6.2.2. Couplings and connecting shafts

Parallel-arranged linear axes can be linked via a connecting shaft (Figure 6.18). The required drive torque is evenly distributed across all axes. Galvanized hollow shafts are used as connecting shafts. In addition, the linear axes from the AXE series allow subsequent assembly and dismantling using half-shell clamping hubs thereby facilitating precise adjustment of the linear axes.
A complete axis connection consists of a coupling kit (Table 6.12) and the connecting shaft (Table 6.13 to 6.15).
For the adaption of drives, couplings with clamping hub for drives with feather key shafts are available.

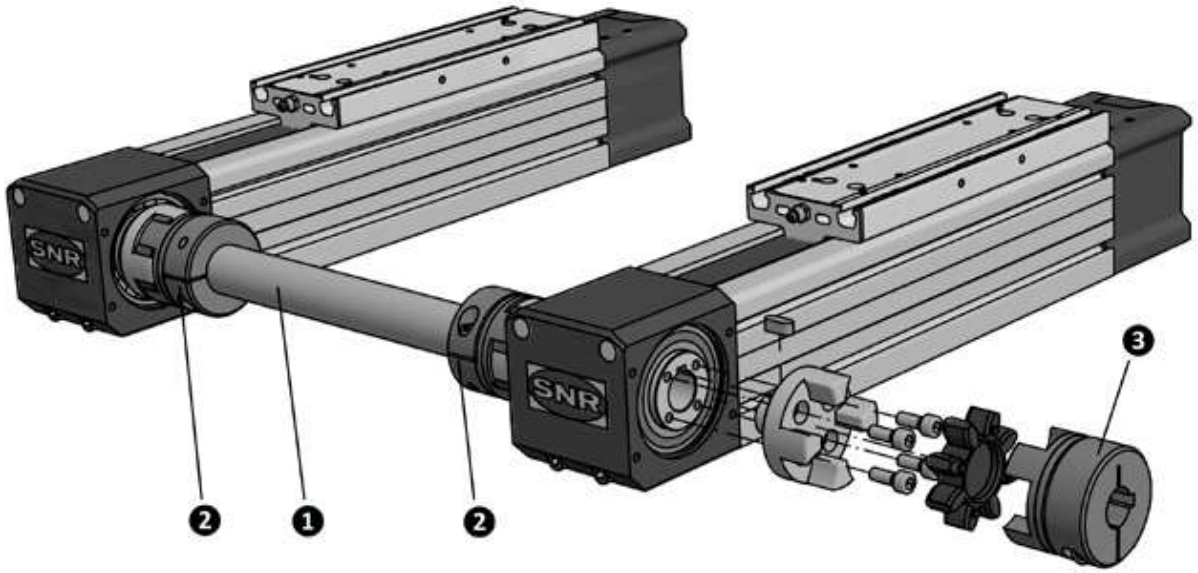


Figure 6.18 Arrangement couplings and connecting shaft

1. Connecting shaft
2. Coupling with half-shell clamping hub
3. Coupling with clamping hub for drives with feather key shaft

The dimensions of the connecting shafts are specified in Figure 6.19 and Table 6.12.

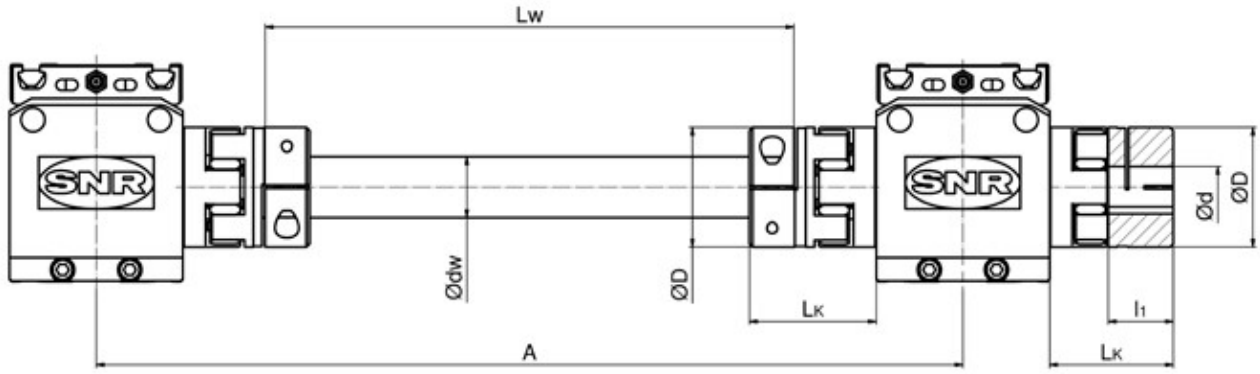


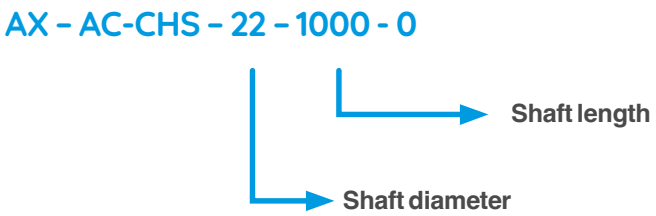
Figure 6.19 Dimension of couplings and connecting shaft

Table 6.12 Dimension of couplings and connecting shaft

Type	Type code	ID number						Type code	ID number	Connecting shaft				
	Clamping hub coupling		D	LK	l[1]	d	TA[2]	Coupling kit		dw	(wall thickness)	Lw	A min.[1]	TA[2]
				[mm]	[mm]	[mm]	[Nm]			[mm]	[mm]	[mm]	[mm]	[Nm]
AXE60Z	AX-AC-60ZA-COU-K-10	233232	40	50.0	25.0	10	10.0	AX-AC-60Z-COU-CHS-22	292876	22	2,0	A - 125	160	6.0
	AX-AC-60ZA-COU-K-14	188209				14								
	AX-AC-60ZA-COU-K-16	230511				16								
	AX-AC-60ZA-COU-K-19	188958				19								
	AX-AC-60ZA-COU-K-20	185644				20								
AXE80Z	AX-AC-80ZA-COU-K-12	257591	55	59.0	30.0	12	10.0	AX-AC-80Z-COU-CHS-28	153844	28	2,5	A - 153	198	10.0
	AX-AC-80ZA-COU-K-14	251343				14								
	AX-AC-80ZA-COU-K-16	187181				16								
	AX-AC-80ZA-COU-K-18	171476				18								
	AX-AC-80ZA-COU-K-19	251662				19								
	AX-AC-80ZA-COU-K-20	151341				20								
	AX-AC-80ZA-COU-K-22	247474				22								
	AX-AC-80ZA-COU-K-25	184826				25								
AXE100Z	AX-AC-100Z-COU-K-38	284121	65	61.0	35.0	38	25.0	AX-AC-100Z-COU-CHS-38	284121	38	4,0	A - 172	222	25.0
AXE110Z	AX-AC-110Z-COU-K-12	409353	55	32.5	30.0	12	10.0	not applicable						
	AX-AC-110Z-COU-K-20	409354				20								
	AX-AC-110Z-COU-K-22	409355				22								
	AX-AC-110Z-COU-K-25	sur demande				25								
AXE160Z	AX-AC-160Z-COU-K-20	251324	65	61.0	35.0	20	25.0	not applicable						
	AX-AC-160Z-COU-K-22	238803				22								
	AX-AC-160Z-COU-K-25	304052				25								
	AX-AC-160Z-COU-K-30	203284				30								
	AX-AC-160Z-COU-K-20	251324	65	22.5	35.0	20		AX-AC-160Z-COU-CHS-38	284121	38	4,0	A - 172	222	25.0
	AX-AC-160Z-COU-K-22	238803				22								
	AX-AC-160Z-COU-K-25	304052				25								
	AX-AC-160Z-COU-K-30	203284				30								

[1] *Minimum dimension, which allows the removal assembly without disassembly of the linear axis*
[2] *Tightening torque*

Example type code of connecting shafts:



For AXE standard axes systems, the corresponding connection shafts including the ID numbers are summarized in Tables 6.13 and 6.14 as well as for the connection of linear axis AXE100 in Table 6.15.

Table 6.14 Connecting shafts for AXE60

Stroke of the Y-Axis (AXE110Z)	Type code	ID number	Center distance A of the X-Axis	Shaft length L	Mass
[mm]			[mm]	[mm]	[kg]
200	AX-AC-CHS-22-0245-0	461314	370	245	0.24
260	AX-AC-CHS-22-0305-0	461313	430	305	0.30
320	AX-AC-CHS-22-0365-0	461312	490	365	0.36
380	AX-AC-CHS-22-0425-0	461311	550	425	0.42
440	AX-AC-CHS-22-0485-0	461310	610	485	0.48
500	AX-AC-CHS-22-0545-0	461309	670	545	0.54
560	AX-AC-CHS-22-0605-0	461307	730	605	0.60
620	AX-AC-CHS-22-0665-0	461306	790	665	0.66
680	AX-AC-CHS-22-0725-0	461305	850	725	0.71
740	AX-AC-CHS-22-0785-0	461304	910	785	0.77
800	AX-AC-CHS-22-0845-0	461303	970	845	0.83
860	AX-AC-CHS-22-0905-0	461302	1030	905	0.89
920	AX-AC-CHS-22-0965-0	461301	1090	965	0.95
980	AX-AC-CHS-22-1025-0	381828	1150	1025	1.01
1040	AX-AC-CHS-22-1085-0	461300	1210	1085	1.07
1100	AX-AC-CHS-22-1145-0	461299	1270	1145	1.13
1160	AX-AC-CHS-22-1205-0	461176	1330	1205	1.19
1220	AX-AC-CHS-22-1265-0	461175	1390	1265	1.25
1280	AX-AC-CHS-22-1325-0	461174	1450	1325	1.31
1340	AX-AC-CHS-22-1385-0	461173	1510	1385	1.37
1400	AX-AC-CHS-22-1445-0	461172	1570	1445	1.42
1460	AX-AC-CHS-22-1505-0	461171	1630	1505	1.48
1520	AX-AC-CHS-22-1565-0	461170	1690	1565	1.54
1580	AX-AC-CHS-22-1625-0	461169	1750	1625	1.60
1640	AX-AC-CHS-22-1685-0	461168	1810	1685	1.66
1700	AX-AC-CHS-22-1745-0	461167	1870	1745	1.72
1820	AX-AC-CHS-22-1865-0	461166	1990	1865	1.84
1940	AX-AC-CHS-22-1985-0	461165	2110	1985	1.96
2060	AX-AC-CHS-22-2105-0	461164	2230	2105	2.08
2180	AX-AC-CHS-22-2225-0	461163	2350	2225	2.19
2300	AX-AC-CHS-22-2345-0	461162	2470	2345	2.31
2420	AX-AC-CHS-22-2465-0	461006	2590	2465	2.43
2540	AX-AC-CHS-22-2585-0	461005	2710	2585	2.55
2660	AX-AC-CHS-22-2705-0	461004	2830	2705	2.67
2780	AX-AC-CHS-22-2825-0	461003	2950	2825	2.79
3020	AX-AC-CHS-22-3065-0	461002	3190	3065	3.02
3260	AX-AC-CHS-22-3305-0	461000	3430	3305	3.26
3500	AX-AC-CHS-22-3545-0	460999	3670	3545	3.50
3740	AX-AC-CHS-22-3785-0	460997	3910	3785	3.73

Table 6.14 Connecting shafts for AXE80

Stroke of the Y-Axis (AXE160Z)	Type code	ID number	Center distance A of the X-Axis	Shaft length L	Mass
[mm]			[mm]	[mm]	[kg]
300	AX-AC-CHS-28-0337-0	460996	490	337	0.53
360	AX-AC-CHS-28-0397-0	460995	550	397	0.62
420	AX-AC-CHS-28-0457-0	460994	610	457	0.72
480	AX-AC-CHS-28-0517-0	460992	670	517	0.81
540	AX-AC-CHS-28-0577-0	460991	730	577	0.91
600	AX-AC-CHS-28-0637-0	460990	790	637	1.00
660	AX-AC-CHS-28-0697-0	460989	850	697	1.10
720	AX-AC-CHS-28-0757-0	460987	910	757	1.19
780	AX-AC-CHS-28-0817-0	460986	970	817	1.28
840	AX-AC-CHS-28-0877-0	460985	1030	877	1.38
900	AX-AC-CHS-28-0937-0	460984	1090	937	1.47
960	AX-AC-CHS-28-0997-0	460983	1150	997	1.57
1020	AX-AC-CHS-28-1057-0	460982	1210	1057	1.66
1080	AX-AC-CHS-28-1117-0	460981	1270	1117	1.76
1140	AX-AC-CHS-28-1177-0	460980	1330	1177	1.85
1200	AX-AC-CHS-28-1237-0	460979	1390	1237	1.94
1260	AX-AC-CHS-28-1297-0	460874	1450	1297	2.04
1320	AX-AC-CHS-28-1357-0	460873	1510	1357	2.13
1380	AX-AC-CHS-28-1417-0	460872	1570	1417	2.23
1440	AX-AC-CHS-28-1477-0	460871	1630	1477	2.32
1500	AX-AC-CHS-28-1537-0	460870	1690	1537	2.42
1560	AX-AC-CHS-28-1597-0	460869	1750	1597	2.51
1620	AX-AC-CHS-28-1657-0	460868	1810	1657	2.60
1680	AX-AC-CHS-28-1717-0	460867	1870	1717	2.70
1800	AX-AC-CHS-28-1837-0	460866	1990	1837	2.89
1920	AX-AC-CHS-28-1957-0	460865	2110	1957	3.08
2040	AX-AC-CHS-28-2077-0	460862	2230	2077	3.27
2160	AX-AC-CHS-28-2197-0	460555	2350	2197	3.45
2280	AX-AC-CHS-28-2317-0	460554	2470	2317	3.64
2400	AX-AC-CHS-28-2437-0	460553	2590	2437	3.83
2520	AX-AC-CHS-28-2557-0	460467	2710	2557	4.02
2640	AX-AC-CHS-28-2677-0	460551	2830	2677	4.21
2760	AX-AC-CHS-28-2797-0	460550	2950	2797	4.40
3000	AX-AC-CHS-28-3037-0	460549	3190	3037	4.77
3240	AX-AC-CHS-28-3277-0	460548	3430	3277	5.15
3480	AX-AC-CHS-28-3517-0	460466	3670	3517	5.53
3720	AX-AC-CHS-28-3757-0	460546	3910	3757	5.91
3960	AX-AC-CHS-28-3997-0	460545	4150	3997	6.28
4200	AX-AC-CHS-28-4237-0	460543	4390	4237	6.66
4500	AX-AC-CHS-28-4537-0	460542	4690	4537	7.13
4800	AX-AC-CHS-28-4837-0	460465	4990	4837	7.60
5100	AX-AC-CHS-28-5137-0	460541	5290	5137	8.08
5400	AX-AC-CHS-28-5437-0	460540	5590	5437	8.55
5700	AX-AC-CHS-28-5737-0	460539	5890	5737	9.02

Table 6.15 Connecting shafts for AXE100

Type code	ID number	Center distance A of the X-Axis	Shaft length L	Mass
		[mm]	[mm]	[kg]
AX-AC-CHS-38-0128-0	460538	300	128	0.43
AX-AC-CHS-38-0188-0	460464	360	188	0.63
AX-AC-CHS-38-0248-0	460537	420	248	0.83
AX-AC-CHS-38-0308-0	460536	480	308	1.03
AX-AC-CHS-38-0368-0	460482	540	368	1.23
AX-AC-CHS-38-0428-0	460480	600	428	1.43
AX-AC-CHS-38-0488-0	460463	660	488	1.63
AX-AC-CHS-38-0548-0	460479	720	548	1.84
AX-AC-CHS-38-0608-0	460478	780	608	2.04
AX-AC-CHS-38-0668-0	460477	840	668	2.24
AX-AC-CHS-38-0728-0	460476	900	728	2.44
AX-AC-CHS-38-0788-0	460462	960	788	2.64
AX-AC-CHS-38-0848-0	460475	1020	848	2.84
AX-AC-CHS-38-0908-0	460474	1080	908	3.04
AX-AC-CHS-38-968-0	460473	1140	968	3.24
AX-AC-CHS-38-1028-0	460472	1200	1028	3.44
AX-AC-CHS-38-1088-0	460460	1260	1088	3.64
AX-AC-CHS-38-1148-0	460471	1320	1148	3.85
AX-AC-CHS-38-1208-0	460470	1380	1208	4.05
AX-AC-CHS-38-1268-0	460469	1440	1268	4.25
AX-AC-CHS-38-1328-0	460468	1500	1328	4.45
AX-AC-CHS-38-1388-0	460459	1560	1388	4.65
AX-AC-CHS-38-1448-0	460458	1620	1448	4.85
AX-AC-CHS-38-1508-0	460457	1680	1508	5.05
AX-AC-CHS-38-1628-0	460456	1800	1628	5.45
AX-AC-CHS-38-1748-0	460454	1920	1748	5.86
AX-AC-CHS-38-1868-0	460453	2040	1868	6.26
AX-AC-CHS-38-1988-0	460452	2160	1988	6.66
AX-AC-CHS-38-2108-0	460451	2280	2108	7.06
AX-AC-CHS-38-2228-0	460429	2400	2228	7.46
AX-AC-CHS-38-2348-0	460428	2520	2348	7.87
AX-AC-CHS-38-2468-0	460427	2640	2468	8.27
AX-AC-CHS-38-2588-0	460426	2760	2588	8.67
AX-AC-CHS-38-2828-0	460425	3000	2828	9.47
AX-AC-CHS-38-3068-0	460424	3240	3068	10.28
AX-AC-CHS-38-3308-0	460423	3480	3308	11.08
AX-AC-CHS-38-3548-0	460422	3720	3548	11.89
AX-AC-CHS-38-3788-0	460421	3960	3788	12.69
AX-AC-CHS-38-4028-0	460419	4200	4028	13.49
AX-AC-CHS-38-4328-0	460418	4500	4328	14.50
AX-AC-CHS-38-4628-0	460416	4800	4628	15.50
AX-AC-CHS-38-4928-0	460415	5100	4928	16.51
AX-AC-CHS-38-5228-0	460414	5400	5228	17.51
AX-AC-CHS-38-5528-0	460413	5700	5528	18.52

When the connecting shaft is of great length and operating with high velocity, the critical speed must be considered. The diagram in Figure 6.20 shows the maximum speed depending on the center distance of the linear axis. The basis of the limits here are 50% of the critical speed. For higher requirements, please contact our application engineers.

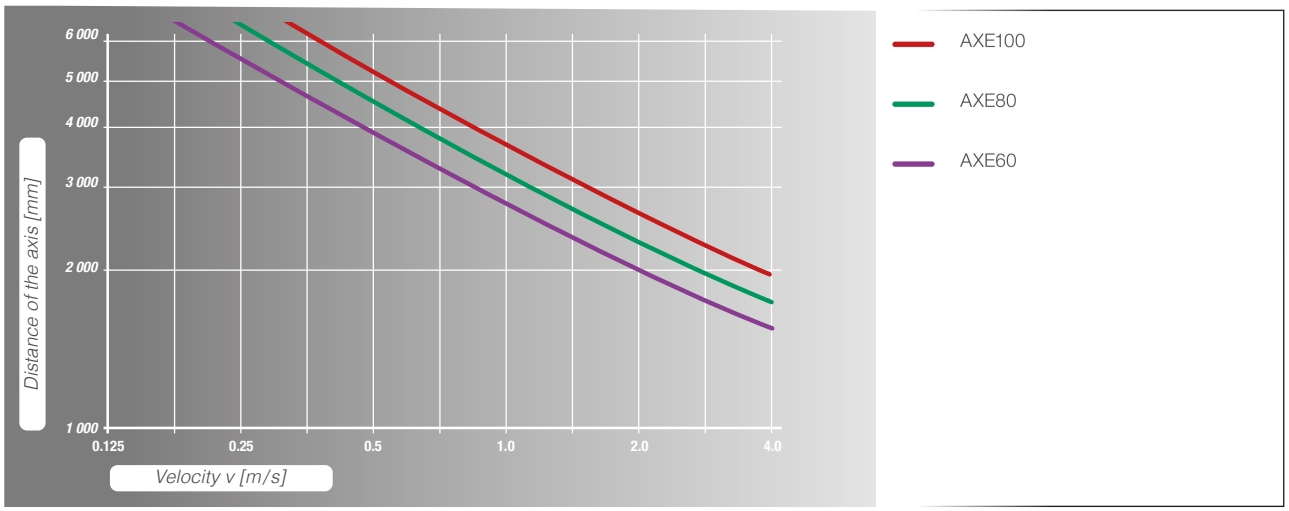


Figure 6.27 Dynamic limits for connecting shafts