

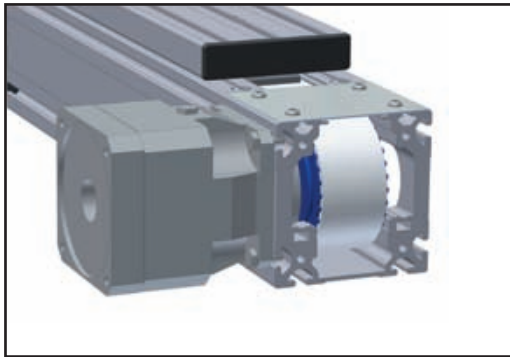
# Drive adaptation AXC / AXLT / AXDL



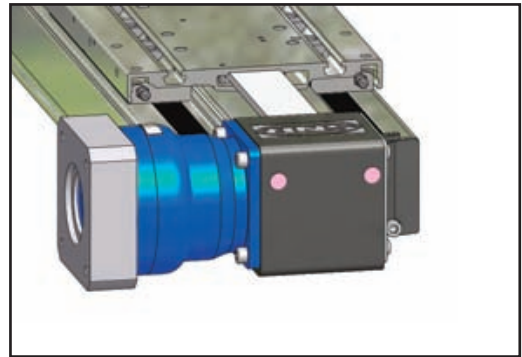
## I Integrated planetary gearbox

AXC and AXDL-series SNR linear axes with synchronous belt drives can be configured with gearboxes according to specifications and application. The integrated planetary gearboxes are used in applications in which the highest level of precision and dynamism is required. The torque is reduced, and the number of revolutions increased, thanks to the use of integrated planetary gearboxes.

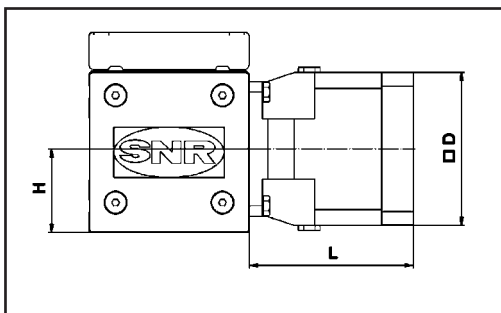
A pulley is friction-lock mounted on the output shaft of the gearbox ensures zero-backlash torque transmission. Since the system is fitted directly, clutch case and clutch are not needed; this results in a compact arrangement. Only engines with a smooth shaft should be used.



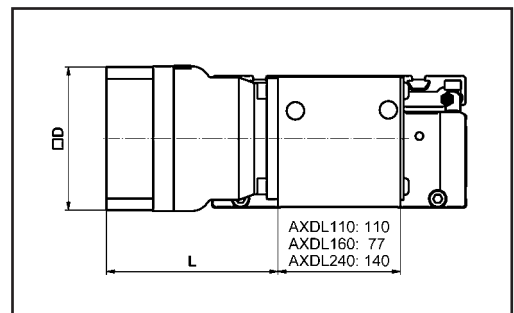
AXDL\_Z series



AXC\_Z series



AXDL\_Z series



AXC\_Z series

### • ID number of drive adaptation

D number	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	Y
Centering b [mm]	40	50	50	60	60	60	60	70	80	80	95	95	95	95	110	110	110	110	110	110	130	130
Reference circle e [mm]	63	70	95	75	75	90	90	90	100	100	115	115	130	130	130	130	145	145	165	165	165	165
Thread	M4	M4	M6	M5	M5	M5	M5	M5	M6	M6	M8	M8	M8	M8	M8	M8	M8	M8	M10	M10	M10	M10
Diameter of shaft [mm]	9	14	14	11	14	11	14	14	14	19	19	24	19	24	19	24	19	24	19	24	24	32

Please use the ID number to label the desired drive adaptation in the order description.  
ID number X: special size or all dimensions not listed.

	AXC40			
	1-level		2-level	
Translations i	5 / 7	10	25 / 35 / 50 / 70	100
Rated torque on gearbox [Nm]	5,7	5,2	5,7	5,2
Max. acceleration torque [Nm] <sup>1)</sup>	11,5	10,5	11,5	10,5
Permissible average input speed [min <sup>-1</sup> ]	4.000		4.000	
Max. input speed [min <sup>-1</sup> ]	8.000		8.000	
Backlash [arcmin]	≤ 20		≤ 25	
Mass [kg]	0,31		0,52	
Diameter of motor shaft d [mm]	9		9	
Moment of inertia [kgcm <sup>2</sup> ] for d	0,04		0,04	
Overall length L [mm] for d	59		74,5	
Flange dimension D [mm]	min. 40			

	AXC60			AXDL110				
	1-level		2-level	1-level			2-level	
Translations i	4/5/7	10	16 / 20 / 25 / 28 / 35 / 40 / 50 / 70	3	4/5/7	10	16 / 20 / 25 / 28 / 35 / 40 / 50 / 70	
Rated torque on gearbox [Nm]	16	12	16	17	26	17	26	
Max. acceleration torque [Nm] <sup>1)</sup>	22	18	22	30	42	32	42	
Permissible average input speed [min <sup>-1</sup> ]	4.500		4.500	3.300	3.300 - 4.000	4.000	4.400 - 5.500	
Max. input speed [min <sup>-1</sup> ]	8.000		8.000	6.000			6.000	
Backlash [arcmin]	≤ 6		≤ 8	Standard: ≤ 4 / Reduced: ≤ 2			Standard: ≤ 6 / Reduced: ≤ 4	
Mass [kg]	1,1		1,7	1,9			2	
Diameter of motor shaft d [mm]	14	19	max. 14	11	14	19	11	14
Moment of inertia [kgcm <sup>2</sup> ] for d	0,07-0,14	0,39-0,43	0,07 - 0,14	0,09-0,21	0,17-0,28	0,49-0,61	0,056-0,077	0,15 - 0,17
Overall length L [mm] for d	73,5	93	105,5	90	94	106	108	116
Flange dimension D [mm]	55 - 100			min. 70		min. 90	min. 60	min. 70

	AXC80 + AXDL160					
	1-level			2-level		
Translations i	3	4/5/7	10	16 / 20 / 25 / 28 / 35 / 40 / 50 / 70		100
Rated torque on gearbox [Nm]	47	75	52	75		52
Max. acceleration torque [Nm] <sup>1)</sup>	85	110	95	110		90
Permissible average input speed [min <sup>-1</sup> ]	2.900	2.900 - 3.100	3.100	3.500 - 4.500		4.500
Max. input speed [min <sup>-1</sup> ]	6.000			6.000		
Backlash [arcmin]	Standard: ≤ 4 / Reduced: ≤ 2			Standard: ≤ 6 / Reduced: ≤ 4		
Mass [kg]	3,9			3,6		
Diameter of motor shaft d [mm]	14	19	24	11	14	19
Moment of inertia [kgcm <sup>2</sup> ] for d	0,38 - 0,86	0,54 - 1,03	1,91 - 2,40	0,09 - 0,16	0,16 - 0,23	0,49 - 0,55
Overall length L [mm] for d (AXC80 + 8 mm)	108	112	130	119	123	136
Flange dimension D [mm]	min. 90		min. 120	min. 70		min. 90

	AXC120 + AXDL240							
	1-level				2-level			
Translations i	3	4	5	7	10	16 / 20 / 25 / 28 / 35 / 40 / 50 / 70		100
Rated torque on gearbox [Nm]	120	180	175	170	120	170 - 180		120
Max. acceleration torque [Nm] <sup>1)</sup>	235	315		235	315		235	
Permissible average input speed [min <sup>-1</sup> ]	2.500			2.800	3.100 - 4.500		4.200	
Max. input speed [min <sup>-1</sup> ]	4.500				4.500			
Backlash [arcmin]	Standard: ≤ 3 / Reduced: ≤ 1				Standard: ≤ 5 / Reduced: ≤ 3			
Mass [kg]	7,7				7,9			
Diameter of motor shaft d [mm]	19	24	28	38	14	19	24	
Moment of inertia [kgcm <sup>2</sup> ] for d	1,38 - 3,29	2,07 - 3,99	1,68 - 3,01	9,14 - 11,1	0,37 - 0,64	0,54 - 0,81	1,91 - 2,18	
Overall length L [mm] for d	122	129		156	142	146	164	
Flange dimension D [mm]	min. 120			min. 150	min. 90		min. 120	

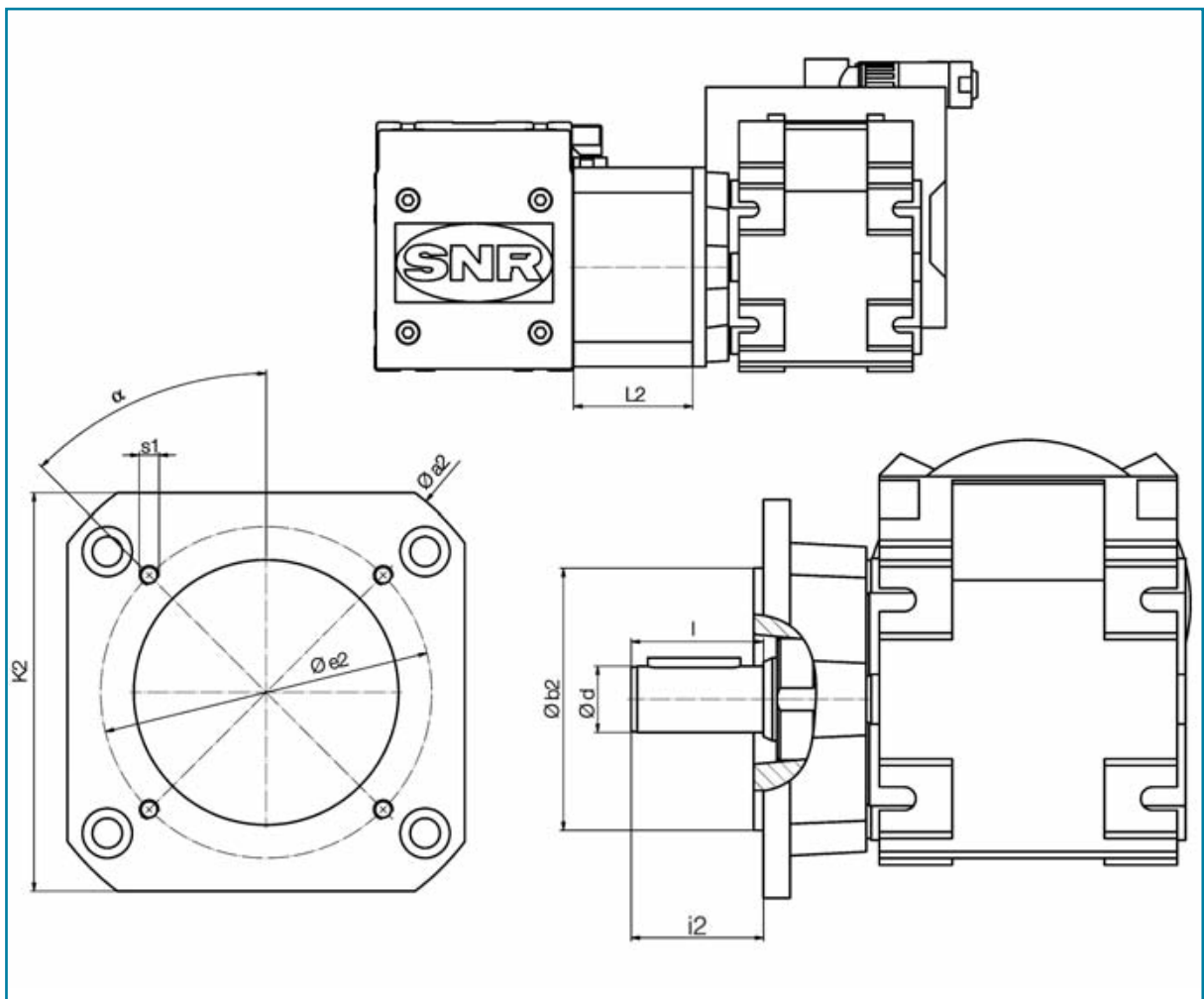
1) Observed permitted operating load of linear axis.



## Adapter/coupling cone for synchronous belt drive AXC\_Z / AXDL\_Z

In the simplest type of linking, the drive shaft of the gearbox or motor is directly inserted into the hollow shaft of the driving belt pulley. The drive is screwed down through a flat adapter plate onto the linear axis. The feather key provides positive power transmission. However, the requirement for this is that the output shaft diameter coincides with the respective hollow shaft diameter of the axis (see axis data sheet).

However, adaptation via the integrated clutch in combination with a coupling cone is more common. The axis-side coupling is screwed down onto the driving belt pulley and due to the friction-lock torque transfer offers optimal operational safety even at high speeds. A large selection of coupling cones is available for standard drives with a standardized B5 flange. Drives with smooth shaft and shaft with feather key can be used.



## I Drive adapter flange with interlocking connection

Size ID for drive design corresponds to diameter d of the inclusive plug-in shaft with model E0.

Linear axis	ID number	Model	e2	$\alpha$	s <sub>1</sub>	b <sub>2</sub>	d	i <sub>2</sub> max.	i <sub>2-l</sub> max.	k <sub>2</sub>	a <sub>2</sub>	L <sub>2</sub>
AXC40ZF	A	VC065-E0	54	0°	4 x Ø 6,5	44	12	-	20	-	64,5	20,5
	B	B5 C100	80	45°	4 x M6 x 8	60	9	36	9	-	100	9
AXC60ZF/AF	A	B14 C60	52	45°	4 x Ø 5,5	40	14	47	5	60	-	5
	B	VC065-E0	54	0°	4 x Ø 6,5	44	14	-	18	70	80	18
	C	B5 C120	100	45°	4 x M6x8	80	14	50	8	100	120	8
AXC80ZF/AF	A	B14 C80	70	45°	4 x Ø 6,5	60	20	71	12	82	-	12
	B	GST04-2x-VCR	61	90°	6 x Ø 5,5	48	20	71	12	80	-	12
	C	GKR03-2x-VCR	70	0°	4 x Ø 6,5	55*	20	69	10	82	100	10
	D	VC065-E0	54	0°	4 x Ø 6,5	44	12	-	20	82	-	20
	E	B5 C120	100	45°	4 x M6x12	80	20	72	12,5	-	120	12,5
AXC120ZF/AF	A	B5 C120	100	45°	4 x M6x12	80	30	107	13	120	-	13
	B	GST06-2x-VCR	90	0°/90°	6 x Ø 9	70	30	108	14	120	150	14
	C	B5 C200	165	45°	4 x M10x20	130	30	119	25	-	200	25

\* Centring by interlocking on the adaptation plate

## I Interlocking and force-fit connection with coupling and coupling cone

Linear axis	ID number	Model	e2	$\alpha$	s <sub>1</sub>	b <sub>2</sub>	d min.	d max.	i <sub>2</sub> max.	i <sub>2-l</sub> max.	k <sub>2</sub>	a <sub>2</sub>	L <sub>2</sub>
AXC40ZG	A	B5 TK63	63	45°	4 x M4x8	40	6	10	23	7	54	72	37
AXC60ZG/AG	A	LP70	62	0°	4 x Ø 5,5	52	16	16	36	8	70	80	58
	B	LP90	80	0°	4 x Ø 6,5	68	20	24	46	21	-	90	71
	C	B14 C80	70	45°	4 x Ø 5,5	60	14	24	40	15	64	80	65
	D	B5 / B14 C100	80	0°	4 x Ø 6,5	60	12	18	34	3	-	100	53
	E	B5 C120	100	45°	4 x M6x12	80	19	20	40	15	96	120	65
AXC80ZG/AG	A	B5 C160	130	45°	4 x M8x16	110	19	25	52	15	120	150	74
	B	B5 C120	100	45°	4 x M6x12	80	19	25	50	12	90	110	71
	C	B5 C120	100	45°	4 x M6x15	80	14	20	40	3	83	110	62
	D	LP70	62	0°	4 x Ø 5,5	52	16	16	36	8	82	100	66
	E	LP90	80	0°	4 x Ø 6,5	68	22	25	52	22	80	90	81
	F	B14 C80	70	45°	4 x Ø 6,5	60	19	20	40	11	80	110	70
AXC120ZG/AG	A	B5 C120	100	45°	4 x M6x18	80	19	30	50(60)	7	120	150	72(91)
	B	B5 C160	130	45°	4 x M6x18	80	24	30	60	18	-	160	83
	C	B5 C200	165	45°	4 x M10x20	130	19	20	40	1	-	200	66
AXDL110	A	B5 C120	80	45°	4 x M6x10	100	14	20	47,5	10	82	110	42,5
	B	B5 C160	110	45°	4 x M8x15	130	14	20	46	8,5	116	160	41
	C	LP070	62	0°	4 x Ø5,5	52	14	20	45,5	8	80	110	40,5
	D	LP050	44	0°	4 x Ø4,5	35	14	20	45,5	8	80	110	40,5
	E	CP060	52	45°	4 x Ø5,5	40	14	20	45,5	8	80	110	40,5
	F	B14 C80	70	45°	4 x Ø6,6	60	20	25	59,5	22	82	110	54,5
AXDL160	A	B5 C120	80	45°	4 x M6x15	100	14	20	43	0	86	120	22,5
	B	LP070	62	0°	4 x Ø5,5	52	14	25	51,5	8,5	78	106	31
	C	LP090	80	0°	4 x Ø6,6	68	14	25	54	11	100	135	33,5
	D	B14 C80	70	45°	4 x Ø6,6	60	14	20	49	6	86	120	28,5
	E	B5 C160	130	45°	4 x M8x18	110	19	30	60	17	120	150	39,5
AXDL240	A	B5 C120	80	45°	4 x M6x29	100	14	20	43	1	96	120	11
	B	B5 C120	80	45°	4 x M6	100	25	25	53	11	96	120	21
	C	TR105	85	45°	4 x Ø9	70	25	30	65,5	23,5	110	144	33,5
	E	B5 C160	110	45°	4 x M8x18	130	25	30	62	20	115	150	30

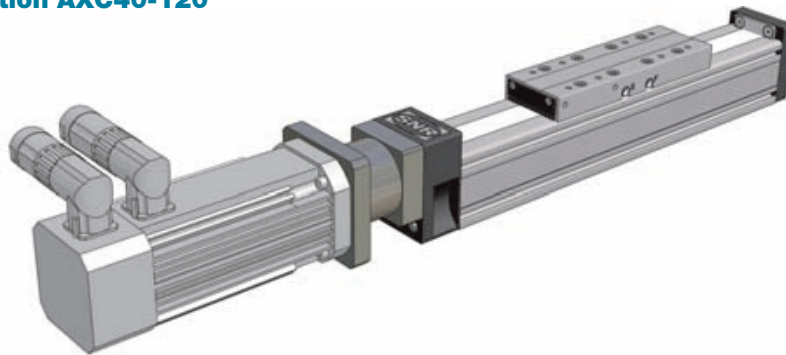
Please use the ID number to label the desired drive adaptation in the order description.  
ID number X: special size or all dimensions not listed.



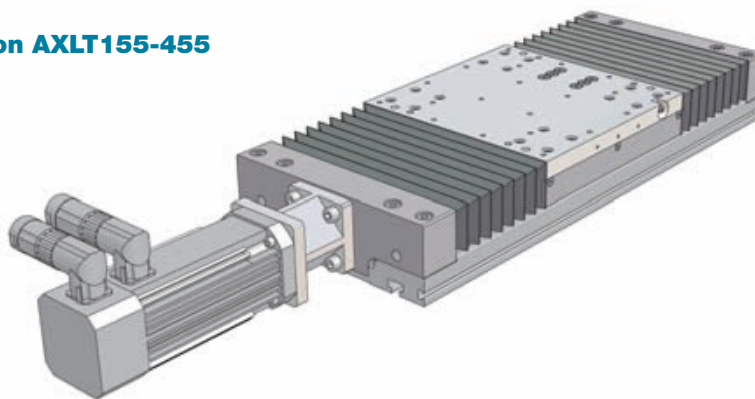
## I Coupling cone for screw-type drive

In this variation, the drive is connected to the linear axis via a coupling cone. The power transmission is through an elastomer coupling insert. Motors with a plain shaft (friction-lock connections) and shafts with feather key (non-positive and interlocking connections).

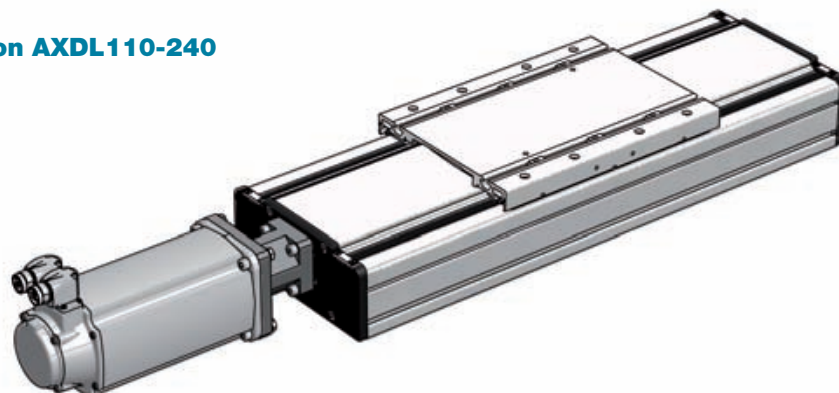
- Drive adaptation **AXC40-120**

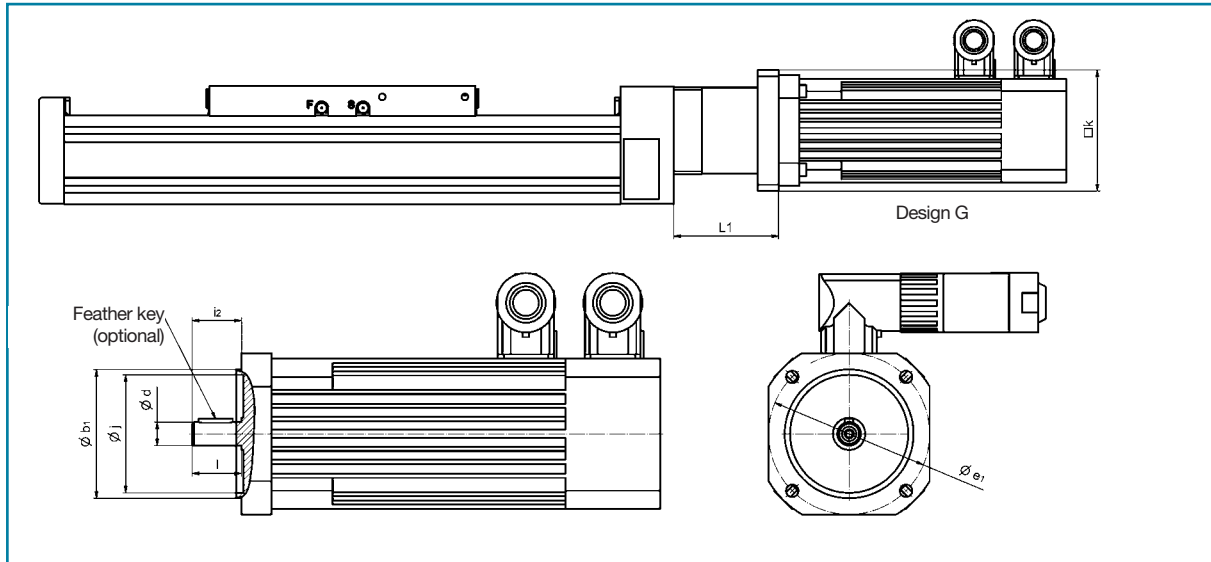


- Drive adaptation **AXLT155-455**



- Drive adaptation **AXDL110-240**





Linear axis	Motor model	e1 min.	e1 max.	b1 min.	b1 max.	d min.	d max.	i2 max.	i2-l max.	k	L1	max. drive torque
AXC40S	B5 / B14	45	63	35*	50	5	14	30	7	55	47	7,5 Nm
AXC60S	B5 (B14)	63 (75)	100	50*	80	9	19**	40	3	82	71	10 Nm
	B5	115	130	95	95	19	20	40	15	110	84	10 Nm
	B5	130	130	110	110	24	24	50	25	120	93	10 Nm
AXDL110	B5 (B14)	50 (70)	75	40	60	9	19**	40	3	60	72	10 Nm
AXLT155	B5 / B14	55	100	34*	80	5	14	30	7	85	71	10 Nm
AXC80/ AXDL160/ AXLT225	B5 / B14	63	100	50	80	9	19**	40	3	82	76	17 Nm
	B5	115	130	95	110	19	20	40	15	110	88	17 Nm
	B5	130	130	110	110	24	24	50	25	120	98	17 Nm
AXC120 / AXDL240 / AXLT325	B5 / B14	75	130	60*	110	14	24**	50	3	112	89	60 Nm
AXLT455	B5 / B14	100	165	80*	130	19	25	50	8	140	105	160 Nm
	B5 / B14	130	165	110	130	28	32	60	23	155	120	160 Nm
	B5 / B14	215	215	180	180	38	38	80	45	192	142	160 Nm

\* Motors with smaller centering can also be used. The centering is then effected via the coupling.

\*\* For motors with a feather key with maximum shaft length a shorter replacement feather key is provided.

## I ID number drive adaptation

Centering b [mm]	35	40	50	60	60	70	70	80	80	95	95	110	110	130	130	180	180	180		
Diameter shaft [mm]	8	9	14	11	14	14	16	14	19	19	24	19	24	24	32	24	28	38		
ID number	Shaft without feather key		A	C	E	G	I	K		N	P	R	T	V	Y	A	C	E	G	I
	Shaft with feather key		B	D	F	H	J	L	M	O	Q	S	U	W	Z	B	D	F	H	J
Reference circle e [mm] <sup>1)</sup>	46	63	70/95	75		90		100	115	130		130		165						
Thread <sup>1)</sup>	M4	M4	M4/M6	M5		M5		M6		M8		M8		M10						

<sup>1)</sup> Only if using a deflection belt drive following the limit size, see page 89.

Please use the ID number to label the desired drive adaptation in the order description.

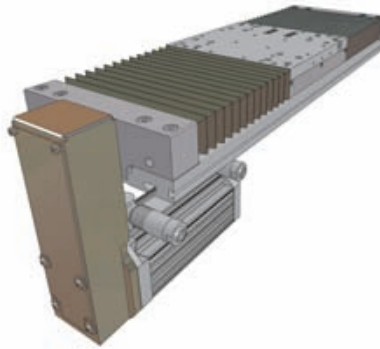
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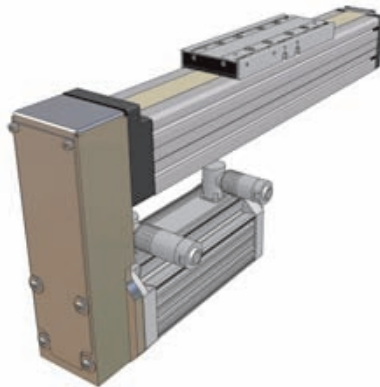
## I Deflection belt drive for screw-type drive

To be able to take best advantage of the existing space even in cramped installation spaces, we offer deflection belt drives for linear axes with screw-type drive as well as for the linear tables. The mounting position of the drive can then be adapted to the environmental conditions. Motors with a plain shaft or a shaft with feather key are used depending on the selected reduction ratio and the associated fastening variations.

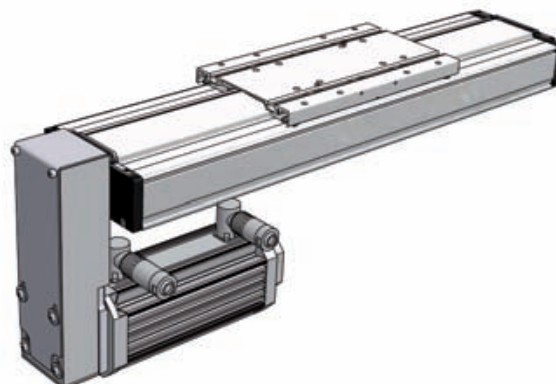
- **AXLT with deflection**

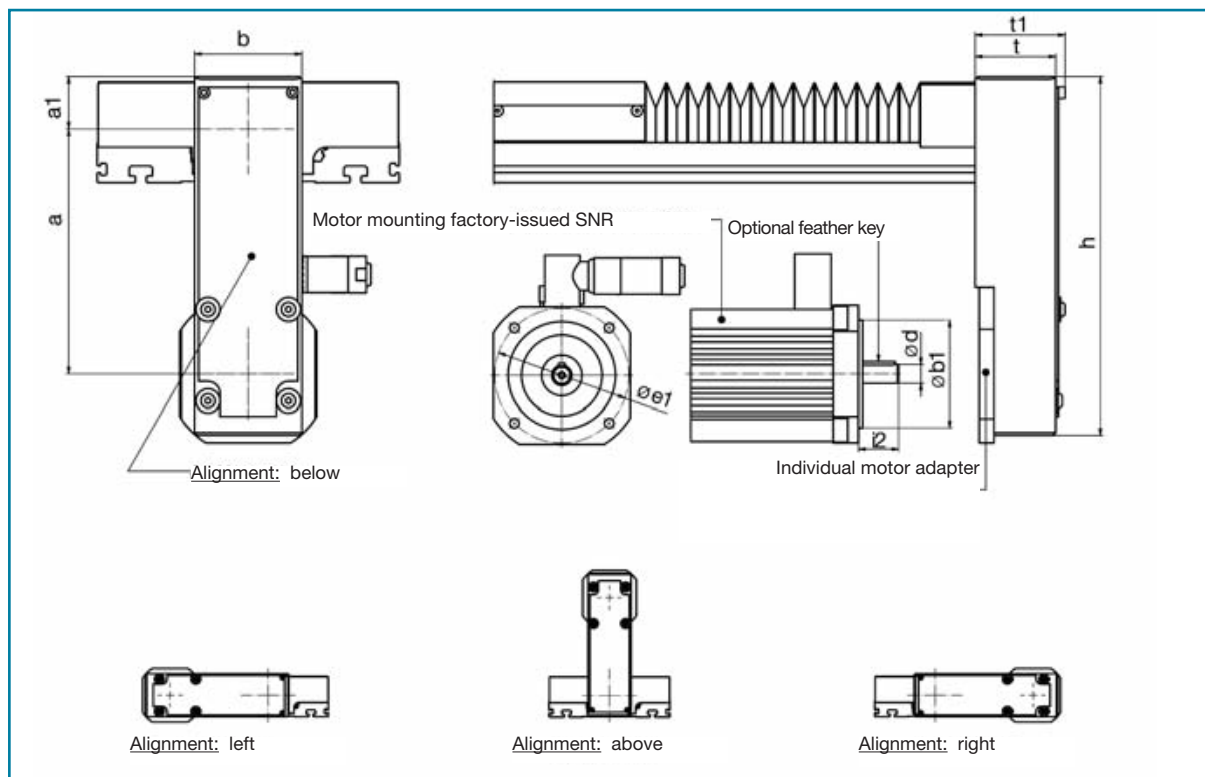


- **AXC with deflection belt drive**



- **AXDL with deflection belt drive**





Linear axis	Available reduction ratios																	
	Minimum motor shaft diameter for fastening variations: Clamping set / feather key / adhesive joint																	
AXC60 / AXDL110 AXLT155	<b>1</b>			<b>1,5</b>			<b>1,8</b>			<b>2,25</b>								
	14	-	-	-	14	14	-	11	14	-	9	9						
AXC80 / AXDL160 AXLT225	<b>1</b>			<b>1,25</b>			<b>1,5</b>			<b>2</b>			<b>2,5</b>					
	16	24	24	14	19	24	10	16	19	-	12	14	-	9	11			
AXC120 / AXDL240 AXLT325	<b>1</b>			<b>1,6</b>			<b>2</b>			<b>2,4</b>			<b>3,2</b>			<b>4</b>		
	24	-	-	14	24	24	11	19	24	-	14	24	-	11	14	-	-	11
AXLT455	<b>1</b>			<b>1,25</b>			<b>1,6</b>			<b>2</b>								
	28	-	-	28	-	-	28	-	-	19	28	28						
Linear axis	Motor size limits (min / max)					Dimensions												
	Ø b <sub>1</sub>	Ø e <sub>1</sub>		i <sub>2</sub>		Model	a	a <sub>1</sub>	b	h	t	t <sub>1</sub>						
AXC60	50*	60	63	75	20	30	B5	106 ± 6	35	60	197	40	45					
AXLT155 / AXDL110	40*	60	63	75	20	30	B5	140,5 ± 2	31,5	60	216	40	45					
AXC80 / AXLT225	50*	80	63	100	20	50	B5	185 ± 2,5	39	80	267	60	67					
AXC120 / AXLT325	60*	110	75	130	30	50	B5 / B14	249,5 ± 5,5	57	100	407	60	67					
AXLT455	80*	130	100	165	30	60	B5 / B14	354 ± 5	89	180	565	80	89					

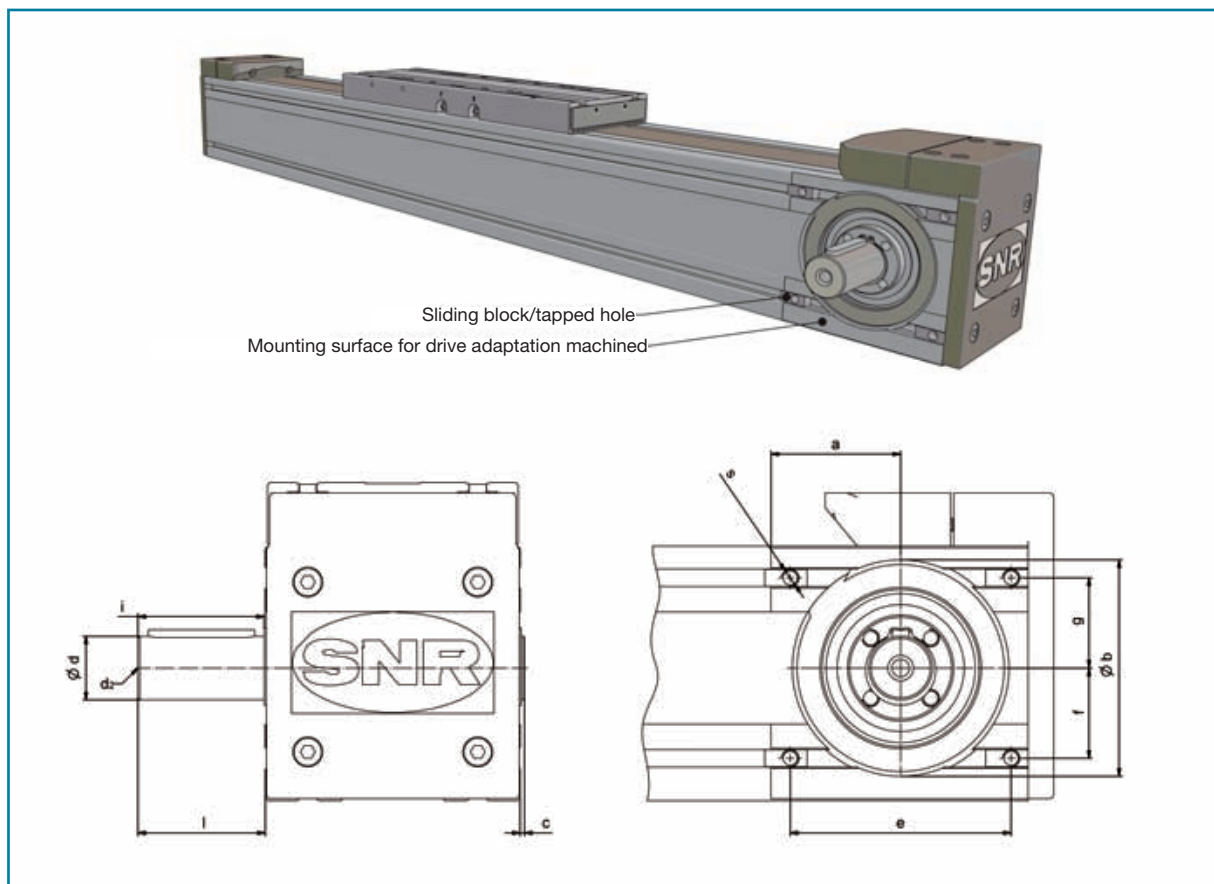
\*\* Motors with smaller centering (Ø b<sub>1</sub>) can also be used. In this case the centering through the motor adapter is not applicable.  
ID number drive adaptation: see page 87





## I Exterior size/plug-in shaft for AXC\_Z/AXDL\_Z

In the event of a drive adaptation by the user, the designated mounting side must be indicated when ordering, since the axis profile for an optimal seat of the drive adapter is determined. The corresponding sliding blocks for drive fastening are contained in the delivery kit.

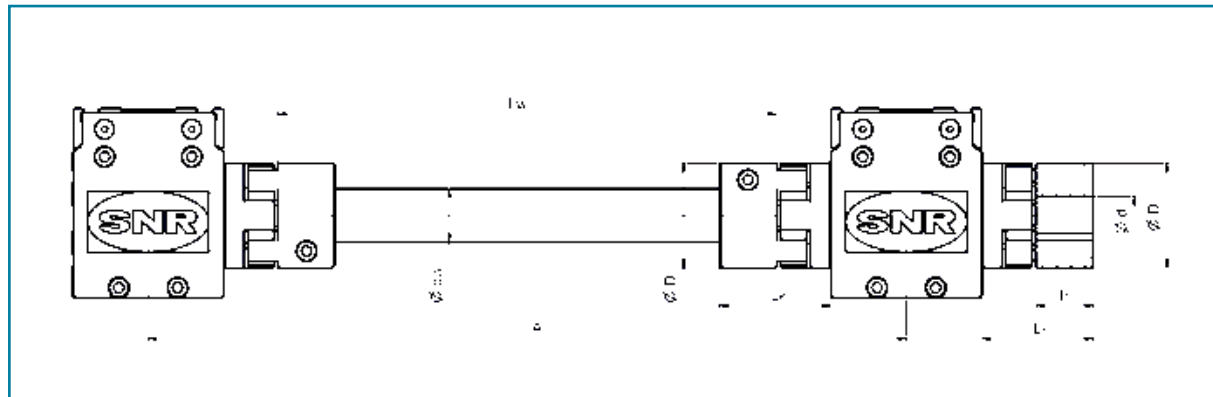
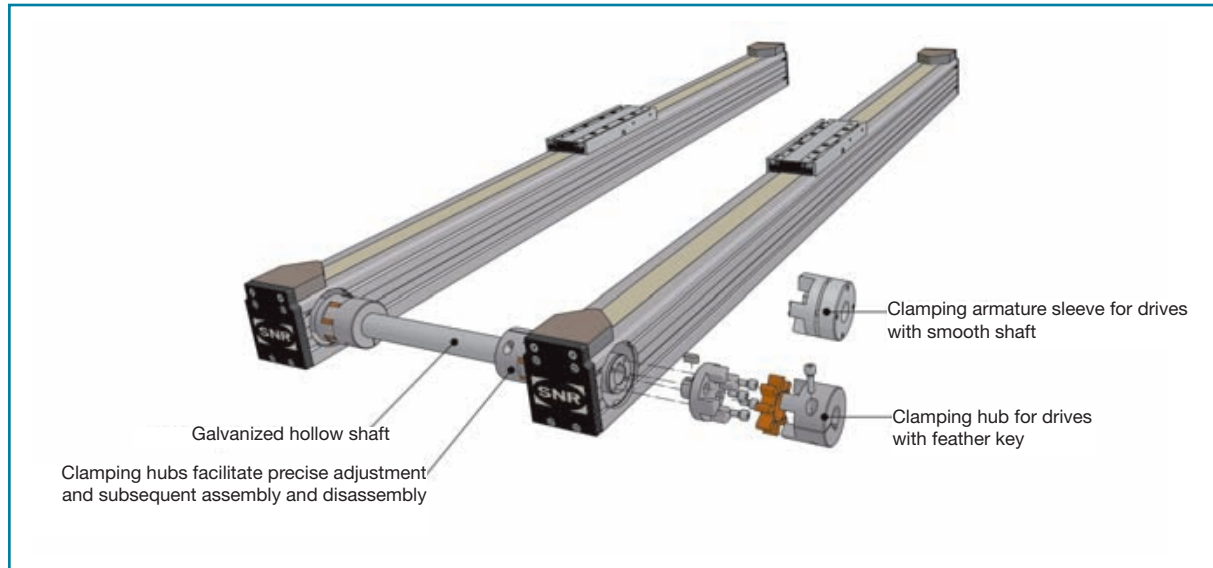


Linear axis	a	b	c	d h6	d2	e	f	g	i	l	s
AXC40Z	23	26H7x1	1	10	M4x7	34	9,9	8,1	29,5	30	M3x5
AXC60Z / A	34	47H7x1	1	14	M5x8	54	22,5	17,5	30,0	30	M5x6
AXC80Z / A	42	68H7x2	2	20	M6x10	72	23,0	20,5	39,3	40	M5x9
AXC120Z / A	61	102H8x2				104	42,5	42,5			M8x12
AXC120A <sup>1)</sup>	$\varnothing 162$	110H8x3,5				$\varnothing 130$	-	-			M8x13
AXDL110Z <sup>1)</sup>	-	60H8x19	-	16	M5x8	$\varnothing 68$	-	-	55,5	30	M5x10
AXDL160Z	-	75H8x41	-	25	M10x17	66	25,0	25,0	92,3	50	M6x15
AXDL240Z <sup>1)</sup>	-	90H8x53	-	30	M10x17	$\varnothing 100$	-	-	113,5	60	M6x18

1) For description see diagrams on pages 40, 44 and 52.

## I Coupling and connecting shaft

Parallel axes can be coupled via a connecting shaft to transfer the torque of the motor-driven axis to the second axis.



Linear axis	Dimensions							Clamping hub			C. armature sleeve		
	dw	Lw	A min. <sup>1)</sup>	A DKM <sup>2)</sup>	D	LK	l1	d min.	d max.	TA <sup>3)</sup> [Nm]	d min.	d max.	TA <sup>3)</sup> [Nm]
AXC40ZK	14x2	A - 79	125	87 <sup>+2</sup>	30	31	11	8	16	1,34	-	-	-
						38	19	-	-	-	10	14	1,34
AXC60-..K	22x2	A - 110	188	120 <sup>+2</sup>	40	50	25	12	24	10,5	10	20	3
AXC80-..K	28x2,5	A - 137	230	154(160) <sup>+3</sup>	55	59	30	12	28	10,5	15	28	6
AXC120-..K	38x4	A - 180	285	198 <sup>+3</sup>	65	65	35	20	38	25	18	38	6
AXC120-..P.K		A - 140	245	158 <sup>+3</sup>		25	-				-	-	-
AXDL110	Connecting not available				55	32,5	30	12	28	10,5	15	28	6
AXDL160	Connecting not available				65	22,5	35	20	38	25	18	38	6
AXDL240	Connecting not available				65	10	35	20	38	25	18	38	6

1) With possibility of removal without disassembly of the linear axes.

2) DKM = special design with double output middle piece.

3) Tightening torque.