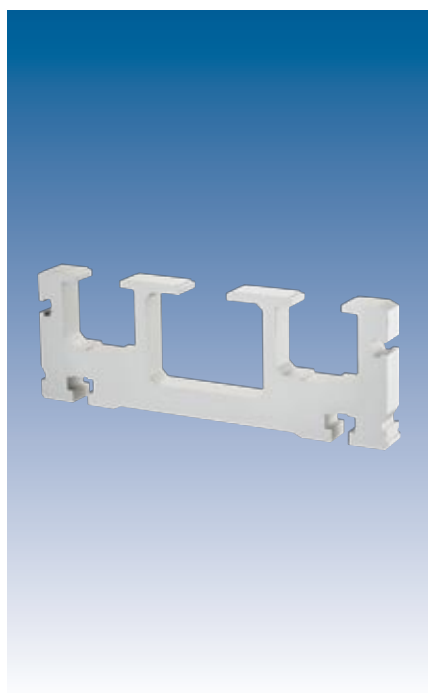
If the lubrication connection has a different seat, this must be defined in the order text.

### Advantages of profiled rail guide

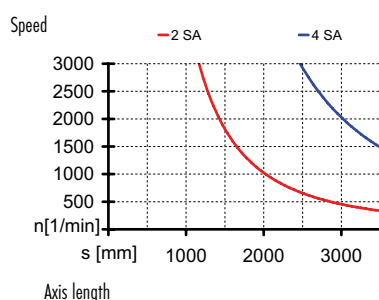
High load bearing capacity

Long lifetime

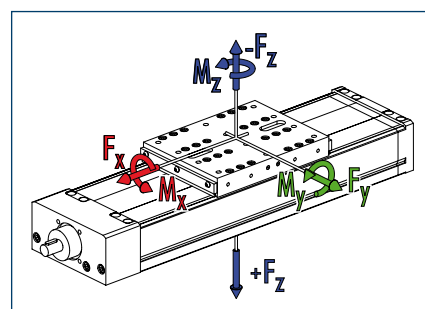
High precision



Spindle supports SA



### Loads and load torques



Load	Dynamic
$F_x^{**}$ [N]	12000
$F_y$ [N]	6000
$F_z$ [N]	12000
$-F_z$ [N]	8000
Load torques	Dynamic
$M_x$ [Nm]	4500
$M_y$ [Nm]	6000 (8500)
$M_z$ [Nm]	1500 (6400)
$M_{Amax}$ [Nm]	12.3 (p=5)
	21.9 (p=10)
	41.0 (p=20)
	79.2 (p=40)

\*\* Depends on speed and pitch  $n_{max}$   
 KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

### Technical data

Designation		D 240-SSS
Max. travel speed	[m/s]	2.0
Repeat accuracy	[mm]	± 0.03
Max. acceleration	[m/s <sup>2</sup> ]	20
Idle torque	[Nm]	2.8
Maximum stroke	[mm]	2600
Max. total length	[mm]	3000
Moment of inertia	[kgm <sup>2</sup> ]	0.000645
Drive element		Ball screw spindle drive
Max. spindle speed	[rpm]	3000
Diameter	[mm]	32
Pitch	[mm]	5 / 10 / 20 / 40
Drive element		Trapezoidal threaded drive
Max. spindle speed	[rpm]	1500
Diameter	[mm]	32
Pitch	[mm]	6
Weights		
Basic without travel	[kg]	26.0
Travel per 100 mm	[kg]	3.4
Slide plate 280 mm	[kg]	10.2
Slide plate 400 mm	[kg]	14.6

[illegible]

- |           |                            |           |   |
|-----------|----------------------------|-----------|---|
| <b>2</b>  | Assembly connection        | <b>74</b> | E for spindle supports with insulated noise emissions |
| <b>6</b>  | Drive connection           | <b>90</b> | Stop angle for alignment of axis                      |
| <b>7</b>  | Number of spindle supports |           |   |
| <b>8</b>  | Feather key DIN 6885       |           |   |
| <b>9</b>  | Useful stroke              |           |   |
| <b>27</b> | Mounting groove for T-nuts |           |   |
| <b>72</b> | Bolt pitch circle          |           |   |

Technical drawing of the 7400 series LED strip light, showing side and top views with dimensions and a table of specifications.

**Side View Dimensions:**

- Overall length:  $520 + H + C + E$
- Mounting bracket width: 408
- Mounting bracket height: 74
- Mounting bracket offset: 9

**Top View Dimensions:**

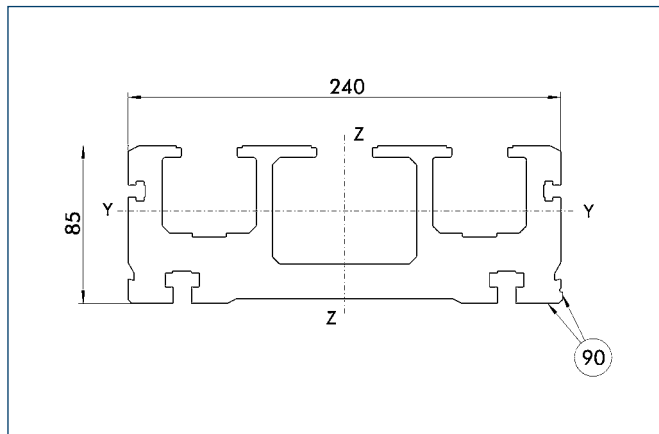
- Overall width:  $204 + A$
- LED array width: 374
- LED array height: 340
- LED array offset: 279

**Table 7: Specifications**

	SA	A	C	E
0x	86	0	0	
2x	126	80	10	
4x	166	160	20	

- |   |                            |    |   |
|---|----------------------------|----|---|
| ⑦ | Number of spindle supports | ⑦4 | E for spindle supports with insulated noise emissions |
| ⑨ | Useful stroke              |    |   |

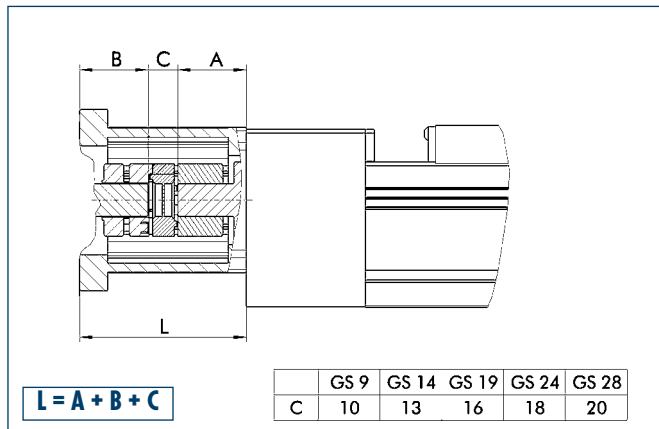
### Profile SSS



90 Stop angle standard side

Specific mass	[kg/m]	27.2
Planar dimension	[mm <sup>2</sup> ]	10074
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	6382473
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	61720897
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	119554
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	511233

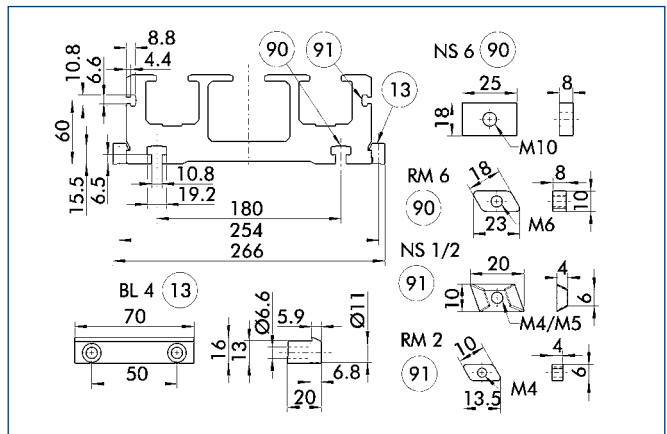
### Motor flange schematic diagram



The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases. Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Mounting



13 Mounting strip

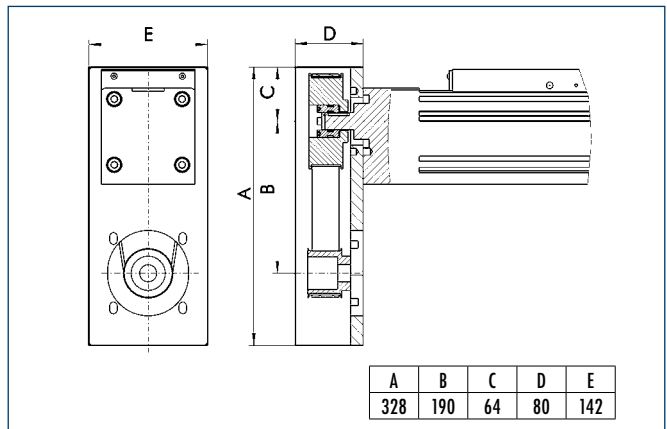
90 T-nut on base side

91 Side T-nut

The profile can be secured either using T-nuts or mounting strips.

Designation	Order designation	ID no.
T-nut	NS1	0331404
T-nut	NS2	0331405
T-nut	NS6	0331409
T-nut	RM2	0331425
T-nut	RM6	0331427
Mounting strip	BL4	0331403

### Angle gear schematic diagram



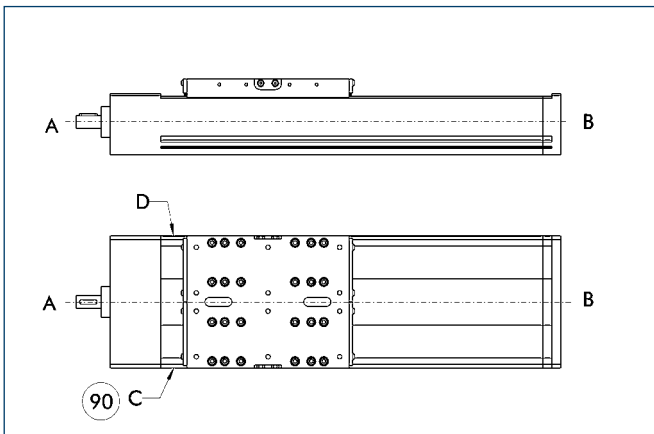
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension **C** can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

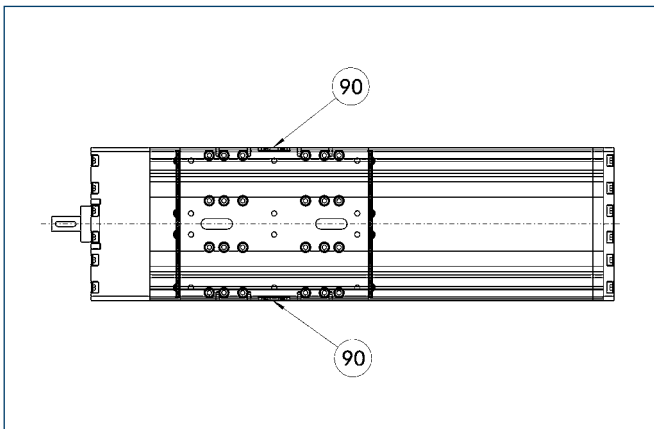
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.



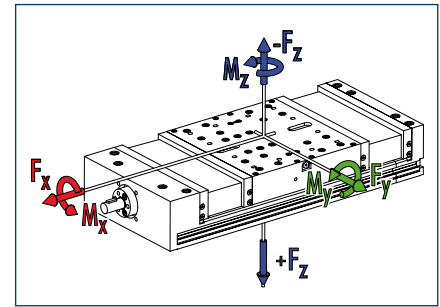
### Advantages of profiled rail guide

High load bearing capacity

Long lifetime

High precision

### Loads and load torques



Load	Dynamic
$F_x^{**}$ [N]	4000
$F_y$ [N]	2000
$F_z$ [N]	20000
$-F_z$ [N]	15000
Load torques	Dynamic
$M_x$ [Nm]	1000
$M_y$ [Nm]	900 (1300)
$M_z$ [Nm]	400 (580)
$M_{Amax}$ [Nm]	3.5 (p=5)
	13.1 (p=20)

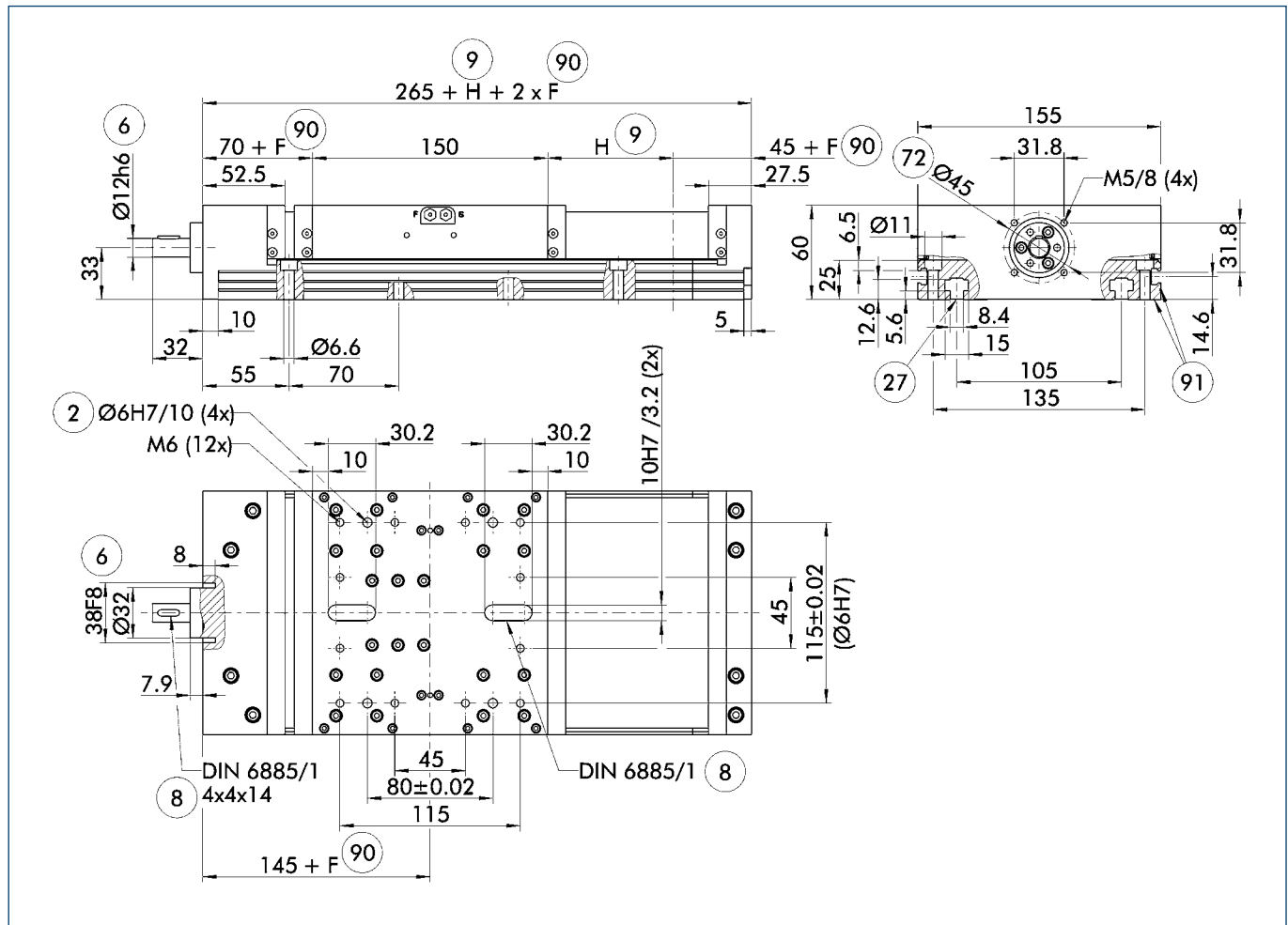
\*\* Depends on speed and pitch  $n_{max}$   
KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

### Technical data

Designation	A 15B-155
Max. travel speed	[m/s] 1.0
Repeat accuracy	[mm] $\pm 0.03$
Max. acceleration	[m/s <sup>2</sup> ] 20
Idle torque	[Nm] 0.35
Maximum stroke	[mm] 1235
Max. total length	[mm] 1500
Moment of inertia	[kgm <sup>2</sup> ] 0.000085
Drive element	Ball screw spindle drive
Max. spindle speed	[rpm] 3000
Diameter	[mm] 20
Pitch	[mm] 5 / 20
Drive element	Trapezoidal threaded drive
Max. spindle speed	[rpm] 1500
Diameter	[mm] 20
Pitch	[mm] 4 / 8 / 16
Weights	
Basic without travel	[kg] 7.8
Travel per 100 mm	[kg] 0.95
Slide plate 150 mm	[kg] 2.8
Slide plate 220 mm	[kg] 4.1

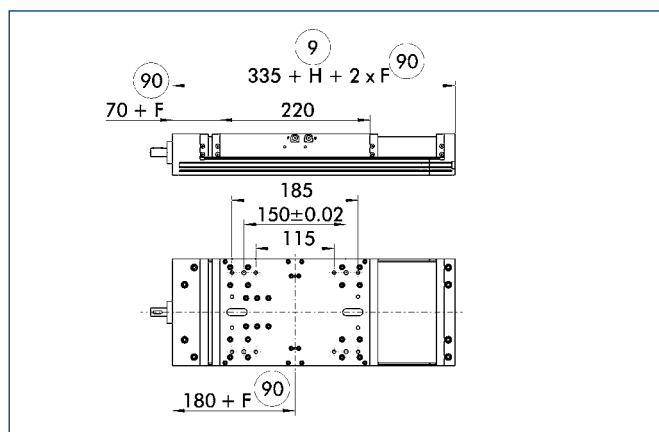
### Main views



- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ②⑦ Mounting groove for T-nuts
- ⑦② Bolt pitch circle
- ⑨⑦ Bellow block length

- ⑨① Stop angle for alignment of axis

### Long slide



- ⑨ Useful stroke

- ⑨⑦ Bellow block length

### Bellow calculation

$$[(\text{Travel} + 17) / 19]$$

$$[(\text{Number of folds} \times 3.8) - 17]$$

**Calculation example:**

**Distance traveled**

$$[(550 \text{ mm} + 17) / 19]$$

$$[(30 \times 3.8) - 17]$$

= Number of folds

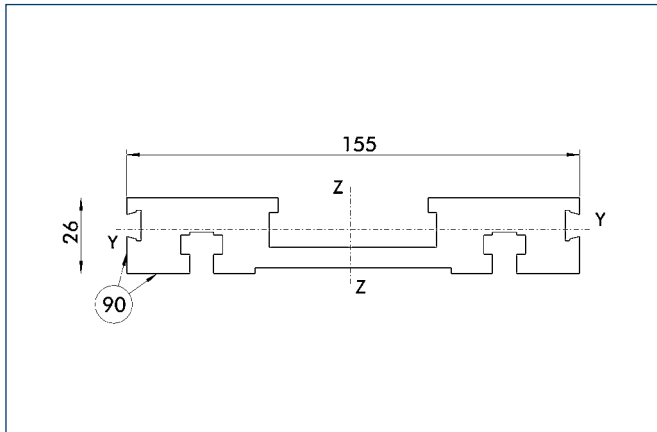
= Bellow block length

**= 550 mm**

= 29.84 Round up! (30 folds)

= 97 mm (1x bellow block length)

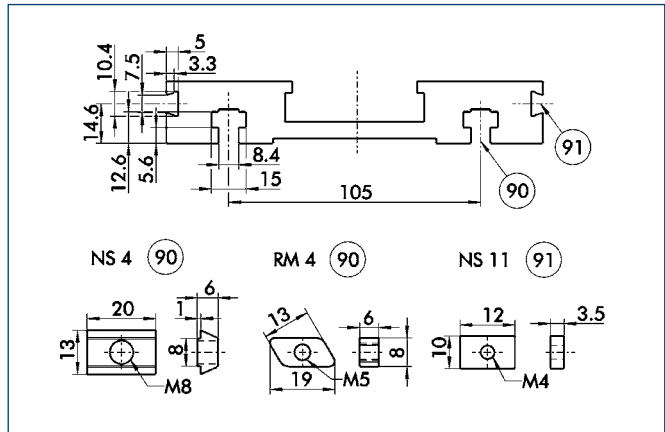
### Profile



90 Stop angle standard side

Specific mass	[kg/m]	6.6
Planar dimension	[mm <sup>2</sup> ]	2446
Planar moment of inertia $I_y$	[mm <sup>4</sup> ]	143666
Planar moment of inertia $I_z$	[mm <sup>4</sup> ]	60433952
Load torque $W_y$	[mm <sup>3</sup> ]	10413
Load torque $W_z$	[mm <sup>3</sup> ]	77156

### Mounting



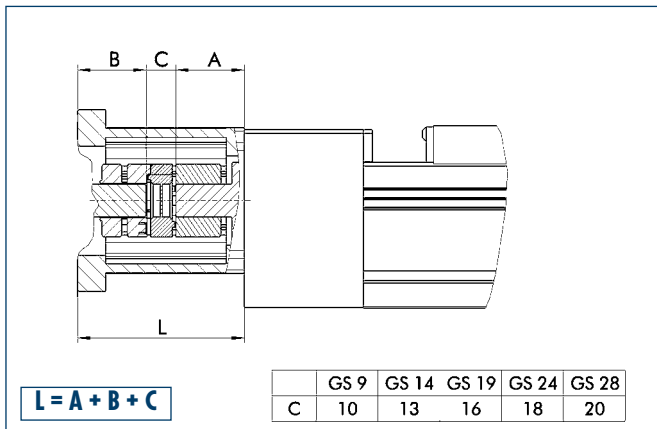
90 T-nut on base side

91 Side T-nut

The profile can be secured using T-nuts.

Designation	Order designation	ID no.
T-nut	NS4	0331407
T-nut	NS11	0331429
T-nut	RM4	0331426

### Motor flange schematic diagram



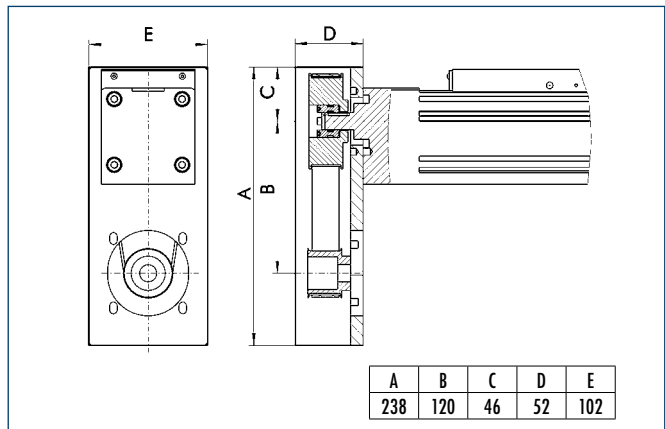
The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes.

SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Angle gear schematic diagram



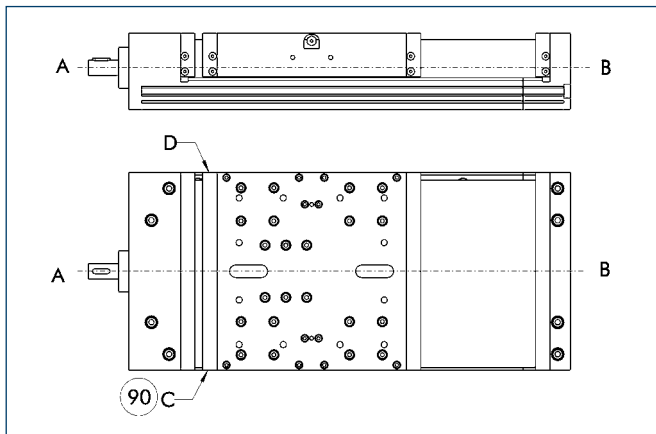
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension C can change at  $i \neq 1 : 1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

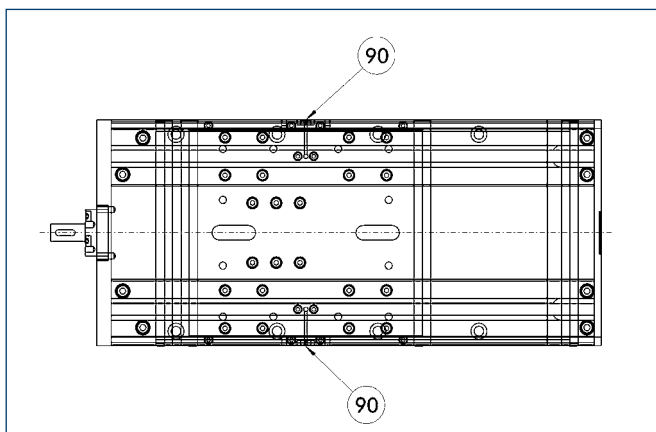
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

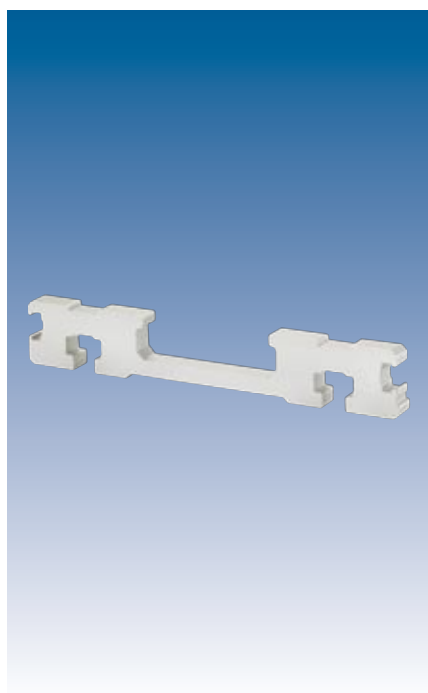
More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

### Advantages of profiled rail guide

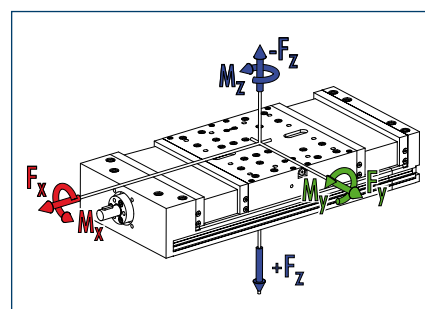
High load bearing capacity

Long lifetime

High precision



### Loads and load torques



Load	Dynamic
$F_x^{**}$ [N]	6000
$F_y$ [N]	5000
$F_z$ [N]	58000
$-F_z$ [N]	40000
Load torques	Dynamic
$M_x$ [Nm]	4000
$M_y$ [Nm]	3000 (4000)
$M_z$ [Nm]	1200 (1700)
$M_{Amax}$ [Nm]	6.0 (p=5)
	10.7 (p=10)
	25.1 (p=25)

\*\* Depends on speed and pitch  $n_{max}$   
 KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

### Technical data

Designation	A 20B-225
Max. travel speed	[m/s] 2.0
Repeat accuracy	[mm] $\pm 0.03$
Max. acceleration	[m/s <sup>2</sup> ] 20
Idle torque	[Nm] 1.2
Maximum stroke	[mm] 1645
Max. total length	[mm] 2000
Moment of inertia	[kgm <sup>2</sup> ] 0.000225
Drive element	Ball screw spindle drive
Max. spindle speed	[rpm] 3000
Diameter	[mm] 25
Pitch	[mm] 5 / 10 / 25
Drive element	Trapezoidal threaded drive
Max. spindle speed	[rpm] 1500
Diameter	[mm] 24
Pitch	[mm] 5 / 10
Weights	
Basic without travel	[kg] 17.6
Travel per 100 mm	[kg] 2.7
Slide plate 220 mm	[kg] 6.2
Slide plate 320 mm	[kg] 9.0

Technical drawing of the 10H7/3.2 (2x) bearing housing, showing front, side, and detail views with dimensions and callouts.

**Front View Dimensions:**

- Overall width:  $355 + H + 2 \times F$
- Distance from left flange to centerline:  $86 + F$
- Distance from centerline to right flange:  $49 + F$
- Flange thickness:  $H$
- Internal bore diameter:  $\varnothing 9$
- Internal bore length:  $100$
- Internal bore offset:  $75$
- Internal bore offset:  $38$
- Internal bore offset:  $23$
- Internal bore offset:  $30.2$
- Internal bore offset:  $20$
- Internal bore offset:  $30.2$
- Internal bore offset:  $20$
- Internal bore offset:  $10H7/3.2 (2x)$
- Internal bore offset:  $60$
- Internal bore offset:  $160 \pm 0.02$
- Internal bore offset:  $200$
- Internal bore offset:  $196 + F$

**Side View Dimensions:**

- Overall height:  $225$
- Distance from top flange to centerline:  $62$
- Distance from centerline to bottom flange:  $49.5$
- Flange thickness:  $75$
- Internal bore diameter:  $\varnothing 70$
- Internal bore length:  $160$
- Internal bore offset:  $14.1$
- Internal bore offset:  $6.5$
- Internal bore offset:  $10.4$
- Internal bore offset:  $19$
- Internal bore offset:  $14.6$
- Internal bore offset:  $91$

**Detail View Dimensions:**

- Distance from top flange to centerline:  $62$
- Distance from centerline to bottom flange:  $49.5$
- Flange thickness:  $75$
- Internal bore diameter:  $\varnothing 70$
- Internal bore length:  $160$
- Internal bore offset:  $14.1$
- Internal bore offset:  $6.5$
- Internal bore offset:  $10.4$
- Internal bore offset:  $19$
- Internal bore offset:  $14.6$
- Internal bore offset:  $91$

**Callouts:**

- 6:  $\varnothing 16h8$
- 9:  $\varnothing 9$
- 90:  $10H7/3.2 (2x)$
- 72:  $\varnothing 70$
- M8/15 (4x)
- 2:  $\varnothing 6H7/10 (4x)$
- M6 (12x)
- 6:  $\varnothing 52K6$
- 36:  $\varnothing 36$
- 10
- 8
- DIN 6885/1 5x5x20
- 8
- DIN 6885/1 8
- 200  $\pm 0.02$  ( $\varnothing 6H7$ )
- 60
- 160  $\pm 0.02$
- 200
- 196 + F

- ② Assembly connection  
 ⑥ Drive connection  
 ⑧ Feather key DIN 6885  
 ⑨ Useful stroke  
 ②⑦ Mounting groove for T-nuts  
 ⑦② Bolt pitch circle  
 ⑨② Bellow block length
- ⑨① Stop angle for alignment of axis

Technical drawing of a mechanical component, showing top and front views with dimensions.

**Top View Dimensions:**

- Overall width:  $455 + H + 2 \times F$
- Distance from left edge to centerline:  $86 + F$
- Distance from centerline to right edge:  $320$
- Radius at top corners:  $R90$
- Central feature:  $9$

**Front View Dimensions:**

- Overall height:  $300$
- Distance from top edge to centerline:  $260 \pm 0.02$
- Distance from centerline to bottom edge:  $160$
- Radius at bottom corners:  $R90$
- Overall width:  $246 + F$

- ⑨ Useful stroke  
⑨〇 Bellow block length

$$\frac{[(\text{Travel} + 17)]}{28}$$
 For stroke > 250 mm:  

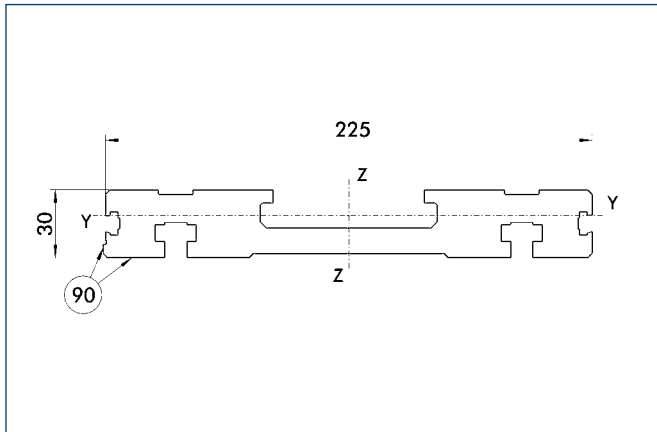
$$\frac{[(\text{Number of folds} \times 4) - 17]}{10}$$
 For stroke < 250 mm:  

$$\frac{[(\text{Number of folds} \times 4) - 10]}{10}$$

$$\begin{aligned} & [(500 \text{ mm} + 17) / 28] \\ & [(19 \times 4) - 17] \end{aligned}$$

- = Number of folds
- = 1x Bellow block length
- = 1x Bellow block length
- = 500 mm**
- = 18.46 Round up! (19 folds)
- = 59 mm (1x bellow block length)

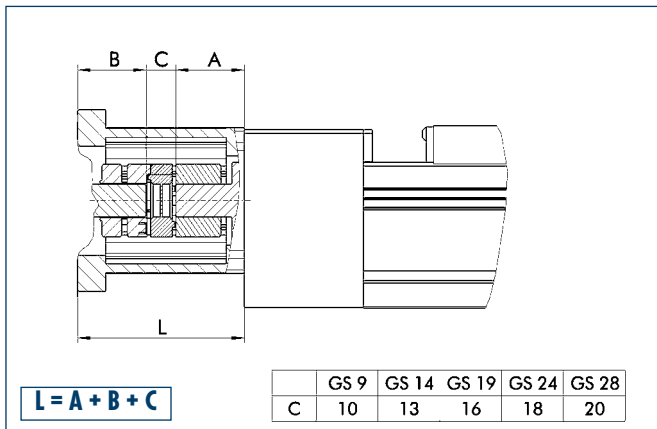
### Profile



90 Stop angle standard side

Specific mass	[kg/m]	12.84
Planar dimension	[mm <sup>2</sup> ]	4756
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	382465
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	23549293
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	23316
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	207803

### Motor flange schematic diagram



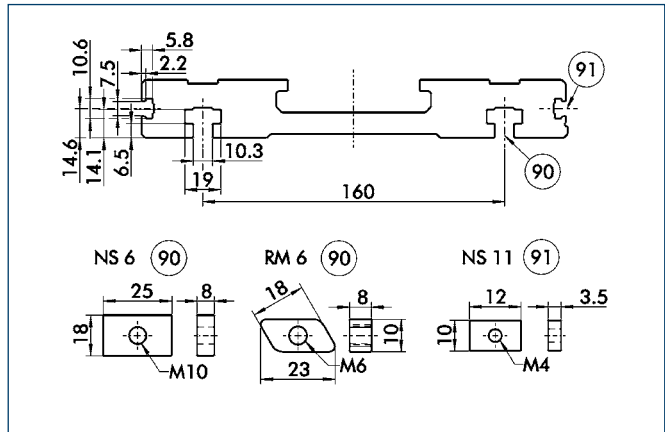
The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

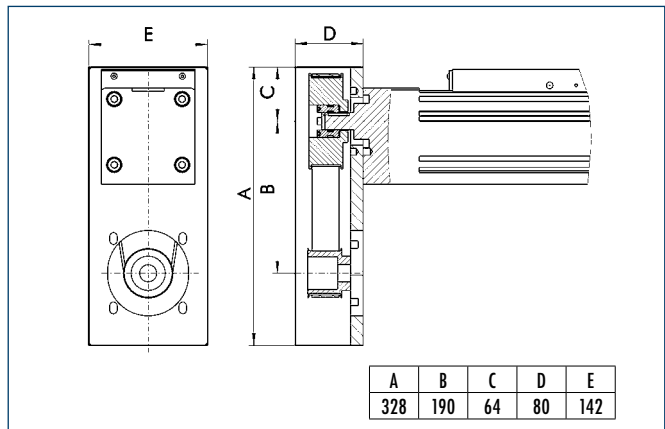
### Mounting



The profile can be secured using T-nuts.

Designation	Order designation	ID no.
T-nut	NS6	0331409
T-nut	NS11	0331429
T-nut	RM6	0331427

### Angle gear schematic diagram



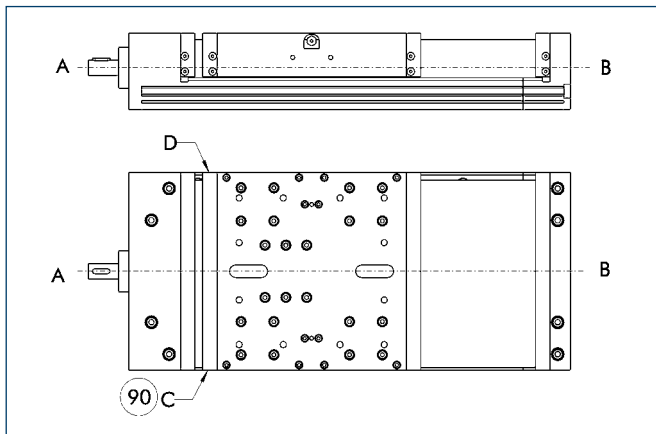
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension C can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

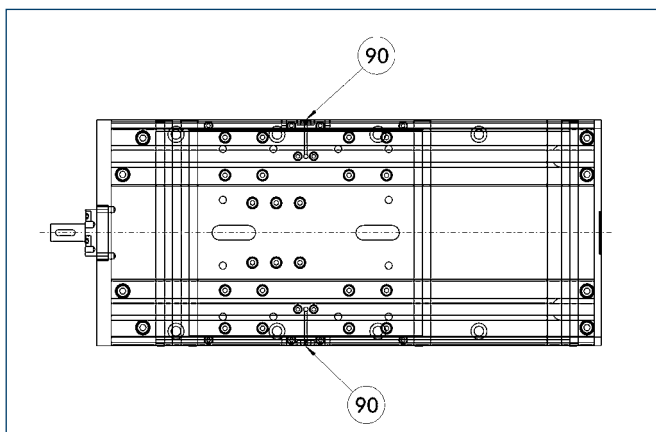
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

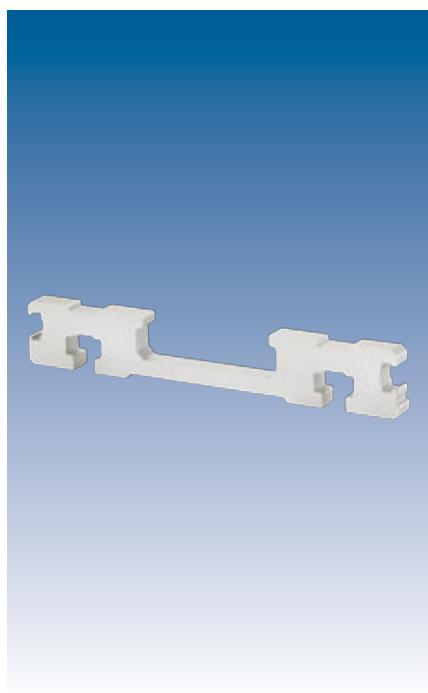


### Advantages of profiled rail guide

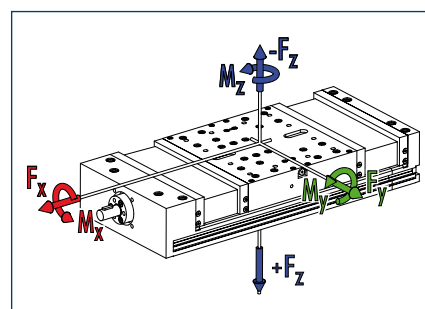
High load bearing capacity

Long lifetime

High precision



### Loads and load torques



Load	Dynamic
$F_x^{**}$ [N]	12000
$F_y$ [N]	11000
$F_z$ [N]	95000
$-F_z$ [N]	63000
Load torques	Dynamic
$M_x$ [Nm]	6300
$M_y$ [Nm]	7500 (9500)
$M_z$ [Nm]	3750 (5000)
$M_{Amax}$ [Nm]	11.1 (p=5)
	20.7 (p=10)
	39.8 (p=20)
	62.7 (p=32)

\*\* Depends on speed and pitch  $n_{max}$   
 KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

### Technical data

Designation	A 30B-325
Max. travel speed	[m/s] 2.0
Repeat accuracy	[mm] $\pm 0.03$
Max. acceleration	[m/s <sup>2</sup> ] 20
Idle torque	[Nm] 1.6
Maximum stroke	[mm] 2540
Max. total length	[mm] 3000
Moment of inertia	[kgm <sup>2</sup> ] 0.000645
Drive element	Ball-screw spindle drive
Max. spindle speed	[rpm] 3000
Diameter	[mm] 32
Pitch	[mm] 5 / 10 / 20 / 32
Drive element	Trapezoidal threaded drive
Max. spindle speed	[rpm] 1500
Diameter	[mm] 32
Pitch	[mm] 6
Weights	
Basic without travel	[kg] 37.0
Travel per 100 mm	[kg] 3.8
Slide plate 320 mm	[kg] 13.4
Slide plate 450 mm	[kg] 18.8

Technical drawing of the M8H7/10 (4x) M8/15 (16x) assembly, showing three views: front, side, and top.

**Front View (Top):**

- Overall width:  $460 + H + 2 \times F$  (90)
- Left side dimensions: 87 + F (90), 71.5, 45,  $\varnothing 20 \times h8$ , 45, 20,  $\varnothing 11$ , 90, 120.
- Right side dimensions: 53 + F (90), 37.5, 6.
- Internal dimensions: 320, H (90).

**Side View (Right):**

- Overall width: 325.
- Top dimensions: 71, 53,  $\varnothing 8H7$  (4x) (6), M8/15 (4x).
- Bottom dimensions: 35, 9,  $\varnothing 18$ , 14.6, 6, 10.4, 19.6, 230, 300.
- Other dimensions: 72,  $\varnothing 75$ , 53, 90, 14.6, 91.

**Top View (Bottom):**

- Left side dimensions:  $\varnothing 62K6$ ,  $\varnothing 42$ , 6, 12.
- Right side dimensions: 30.2, 20, 30.2, 20, 10H7/3.2 (2x), 90,  $270 \pm 0.02$  ( $\varnothing 8H7$ ).
- Bottom dimensions: 90,  $200 \pm 0.02$ , 270, 247 + F (90).
- Material/Finish: DIN 6885/1 6x6x25 (8), DIN 6885/1 (8).

- ② Assembly connection  
 ⑥ Drive connection  
 ⑧ Feather key DIN 6885  
 ⑨ Useful stroke  
 ②⑦ Mounting groove for T-nuts  
 ⑦② Bolt pitch circle  
 ⑨② Bellow block length
- ⑨① Stop angle for alignment of axis

Technical drawing of a rectangular plate with dimensions and formulas:

- Top view:
  - Overall width:  $87 + F$
  - Overall length:  $590 + H + 2 \times F$
  - Inner length:  $450$
  - Corner radius:  $R90$
- Front view:
  - Overall height:  $312 + F$
  - Inner height:  $400$
  - Inner width:  $330 \pm 0.02$
  - Inner width offset:  $220$
  - Corner radius:  $R90$

- ⑨ Useful stroke  
⑨〇 Bellow block length

$$\begin{aligned} &[(\text{Travel} + 15) / 33] \\ &[(\text{Number of folds} \times 4.8) - 15] \end{aligned}$$

### Calculation example:

### Distance traveled

$$[(550 \text{ mm} + 15) / 33]$$
$$[(18 \times 4.8) - 15]$$

= Number of folds

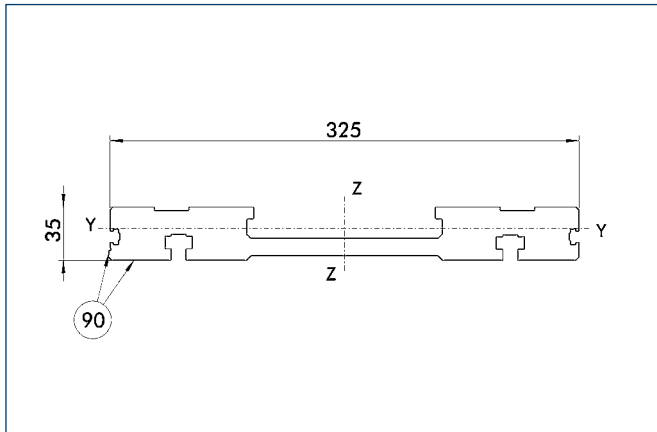
= 1x Bellow block length

**= 550 mm**

= 17.12 Round up! (18 folds)

= 72 mm (1x bellow block length)

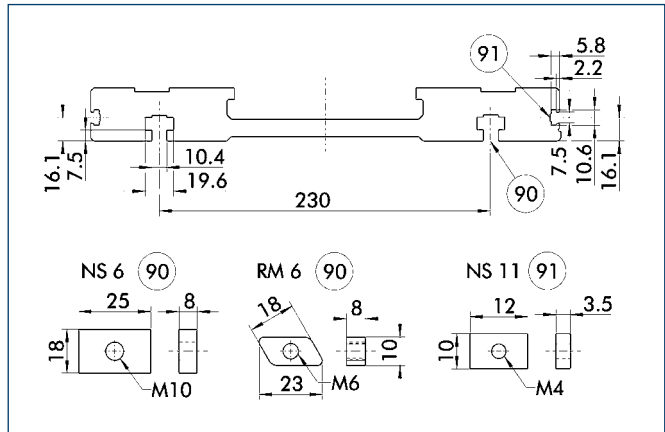
### Profile



90 Stop angle standard side

Specific mass	[kg/m]	21.24
Planar dimension	[mm <sup>2</sup> ]	7868
Planar moment of inertia I <sub>y</sub>	[mm <sup>4</sup> ]	841240
Planar moment of inertia I <sub>z</sub>	[mm <sup>4</sup> ]	88022524
Load torque W <sub>y</sub>	[mm <sup>3</sup> ]	42594
Load torque W <sub>z</sub>	[mm <sup>3</sup> ]	538754

### Mounting



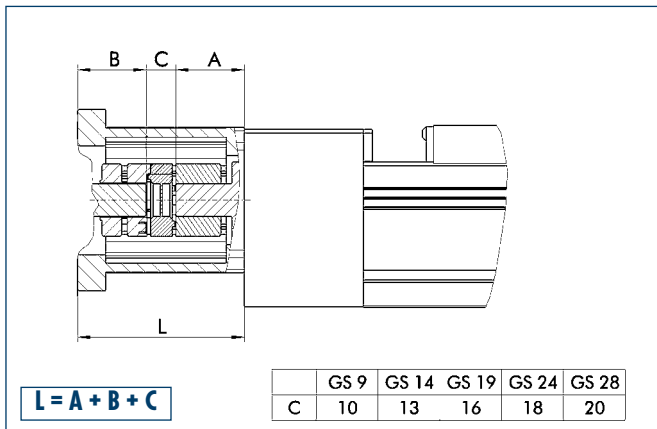
90 T-nut on base side

91 Side T-nut

The profile can be secured using T-nuts.

Designation	Order designation	ID no.
T-nut	NS6	0331409
T-nut	NS11	0331429
T-nut	RM6	0331427

### Motor flange schematic diagram

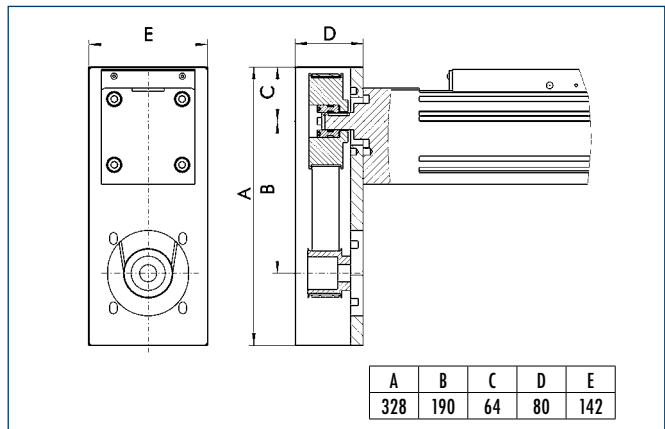


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Angle gear schematic diagram



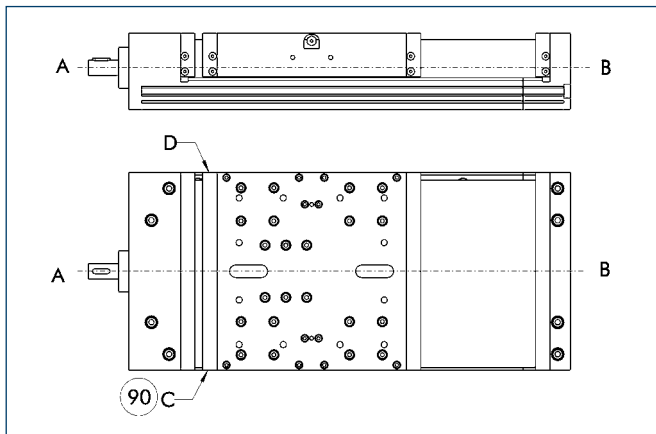
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension **C** can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

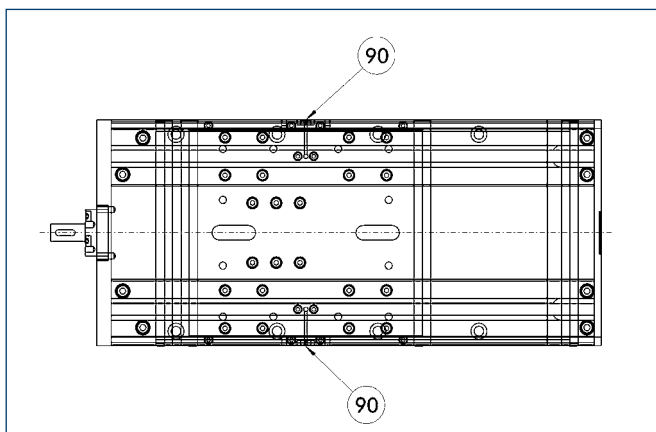
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

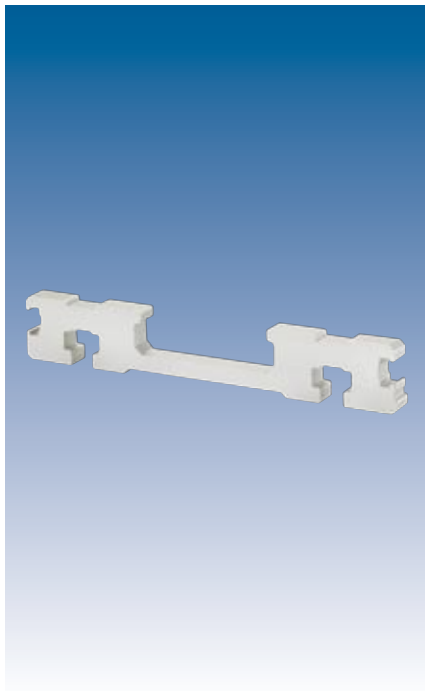
More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.

### Advantages of profiled rail guide

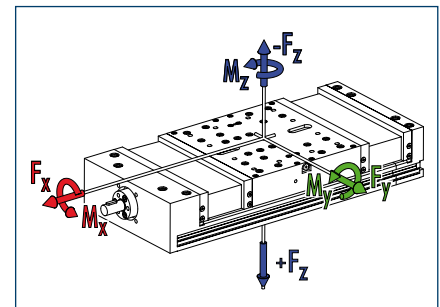
High load bearing capacity

Long lifetime

High precision



### Loads and load torques



Load	Dynamic
$F_x^{**}$ [N]	18000
$F_y$ [N]	14000
$F_z$ [N]	120000
$-F_z$ [N]	80000
Load torques	Dynamic
$M_x$ [Nm]	12000
$M_y$ [Nm]	10000 (13000)
$M_z$ [Nm]	5000 (6000)
$M_{Amax}$ [Nm]	16.8 (p=5)
	31.1 (p=10)
	59.8 (p=20)
	117.1 (p=40)

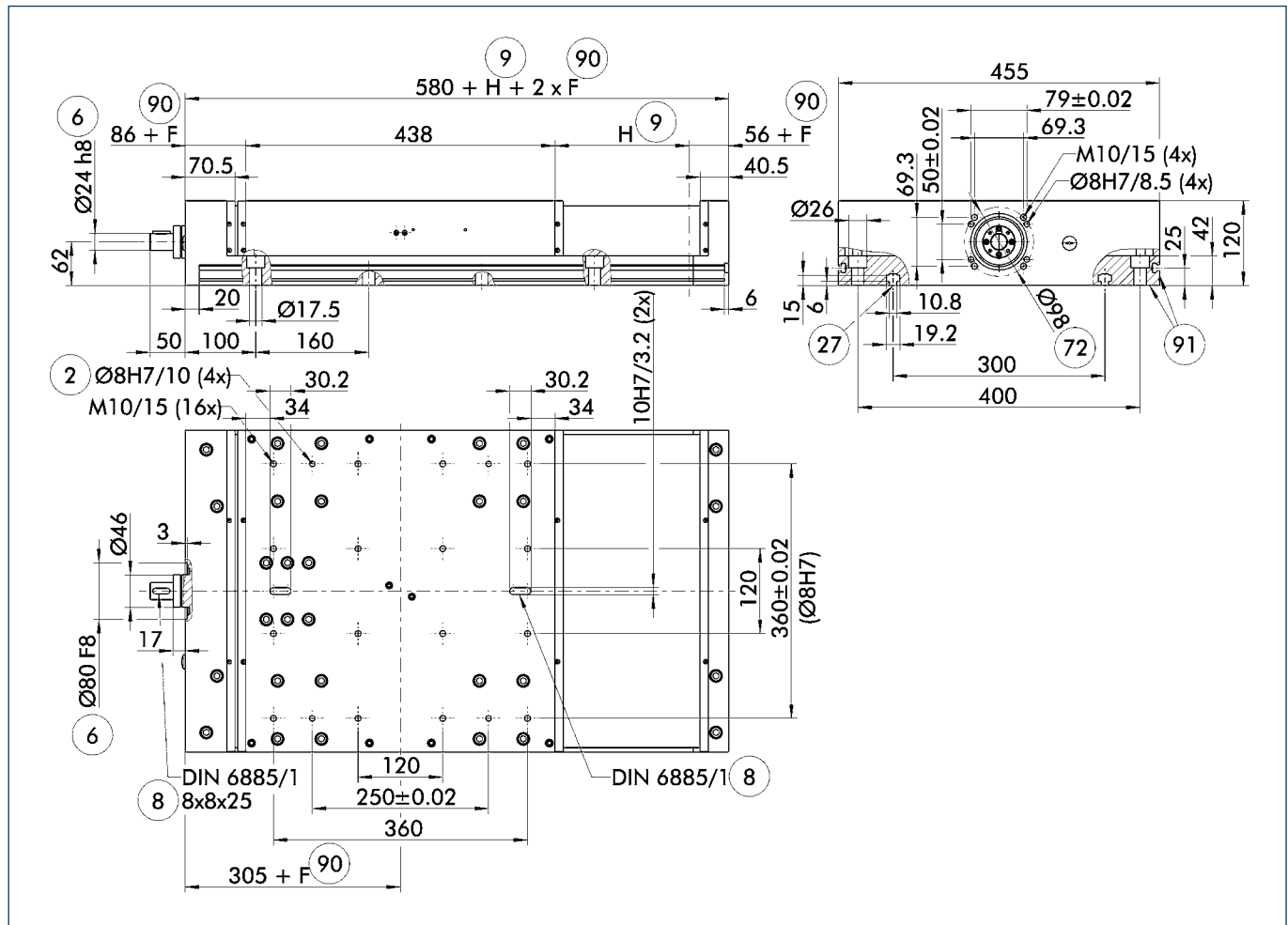
\*\* Depends on speed and pitch  $n_{max}$   
 KGT = 3000 rpm; TGT = 1500 rpm

① Values in brackets relate to the long slide.

### Technical data

Designation	A 35B-455
Max. travel speed	[m/s] 2.0
Repeat accuracy	[mm] $\pm 0.03$
Max. acceleration	[m/s <sup>2</sup> ] 20
Idle torque	[Nm] 2.5
Maximum stroke	[mm] 2420
Max. total length	[mm] 3000
Moment of inertia	[kgm <sup>2</sup> ] 0.00165
Drive element	Ball-screw spindle drive
Max. spindle speed	[rpm] 3000
Diameter	[mm] 40
Pitch	[mm] 5 / 10 / 20 / 40
Drive element	Trapezoidal threaded drive
Max. spindle speed	[rpm] 1500
Diameter	[mm] 40
Pitch	[mm] 7
Weights	
Basic without travel	[kg] 65.2
Travel per 100 mm	[kg] 5.2
Slide plate 450 mm	[kg] 26.2
Slide plate 600 mm	[kg] 33.8

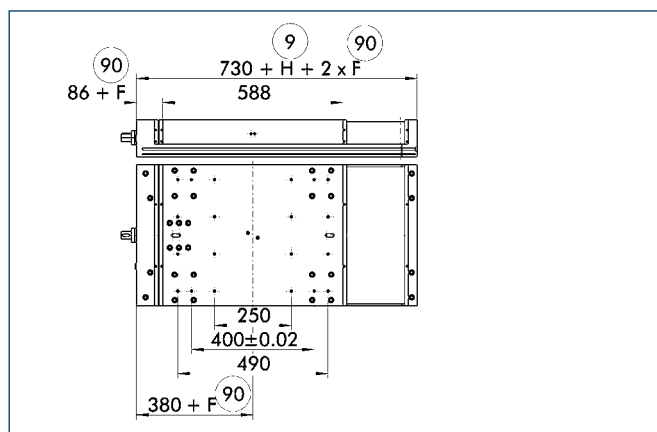
### Main views



- ② Assembly connection
- ⑥ Drive connection
- ⑧ Feather key DIN 6885
- ⑨ Useful stroke
- ②⑦ Mounting groove for T-nuts
- ⑦② Bolt pitch circle
- ⑨① Bellow block length

- ⑨① Stop angle for alignment of axis

### Long slide



- ⑨ Useful stroke
- ⑨① Bellow block length

### Bellow calculation

$$\left[ \frac{(\text{Travel} + 15)}{47} \right]$$

$$\left[ (\text{Number of folds} \times 5.5) - 15 \right]$$

**Calculation example:**

**Distance traveled**

$$\left[ \frac{(500 \text{ mm} + 15)}{47} \right]$$

$$\left[ (11 \times 5.5) - 15 \right]$$

= Number of folds

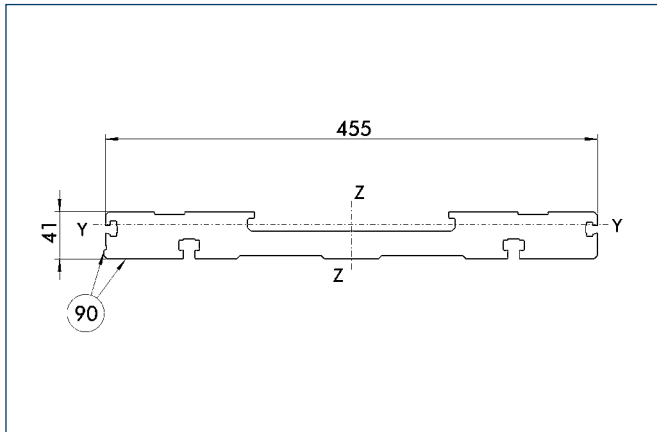
= 1x Bellow block length

**= 500 mm**

= 10.95 Round up! (11 folds)

= 46 mm (1x bellow block length)

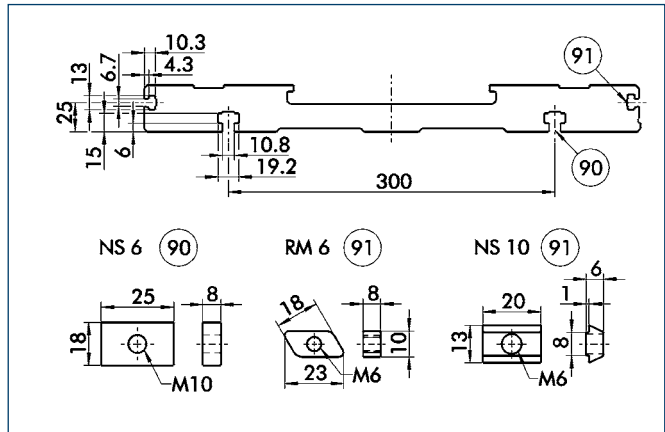
### Profile



90 Stop angle standard side

Specific mass	[kg/m]	40.21
Planar dimension	[mm <sup>2</sup> ]	14892
Planar moment of inertia $I_y$	[mm <sup>4</sup> ]	2003907
Planar moment of inertia $I_z$	[mm <sup>4</sup> ]	297691553
Load torque $W_y$	[mm <sup>3</sup> ]	85106
Load torque $W_z$	[mm <sup>3</sup> ]	1300745

### Mounting



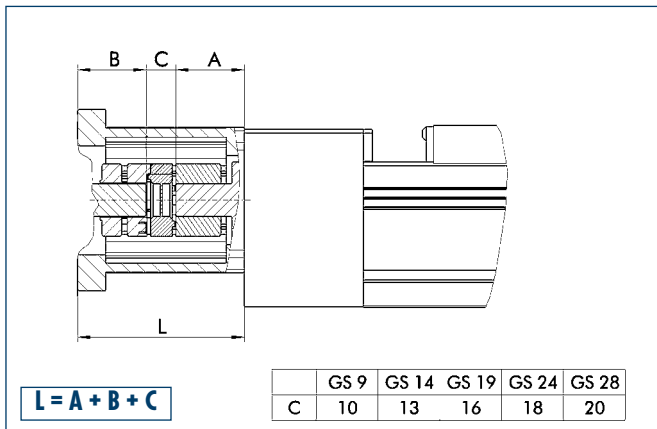
90 T-nut on base side

91 Side T-nut

The profile can be secured using T-nuts.

Designation	Order designation	ID no.
T-nut	NS6	0331409
T-nut	NS10	0331422
T-nut	RM6	0331427

### Motor flange schematic diagram

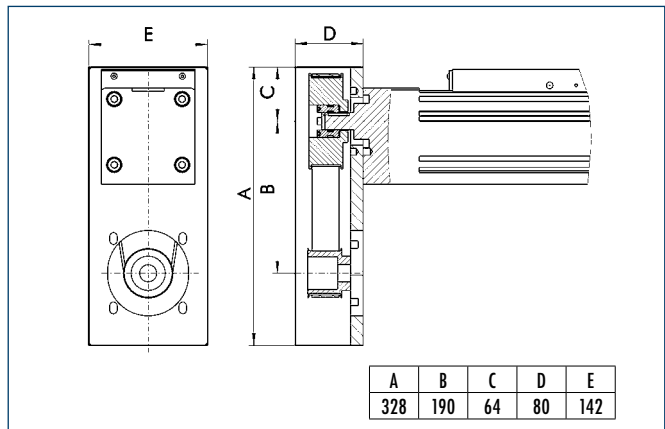


The table shows the relevant dimension **C** of the standard couplings. For dimension **A** refer to drive journal connection dimensions, for dimension **B** refer to corresponding motor dimension sheet, dimension **L** may differ in individual cases.

Different drive solutions can be attached to our axes. SCHUNK can supply you with the right motor flange and coupling for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Angle gear schematic diagram



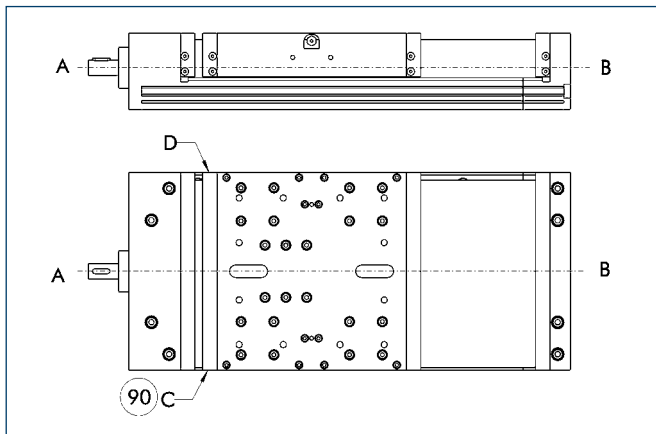
Possible transmission ratios:  $i = 1 : 1$ ,  $i = 2 : 1$ ,  $i = 3 : 1$

Caution: Dimension **C** can change at  $i \neq 1:1$  or with smooth motor shafts (without feather key).

Even in tight conditions, different drive solutions can be attached. SCHUNK can provide you with the right angle gear for your drive.

① Because of the different thermal behavior of motors, we recommend that the drive solution is tested by the motor manufacturer.

### Limit switch position



90 Limit switch standard position

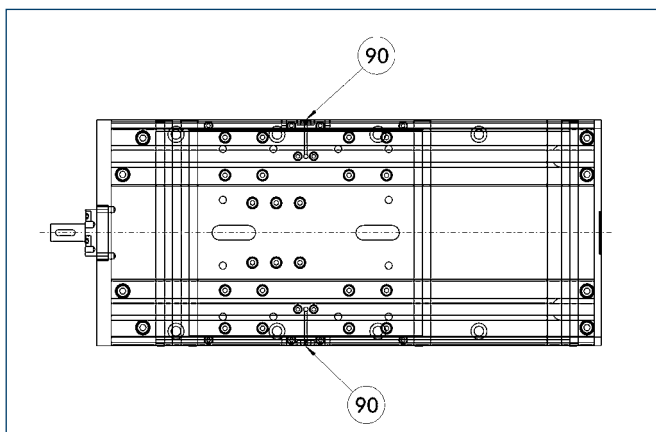
Two E02 switches are used as limit switches and an RS2 as the reference switch as standard.

① The positions and dimensions of limit switches, switching lugs, and mounting components may vary depending on the application and the selected limit switches. Please contact us for assistance.

### Limit switch selection

Designation	Order designation	ID no.
Inductive limit switch, opener, 2 m cable	E02	0331410
Inductive limit switch, opener, 10 m cable	E010	0331412
Inductive limit switch, closer, 2 m cable	ES2	0331411
Inductive limit switch, closer, 10 m cable	ES10	0331413
Mechanical limit switch (Siemens), opener	EMS	0331414
Mechanical limit switch (Balluff), opener	EMB	0331415

### Lubrication connections



90 Standard lubrication connection

#### Standard connection

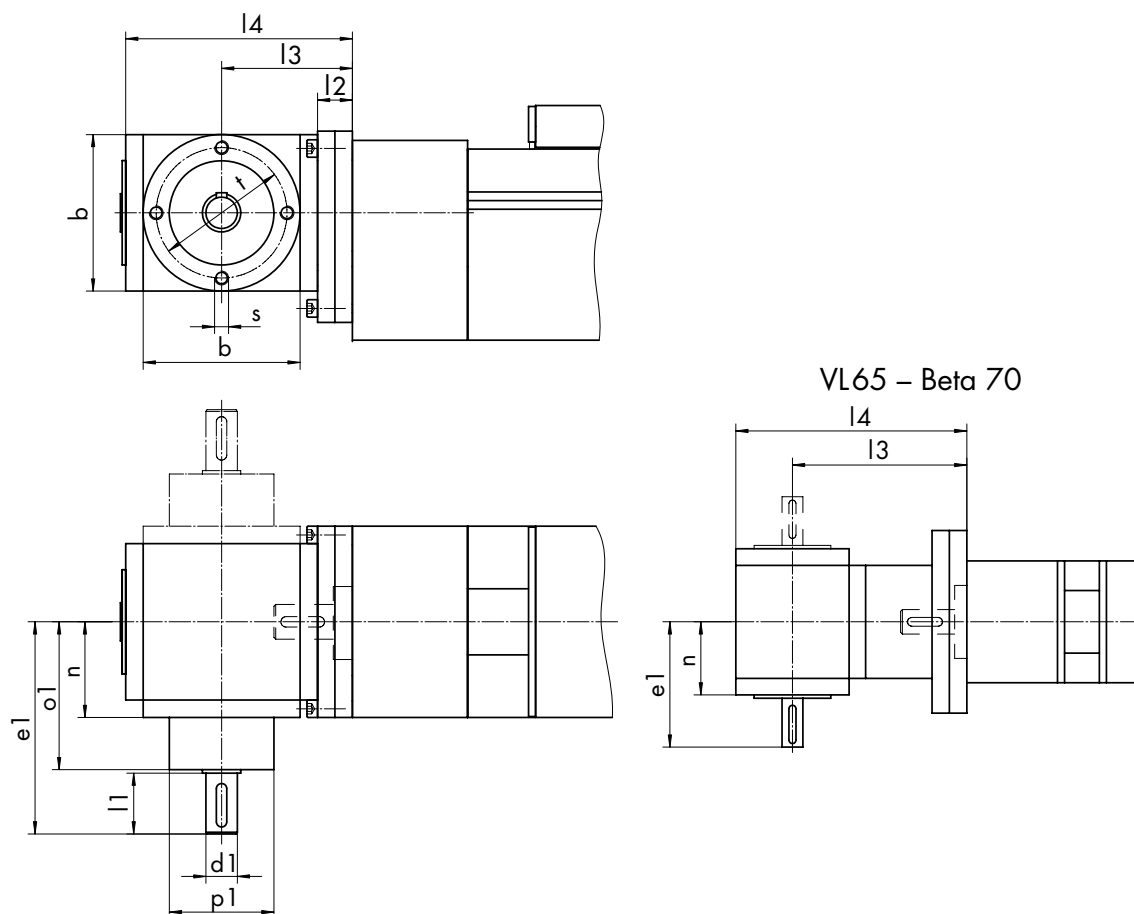
Lubrication nipple M8x1

If the lubrication connection has a different seat, this must be defined in the order text.

More detailed information on pedestal bearings, connection shafts and bevel gears can be found in the "OPTIONS for System HSB" section of the catalog.



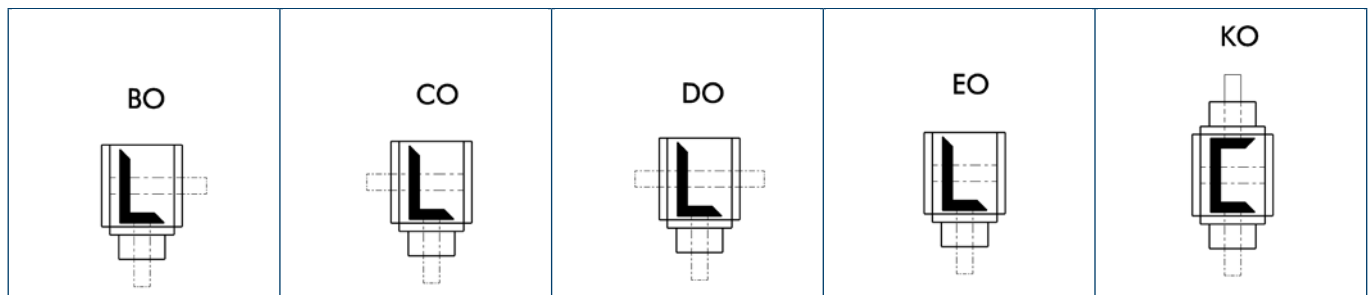
### Attachment of bevel gears (KRG) for thread spindle drive



Size	Gear type	Version	Transmission	b [mm]	l2 [mm]	l3 [mm]	l4 [mm]	n [mm]	s	t [mm]
B 40	V065	E0, K0	1:1 ... 3:1	65	11	53	95	42	M6	54
B 50C	V065	E0, K0	1:1 ... 3:1	65	11	53	95	42	M6	54
B 60	V065	E0, K0	1:1 ... 3:1	65	16	58	100	42	M6	54
B 70C	V065	E0, K0	1:1 ... 3:1	65	16	58	100	42	M6	54
B 80	V090	E0, K0	1:1 ... 6:1	90	20	75	130	55	M8	75
B 100D	V090	E0, K0	1:1 ... 6:1	90	20	75	130	55	M8	75
B 110	V090	E0, K0	1:1 ... 6:1	90	20	75	130	55	M8	75
B 140( C )	V090	E0, K0	1:1 ... 6:1	90	20	75	130	55	M8	75
B 165	V120	E0, K0	1:1 ... 6:1	120	30	102	174	75	M10	100
B 180( C )	V120	E0, K0	1:1 ... 6:1	120	30	102	174	75	M10	100
D 110	V065	E0, K0	1:1 ... 3:1	65	16	58	100	42	M6	54
D 145	V090	B0, C0, H0	1:1 ... 6:1	90	94	149	204	55	M8	75
D 200	V120	B0, C0, H0	1:1 ... 6:1	120	112	184	256	75	M10	100
D 240	V120	B0, C0, H0	1:1 ... 6:1	120	112	184	256	75	M10	100
A 15B-155	V065	E0, K0	1:1 ... 3:1	65	16	58	100	42	M6	54
A 20B-225	V090	E0, K0	1:1 ... 6:1	90	20	75	130	55	M8	75
A 30B-325	V090	E0, K0	1:1 ... 6:1	90	20	75	130	55	M8	75
A 35B-455	V120	E0, K0	1:1 ... 6:1	120	30	102	174	75	M10	100

All bevel gears are life-time lubricated with synthetic oil (lubrication B0). Maximum on time 40 %. For a longer on time, please specify lubrication B1 and installation position. Angular clearance < 20 minutes.

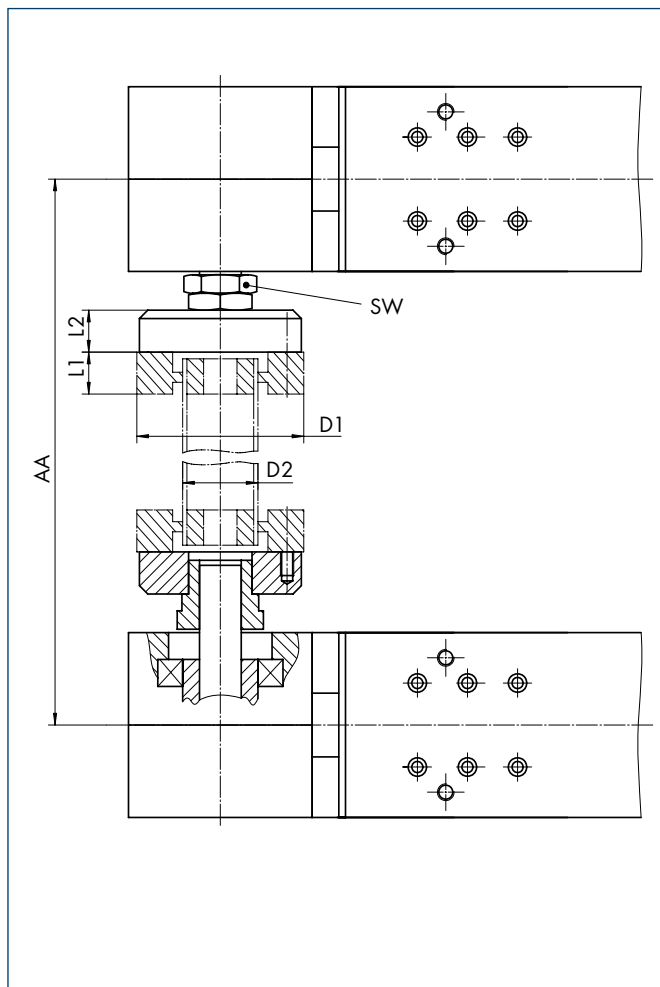
### Versions



Transmission	1:1 - 2:1					3:1					4:1					5:1 - 6:1				
Size	d1	l1	e1	o1	p1	d1	l1	e1	o1	p1	d1	l1	e1	o1	p1	d1	l1	e1	o1	p1
B 40	12	26	100	72	44	12	26	100	72	44										
B 50C	12	26	100	72	44	12	26	100	72	44										
B 60	12	26	100	72	44	12	26	100	72	44										
B 70C	12	26	100	72	44	12	26	100	72	44										
B 80	18	35	122	85	60	12	35	122	85	60	12	35	132	95	60	12	35	132	95	60
B 100D	18	35	122	85	60	12	35	122	85	60	12	35	132	95	60	12	35	132	95	60
B 110	18	35	122	85	60	12	35	122	85	60	12	35	132	95	60	12	35	132	95	60
B 140( C )	18	35	122	85	60	12	35	122	85	60	12	35	132	95	60	12	35	132	95	60
B 165	25	45	162	115	80	20	45	162	115	80	20	45	172	125	80	15	35	162	125	70
B 180( C )	25	45	162	115	80	20	45	162	115	80	20	45	172	125	80	15	35	162	125	70
D 110	12	26	100	72	44	12	26	100	72	44										
D 145	18	35	122	85	60	12	35	122	85	60	12	35	132	95	60	12	35	132	95	60
D 200	25	45	162	115	80	20	45	162	115	80	20	45	172	125	80	15	35	162	125	70
D 240	25	45	162	115	80	20	45	162	115	80	20	45	172	125	80	15	35	162	125	70
A 15B-155	12	26	100	72	44	12	26	100	72	44										
A 20B-225	18	35	122	85	60	12	35	122	85	60	12	35	132	95	60	12	35	132	95	60
A 30B-325	18	35	122	85	60	12	35	122	85	60	12	35	132	95	60	12	35	132	95	60
A 35B-455	25	45	162	115	80	20	45	162	115	80	20	45	172	125	80	15	35	162	125	70

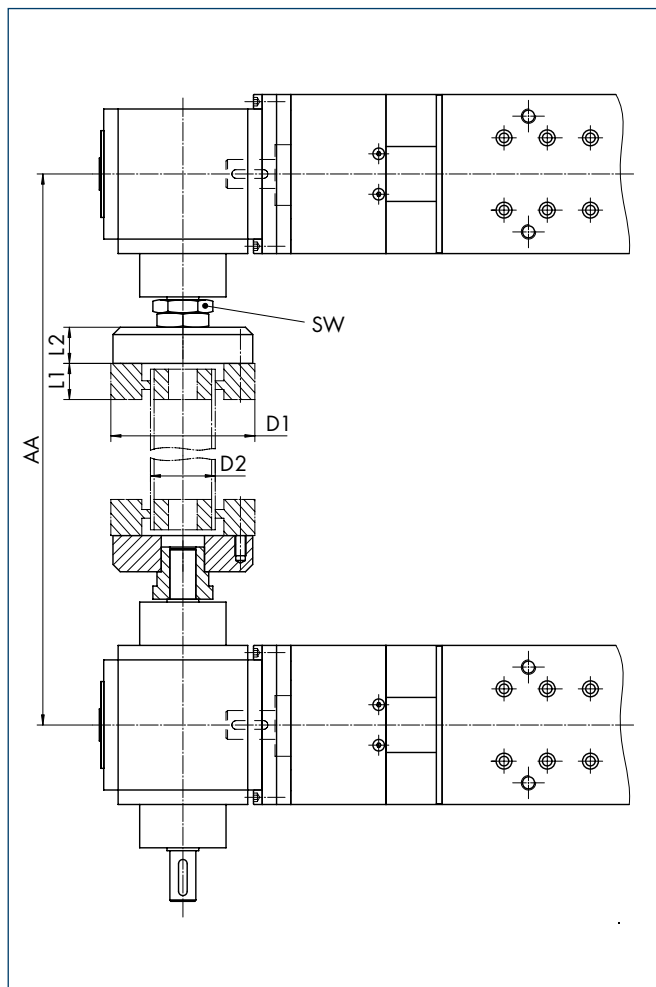
All bevel gears are life-time lubricated with synthetic oil (lubrication B0). Maximum on time 40%. For a longer on time, please specify lubrication B1 and installation position. Angular clearance < 20 minutes.

### Attachment of connection shaft (GX) for Beta linear axes



#### Toothed belt drive

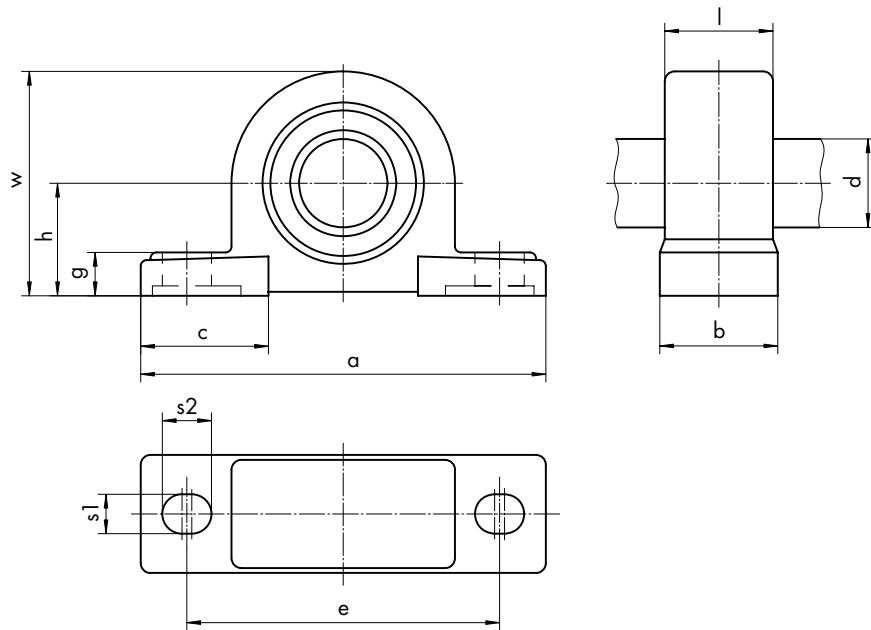
Dimension AA = Center distance (axis spacing) of mechanical linear units



#### Thread spindle drive

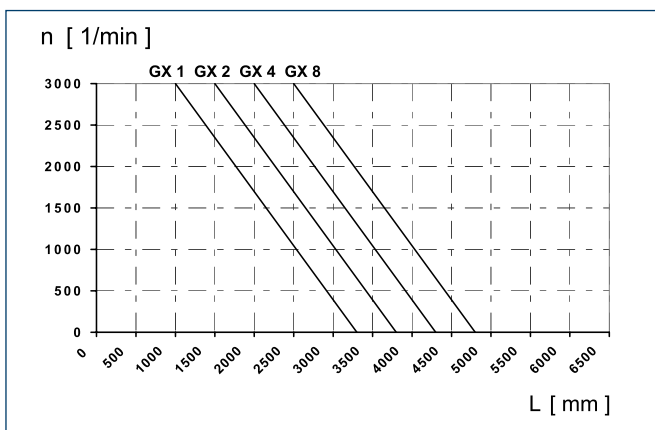
Size	Designation	AA min. [mm]	D1 [mm]	D2 [mm]	L1 [mm]	L2 [mm]	SW [mm]
B 40-ZSS	GX1	170	56	30x2	20	24	22
B 50C-ZRS	GX1	190	56	30x2	20	24	22
B 60-ZSS	GX2	205	85	40x1.5	20	24	27
B 60-SSS	GX2	320	85	40x1.5	20	24	22
B 70C-ZRS/ZSS	GX2	215	85	40x1.5	20	24	27
B 70C-SRS/SSS	GX2	330	85	40x1.5	20	24	27
B 80-ZRS/ZSS	GX2	225	85	40x1.5	20	24	27
B 80-SRS/SSS	GX2	330	85	40x1.5	20	24	27
B 80C-ZSS	GX4	270	100	45x2.5	25	28	36
B 100-ZRS/ZSS	GX4	270	100	45x2.5	25	28	36
B 100D-ZSS	GX4	270	100	45x2.5	25	28	36
B 100D-SSS	GX4	290	100	45x2.5	25	28	36
B 110-ZRS/ZSS	GX4	320	100	45x2.5	25	28	46
B 110-SRS/SSS	GX4	350	100	45x2.5	25	28	46
B 120-ZRS/ZSS	GX4	300	100	45x2.5	25	28	46
B 140-ZRS/ZSS	GX4	310	100	45x2.5	25	28	46
B 140-SRS/SSS	GX4	350	100	45x2.5	25	28	36
B 140C-ZSS	GX4	310	100	45x2.5	25	28	46
B 140C-SSS	GX4	350	100	45x2.5	25	28	36
B 165-ZSS	GX8	350	120	60x2.5	30	32	55
B 165-SSS	GX8	430	120	60x2.5	30	32	46
B 180-ZRS/ZSS	GX8	370	120	60x2.5	30	32	55
B 180-AZS	GX8	370	120	60x2.5	30	32	55
B 180-SRS/SSS	GX8	430	120	60x2.5	30	32	46
B 180C-ZRS/ZSS	GX8	370	120	60x2.5	30	32	55
B 180C-SRS/SSS	GX8	430	120	60x2.5	30	32	46
B 180C-ARS/ASS	GX8	370	120	60x2.5	30	32	55

### Pedestal bearing SL



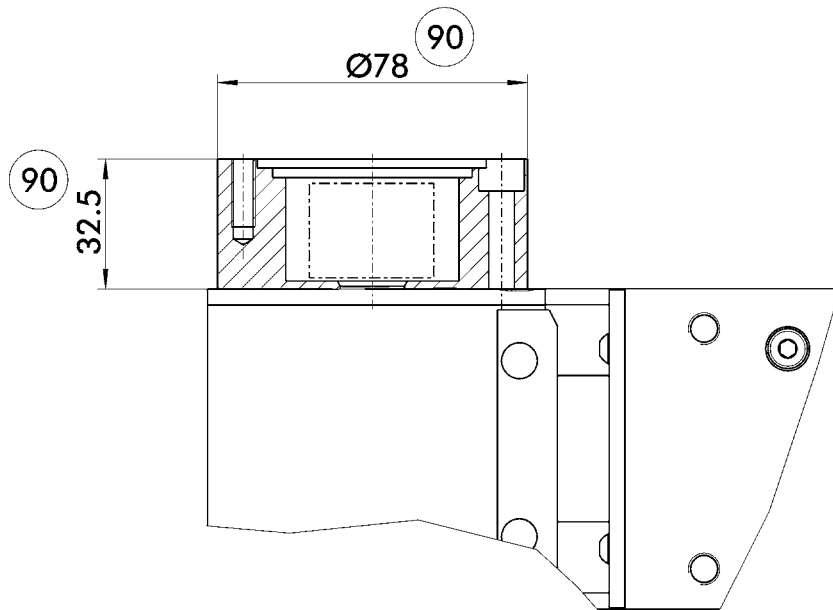
Size	For drive shaft	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	g [mm]	h [mm]	l [mm]	s1 [mm]	s2 [mm]	w [mm]
B 40	GX1	167	48	54	30	127	19	47,6	43	17	21	92
B 50C	GX1	167	48	54	30	127	19	47,6	43	17	21	92
B 60	GX2	190	54	60	40	146	20	54	50	17	22	106
B 70C	GX2	190	54	60	40	146	20	54	50	17	22	106
B 80	GX2	190	54	60	40	146	20	54	50	17	22	106
B 80C	GX4	206	60	65	45	159	22	57,2	55	20	25	114
B 100	GX4	206	60	65	45	159	22	57,2	55	20	25	114
B 100D	GX4	206	60	65	45	159	22	57,2	55	20	25	114
B 110	GX4	206	60	65	45	159	22	57,2	55	20	25	114
B 120	GX4	206	60	65	45	159	22	57,2	55	20	25	114
B 140( C )	GX4	206	60	65	45	159	22	57,2	55	20	25	114
B 165	GX8	265	70	77	60	203	27	76,2	65	25	29	150
B 180( C )	GX8	265	70	77	60	203	27	76,2	65	25	29	150

### Drive shaft diagram



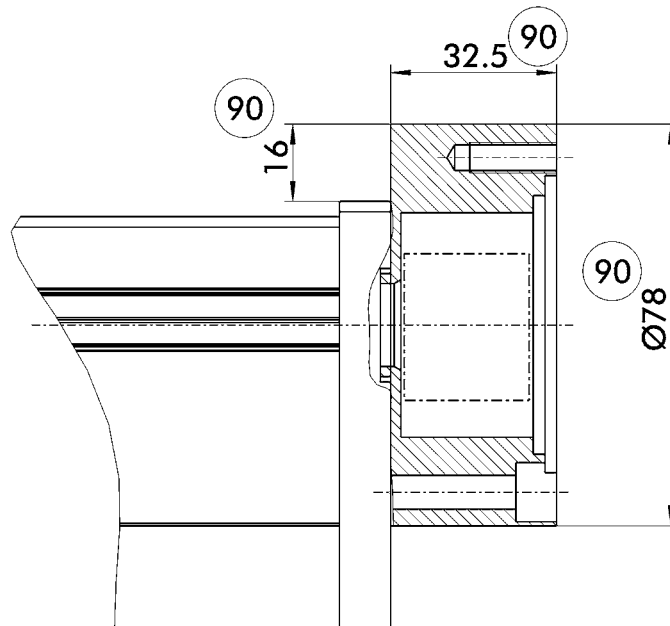
Depending on length and speed

### DGK shaft encoder for toothed belt axes



90 Dimensions depend on shaft encoder type

### DGK shaft encoder for spindle axes



90 Dimensions depend on shaft encoder type

### General technical information

#### Explanations for performance overview

- All specifications relate to the relevant standard versions. The values for special designs may differ considerably in some cases.
- The permissible loads are the maximum possible individual loads on the entire system. For mixed loads (several different force or moment directions), the individual permissible forces are lower. It is important to note that some elastic deformation occurs, which influences the accuracy. For linear units with roller guides, with static loads the static basic load rating (Cstat) must be taken into account.
- The repeat accuracy is defined as the linear axis returning to an actual position previously attained under identical conditions within the specified tolerance limit. Note that various factors including temperature, load, speed, delay, and travel direction influence the repeat accuracy.

#### Linear axes with thread drive

- The basic load ratings for the guide and the thread drive are used to calculate the total lifetime. Please consult us for details.
- The idle torques relate to the relevant standard designs (not double nut or individual nut set with no play) and are measured at a very low speed (= 0 rpm). Production and assembly tolerances result in a spread of  $\pm 20\%$ .
- The values for linear axes with trapezoid threaded drive differ significantly from this performance data in some cases. Please consult us for details.
- The permissible bending of the linear axis is 0.2 mm/m (maximum 1 mm).

#### Linear axes with toothed belt drive

- The idle torques relate to the relevant standard designs and are measured at a very low speed (= 0 rpm). Production and assembly tolerances result in a spread of  $\pm 20\%$ .
- The specified force  $F_x$  is the maximum value that is permissible for low speeds. For higher speeds, please contact us for details of the maximum value.
- The permissible bending of the linear axis is 0.5 mm/m (maximum 2.5 mm).

#### Running characteristics and noise

Due to production tolerances in the components used (e.g. threaded or toothed belt drive, guide, bearings, etc.), the running characteristics and noise emissions for linear axes and linear tables can be very different even on identical units.

#### Straightness and warping

All aluminum sections used for linear axes and linear tables are press-drawn sections. Because of the manufacturing process, these differ in respect of their straightness and warping. However, they are normally well below the permissible variations set out in DIN 17615.

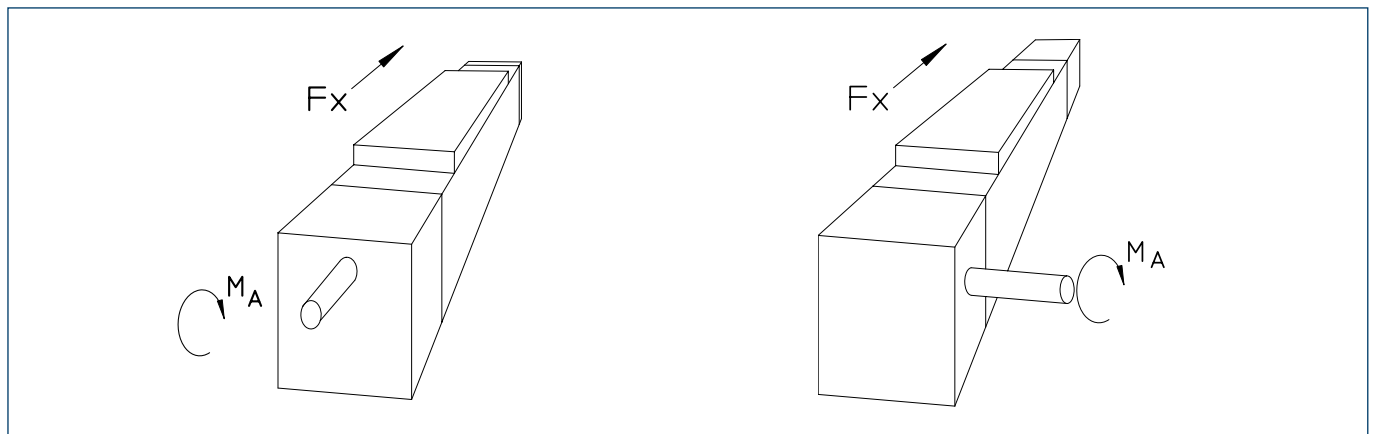
Nevertheless, it may be necessary to align the linear axes using appropriate leveling elements or to mount them on a sufficiently precisely finished mounting surface in order to achieve the required guide accuracy. This enables tolerances of better than 0.1 mm / 1000 mm to be achieved.

#### Stroke length

The stroke length specified in the ordering code corresponds to the maximum possible travel. The design must take account of acceleration and braking distances or any over stroke.

We reserve the right to make technical modifications to all products.

### Drive dimensioning for linear axes with ball screw or toothed belt drive



#### Required input torque\* MA [Nm]

$$M_A = M_{Load} + M_{Idle}$$

$$M_{Load} = \frac{F_x \times p}{2 \times \pi \times 1000}$$

$$F_{xH} = m \times g \times \mu + m \times a$$

$$F_{xV} = m \times (g + a)$$

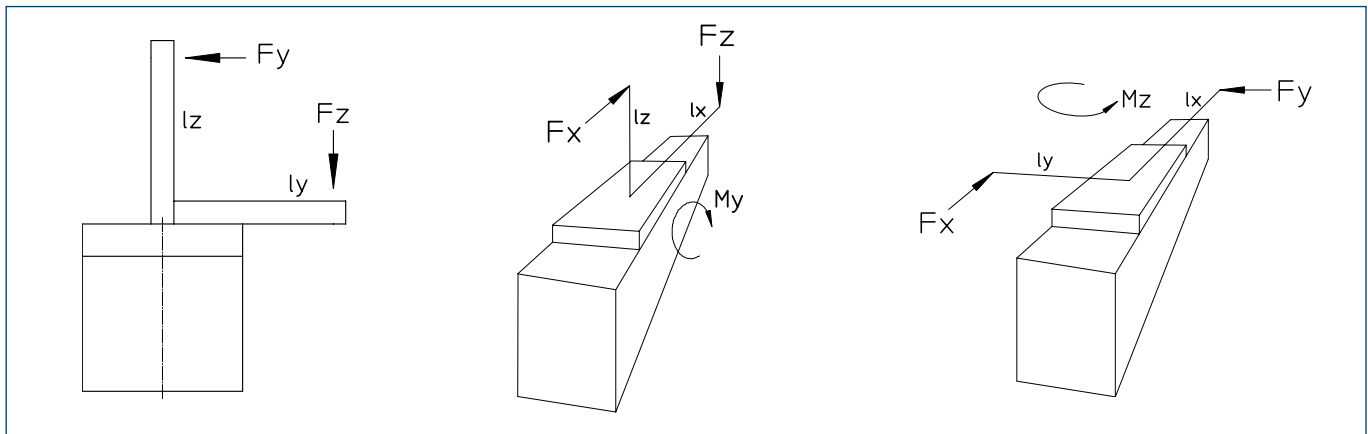
$$\begin{aligned} \mu_s &= 0.05 \\ \mu_r &= 0.02 \\ \mu_g &= 0.1 \\ g &= 9.81 \text{ m/s}^2 \end{aligned}$$

\* approximate

#### Definitions

$M_A$	Required input torque [Nm]
$M_{Load}$	Load torque [Nm]
$M_{Idle}$	See data sheets [Nm]
$F_{xH}$	Horizontal application feeding force [N]
$F_{xV}$	Vertical application feeding force [N]
$\mu_s$	Coefficient of friction for rail guide
$\mu_r$	Coefficient of friction for roller guide
$\mu_g$	Coefficient of friction for sliding guide
$g$	Acceleration due to gravity [m/s <sup>2</sup> ]
$a$	Acceleration [m/s <sup>2</sup> ]
$m$	Transport mass [kg]
$p$	Spindle pitch [mm] (Ball screw drive) or stroke per revolution [mm] (toothed belt drive)

### Basic principles of force and moment determination



$$M_x = F_y \times l_z \text{ or } F_z \times l_y$$

$$M_y = F_x \times l_z \text{ or } F_z \times l_x$$

$$M_z = F_x \times l_y \text{ or } F_y \times l_x$$

#### Explanations

Forces (F) occur if

- a mass (m) is acted on by an acceleration (a).
- a mass (m) is acted on by acceleration due to gravity (g).

This results in:

$$F_z = m \times (g + a) \quad (\text{horizontal applications})$$

$$F_z = m \times (g + a) \quad (\text{vertical applications})$$

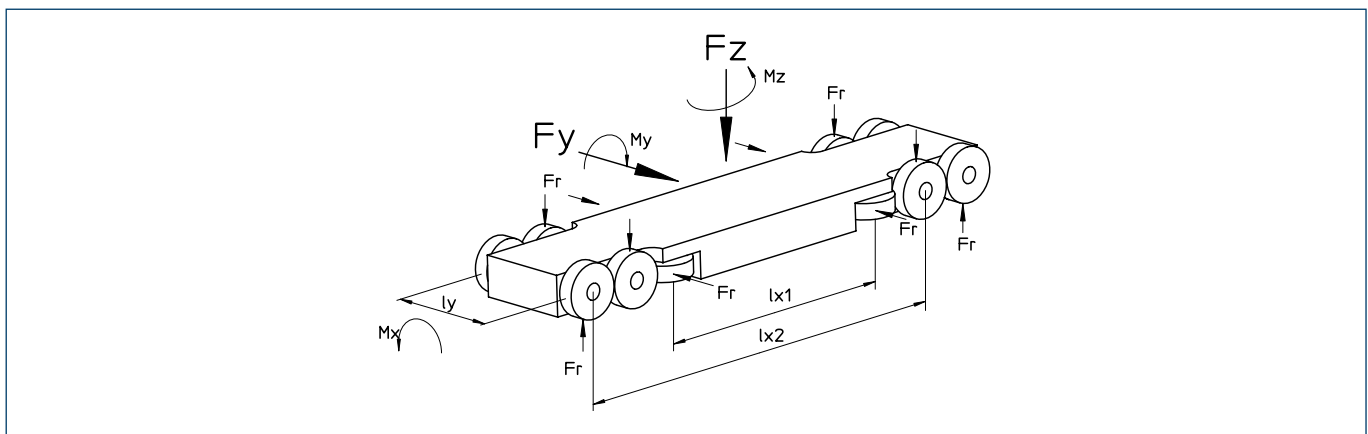
In most applications, combinations of these possible forces occur.

The resulting total forces must always be less than the relevant permissible values.

Moments occur when a force (F) acts on a lever arm (l);  
i.e. a force acts eccentrically.

The actual forces are used for the lifetime calculation.

### Force determination on the roller guide



#### Force direction $F_y$

$F_y$  is absorbed by two rollers

#### Force direction $F_z$

$F_z$  and  $F_z$  is absorbed by four rollers  
(Beta 50: two rollers for  $F_z$ )

#### Moment $M_x$

$M_x$  is absorbed by two rollers in each case

#### Moment $M_y$

$M_y$  is absorbed by two rollers in each case

#### Moment $M_z$

$M_z$  is absorbed by two rollers in each case

$$F_r = F_y \times 0.5$$

$$F_r = F_z \times 0.25$$

$$F_r = M_x / l_y \times 0.5$$

$$F_r = M_y / l_{x2} \times 0.5$$

$$F_r = M_z / l_{x1} \times 1$$

#### Definitions:

$F_x$  Force in feed direction

$F_y$  Force in Y direction

$F_z$  Force in Z direction

$M_x$  Moment about longitudinal axis (X)

$M_y$  Moment about transverse axis (Y)

$M_z$  Moment about vertical axis (Z)

$F_r$  Force on the roller

$l_y$  Guide distance in y direction

(see "Technical data" table for installed guide)

$l_{x1}$  Side roller guide distance in x direction

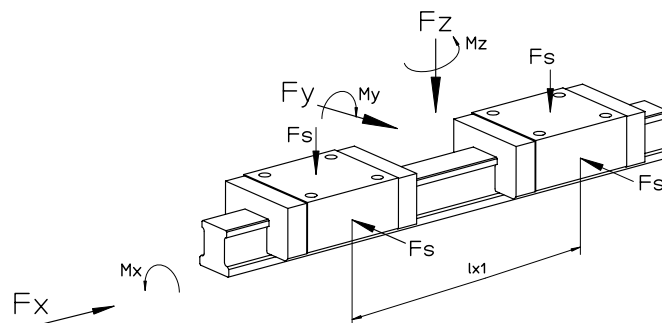
(see "Technical data" table for installed guide)

$l_{x2}$  Vertical roller guide distance in x direction

(see "Technical data" table for installed guide)



### Force determination on the single rail guide



#### Force direction $F_y$

$F_y$  is absorbed by two slides

$$F_s = F_y \times 0.5$$

#### Force direction $F_z$

$F_z$  is absorbed by two slides

$$F_s = F_z \times 0.5$$

#### Moment $M_x$

$M_x$  is absorbed by two slides with combined external load ( $F_z$  and  $F_y$ ) in conjunction with a torsion moment

$$F_s = |F_z| + |F_y| + C_x (|M_x| / M_t) \times 0.5$$

#### Moment $M_y$

$M_y$  is absorbed by two slides (with opposing force direction)

$$F_s = M_y / l_{x1} \times l$$

#### Moment $M_z$

$M_z$  is absorbed by two slides (with opposing force direction)

$$F_s = M_z / l_{x1} \times l$$

#### Definitions:

$F_x$  Force in feed direction

$F_y$  Force in Y direction

$F_z$  Force in Z direction

$M_x$  Moment about longitudinal axis (X)

$M_y$  Moment about transverse axis (Y)

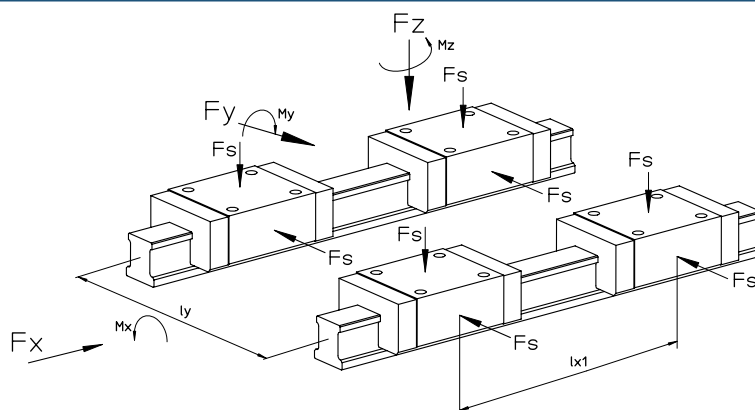
$M_t$  Permissible dynamic moment of carriage on guide (see "Technical data" table for installed guide)

$C$  Dynamic basic load rating ( $C_{dyn}$ ) of carriage on guide (see "Technical data" table for installed guide)

$F_s$  Force on a slide

$l_{x1}$  Guide distance in x direction (see "Technical data" table for installed guide)

### Force determination on the double rail guide



#### Force direction $F_y$

$F_y$  is absorbed by four slides

$$F_s = F_y \times 0.25$$

#### Force direction $F_z$

$F_z$  is absorbed by four slides

$$F_s = F_z \times 0.25$$

#### Moment $M_x$

$M_x$  is absorbed by four slides (two sets of two with opposing force direction)

$$F_s = M_x / l_y \times 0.5$$

#### Moment $M_y$

$M_y$  is absorbed by four slides (two sets of two with opposing force direction)

$$F_s = M_y / l_{x1} \times 0.5$$

#### Moment $M_z$

$M_z$  is absorbed by four slides (two sets of two with opposing force direction)

$$F_s = M_z / l_{x1} \times 0.5$$

#### Definitions:

$F_x$  Force in feed direction

$F_y$  Force in Y direction

$F_z$  Force in Z direction

$M_x$  Moment about longitudinal axis (X)

$M_y$  Moment about transverse axis (Y)

$M_z$  Moment about vertical axis (Z)

$F_s$  Force on a slide

$l_y$  Guide distance in y direction (see "Technical data" table for installed guide)

$l_{x1}$  Guide distance in x direction (see "Technical data" table for installed guide)

### Life-time calculation for roller, profiled rail guide and ball-screw spindle drive

The estimated nominal lifetime is primarily based on the linear axis guide calculation. For drives with a ball screw spindle, the ball-screw spindle drive must also be calculated.

Because of the number of parameters that have an influence on the lifetime of the overall linear axis (forces and moments taking into account directions and any combinations lead to an average load ( $F_m$ ); ambient conditions, on time, etc.), the following simplified formulae can only be used to obtain an initial estimate.

#### 1. Average load on guide or ball-screw spindle drive

$$F_m = (F_1^3 \times q_1 / 100 + F_2^3 \times q_2 / 100 + F_n^3 \times q_n / 100)^{1/3}$$

#### 2. Nominal lifetime of roller guide

$$L = (C / F)^3 \times 10^5 \times R$$

$$F = F_m + F_v$$

#### 3. Nominal lifetime of rail guide

$$L = (C / F)^3 \times 10^5$$

$$F = F_m + F_v$$

#### 4. Nominal lifetime of ball-screw spindle drive

$$L_{KGT} = (C_{KGT} / F)^3 \times 10^6$$

$$F = F_m + F_v \text{ (} F_v \text{ for double nut (MM) only; approx. 10 \% )}$$

#### Definitions

$F_m$	Average load [N] on guide or ball-screw spindle drive
$F_1, F_2, F_n$	Graduated individual load [N]
$q_1, q_2, q_n$	Proportion of travel for $F_1, F_2, F_n$ [%]
$L$	Nominal lifetime of guide [m]
$C$	Dynamic basic load rating of guide [N] ( $C_{dyn}$ ) (see "Technical data" table for installed guide)
$R$	Factor for roller guide size: Beta 50 ... Beta 80: $R = 0.625$ Beta 100 + 110: $R = 0.87$ Beta 140 + 180: $R = 1.1$
$F$	Equivalent load [N] on guide or ball-screw spindle drive
$F_v$	Initial tension [N] (8 % or 2 % of $C_{dyn}$ , (see "Technical data" table for installed guide) 5 % for roller guide)
$L_{KGT}$	Nominal lifetime of ball-screw spindle drive [revolutions]
$C_{KGT}$	Dynamic basic load rating of ball-screw spindle drive ( $C_{dyn}$ ) [N] (see "Technical data" table for installed guide)

### Maintenance information

#### Maintenance information for profiled rail guide

The recirculating ball-bearing slide should be lubricated with a rolling contact bearing grease every 5000 km. The initial lubrication is carried out with Klüberplex BE 31-102.

Refer to our relevant assembly and maintenance instructions.

#### Maintenance information for roller guide

The tracks of the roller guide should be oiled every 2000 km. This is done in the factory using Febis K68 or INTERFLOW fin super oil.

Refer to our relevant assembly and maintenance instructions.

#### Maintenance information for ball-screw spindle drive

The ball-screw spindle drive should be lubricated with a standard rolling contact bearing grease every 5000 km. The initial lubrication is carried out with Klüberplex BE 31-102.

Ball-screw spindles should generally be protected against contamination. This can either be done using a cover tape or a bellow.

Refer to our relevant assembly and maintenance instructions.

#### Other maintenance information

The lubrication interval depends on many factors, such as the degree of contamination, operating temperature, load, etc. Therefore, the specifications here are only intended as guidelines.

Caution: Basic lubrication by the customer is essential after commissioning.

All installed ball bearings are sealed and maintenance free.

The toothed belt is also maintenance free and only needs to be replaced if an excessive load has led to a breakage or to expansion outside the elastic range.

Excessive dust and dirt on the toothed belt and cover tape should be removed regularly.

### Technical data for installed guides

#### Static and dynamic basic load ratings for roller guides

Size	Size	Number of supporting rollers for	Number of supporting rollers for	Basic load rating per roller	Basic load rating per roller	Guide spacing* in x direction		Guide spacing in y direction
	[mm]	F <sub>z</sub>	F <sub>y</sub>	C <sub>stst</sub> [N]	C <sub>dyn</sub> [N]	l <sub>x1</sub> [mm]	l <sub>x2</sub> [mm]	l <sub>y</sub> [mm]
<b>Beta</b>								
B 50C	20	4	2	600	1500	86 (136)	86 (136)	30.5
B 70C	20	4	2	600	1500	74 (124)	138.5 (188)	41
B 80	20	4	2	600	1500	95 (155)	156.5 (216)	41.5
B 100	28	4	2	1300	3200	136 (256)	223 (343)	47
B 110	28	4	2	1300	3200	175 (355)	262 (424)	66
B 120	35	4	2	3000	6800	148 (328)	148 (328)	70
B 140	35	4	2	3000	6800	202 (352)	202 (389)	98
B 180	35	4	2	3000	6800	272 (492)	272 (492)	121
B 180C	47	4	2	6550	13500	224 (444)	224 (444)	125

① The initial tension for each roller is approx. 5 %.

\* Values in brackets () relate to the long standard slide plate

#### Dynamic basic load ratings for profiled rail guides

Size	Size	Number of rails	Number of carriages	Basic load rating per carriage	Initial tension	Maximum moment over longitudinal axis x	Carriage spacing* in x direction	Guide spacing in y direction
				C <sub>dyn</sub> [N]	F <sub>y</sub> [%]	M <sub>x</sub> [Nm]	l <sub>x1</sub> [mm]	l <sub>y</sub> [mm]
<b>Beta</b>								
B 40	12	1	2	1205	-	14	83 (163)	-
B 60	15	1	2	7800	8	74	106 (156)	-
B 70	15	1	2	7800	8	74	124 (174)	-
B 80	20	1	2	18800	8	240	128 (188)	-
B 80C	25	1	2	22800	8	320	122 (182)	-
B 100	20	1	2	18800	8	240	152 (272)	-
B 100D-ZSS	15	2	4	7800	8	-	150 (210)	56
B 100D-ASS	15	2	4	7800	8	-	192	56
B 100D-SSS	15	2	4	7800	8	-	150 (210)	56
B 110	25	1	2	22800	8	320	203 (383)	-
B 120	25	1	2	22800	8	320	144 (324)	-
B 140	15	2	4	7800	8	-	180 (330)	72
B 140C-ZSS	20	2	4	18800	8	-	220 (400)	76
B 140C-ASS	20	2	4	18800	8	-	300	76
B 140C-SSS	20	2	4	18800	8	-	210 (360)	76
B 165-ZSS	35	1	2	41900	8	890	198 (398)	-
B 165-SSS	35	1	2	41900	8	890	219 (329)	-
B 180-ZSS	20	2	4	18800	8	-	172 (392)	84
B 180-AZS	20	2	8	18800	8	-	430	84
B 180-ASS	20	2	4	18800	8	-	306	84
B 180-SSS	20	2	4	18800	8	-	247 (467)	84
B 180C-ZSS	25	2	4	22800	8	-	272 (492)	84
B 180C-ASS	25	2	4	22800	8	-	307	84
B 180C-SSS	25	2	4	22800	8	-	233 (453)	84
<b>Delta</b>								
D 110	15	2	4	7800	8	-	90 (210)	66
D 145	20	2	4	18800	8	-	114 (234)	87
D 200	25	2	4	22800	8	-	144 (294)	126
D 240	25	2	4	22800	8	-	200 (320)	150
<b>Alpha</b>								
A 15B	15	2	4	7800	8	-	94 (164)	105
A 20B	20	2	4	18800	8	-	143 (243)	160
A 30B	30	2	4	31700	8	-	205 (335)	240
A 35B	35	2	4	55600	8	-	286 (436)	340

\* Values in brackets () relate to the long standard slide plate

### Technical data for installed ball-screw spindle drives

#### Dynamic basic load ratings for ball-screw spindle drives

Size	Nominal diameter		Pitch	Basic load rating per guide carriage
		[mm]	[mm]	$C_{dyn}$ [N]
B 40		12	4	3400
B 50C			5	4400
B 70	D 110	16	5	9300
B 70C			10	15400
			20	7450
B 60	A 15B	20	5	10500
B 80			20	11600
B 100D			50	13000
B 110	D 145	25	5	12300
B 140			10	13200
B 140C			25	16700
			50	15400
B 180	D 200	32	5	21500
			10	26000
B 180C	D240		20	29700
			32 (A 30B only)	19500
			40	14900
B 165	A 35B	40	5	23800
			10	38000
			20	33300
			40	35000

(Dynamic basic load rating for ball-screw spindle nut complies with DIN 69051, 1989)