

## 6.2.4 Adapters / Coupling cones

### 6.2.4.1 Linear Axis toothed belt drive

The simplest way to connect a gearbox or drive with the Linear Axis is the direct insertion of the drive shaft into the hollow shaft of the drive pulley. The drive is screwed via a flat adapter plate with the Linear Axis. The power transmission is form-fitted by a feather key. The only prerequisite is that the diameter of the drive shaft corresponding to the respective hollow shaft diameter of the Linear Axis. In Table 6.22 the code numbers and dimensions for each Linear Axis are summarized and the dimensions are shown in Figure 6.33.

Table 6.22 — Code numbers and dimensions for form-fitted drive adaptations

Type	Code number	Design type	e2 [mm]	a [°]	s1	b2 [mm]	d [mm]	i2 <sub>max.</sub> [mm]	i2 <sub>max.-1</sub> [mm]	k2 [mm]	a2 [mm]	L2 [mm]
AXC40ZF	A	VC065-E0 <sup>1</sup>	54	0	4 x Ø 6,5	44	12	-	20,0	-	64,5	20,5
AXC40AF	C	B14 C40	34	45	4 x Ø 4,3	26	10	31	4,0	-	-	3,1
AXC60ZF	A	B14 C60	52	45	4 x Ø 5,5	40	14	47	5,0	60	-	5,0
AXC60AF	B	VC065-E01	54	0	4 x Ø 6,5	44	12	-	18,0	70	80	18,0
	C	B5 C120	100	45	4 x M6 x 8	80	14	50	8,0	100	120	8,0
AXC80ZF	A	B14 C80	70	45	4 x Ø 6,5	60	20	71	12,0	82	-	12,0
AXC80AF	E	B5 C120	100	45	4 x M6 x 12	80	20	72	12,5	-	120	12,5
	A	B5 C120	100	45	4 x M6 x 12	80	25	82	17,0	103	120	12,0
AXC100Z	B	B14 C120	100	45	4 x Ø 6,5	80	25	82	17,0	100	115	12,0
	C	B5 C160	130	45	4 x M8 x 12	110	25	82	17,0	115	145	12,0
AXF100ZF	A	B5 C120	100	45	4 x M6 x 12	80	25	82	17,0	103	120	12,0
AXC120ZF	A	B5 C120	100	45	4 x M6 x 12	80	30	107	13,0	120	-	13,0
AXC120AF	C	B5 C200	165	45	4 x M10 x 20	130	30	119	25,0	-	200	25,0
	F	B5 C115	100	45	4 x Ø 11	80	25	113	7,0	120	-	9,0

<sup>1</sup>- Design type E0 contains the delivery of a special plug-in shaft with Ød

X: Code number for special adapters

Linear axis with toothed belt drive and coupling (ZK\_) can be equipped with different coupling versions. The following code numbers can be selected as drive adaptations:

- S = Clamping ring hub for smooth shaft
- F = Clamping hub with feather key groove
- T = Clamping hub without feather key groove (only for AXBG)
- C = Coupling for connecting shaft

A universal version is an adaptation via integrated coupling in combination with a coupling cone. Here, the coupling half on the axis side is screwed to the drive pulley and offers by the force-fitted torque transmission even under high dynamic optimal reliability. For usual market drives with a standard B5 flange is a wide range of coupling cones available. Clamping hubs with groove are used as standard for driving shafts with feather key. Also available as a special design are clamping ring hubs for smooth shafts. In Table 6.23 the code numbers and dimensions for each Linear Axis are summarized and in the dimensions are shown in Figure 6.34.

Table 6.23 — Code numbers and dimensions for force-fitted drive adaptations via coupling and couplig cone

Type	Code number		Design type	e2 [mm]	α [°]	s1	b2 [mm]	d <sub>min.</sub> [mm]	d <sub>max.</sub> [mm]	i2 <sub>max.</sub> [mm]	i2 <sub>max.-l</sub> [mm]	k2 [mm]	a2 [mm]	L2 [mm]	LK <sup>1</sup> [mm]
	with feather key	without feather key													
AXC40ZG AXC40AG	A	K	B5 TK63	63	45	4 x M4 x 8	40	6	10	23,0	7,0	54,0	72	37,0	31,0/38,0 <sup>2</sup>
AXC60ZG AXC60AG	A	K	NP015	62	0	4 x Ø 5,5	52	16	16	36,0	8,0	70	80	58,0	50,0
	E	P	B5 C120	100	45	4 x M6 x 12	80	19	20	40,0	15,0	96	120	65,0	
	H	R	PSF12	62/63	45	4 x M5 x 12	50	12	14	48,0	17,0	-	80	67,0	
	I	T	B14 C60	52	45	4 x Ø 5,5	40	14	14	38,0	6,5	64	80	56,5	
AXC80ZG AXC80AG	A	K	B5 C160	130	45	4 x M8 x 16	110	19	25	52,0	15,0	120	150	74,0	59,0
	B	L	B5 C120	100	45	4 x M6 x 12	80	25	25	50,0	12,0	90	110	71,0	
	C	N	B5 C120	100	45	4 x M6 x 15	80	14	20	41,0	4,0	83	110	62,0	
	D	O	NP015	62	0	4 x Ø 5,5	52	16	16	36,0	8,0	82	100	66,0	
	E	P	NP025	80	0	4 x Ø 6,5	68	22	25	52,0	22,0	80	90	81,0	
	F	Q	B14 C80	70	45	4 x Ø 6,5	60	19	20	40,0	11,0	80	110	70,0	
AXC100ZG	A	K	B5 C120	100	45	4 x M6 x 15	80	19	20	47,0	4,0	100	112	65,0	61,0
	B	L	B14 C120	100	45	4 x Ø 10,5 x 14	80	24	25	58,0	15,0	100	116	76,0	
	C	N	B5 C160	130	45	4 x M8 x 20	110	19	30	60,0	17,0	115	145	78,0	
AXC100ZG_D AXF100ZG AXS200Y AXS280Y	A	K	B5/B14 C120	100	45	4 x Ø 10,5 x 10	80	19	25	58,0	15,0	90	116	76,0	59,0
	B	L	B5 C160	130	45	4 x M8 x 15	110	19	30	60,0	17,0	120	160	78,0	
	C	N	NP025	80	0	4 x Ø 6,6	68	20	25	53,0	10,0	100	135	71,0	
	A	K	B5 C120	100	45	4 x M6 x 18	80	19	25	50,0	7,0	120	150	72,0	
AXC120ZG AXC120AG AXDL240AG	B	L	B5 C160	130	45	4 x M8 x 18	110	24	30	60,0	18,0	-	160	83,0	65,0
	C	N	B5 C200	165	45	4 x M10 x 20	130	25	35	61,0	26,0	-	200	91,0	
	A	K	B5 C120	100	45	4 x M6 x 10	80	14	20	47,5	10,0	82	110	42,5	
AXDL110Z	C	N	NP015	62	0	4 x Ø 5,5	52	14	20	45,5	8,0	80	110	40,5	32,5
	E	P	CP060	52	45	4 x Ø 5,5	40	14	20	45,5	8,0	80	110	40,5	
	F	Q	B14 C80	70	45	4 x Ø 6,6	60	20	25	59,5	22,0	82	110	54,5	
	A	K	B5 C120	100	45	4 x M6 x 15	80	14	20	43,0	0,0	86	120	22,5	
AXDL160Z	B	L	NP015	62	0	4 x Ø 5,5	52	14	25	51,5	8,5	78	106	31,0	22,5
	C	N	NP025	80	0	4 x Ø 6,6	68	14	25	54,0	11,0	100	135	33,5	
	D	O	B14 C80	70	45	4 x Ø 6,6	60	14	20	49,0	6,0	86	120	28,5	
	E	P	B5 C160	130	45	4 x M8 x 18	110	19	30	60,0	17,0	120	150	39,5	
	A	K	B5 C120	100	45	4 x M6 x 10	80	14	25	50,0	7,5	100	115	74,5	
AXDL160A	C	N	NP025	80	0	4 x Ø 6,6	68	20	25	54,0	11,0	100	130	78,0	67,0
	A	K	B5 C120	100	45	4 x M6 x 29	80	14	20	43,0	1,0	96	120	11,0	
AXDL240Z	B	L	B5 C120	100	45	4 x M6 <sup>3</sup>	80	25	25	53,0	11,0	96	120	21,0	10,0
	E	P	B5 C160	130	45	4 x M8 x 18	110	25	30	62,0	20,0	115	150	30,0	
	A	K	P	120	45	4 x M8 x 15	90	32	32	88	52			48	
AXS280Z	B	L	B5 C160	130	45	4 x M8 x 10	110	25	30	62	14			10	1
	C	N	NP035	108	0	4 x Ø 9 x 16	90	32	32	77	24			25	-4

<sup>1</sup>- Graphic account of the dimension in Chapter 3.7.1 Figure 3.11

<sup>2</sup>- Clamping hub / Tension ring hub

<sup>3</sup>- Stud bolt

X: Code number for special adapters

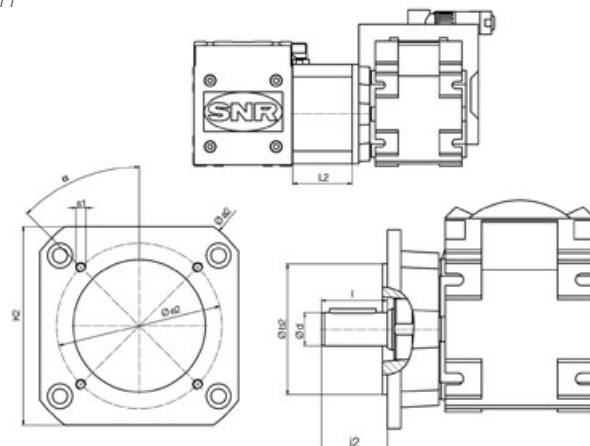


Figure 6.33 — Dimensions drive adaptations

### 6.2.4.2 Linear Axis with screw drive, coupling and coupling cone

For Linear Axis with screw drive, the drive is normally connected via a coupling and coupling cone with the Linear Axis (Figure 6.34).

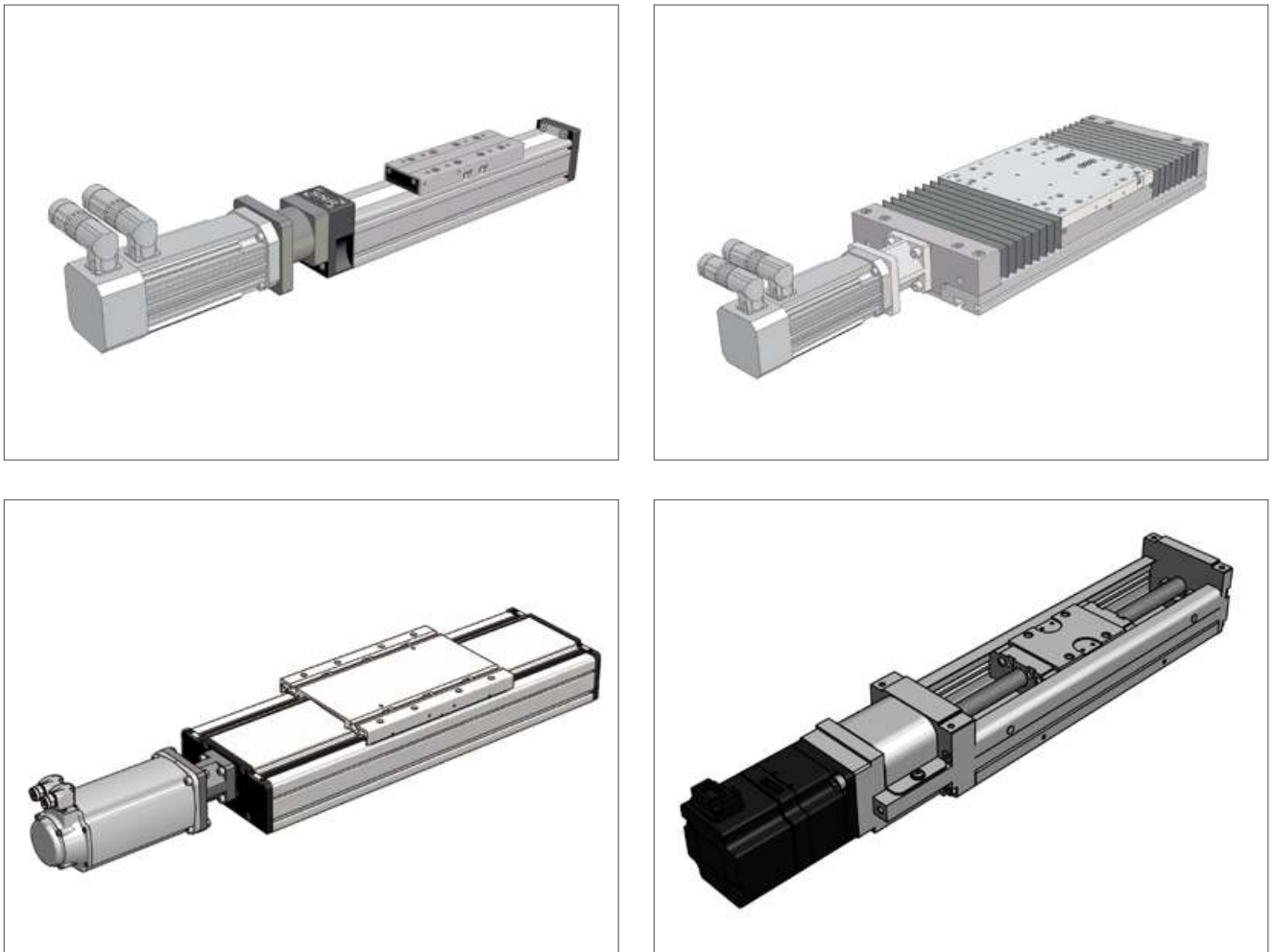


Figure 6.34 — Drive adaptation via coupling and coupling cone with screw drive axis

Power is transmitted via pluggable elastomer coupling. It is possible to use drives with smooth shaft (force-fitted connection) as well as drives with shafts with feather key (force- and form-fitted connection).

Table 6.24 contains the limit sizes for the drives of the respective axis of the series AXC, AXF, AXDL and AXLT which are characterized in Figure 6.35. The code numbers of the each possible coupling cone are summarized in Table 6.25.

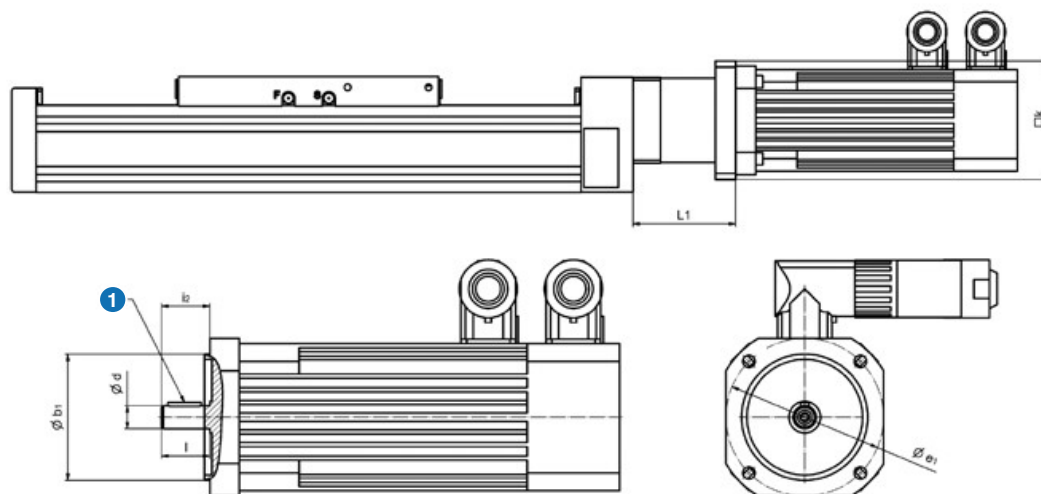
Table 6.24 — EN Code numbers of the drive adaptation for AX\_S\_G and AX\_S\_U

Type	Design type	e1 <sub>min.</sub> [mm]	e1 <sub>max.</sub> [mm]	b1 <sub>min.</sub> [mm]	b1 <sub>max.</sub> [mm]	d <sub>min.</sub> [mm]	d <sub>max.</sub> [mm]	i2 <sub>max.</sub> [mm]	i2 <sub>max.</sub> <sup>13</sup> [mm]	k [mm]	L1 [mm]	Maximum drive torque [Nm]
AXC40S/T	B5 / B14	45	63	35 <sup>1</sup>	50	5	14	30	7	55	47,0	7,5
AXC60S/T	B5	63	100	40 <sup>1</sup>	80	9	19 <sup>2</sup>	40	3	82	71,0	10,0
	B 14	75	100	50 <sup>1</sup>	80	9	19 <sup>2</sup>	40	3	82	71,0	10,0
	B5	115	130	95	95	19	20	40	15	110	84,0	10,0
		130	130	110	110	24	24	50	25	120	93,0	10,0
AXDL110S/T	B5	50	75	40	60	9	19 <sup>2</sup>	40	3	60	72,0	10,0
	B 14	70	75	40	60	9	19 <sup>2</sup>	40	3	60	72,0	10,0
AXLT155S/T	B5 / B14	55	100	34 <sup>1</sup>	80	5	14	30	7	85	71,0	10,0
AXC80S/T AXC100S/T AXF100G/S/T AXDL160S/T AXLT225S/T	B5 / B14	63	100	50 <sup>1</sup>	80	9	19 <sup>2</sup>	40	3	82	76,0	17,0
		115	130	95	110	19	20	40	15	110	88,0	17,0
	B5	130	130	110	110	24	24	50	25	120	98,0	17,0
		165	165	130	130	32	32	60	28	155	130,5	60,0
AXC120S/T AXDL240S/T AXLT325S/T	B5 / B14	75	130	60 <sup>1</sup>	110	14	24 <sup>2</sup>	50	3	112	89,0	60,0
		165	165	130	130	32	32	60	28	155	130,5	60,0
		100	165	80 <sup>1</sup>	130	19	25	50	8	140	105,0	160,0
AXLT455S/T	B5 / B14		165	110	130	28	32	60	23	155	120,0	160,0
		215	215	180	180	38	38	80	45	192	142,0	160,0

<sup>1</sup> If using drives with smaller centering, the centering is done by the coupling

<sup>2</sup> For drives with feather key and maximum shaft length, the delivery includes a shorter feather key for exchanging

<sup>3</sup> Maximum value, dimensional representation in Chapter 3.7.3, Figure 3.14



1 Optional feather key

Figure 6.35 — Code numbers of coupling cones for AXC\_S\_G, AXF\_S\_G, AXDL\_S\_G, AXLT\_S\_G

Table 6.25 — EN Limit sizes of coupling cones for AXC\_S\_G, AXF\_S\_G, AXDL\_S\_G, AXLT\_S\_G

Centering b [mm]		35	40	50	60		70		80		95		110		130		180		
Shaft diameter d [mm]		8	9	14	11	14	14	16	14	19	19	24	19	24	24	32	24	28	38
Code 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
When using a deflection belt drive <sup>1</sup>	Pitch circle e1 [mm]	46	63	70 / 95	75		90		100		115	130	130		165				
	Thread	M4	M4	M4 / M6	M5		M5		M6		M8		M8		M10				

<sup>1</sup> note limit sizes of Chapter 6.2.5

X: Code number for special version according drawing

The coupling cone is no separate componet for Linear Axis of the series AXBG. The fixed bearing of the ball screw and the coupling cone are here one part. The dimensions according Figure 6.35 for this series are summarized in Table 6.26. The dimensions of the associated couplings are shown in Table 6.27 and Figure 6.36 and can be ordered as a separate part.

Table 6.26 — Dimensions of coupling cones for AXBG\_S\_G

Type	Code number	e1 [mm]	Thread	L1 [mm]	b1 [mm]	d <sub>min.</sub> [mm]	d <sub>max.</sub> [mm]	k [mm]	Nominal torque [Nm]
AXBG15S	A	25 x 8	4 x Ø 2,4	42,0	20	3	7	29,5 x 22	0,5
AXBG20S	A	29	4 x M3 x 6	49,0	20	3	7	40 x 29	1,0
AXBG26S	A	33	4 x M3 x 6	52,0	24	3	8	50 x 37	1,5
AXBG33S	A	37	4 x M3 x 8	59,0	28	3	8	50 x 44,5	1,5
		40	4 x M4 x 8						
	B	70	4 x M5 x 10	69,0	50			60 x 60	
AXBG46S	A	60	8 x M4 x 8	85,5	50	5	24	63 x 63,5	10,0
	B	70	4 x M4 x 8	93,5				62 x 62	
	C	90	4 x M5 x 10	100,5	70			80 x 80	
	D		4 x M6 x 12	105,5					
AXBG55S	A	70	4 x M5 x 10	94,0	50	5	24	89 x 74,5	10,0
	B	90	4 x M6 x 12	106,0	70			80 x 80	
	C		4 x M5 x 12		80			86 x 86	
	D	100	4 x M6 x 12						

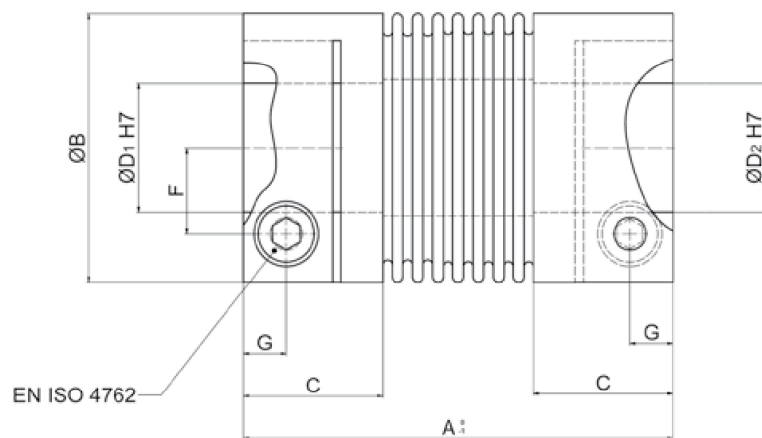


Figure 6.36 — Dimensions of the coupling for AXBG\_S\_G

Table 6.27 — Dimensions of the coupling for AXBG\_S\_G

Type	Coupling designation	A	B	C	D <sub>1</sub>	D <sub>2min</sub>	D <sub>2max</sub>	F	G	H	E	Torsional rigidity	Moment of inertia	Nominal torque	Mass
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[Nm/rad]	[gcm <sup>2</sup> ]	[Nm]	[g]
AXBG15S	AX-AC-MK2-5-25-3-(D <sub>2</sub> )	25	15	9	3,0	3,0	7,0	4,5	3,0	12,0	M2	280	2,6	0,5	9,0
AXBG20S	AX-AC-MK2-10-30-4-(D <sub>2</sub> )	30	15	9	4,0	3,0	7,0	4,5	3,0	17,0	M2	380	3,4	1,0	10,0
AXBG26S	AX-AC-MK2-15-30-5-(D <sub>2</sub> )	30	19	11	5,0	3,0	8,0	6,0	3,5	14,5	M2,5	380	3,4	1,5	10,0
AXBG33S	AX-AC-MK2-15-30-6-(D <sub>2</sub> )	30	19	11	6,0	3,0	8,0	6,0	3,5	14,5	M2,5	750	8,5	1,5	22,0
AXBG46S	AX-AC-MK2-100-50-8-(D <sub>2</sub> )	50	40	16	8,0	5,0	14,0	15,0	5,0	27,5	M4	9 050	160,0	10,0	120,0
AXBG55S	AX-AC-MK2-100-50-12-(D <sub>2</sub> )	50	40	16	12,0	5,0	24,0	15,0	5,0	27,5	M4	9 050	160,0	10,0	120,0

Example type code of a coupling for AXBG\_S\_G:

