

Compact Modules CKR

Compact Modules with toothed belt drive (CKR)

## Product overview

Compact Modules are precision, ready-to-install linear motion systems offering high performance, compact design, and good price/performance ratio.

Compact Modules are available in any desired length and with fast delivery time.

### Structural design

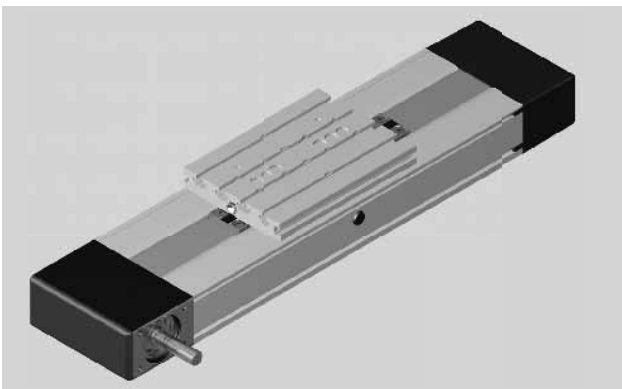
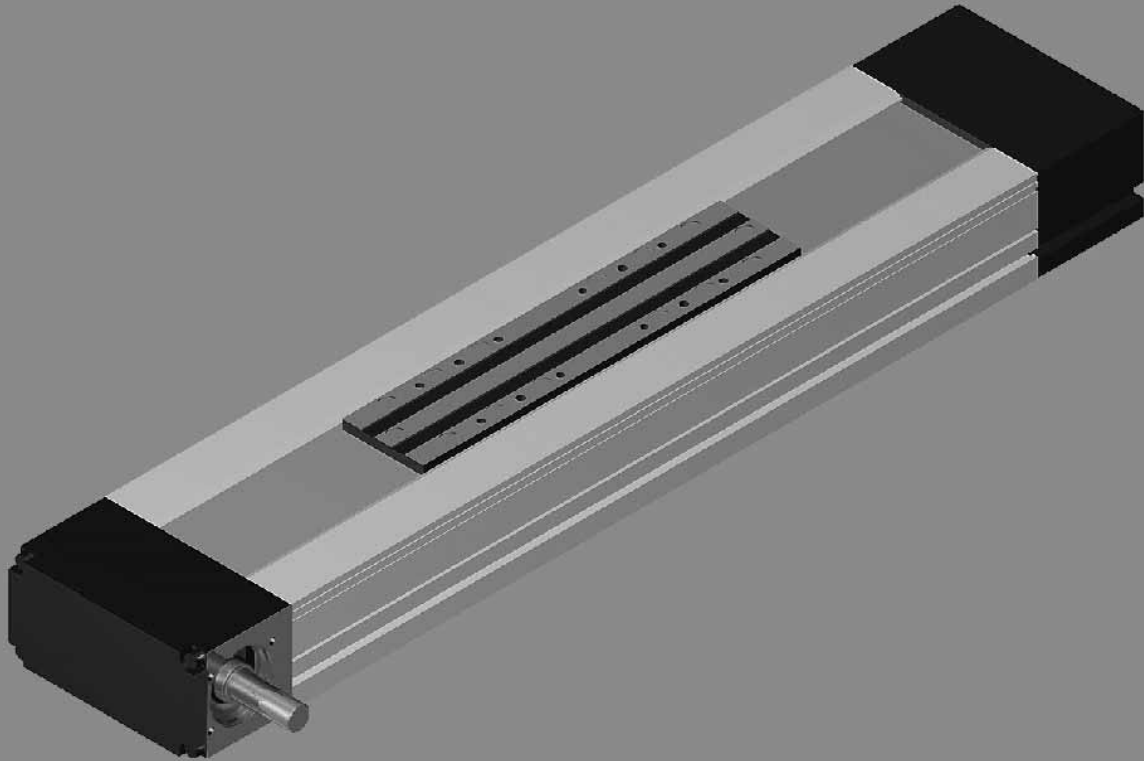
- Extremely compact precision aluminum profile with two integrated ball rail systems
- Ready-to-install Compact Modules in selectable lengths up to  $L_{\max}$
- Aluminum carriage available in two lengths, depending on applied load
- Driven by a pre-tensioned toothed belt

### Attachments

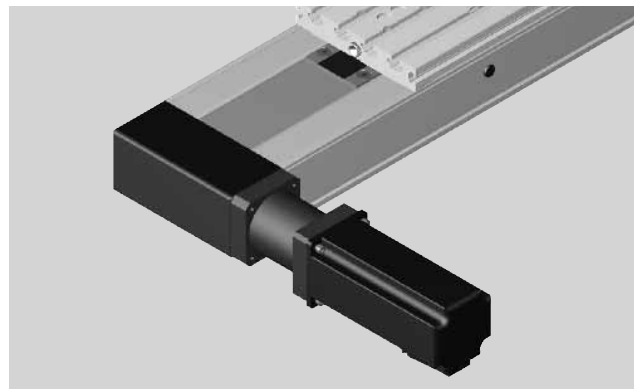
- Maintenance-free digital servo drives with integrated brake and attached feedback
- Gear reducer type LP
- Reed or Hall sensors
- Socket with mating plug for the switches
- Aluminum profile mounting duct

### Other distinguishing features

- Precise alignment and secure fastening of attachments with threads and pin holes in carriage
- Idler (non-drive) end enclosure with integrated belt-tensioning system. Pulley ball bearings are lubricated for life
- Economical maintenance thanks to one-point lubrication feature (grease lubrication) for ball rail systems at sides or through the carriage
- Easy motor attachment by means of locating feature and fastening threads on drive end enclosure
- Two integrated zero-clearance ball rail systems provide optimized travel performance, high load capacities, and high rigidity
- High travel speed with high precision and smooth operation over lengths up to 10,000 mm
- Gap-type sealing and side-mounted aluminum profiles for guiding the toothed belt
- Adjustable switches over the entire travel range, switch activation without switching cam (with switching cam in CKR 25-200)



Connection plate for easy installation



Gear reducer:  
A variety of gear ratios allow an optimal match between the load and the motor inertia.

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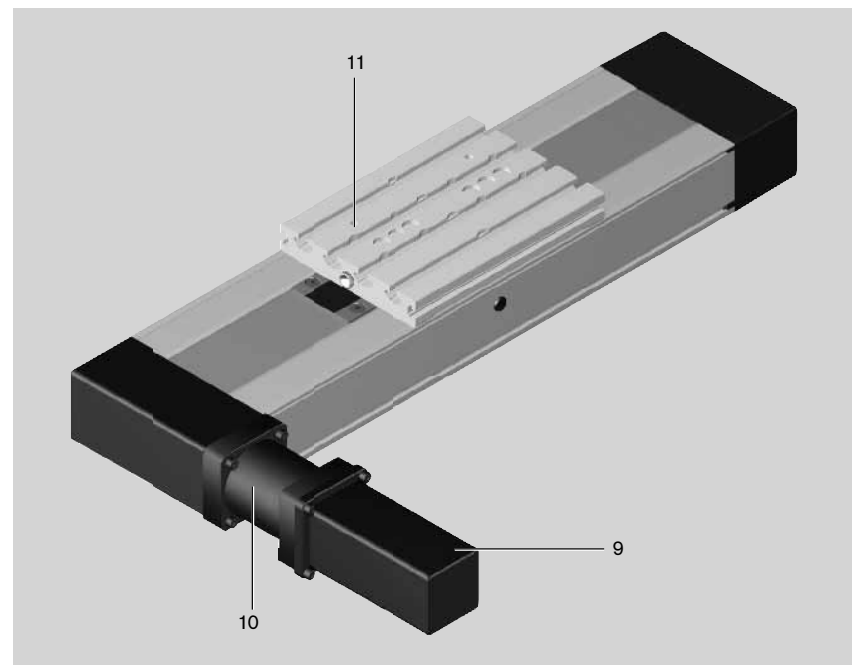
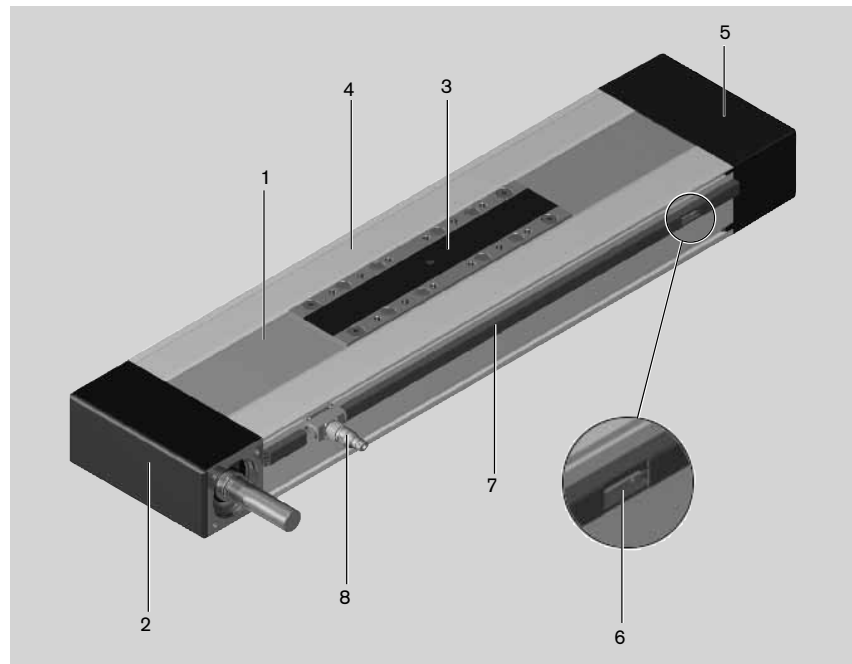
## Structural design

### Structural design CKR

- 1 Toothed belt
- 2 Drive end enclosure
- 3 Carriage versions
  - “Short carriage” with two runner blocks
  - “Long carriage” with four runner blocks
- 4 Frame
- 5 Idler (non-drive) end enclosure

### Attachments:

- 6 Magnetic field sensor
- 7 Mounting duct
- 8 Socket/plug
- 9 Motor
- 10 Gear reducer LP
- 11 Connection plate



### Structural design of gear reducer

For all Compact Modules CKR, a planetary gearbox can be installed via a flange. The flange serves as a mounting point for the gearbox to the Compact Module. This direct connection eliminates the need for a coupling, thereby minimizing torsional deflection.

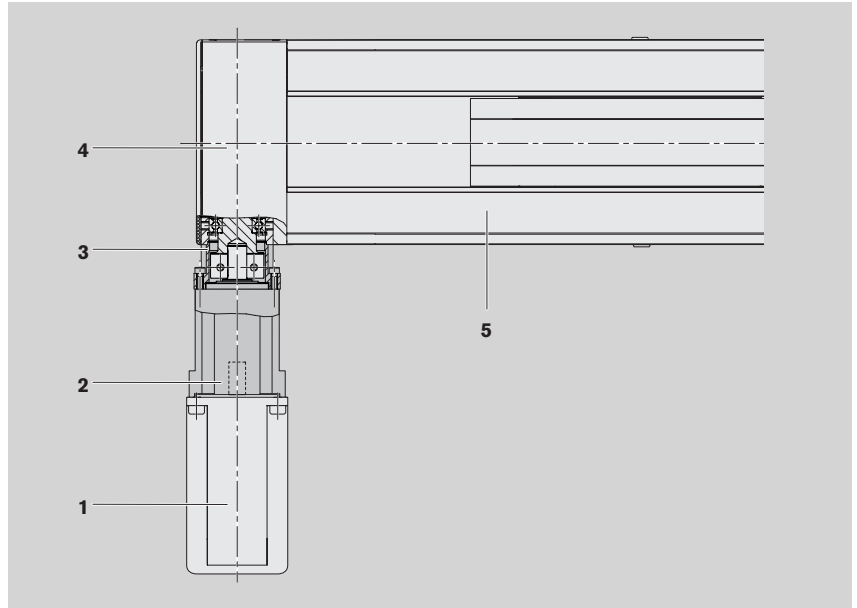
Several different gear ratios are available:

$i = 3$  (only for CKR 20-145 and 25-200)

$i = 5$

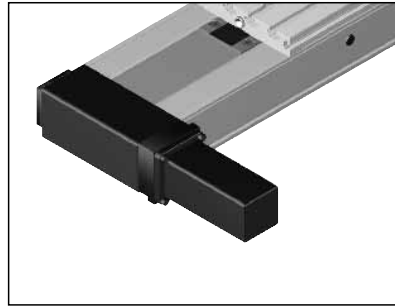
$i = 10$

- 1 Motor
- 2 Gear reducer
- 3 Flange
- 4 Drive end enclosure
- 5 Compact Module



### Direct motor attachment with $i = 1$

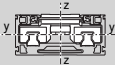
The motor is attached directly to the Compact Module's drive end enclosure via a motor mount.



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## Technical data

### Load capacities and moments

Size	Carriage length	Belt type	Dynamic load capacity of guideway  C (N)	Dynamic moments		Planar moment of inertia 		Moved mass  m <sub>B</sub> (kg)	Maximum length  L <sub>max</sub> (mm)	Specific spring rate  C <sub>spec</sub> (N/mm · m)
				M <sub>t</sub> (Nm)	M <sub>L</sub> (Nm)	I <sub>y</sub> (cm <sup>4</sup> )	I <sub>z</sub> (cm <sup>4</sup> )			
CKR 12-90	102	AT 3	4620	110	16	12.8	115.3	0.32	5500	350
	156	AT 3	7500	360	240	12.8	115.3	0.55		
CKR 15-110	170	AT 5	14560	480	80	32.7	282.9	0.52	5500	1050
	215	AT 5	23650	780	1000	32.7	282.9	0.87		
CKR 20-145	180	AT 5	34800	1530	260	87.5	903.9	0.99	5500	1225
	240	AT 5	56530	2480	2820	87.5	903.9	1.67		
CKR 25-200	265	AT 10	55000	3570	360	465.6	3316.6	2.40	10000	4000
	405	AT 10	89340	5800	7810	465.6	3316.6	4.24		

Toothed belt stretch  $\Delta L = (F \cdot L) / c_{\text{spec}}$ 

### Maximum permissible loads

Size	Carriage length	Maximum permissible forces (N)			Maximum permissible moments (Nm)	
		F <sub>z1max</sub>	F <sub>z2max</sub>	F <sub>ymax</sub>	M <sub>tmax</sub>	M <sub>Lmax</sub>
CKR 12-90	102	4620	4120	1195	110	16
	156	7500	6700	2170	180	210
CKR 15-110	170	11200	5600	3240	180	40
	215	18190	9090	5270	300	380
CKR 20-145	180	26760	13380	7760	580	130
	240	43470	21730	12600	950	1080
CKR 25-200	265	42300	21150	12260	1370	180
	405	68710	34350	19920	2230	3000

### Modulus of elasticity E

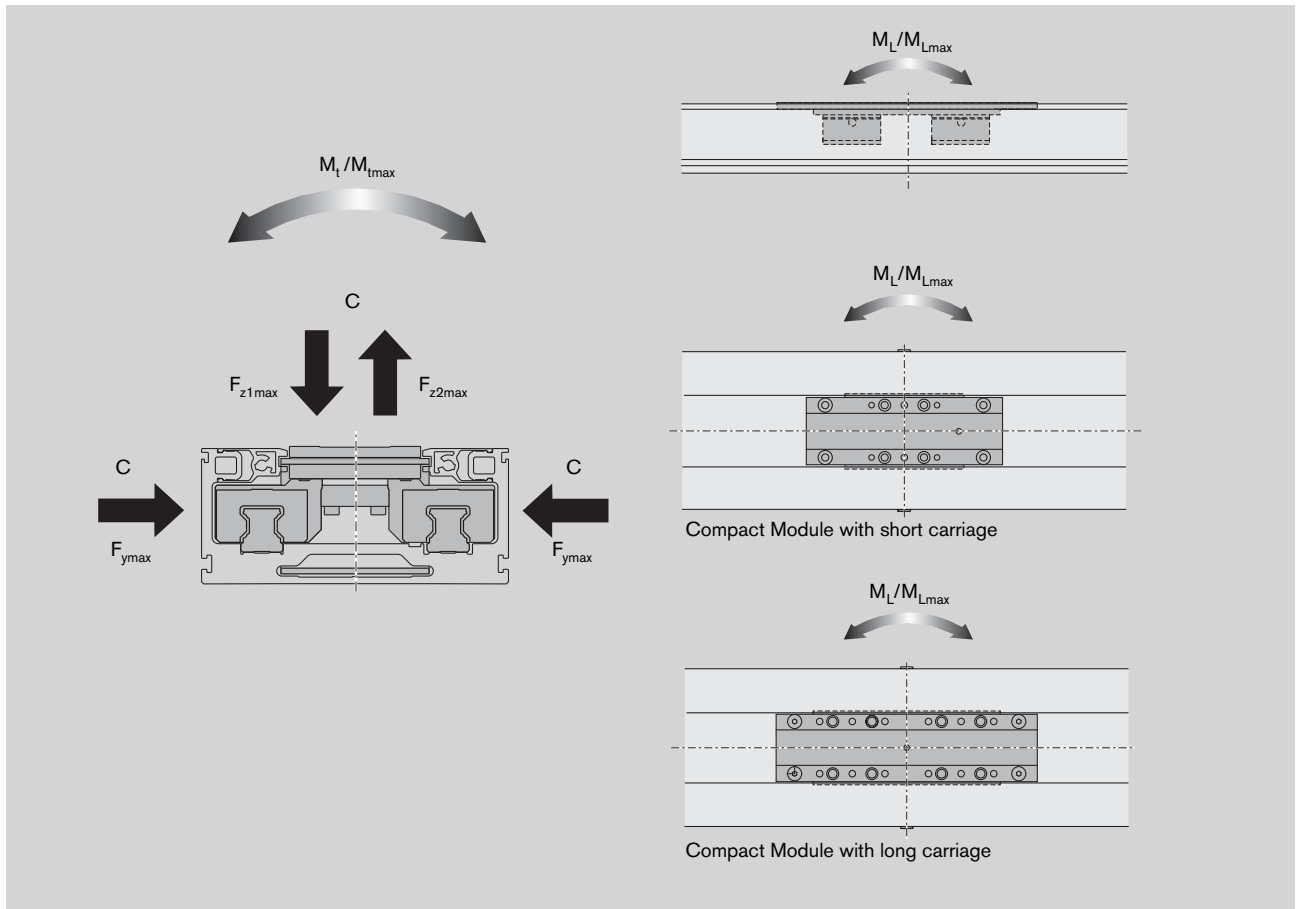
E = 70,000 N/mm<sup>2</sup>

### Weight

Mass calculation without motor and sensors.

Mass formula: Mass (kg/mm) · length L (mm) + mass of all parts of fixed lengths  
(carriage, drive end, idler end, etc.) (kg)  
(+ additional mass (kg))

Compact Module	Carriage length (mm)	Drive type	Mass (kg)	Additional mass of gear reducer (kg)
CKR 12-90	102	without drive	0.0044 · L + 0.77	–
		Drive i = 1	0.0044 · L + 0.96	1.00 (LP050)
	156	without drive	0.0043 · L + 0.96	–
		Drive i = 1	0.0043 · L + 1.15	1.00 (LP050)
CKR 15-110	170	without drive	0.0074 · L + 1.55	–
		Drive i = 1	0.0074 · L + 1.79	1.02 (LP050)
	215	without drive	0.0073 · L + 1.84	–
		Drive i = 1	0.0073 · L + 2.08	1.02 (LP050)
CKR 20-145	180	without drive	0.0122 · L + 2.84	–
		Drive i = 1	0.0122 · L + 3.53	2.29 (LP070)
	240	without drive	0.0122 · L + 3.47	–
		Drive i = 1	0.0122 · L + 4.16	2.29 (LP070)
CKR 25-200	265	without drive	0.0233 · L + 8.99	–
		Drive i = 1	0.0233 · L + 10.23	4.37 (LP090) / 11.36 (LP120)
	405	without drive	0.0231 · L + 10.83	–
		Drive i = 1	0.0231 · L + 12.07	4.37 (LP090) / 11.36 (LP120)



**Note on dynamic load capacities and moments**

Determination of the dynamic load capacities and moments is based on a travel life of 100,000 m.

Often only 50,000 m are actually stipulated.

For comparison: Multiply values  $C$ ,  $M_t$  and  $M_L$  from the table by 1.26.

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## Technical data

### Drive data

Size	Drive type	Gear reducer ratio $i$	Max. drive torque <sup>1)</sup> $M_a$ (Nm)	Lead constant $u$ (mm/rev)	Belt type	Width $b$ (mm)	Tooth pitch $T$ (mm)	Max. belt drive transmission force $F$ (N)	Belt elasticity limit $F_{perm}$ (N)
CKR 12-90	$i = 1$	1	8.0	90.0	AT 3	35	3	560	1600
	Gear reducer LP050	5	1.6	18.0					
		10	0.8	9.0					
CKR 15-110	$i = 1$	1	13.5	120.0	AT 5	50	5	705	4200
	Gear reducer LP050	5	2.4	24.0					
		10	1.1	12.0					
CKR 20-145	$i = 1$	1	32.5	165.0	AT 5	70	5	1235	4800
	Gear reducer LP070	3	10.6	55.0					
		5	6.4	33.0					
		10	3.2	16.5					
CKR 25-200	$i = 1$	1	112.7	250.0	AT10	100	10	2830	17000
		1 with keyway	99.8	250.0					
	Gear reducer LP090	3	24.0	83.3					
		5	18.0	50.0					
		10	8.0	25.0					
	Gear reducer LP120	3	37.6	83.3					
		5	22.5	50.0					
		10	11.2	25.0					

1) Maximum 1,000 cycles/hour

### Drive data without motor ( $i = 1$ )

Size	Drive unit diameter (mm)	Lead constant (mm)	Travel speed (m/s)	Belt type	Reduced mass moment of inertia for	
					short carriage (kgm <sup>2</sup> )	long carriage (kgm <sup>2</sup> )
CKR 12-90	28.65	90	up to 3	AT 3 Width 35 mm	$(0.71 + 0.00032 \cdot L) \cdot 10^{-4}$	$(1.08 + 0.00032 \cdot L) \cdot 10^{-4}$
CKR 15-110	38.20	120	up to 5	AT 5 Width 50 mm	$(2.91 + 0.00136 \cdot L) \cdot 10^{-4}$	$(3.80 + 0.00136 \cdot L) \cdot 10^{-4}$
CKR 20-145	52.52	165	up to 5	AT 5 Width 70 mm	$(10.57 + 0.00317 \cdot L) \cdot 10^{-4}$	$(14.49 + 0.00317 \cdot L) \cdot 10^{-4}$
CKR 25-200	79.58	250	up to 5	AT10 Width 100 mm	$(76.18 + 0.01840 \cdot L) \cdot 10^{-4}$	$(88.87 + 0.01840 \cdot L) \cdot 10^{-4}$

# Calculations

## Formulas

### Nominal life

#### Nominal life in meters:

$$L_{10} = \left( \frac{C}{F_m} \right)^3 \cdot 10^5$$

$L_{10}$  = Nominal life in meters (m)  
 $L_{10h}$  = Nominal life in hours (h)  
 $C$  = Dynamic load capacity (N)  
 $F_m$  = Mean equivalent dynamic load (N)  
 $v_m$  = Average speed (m/s)

#### Nominal life in hours:

$$L_{10h} = \frac{L_{10}}{3600 \cdot v_m}$$

### Frictional torque

with motor attached via motor mount and coupling:

$$M_R = M_{RS}$$

$M_R$  = Frictional torque at motor journal (Nm)  
 $M_{RS}$  = Frictional torque of system (Nm)

with motor attached via gear reducer:

$$M_R = \frac{M_{RS}}{i} + M_{RLP}$$

$M_{RLP}$  = Frictional torque of gear reducer (Nm)  
 $i$  = Gear ratio

### Frictional torque data

Size	Motor	Gear unit type	i	$M_{RS}$ (Nm)	$M_{RLP}$ (Nm)
12-90	MSK030C	Gear reducer LP050	5, 10	0.58	0.05
	MSM030C				
15-110	MSK030C	Gear reducer LP050	5, 10	1.42	0.05
	MSM030C				
20-145	MSK040C	Gear reducer LP070	3, 5, 10	2.04	0.14
	MSM040B				
25-200	MSK060C	Gear reducer LP090	3, 5, 10	3.60	0.38
	MSK076C	Gear reducer LP120	3, 5, 10	3.60	0.80

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# CKR 12-90 components

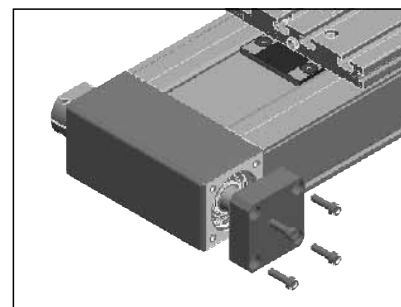
Part number, length R0364 300 00, ... mm	Type	Guideway	Drive unit				Carriage				
			Shaft for motor	without keyway i = 1	with keyway i = 1	Gear reducer i = 5, 10	Length 102 mm Connection plate		Length 156 mm Connection plate		
							without	with	without	with	
<b>without drive</b> 	OA01		without	50							
<b>with drive</b> 	MA01		right								
	MA02		left	01	03		01	40		02	41
	MA05		right	06							
	MA06		left	06							
<b>with direct drive, i=1</b> 	MA10 MA11		01	right	06			01	40	02	41
			left	06							
<b>with gear reducer</b> 	MG10 MG11	01	with gear reducer			08	01	40	02	41	

1) Attachment kit also available without motor (when ordering: enter "00" for motor)

**Note:** For gear unit performance data, see "Performance data" section.

### CKR with second shaft end

In types MA05, MA06, MA10, MA11, MG10, and MG11 a second drive shaft end can be made available by removing the screws and cover.



Motor attachment <sup>1)</sup>			Motor			Switch Socket, plug Mounting duct		Documentation	
Direct drive	i = 5	i = 10	without brake	with brake			Standard report	Measurement report	
00	00	00	00			without switch without mounting duct 00		01	02 Frictional torque
						<b>Magnetic field sensor</b> Reed sensor 21    Mounting duct 25    Socket Plug 17 Hall sensor PNP - NC contact 22    Length = L			
01			MSK 040C	86	87	<b>Magnetic field sensor with plug<sup>2)</sup></b> Reed sensor 58 Hall sensor PNP - NC contact 59			
	11	12	MSK 030C	84	85				
	31	32	MSM 030C	72	73				

Including mounting accessories

**Length of the Compact Module**

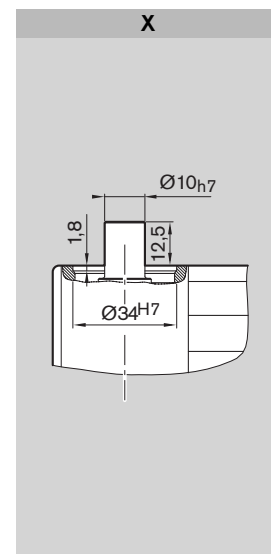
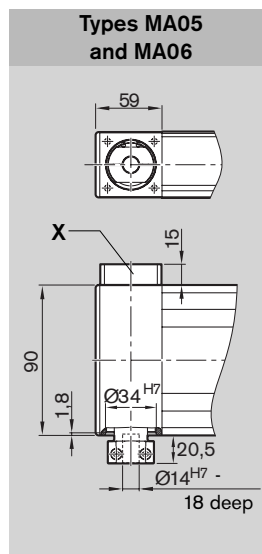
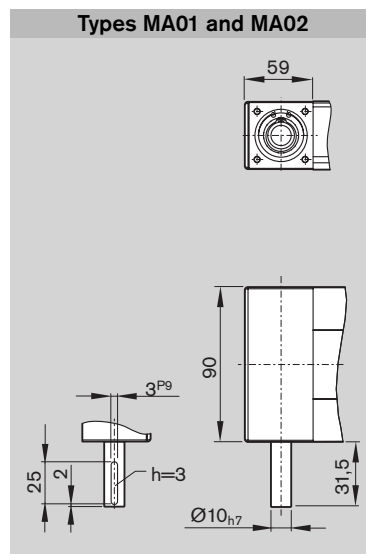
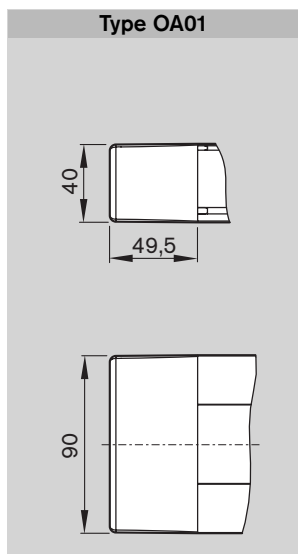
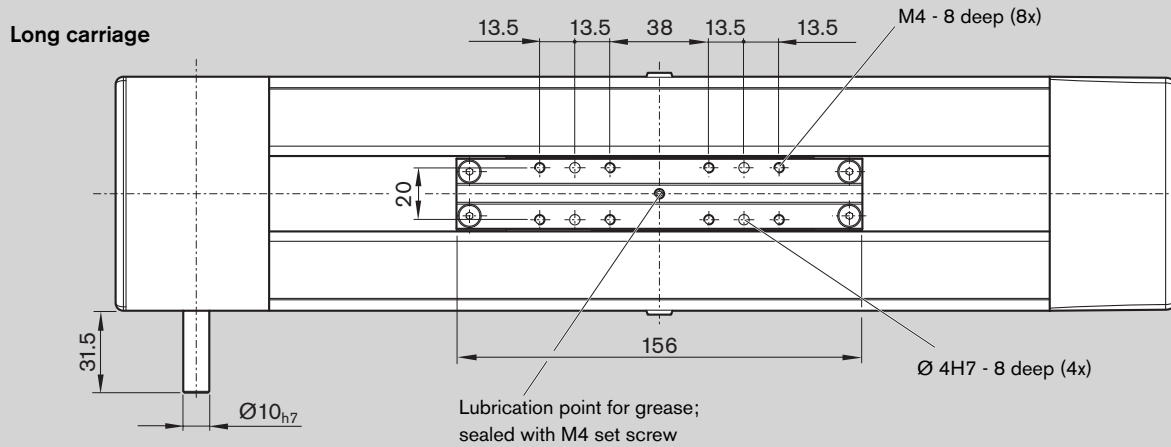
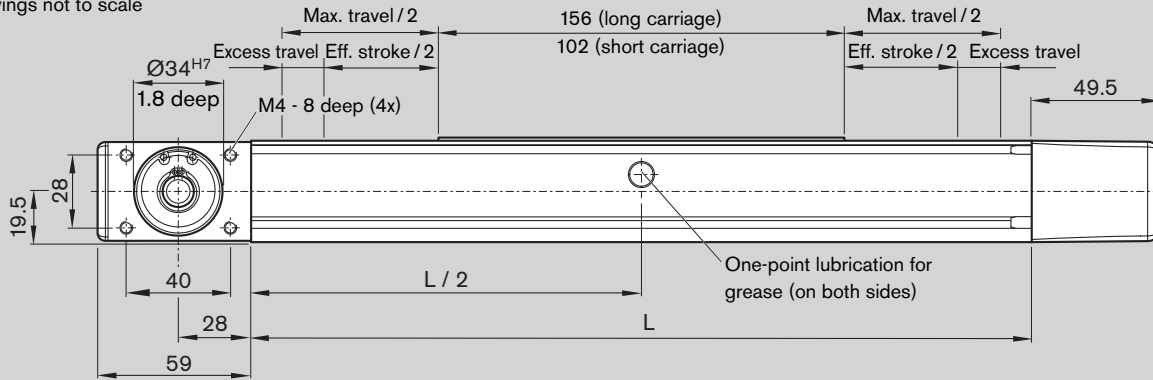
$$L = (\text{stroke} + 2 \cdot \text{excess travel}) + L_T + 25 \text{ mm}$$

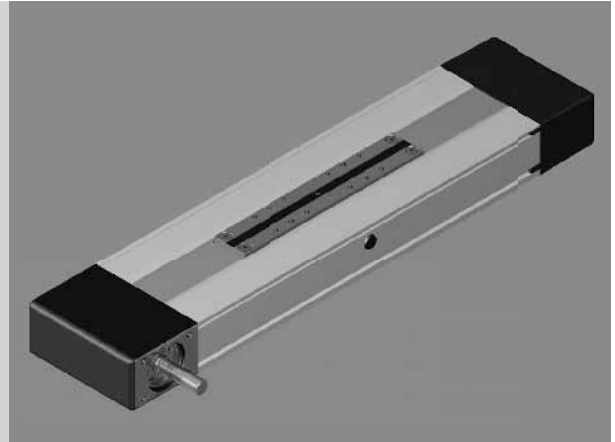
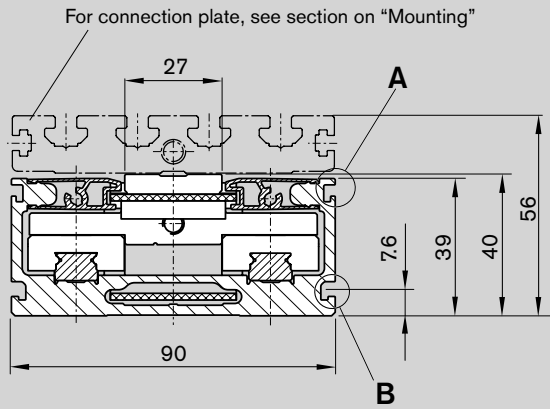
See order example on p. 102 for example of how to calculate length.

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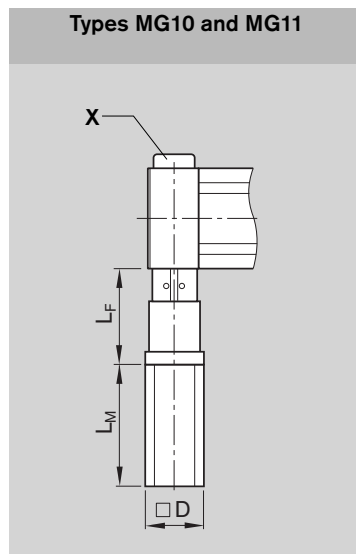
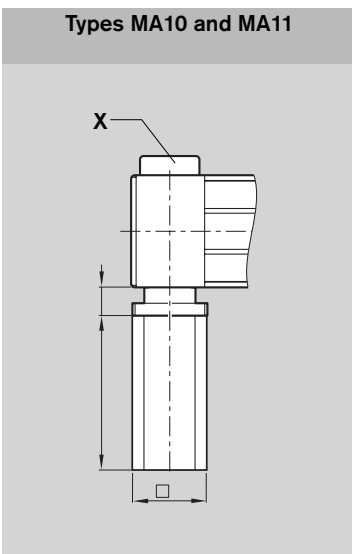
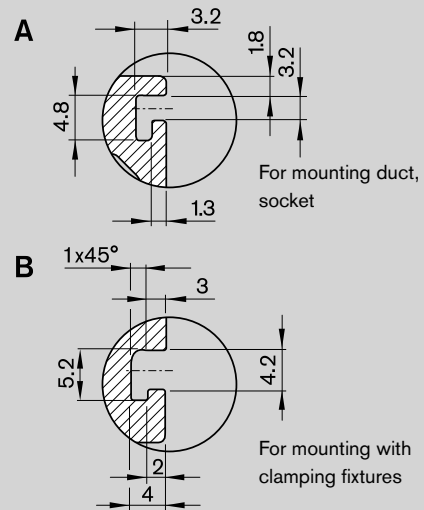
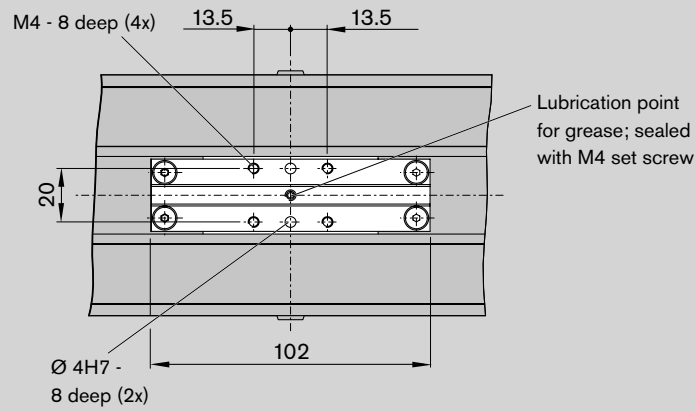
# CKR 12-90 dimensions

All dimensions in mm  
Drawings not to scale






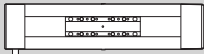
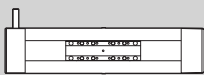
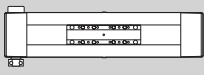
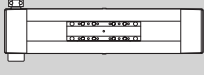
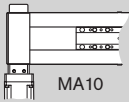
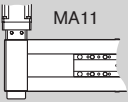
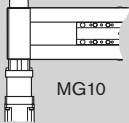
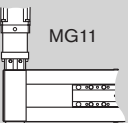
**Short carriage**



Type	Motor	Dimensions (mm)			
		D	L <sub>F</sub>	L <sub>M</sub> without brake	L <sub>M</sub> with brake
MA10	MSK 040C	82	34.5	185.5	215.5
MA11					
MG10	MSK 030C	54	91.0	188.0	213.0
MG11	MSM 030C	54	111.0	138.5	171.5

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## CKR 15-110 components

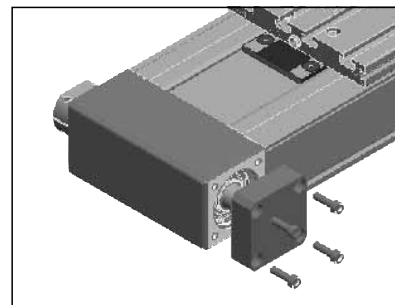
Part number, length R0364 400 00, ... mm	Type	Guideway	Drive unit				Carriage			
			Shaft for motor	without keyway i = 1	with keyway i = 1	Gear reducer i = 5, 10	Length 170 mm Connection plate		Length 215 mm Connection plate	
							without	with	without	with
<b>without drive</b> 	OA01	01	without	50			01	40	02	41
<b>with drive</b> 	MA01		right	01	03					
	MA02		left							
	MA05		right	06						
	MA06		left	06						
<b>with direct drive, i=1</b>  MA10  MA11	MA10 MA11		01	right	06					
		left		06						
<b>with gear reducer</b>  MG10  MG11	MG10 MG11	01	with gear reducer			08	01	40	02	41

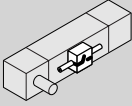
1) Attachment kit also available without motor (when ordering: enter "00" for motor)

2) Including mounting accessories

**Note:** For gear unit performance data, see "Performance data" section.**CKR with second shaft end**

In types MA05, MA06, MA10, MA11, MG10, and MG11 a second drive shaft end can be made available by removing the screws and cover.



Motor attachment <sup>1)</sup>			Motor			Switch Socket, plug Mounting duct		Documentation										
Direct drive	i = 5	i = 10	without brake	with brake			Standard report	Measurement report										
00	00	00	00		<table border="1"> <tr> <td colspan="2">without switch without mounting duct</td> <td>00</td> </tr> </table>		without switch without mounting duct		00									
without switch without mounting duct		00																
					<table border="1"> <tr> <th colspan="4">Magnetic field sensor</th> </tr> <tr> <td>Reed sensor</td> <td>21</td> <td rowspan="2">Mounting duct 25 Length = L</td> <td rowspan="2">Socket Plug 17</td> </tr> <tr> <td>Hall sensor PNP - NC contact</td> <td>22</td> </tr> </table>		Magnetic field sensor				Reed sensor	21	Mounting duct 25 Length = L	Socket Plug 17	Hall sensor PNP - NC contact	22	01	02 Frictional torque
Magnetic field sensor																		
Reed sensor	21	Mounting duct 25 Length = L	Socket Plug 17															
Hall sensor PNP - NC contact	22																	
01			MSK 050C	88	89			05 Positioning accuracy										
	11	12	MSK 030C	84	85													
	31	32	MSM 030C	72	73													
						<table border="1"> <tr> <th colspan="3">Magnetic field sensor with plug<sup>2)</sup></th> </tr> <tr> <td>Reed sensor</td> <td>58</td> <td></td> </tr> <tr> <td>Hall sensor PNP - NC contact</td> <td>59</td> <td></td> </tr> </table>		Magnetic field sensor with plug <sup>2)</sup>			Reed sensor	58		Hall sensor PNP - NC contact	59			
Magnetic field sensor with plug <sup>2)</sup>																		
Reed sensor	58																	
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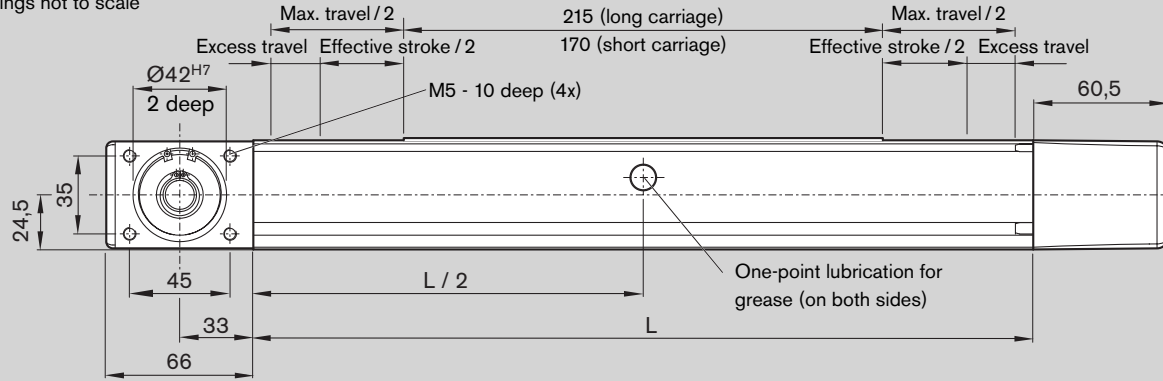
**Length of the Compact Module**

$L = (\text{stroke} + 2 \cdot \text{excess travel}) + L_T + 25 \text{ mm}$   
 See order example on p. 102 for example of how to calculate length.

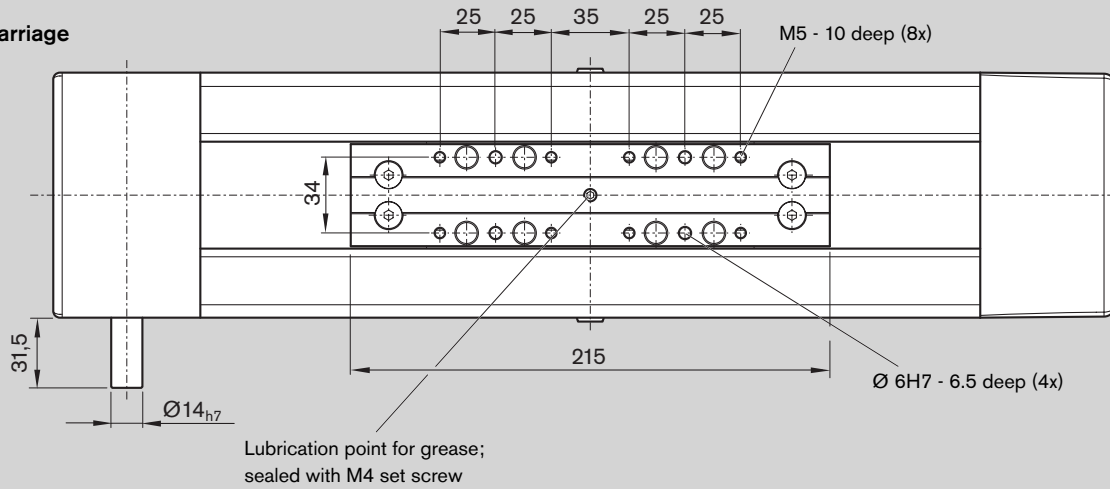
Compact Modules CKR

# CKR 15-110 dimensions

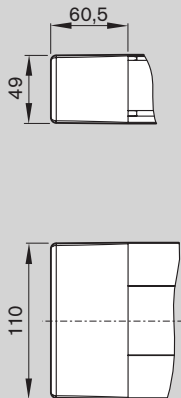
All dimensions in mm  
Drawings not to scale



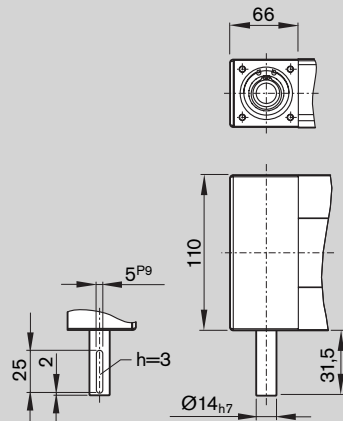
### Long carriage



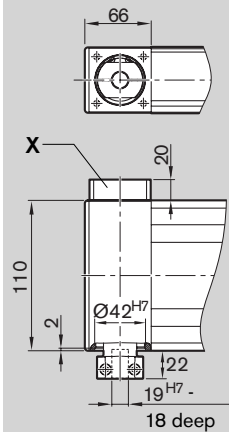
### Type OA01



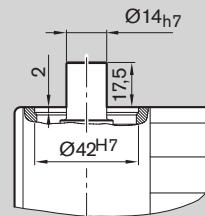
### Types MA01 and MA02

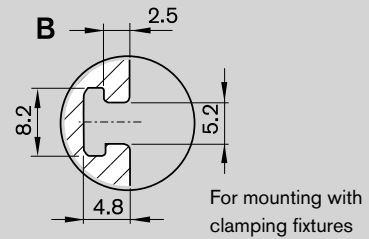
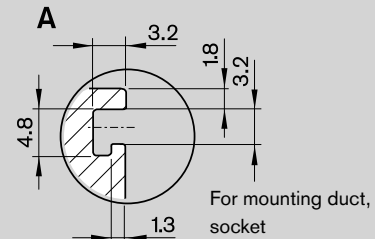
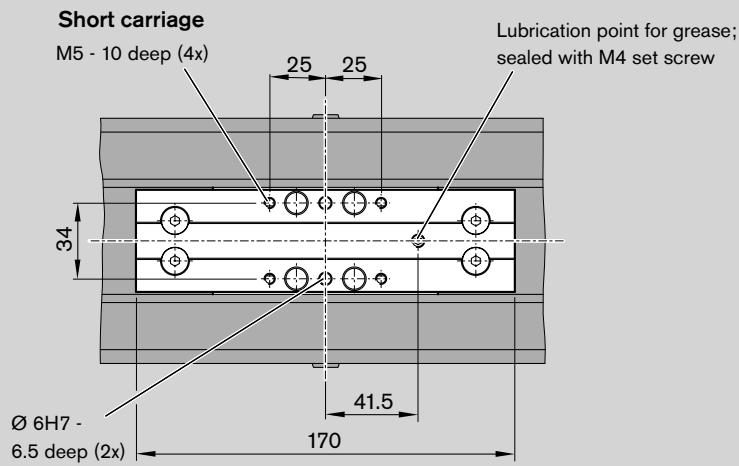
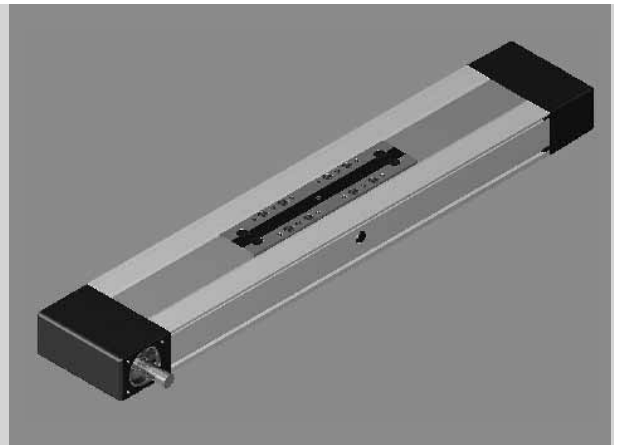
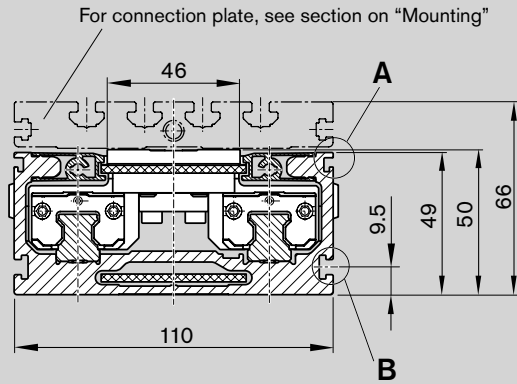


### Types MA05 and MA06

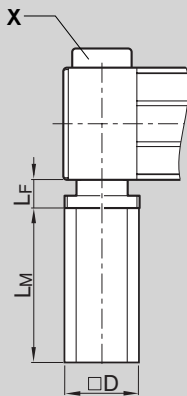


### X

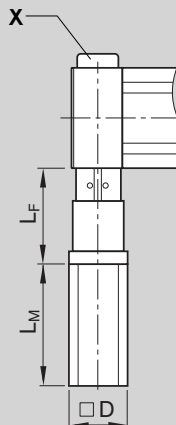




**Types MA10 and MA11**



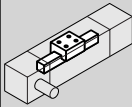
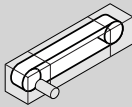
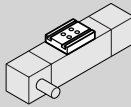
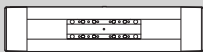



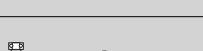
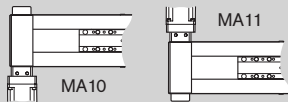
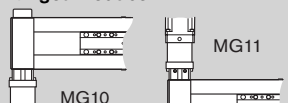
**Types MG10 and MG11**



Type	Motor	Dimensions (mm)			
		D	L <sub>F</sub>	L <sub>M</sub> without brake	L <sub>M</sub> with brake
MA10	MSK 050C	98	46.0	203.0	233.0
MA11	MSK 050C	98	46.0	203.0	233.0
MG10	MSK 030C	54	93.5	188.0	213.0
MG11	MSM 030C	60	93.5	138.5	171.5

Compact Modules CKR

# CKR 20-145 components

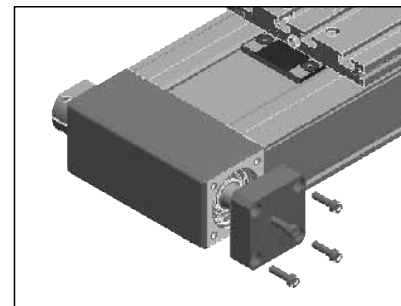
Part number, length R0364 500 00, ... mm	Type	Guideway 	Drive unit 				Carriage 			
			Shaft for motor	without keyway i = 1	with keyway i = 1	Gear reducer i = 3, 5, 10	Length 180 mm Connection plate		Length 240 mm Connection plate	
			without	50			without	with	without	with
<b>without drive</b> 	OA01	01	without	50			01	40	02	41
<b>with drive</b> 	MA01		right	01	03					
	MA02		left							
	MA05		right	06						
	MA06		left	06						
<b>with direct drive, i=1</b> 	MA10 MA11		01	right	06					
		left	06							
<b>with gear reducer</b> 	MG10 MG11	01	with gear reducer			08	01	40	02	41

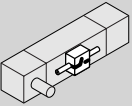
- 1) Attachment kit also available without motor (when ordering: enter "00" for motor)
- 2) Including mounting accessories

**Note:** For gear unit performance data, see "Performance data" section.

### CKR with second shaft end

In types MA05, MA06, MA10, MA11, MG10, and MG11 a second drive shaft end can be made available by removing the screws and cover.



Motor attachment <sup>1)</sup>				Motor			Switch Socket, plug Mounting duct			Documentation	
Direct drive	i = 3	i = 5	i = 10	without brake	with brake				Standard report	Measurement report	
00	00	00	00	00			without switch without mounting duct      00			01	02 Frictional torque
							<b>Magnetic field sensor</b>				
							Reed sensor      21 Hall sensor PNP - NC contact      22	Mounting duct 25 Length = L	Socket Plug 17		
01				MSK 060C	90	91	<b>Magnetic field sensor with plug<sup>2)</sup></b>			05 Positioning accuracy	
	10	11	12	MSK 040C	86	87	Reed sensor      58 Hall sensor PNP - NC contact      59				
	30	31	32	MSM 040B	74	75					

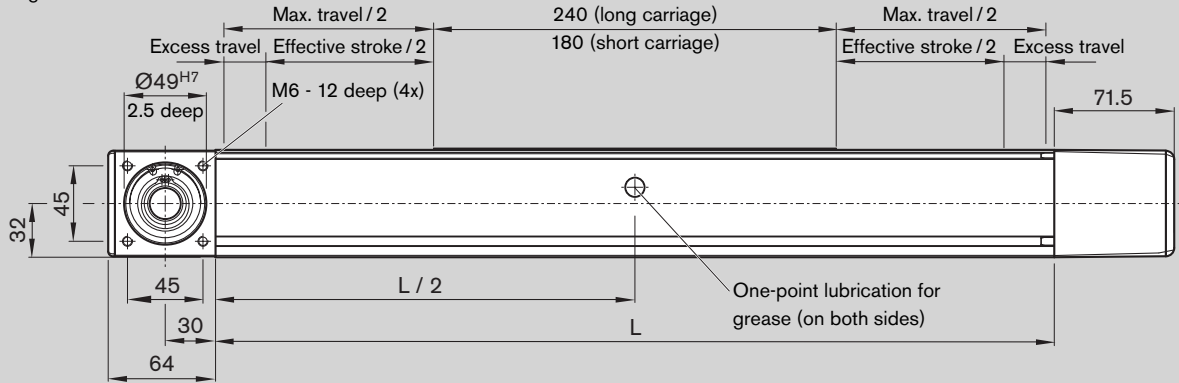
**Length of the Compact Module**

$L = (\text{stroke} + 2 \cdot \text{excess travel}) + L_T + 25 \text{ mm}$   
 See order example on p. 102 for example of how to calculate length.

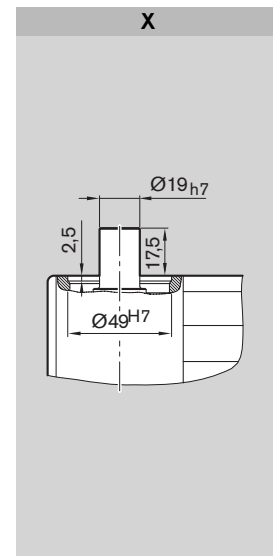
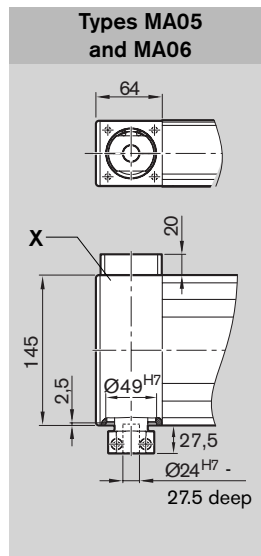
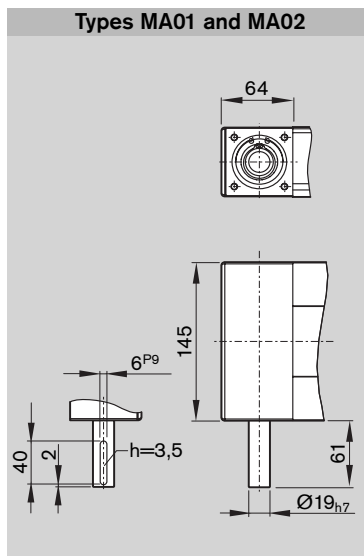
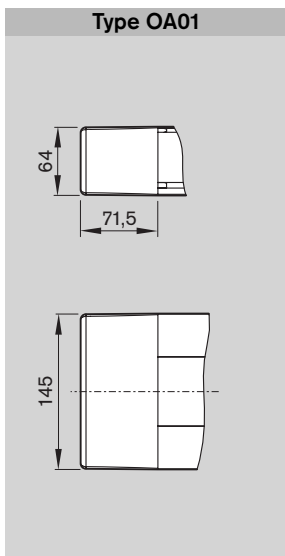
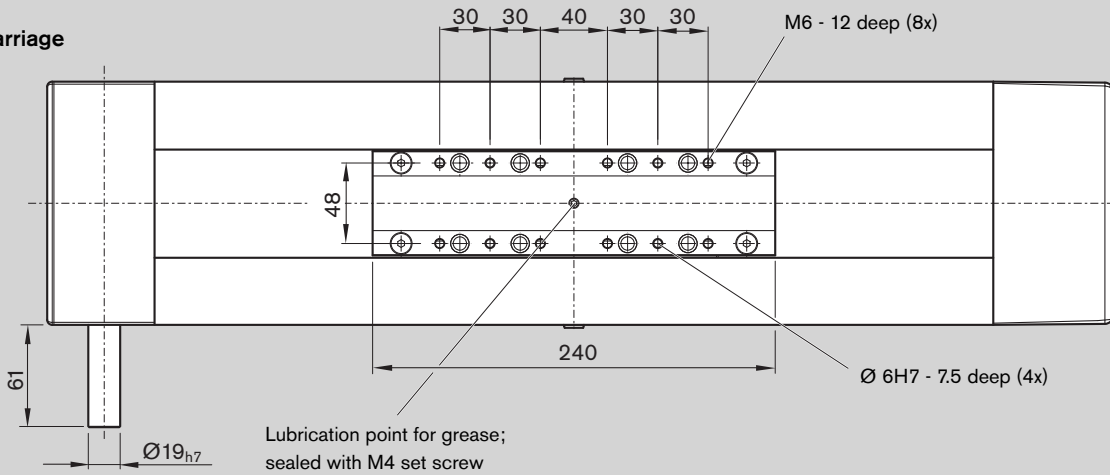
Compact Modules CKR

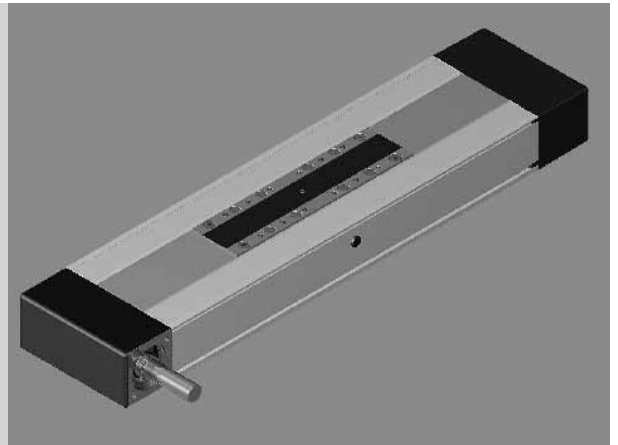
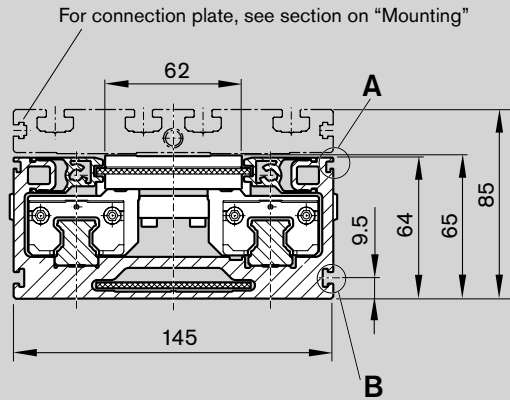
# CKR 20-145 dimensions

All dimensions in mm  
 Drawings not to scale

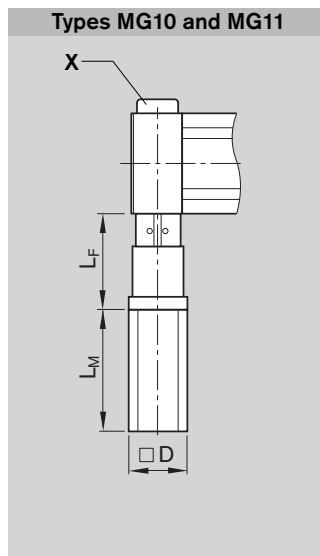
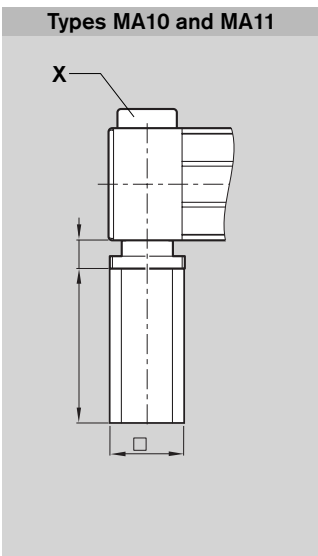
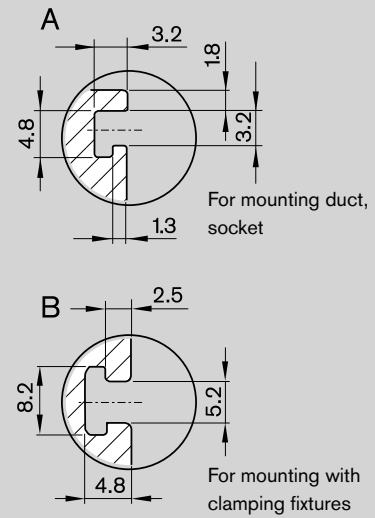
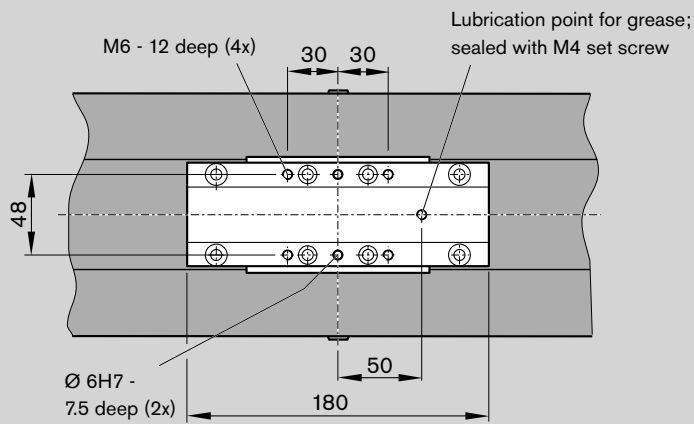


**Long carriage**





**Short carriage**



Motor	D	L <sub>F</sub>	Dimensions (mm)	
			without brake	L <sub>M</sub> with brake
MSK 040C	82	127	185.5	215.5
MSM 040B	80	132	157.5	191.5
MSK 060C	116	52	226.0	259.0

Compact Modules CKR

# CKR 25-200 components

Part number, length R0364 600 00, ... mm	Type	Guideway	Drive unit				Carriage			
			Shaft for motor	without keyway i = 1	with keyway i = 1	Gear reducer i = 3, 5, 10	Length 265 mm Connection plate		Length 405 mm Connection plate	
							without	with	without	with
<b>without drive</b> 	OA01		without	50			01	40	02	41
<b>with drive</b> 	MA01		right	01	03					
	MA02		left							
	MA03		both sides							
<b>with gear reducer</b> 	MG01 MG02	01	for gear reducer	1 shaft	LP090	10	01	40	02	41
	MG03 MG04				2 shafts	LP120				
						LP090				
						LP120				

- 1) Attachment kit also available without motor (when ordering: enter "00" for motor)
- 2) Including mounting accessories
- 3) Switch configuration with magnetic field sensor and mechanical/proximity switches together on one side is not possible.
- 4) Switching cam can be attached only in conjunction with connection plate.

**Note:** For gear unit performance data, see "Performance data" section.

Motor attachment <sup>1)</sup>			Motor	Switch		Documentation																												
i = 3	i = 5	i = 10	without brake	with brake	Socket, plug Mounting duct		Standard report	Measurement report																										
									without switch without mounting duct																									
			00		<table border="1"> <tr> <td colspan="2">without switch without mounting duct</td> <td colspan="2">00</td> </tr> <tr> <td colspan="4"><b>Magnetic field sensor</b></td> </tr> <tr> <td>Reed sensor</td> <td>21</td> <td rowspan="2">Mounting duct 25 Length = L</td> <td rowspan="2">Socket Plug 27</td> </tr> <tr> <td>Hall sensor PNP - NC contact</td> <td>22</td> </tr> <tr> <td colspan="4"><b>Magnetic field sensor with plug<sup>2)</sup></b></td> </tr> <tr> <td>Reed sensor</td> <td>58</td> <td></td> <td></td> </tr> <tr> <td>Hall sensor PNP - NC contact</td> <td>59</td> <td></td> <td></td> </tr> </table>		without switch without mounting duct		00		<b>Magnetic field sensor</b>				Reed sensor	21	Mounting duct 25 Length = L	Socket Plug 27	Hall sensor PNP - NC contact	22	<b>Magnetic field sensor with plug<sup>2)</sup></b>				Reed sensor	58			Hall sensor PNP - NC contact	59				02 Frictional torque
without switch without mounting duct		00																																
<b>Magnetic field sensor</b>																																		
Reed sensor	21	Mounting duct 25 Length = L	Socket Plug 27																															
Hall sensor PNP - NC contact	22																																	
<b>Magnetic field sensor with plug<sup>2)</sup></b>																																		
Reed sensor	58																																	
Hall sensor PNP - NC contact	59																																	
40	41	42	MSK 060C	90	91	01																												
30	31	32	MSK 076C	92	93	<table border="1"> <tr> <td colspan="4"><b>Proximity / mechanical switches<sup>3)</sup></b></td> </tr> <tr> <td>Mechanical</td> <td>15</td> <td rowspan="2">1 switching cam<sup>4)</sup> 16</td> <td rowspan="2">2 switching cams<sup>4)</sup> 26</td> <td rowspan="2">Socket Plug 17</td> </tr> <tr> <td>Proximity PNP - NC contact</td> <td>11</td> </tr> <tr> <td>Proximity PNP - NO contact</td> <td>13</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="2"><b>Cable duct length = L</b></td> <td colspan="2">20</td> </tr> </table>		<b>Proximity / mechanical switches<sup>3)</sup></b>				Mechanical	15	1 switching cam <sup>4)</sup> 16	2 switching cams <sup>4)</sup> 26	Socket Plug 17	Proximity PNP - NC contact	11	Proximity PNP - NO contact	13				<b>Cable duct length = L</b>		20			05 Positioning accuracy					
<b>Proximity / mechanical switches<sup>3)</sup></b>																																		
Mechanical	15	1 switching cam <sup>4)</sup> 16	2 switching cams <sup>4)</sup> 26	Socket Plug 17																														
Proximity PNP - NC contact	11																																	
Proximity PNP - NO contact	13																																	
<b>Cable duct length = L</b>		20																																
40	41	42	MSK 060C	90	91																													
30	31	32	MSK 076C	92	93																													

**Length of the Compact Module**

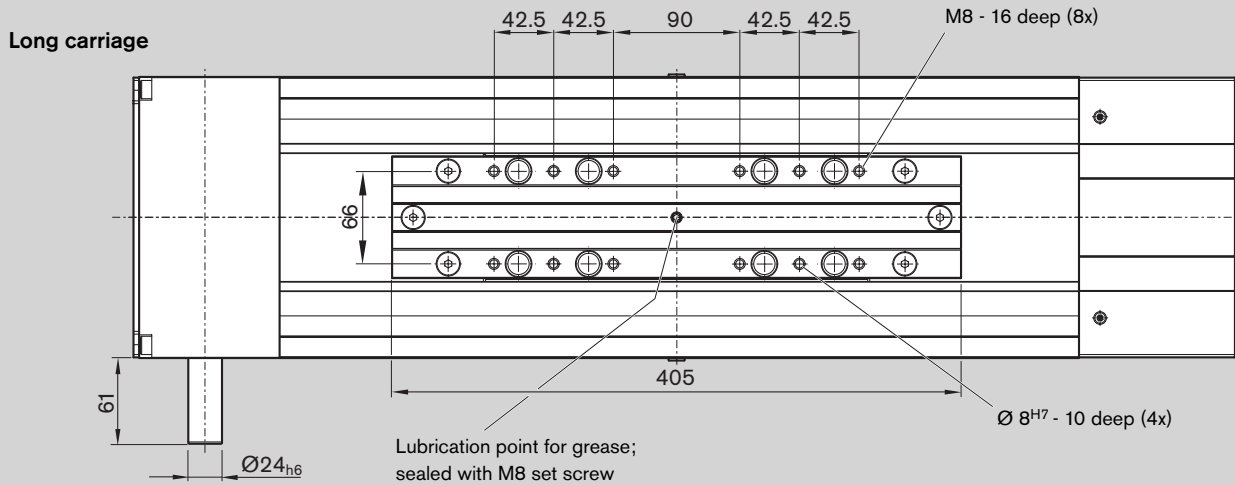
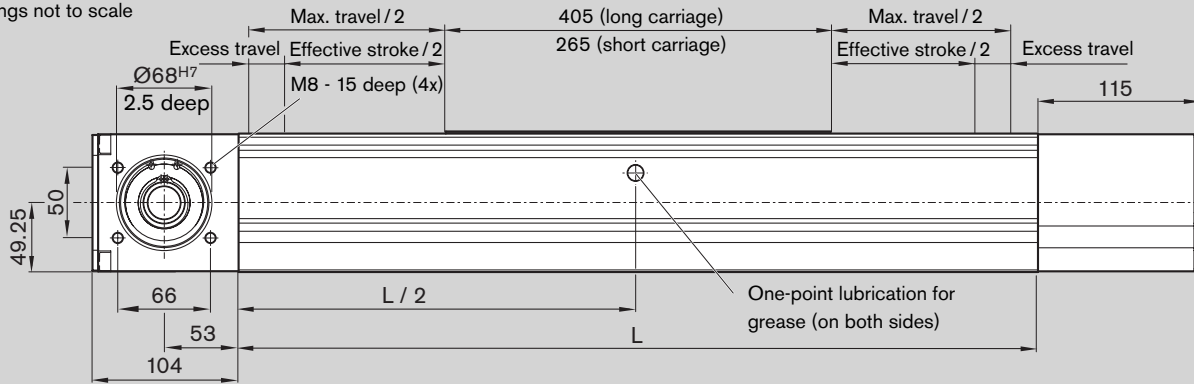
$$L = (\text{stroke} + 2 \cdot \text{excess travel}) + L_T + 25 \text{ mm}$$

See order example on p. 102 for example of how to calculate length.

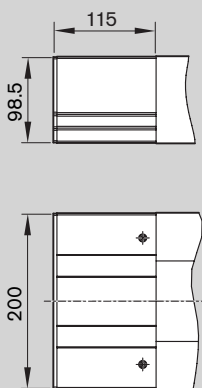
Compact Modules CKR

# CKR 25-200 dimensions

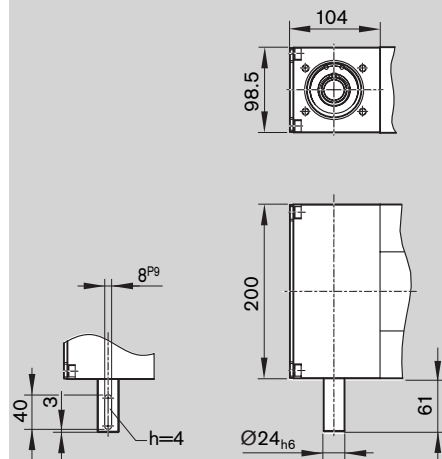
All dimensions in mm  
Drawings not to scale



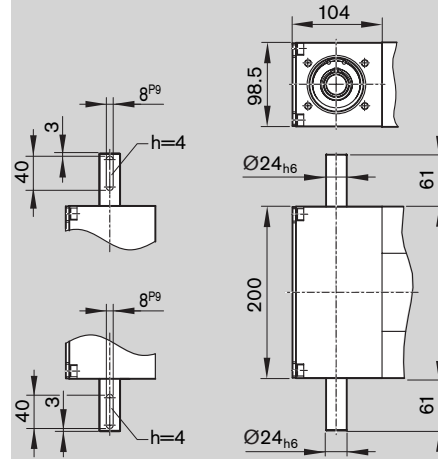
Type OA01

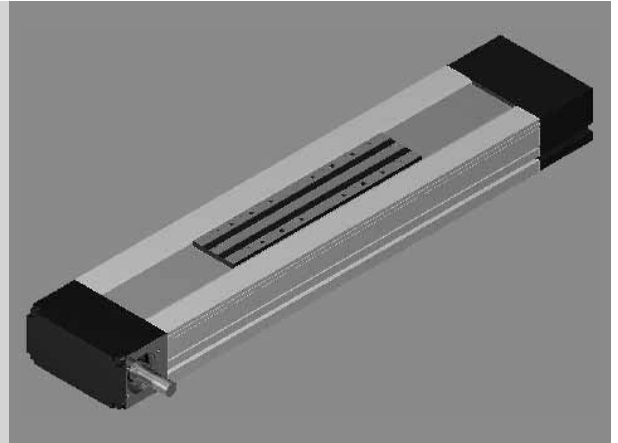
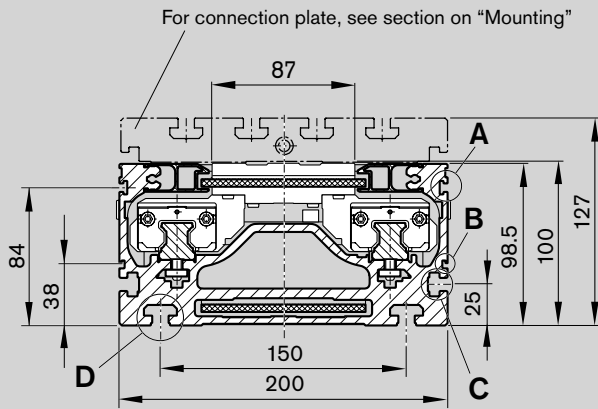


Types MA01 and MA02

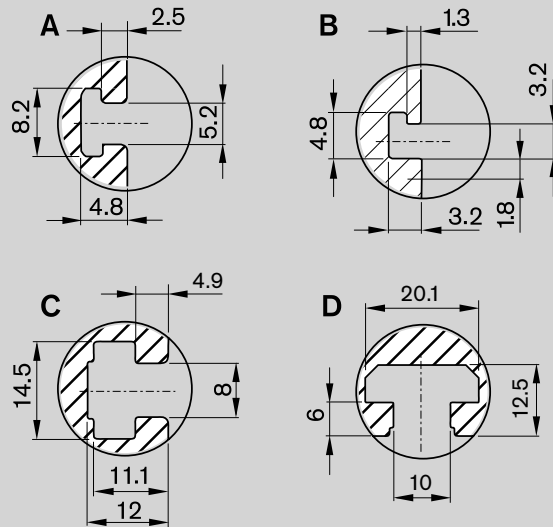
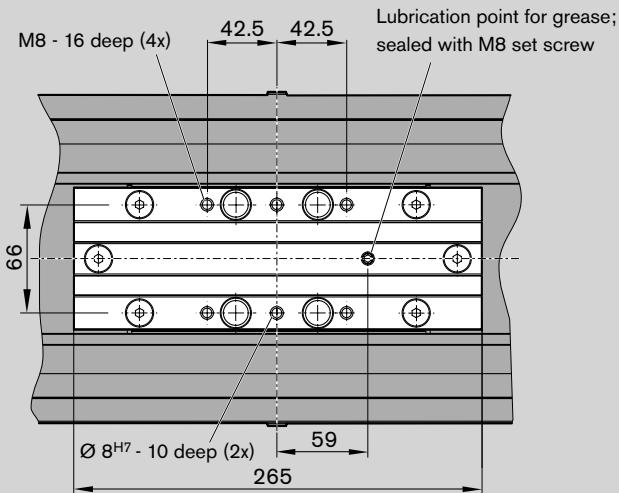


Type MA03

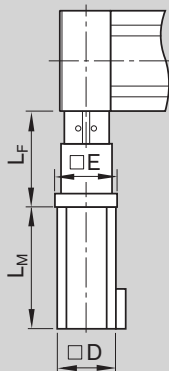




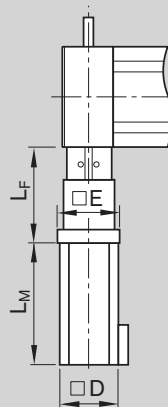
Short carriage



Types MG01 to MG02



Types MG03 to MG04



Motor	Gear reducer	Dimensions (mm)				
		D	E	L <sub>F</sub>	without brake	L <sub>M</sub> with brake
MSK 060C	LP090	116	120	157	226.0	259.0
MSK 076C	LP120	140	140	215	292.5	292.5

Compact Modules

## Performance data

### All data for motors with brake

#### CKR 12-90

Performance data of gear reducer

Performance values for horizontal operation with servo motor MSK 030C and IndraDrive controller<sup>1)</sup>

Connection voltage: 3 x 400 V

Gear reducer ratio	i = 5					i = 10				
Mass (kg)	2	4	6	8	10	2	4	6	8	10
Acceleration time t (ms)	50	63	75	87	100	77	84	90	97	103
Acceleration distance s (mm)	60	75	90	105	120	46	50	54	58	62
Acceleration a (m/s <sup>2</sup> )	47.7	38.3	32.0	27.4	24.0	15.6	14.3	13.3	12.4	11.6
Speed v (m/s)	2.4					1.2				
Repeatability (mm)	0.1					0.1				

Performance values for horizontal operation with servo motor MSM 030C and EcoDrive Cs controller<sup>1)</sup>

Connection voltage: 1 x 230 V

Gear reducer ratio	i = 5					i = 10				
Mass (kg)	2	4	6	8	10	2	4	6	8	10
Acceleration time t (ms)	18	19	23	28	33	19	21	24	26	29
Acceleration distance s (mm)	8	8	10	13	15	4	5	5	6	6
Acceleration a (m/s <sup>2</sup> )	50.0	48.2	38.6	32.2	27.6	23.9	21.1	19.0	17.2	15.7
Speed v (m/s)	0.90					0.45				
Repeatability (mm)	0.1					0.1				

#### CKR 15-110

Performance data of gear reducer

Performance values for horizontal operation with servo motor MSK 030C and IndraDrive controller<sup>1)</sup>

Connection voltage: 3 x 400 V

Gear reducer ratio	i = 5					i = 10				
Mass (kg)	1	3	5	7	9	4	8	12	16	20
Acceleration time t (ms)	48	48	60	72	84	64	78	93	107	120
Acceleration distance s (mm)	58	58	72	87	101	38	47	56	64	72
Acceleration a (m/s <sup>2</sup> )	50.0	50.0	39.9	33.2	28.5	18.8	15.3	13.0	11.2	10.0
Speed v (m/s)	2.4					1.2				
Repeatability (mm)	0.1					0.1				

Performance values for horizontal operation with servo motor MSM 030C and EcoDrive Cs controller<sup>1)</sup>

Connection voltage: 1 x 230 V

Gear reducer ratio	i = 5					i = 10					
Mass (kg)	3	5	7	9	3	6	9	12	15	18	21
Acceleration time t (ms)	24	26	32	38	21	27	32	37	43	48	54
Acceleration distance s (mm)	14	16	19	23	6	8	10	11	13	14	16
Acceleration a (m/s <sup>2</sup> )	50.0	45.7	37.1	31.2	28.1	22.5	18.7	16.0	14.0	12.5	11.2
Speed v (m/s)	1.20					0.60					
Repeatability (mm)	0.1					0.1					

1) For additional information, refer to the catalogs "Controllers, Motors, Electrical Accessories, Servo motors" and "DSC, ECODRIVE Cs".

**CKR 20-145****Performance data of gear reducer**Performance values for horizontal operation with servo motor MSK 030C and IndraDrive controller<sup>1)</sup>

Connection voltage: 3 x 400 V

Gear reducer ratio	i = 3								
Mass (kg)	3	5	7	3	5	7	3	5	7
Acceleration time t (ms)	20	20	20	60	60	60	100	100	117
Acceleration distance s (mm)	10	10	10	90	90	90	250	250	292
Acceleration a (m/s <sup>2</sup> )	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	42.8
Speed v (m/s)	1.0			3.0			5.0		
Repeatability (mm)	0.1								

Gear reducer ratio	i = 5								
Mass (kg)	4	7	10	13	16	19	22	25	
Acceleration time t (ms)	66	66	77	88	100	111	122	134	
Acceleration distance s (mm)	109	109	127	146	164	183	202	221	
Acceleration a (m/s <sup>2</sup> )	50.0	50.0	42.9	37.4	33.1	29.7	26.9	24.7	
Speed v (m/s)	3.3								
Repeatability (mm)	0.1								

Gear reducer ratio	i = 10									
Mass (kg)	3	6	9	12	15	18	21	24	27	30
Acceleration time t (ms)	75	82	88	95	102	108	115	122	128	135
Acceleration distance s (mm)	62	67	73	78	84	89	95	100	106	111
Acceleration a (m/s <sup>2</sup> )	22.0	20.2	18.7	17.4	16.2	15.2	14.4	13.6	12.9	12.2
Speed v (m/s)	1.65									
Repeatability (mm)	0.1									

Performance values for horizontal operation with servo motor MSM 040B and EcoDrive Cs controller<sup>1)</sup>

Connection voltage: 1 x 230 V

Gear reducer ratio	i = 5									
Mass (kg)	6	9	12	15	18	6	9	12	15	18
Acceleration time t (ms)	16	16	18	20	23	33	33	36	42	48
Acceleration distance s (mm)	6	6	7	8	9	27	27	30	35	39
Acceleration a (m/s <sup>2</sup> )	50.0	50.0	45.6	39.4	34.7	50.0	50.0	45.6	39.4	34.7
Speed v (m/s)	0.80					1.65				
Repeatability (mm)	0.1									

Gear reducer ratio	i = 10									
Mass (kg)	3	6	9	12	15	18	21	24	27	30
Acceleration time t (ms)	23	27	30	33	37	40	43	47	50	53
Acceleration distance s (mm)	10	11	12	14	15	17	18	19	21	22
Acceleration a (m/s <sup>2</sup> )	35.1	30.8	27.4	24.7	22.5	20.6	19.0	17.7	16.5	15.5
Speed v (m/s)	0.80									
Repeatability (mm)	0.1									

1) For additional information, refer to the catalogs "Controllers, Motors, Electrical Accessories, Servo motors" and "DSC, ECODRIVE Cs".

Compact Modules

## Performance data

### CKR 25-200

Performance data LP gear reducer LP090

Performance values for horizontal operation with servo motor MSK 060C – 0600 and IndraDrive controller<sup>1)</sup>

Connection voltage: 3 x 400 V

Gear reducer ratio		i = 3									
Mass	(kg)	5	8	11	14	17	5	8	11	14	17
Acceleration time t	(ms)	60	60	61	69	76	100	100	102	115	127
Acceleration distance s	(mm)	90	90	92	103	114	250	250	256	286	317
Acceleration a	(m/s <sup>2</sup> )	50.0	50.0	48.8	43.6	39.5	50.0	50.0	48.8	43.6	39.5
Speed v	(m/s)	3.00					5.00				
Repeatability	(mm)	0.1									

Gear reducer ratio		i = 5									
Mass	(kg)	10	20	30	40	50	10	20	30	40	50
Acceleration time t	(ms)	46	59	72	85	98	95	123	150	178	205
Acceleration distance s	(mm)	41	53	65	77	89	179	230	282	333	385
Acceleration a	(m/s <sup>2</sup> )	39.3	30.5	25.0	21.1	18.3	39.3	30.5	25.0	21.1	18.3
Speed v	(m/s)	1.80					3.75				
Repeatability	(mm)	0.1									

Gear reducer ratio		i = 10									
Mass	(kg)	10	20	30	40	50	10	20	30	40	50
Acceleration time t	(ms)	90	101	112	122	133	180	202	223	245	266
Acceleration distance s	(mm)	56	63	70	76	83	225	252	279	306	333
Acceleration a	(m/s <sup>2</sup> )	13.9	12.4	11.2	10.2	9.4	13.9	12.4	11.2	10.2	9.4
Speed v	(m/s)	1.25					2.50				
Repeatability	(mm)	0.1									

1) For additional information, refer to the catalogs "Controllers, Motors, Electrical Accessories, Servo motors" and "DSC, ECODRIVE Cs".

**Performance data LP gear reducer LP120**Performance values for horizontal operation with servo motor MSK 076 and IndraDrive controller<sup>1)</sup>

Connection voltage: 3 x 400 V

Gear reducer ratio		i = 3									
Mass	(kg)	20	30	40	50	60	20	30	40	50	60
Acceleration time t	(ms)	59	69	76	90	100	118	138	159	179	199
Acceleration distance s	(mm)	59	69	79	90	100	236	277	317	358	399
Acceleration a	(m/s <sup>2</sup> )	33.9	28.9	25.2	22.3	20.1	33.9	28.9	25.2	22.3	20.1
Speed v	(m/s)	2.0					4.0				
Repeatability	(mm)	0.1									

Gear reducer ratio		i = 5									
Mass	(kg)	20	30	40	50	60	20	30	40	50	60
Acceleration time t	(ms)	92	101	109	117	126	184	201	218	234	251
Acceleration distance s	(mm)	74	80	87	94	100	295	322	348	375	402
Acceleration a	(m/s <sup>2</sup> )	17.4	15.9	14.7	13.6	12.7	17.4	15.9	14.7	13.6	12.7
Speed v	(m/s)	1.6					3.2				
Repeatability	(mm)	0.1									

Gear reducer ratio		i = 10									
Mass	(kg)	20	30	40	50	60	20	30	40	50	60
Acceleration time t	(ms)	177	182	187	192	197	344	353	363	373	382
Acceleration distance s	(mm)	80	82	84	86	88	301	309	318	326	334
Acceleration a	(m/s <sup>2</sup> )	5.1	5.0	4.8	4.7	4.6	5.1	5.0	4.8	4.7	4.6
Speed v	(m/s)	0.90					1.75				
Repeatability	(mm)	0.1									

1) For additional information, refer to the catalogs "Controllers, Motors, Electrical Accessories, Servo motors" and "DSC, ECODRIVE Cs".

The tables contain performance data examples for different gearbox-motor-controller combinations. They are intended to serve as a guide for selection; exact values must be calculated based on individual cases.

Please make sure that the selected combination is a permissible one (load capacities, moments, max. speeds, motor data, etc.)!