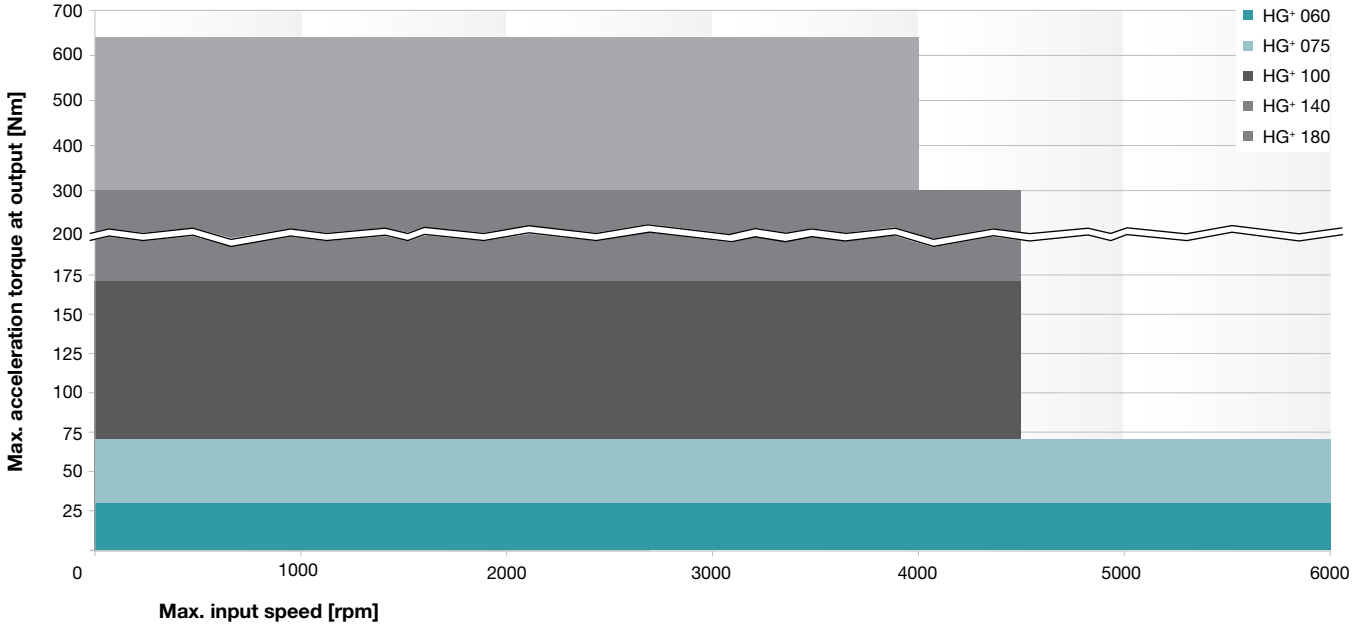
HG+ – Precise hollow shaft solution

The successor to our versatile hypoid gearhead with hollow shaft on one/both sides.

With the HG+, low torsional backlash and high torsional rigidity assure maximum positioning accuracy of your drives and precision of your machines – even during highly dynamic operation.

Quick size selection

HG+ MF (example for i = 5)
For applications in cyclic operation (DC ≤ 60%) or continuous operation (DC ≥ 60%)



Versions and Applications

Features	HG+ MF version page 250
Power density	••
Positioning accuracy (e.g clamped drives)	••
Highly dynamic applications	••

Product features

Ratios [c]		3 – 100
Torsional backlash [arcmin] [c]	Standard	≤ 4
	Reduced	–
Output type*		
Smooth output shaft, rear side		•
Keywayed output shaft, rear side		•
Hollow shaft interface Connected via shrink disc		•
Hollow shaft interface, rear side Connected via shrink disc		•
Closed cover, rear side		•
Input type		
Motor mounted version		•
Type		
ATEX [a]		•
Food-grade lubrication [a] [b]		•
Corrosion resistant [a] [b]		•
Accessories		
Coupling		•
Shrink disc		•
torqXis sensor flange		•
Intermediate plate for cooling connection		•

[a] Power reduction: technical data available upon request [b] Please contact WITTENSTEIN alpha [c] In relation to reference sizes

You can find order information for the relevant type of output on page 424.

HG+ 060 MF 1/2-stage

				1-stage					2-stage									
Ratio [a]			*i*	**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	30	30	30	25	20	30	30	30	30	30	30	30	30	25	20
			T_{2B} in.lb	266	266	266	221	177	266	266	266	266	266	266	266	266	221	177
Nominal output torque (with n_{1N})			T_{2N} Nm	22	22	22	20	15	22	22	22	22	22	22	22	22	20	15
			T_{2N} in.lb	195	195	195	177	133	195	195	195	195	195	195	195	195	177	133
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	40	50	50	45	40	50	50	50	50	50	50	50	50	45	40
			T_{2Not} in.lb	354	443	443	398	354	443	443	443	443	443	443	443	443	398	354
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N} rpm	2500	2700	3000	3000	3000	4400	4400	4400	4400	4400	4400	4400	4800	5500	5500
Max. continuous speed (with 20% T_{2N} and 20°C ambient temperature)			n_{1Ncym} rpm	3000	3500	4000	3500	3500	5000	5000	5000	5000	5000	5000	5000	5000	5500	5500
Max. input speed			n_{1Max} rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [d)]			T_{012} Nm	1.3	1.2	1.1	1.3	1.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
			T_{012} in.lb	11.5	10.6	9.7	11.5	10.6	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
Max. torsional backlash			j_t arcmin	≤ 5														
Torsional rigidity			C_{t21} Nm/ arcmin	2.2	2.3	2.4	2.2	1.9	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.2	1.9
			C_{t21} in.lb/ arcmin	19	20	21	19	17	20	20	20	20	20	20	20	21	19	17
Max. axial force [e)]			F_{2AMax} N	2400														
			F_{2AMax} lb_f	540														
Max. radial force [e)]			F_{2RMax} N	2700														
			F_{2RMax} lb_f	608														
Max. tilting moment			M_{2KMax} Nm	251														
			M_{2KMax} in.lb	2220														
Efficiency at full load			η %	96					94									
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000														
Weight incl. standard adapter plate			*m* kg	2.9					3.2									
			m lb_m	6.4					7.1									
Operating noise (with n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 64														
Max. permitted housing temperature			°C	+90														
			F	194														
Ambient temperature			°C	0 to +40														
			F	32 to 104														
Lubrication				Lubricated for life														
Paint				Blue RAL 5002														
Direction of rotation				Motor and gearhead opposite directions														
Protection class				IP 65														
Moment of inertia (relates to the drive)	B	11	J_1 kgcm²	–	–	–	–	–	0.09	0.09	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06
			J_1 10^{-3} in.lb.s²						0.08	0.08	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.05
Clamping hub diameter [mm]	C	14	J_1 kgcm²	0.52	0.44	0.40	0.36	0.34	0.20	0.20	0.19	0.19	0.18	0.18	0.17	0.17	0.17	0.17
			J_1 10^{-3} in.lb.s²	0.46	0.39	0.35	0.32	0.30	0.18	0.18	0.17	0.16	0.16	0.16	0.15	0.15	0.15	0.15
	E	19	J_1 kgcm²	0.87	0.79	0.75	0.71	0.70	–	–	–	–	–	–	–	–	–	–
			J_1 10^{-3} in.lb.s²	0.77	0.70	0.66	0.63	0.62										

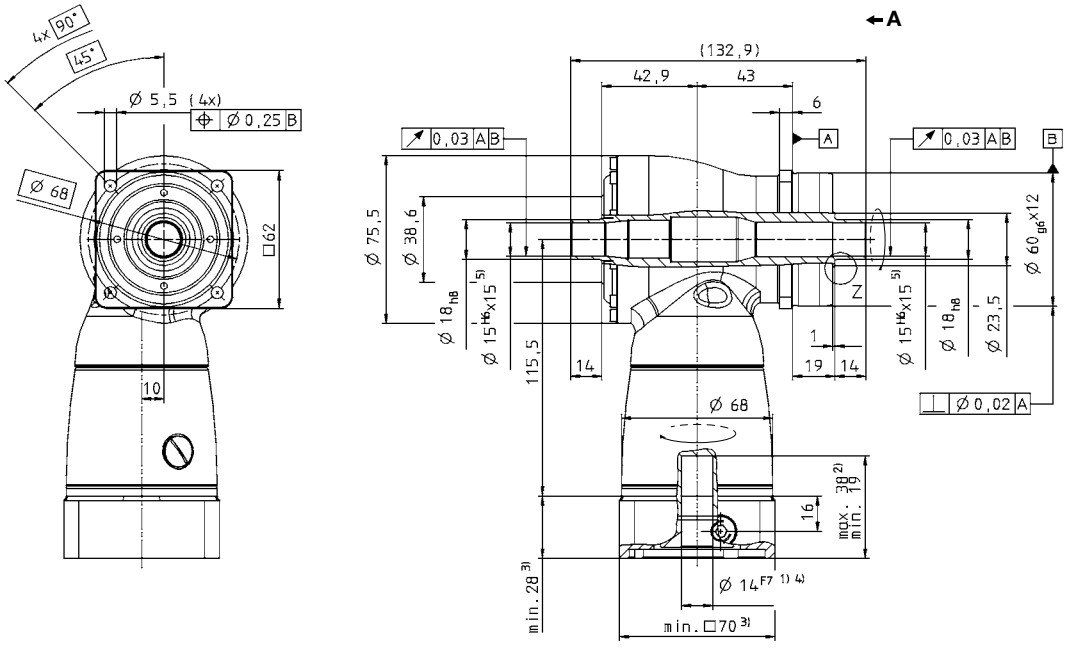
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

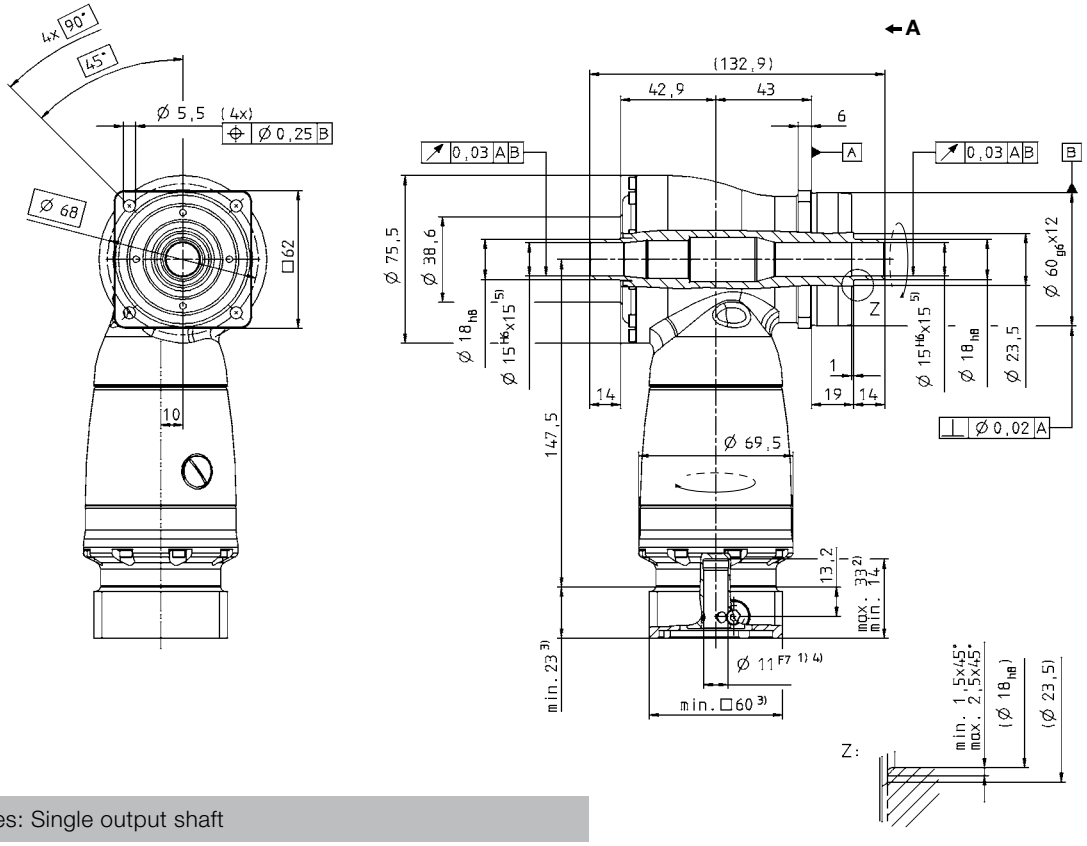
All technical data for front output side applies.
Technical data for rearward output versions, see page 428.

View A

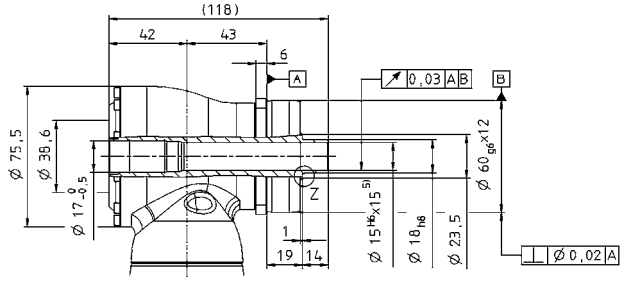
1-stage:



2-stage:



Alternatives: Single output shaft



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

HG+ 075 MF 1/2-stage

					1-stage					2-stage									
Ratio [a]			*i*		**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	70	70	70	60	50	70	70	70	70	70	70	70	70	60	50
				in.lb	620	620	620	531	443	620	620	620	620	620	620	620	620	531	443
Nominal output torque (with n_{1N})			T_{2N}	Nm	50	50	50	45	40	50	50	50	50	50	50	50	50	45	40
				in.lb	443	443	443	398	354	443	443	443	443	443	443	443	443	398	354
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	95	115	115	110	100	115	115	115	115	115	115	115	115	110	100
				in.lb	841	1018	1018	974	885	1018	1018	1018	1018	1018	1018	1018	1018	974	885
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	2300	2500	2800	2800	2800	3500	3500	3500	3500	3500	3500	3500	3800	4500	4500
Max. continuous speed (with 20?% T_{2N} and 20°C ambient temperature)			n_{1Ncym}	rpm	3000	3500	4000	3500	3500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. input speed			n_{1Max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [d)]			T_{012}	Nm	2.2	1.9	1.7	2.2	2.0	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
				in.lb	19	17	15	19	18	2.7	2.7	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
Max. torsional backlash			j_t	arcmin	≤ 4														
Torsional rigidity			C_{t21}	Nm/ arcmin	5.3	5.9	6.7	6.6	6.5	5.9	5.9	5.9	5.9	5.9	5.9	5.9	6.7	6.6	6.5
				in.lb/ arcmin	47	52	60	58	57	52	52	52	52	52	52	52	59	58	58
Max. axial force [e)]			F_{2AMax}	N	3400														
				lb_f	765														
Max. radial force [e)]			F_{2RMax}	N	4000														
				lb_f	900														
Max. tilting moment			M_{2KMax}	Nm	437														
				in.lb	3867														
Efficiency at full load			η	%	96					94									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000														
Weight incl. standard adapter plate			*m*	kg	4.8					5.1									
				lb_m	10.6					11.3									
Operating noise (with n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 66														
Max. permitted housing temperature				°C	+90														
				F	194														
Ambient temperature				°C	0 to +40														
				F	32 to 104														
Lubrication					Lubricated for life														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead opposite directions														
Protection class					IP 65														
Moment of inertia (relates to the drive)	C	14	J_1	$kgcm^2$	–	–	–	–	–	0.28	0.27	0.23	0.23	0.20	0.20	0.18	0.18	0.18	0.18
Clamping hub diameter [mm]				10^{-3} in.lb.s²						0.25	0.24	0.21	0.20	0.18	0.18	0.16	0.16	0.16	0.16
	E	19	J_1	$kgcm^2$	1.46	1.19	1.06	0.95	0.90	0.73	0.71	0.68	0.67	0.63	0.62	0.63	0.63	0.63	0.63
				10^{-3} in.lb.s²	1.29	1.05	0.94	0.84	0.79	0.64	0.63	0.60	0.59	0.55	0.55	0.56	0.55	0.55	0.55
	H	28	J_1	$kgcm^2$	2.86	2.60	2.47	2.36	2.31	–	–	–	–	–	–	–	–	–	–
				10^{-3} in.lb.s²	2.53	2.30	2.19	2.09	2.04										

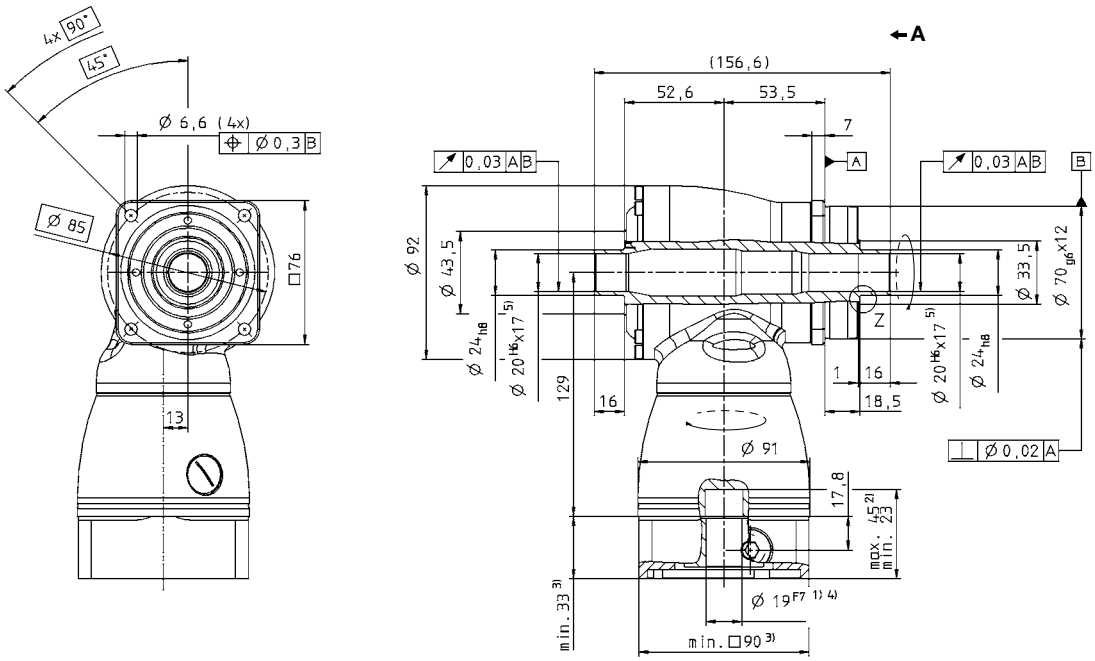
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

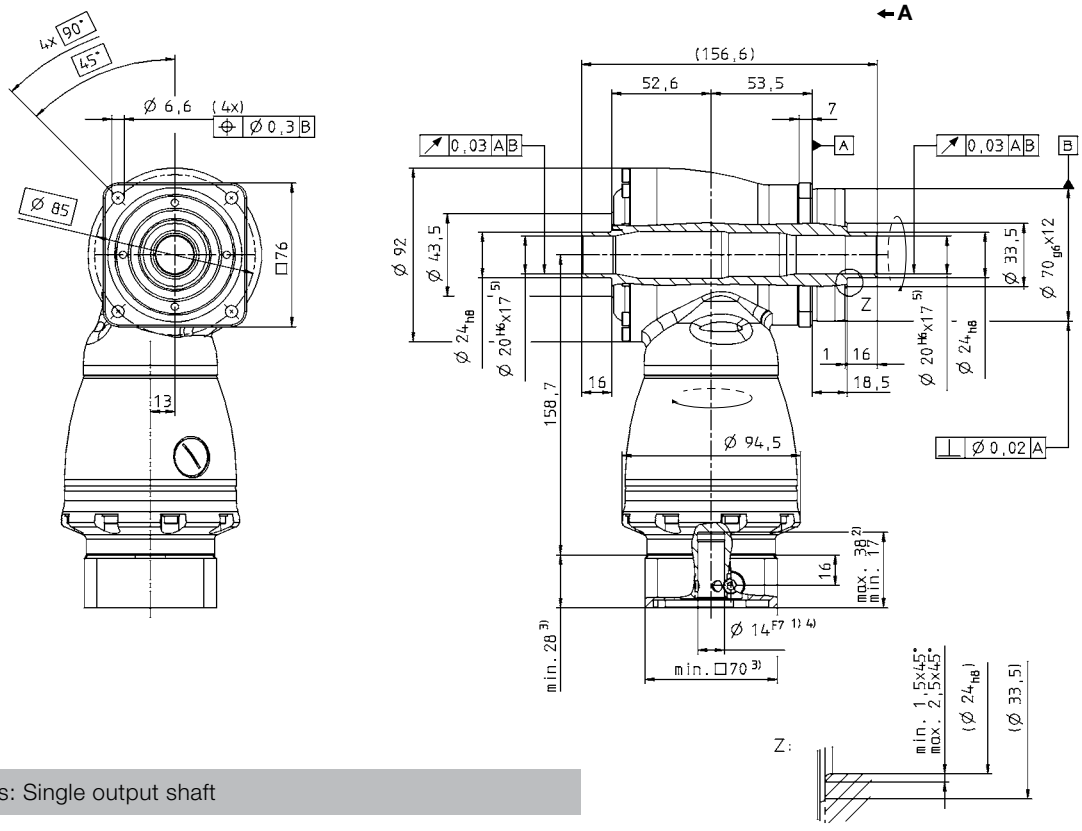
All technical data for front output side applies.
Technical data for rearward output versions, see page 428.

View A

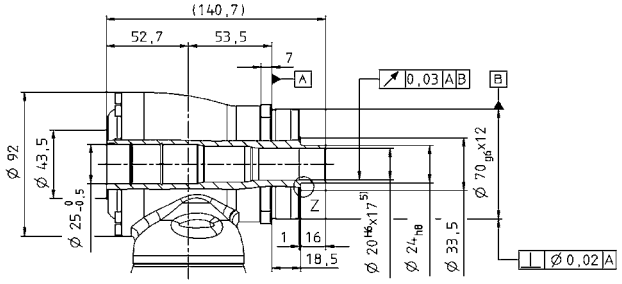
1-stage:



2-stage:



Alternatives: Single output shaft



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

HG+ 100 MF 1/2-stage

					1-stage					2-stage									
Ratio [a]			*i*		**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	170	170	170	145	125	170	170	170	170	170	170	170	170	145	125
				in.lb	1505	1505	1505	1283	1106	1505	1505	1505	1505	1505	1505	1505	1505	1283	1106
Nominal output torque (with n_{1N})			T_{2N}	Nm	100	100	100	90	80	100	100	100	100	100	100	100	100	90	80
				in.lb	885	885	885	797	708	885	885	885	885	885	885	885	885	797	708
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	220	260	260	255	250	260	260	260	260	260	260	260	260	255	250
				in.lb	1947	2301	2301	2257	2213	2301	2301	2301	2301	2301	2301	2301	2301	2257	2213
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	2200	2400	2700	2500	2500	3100	3100	3100	3100	3100	3100	3100	3500	4200	4200
Max. continuous speed (with 20% T_{2N} and 20°C ambient temperature)			n_{1Ncym}	rpm	3000	3400	3800	3400	3400	4000	4000	4000	4000	4000	4000	4000	4000	4200	4200
Max. input speed			n_{1Max}	rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [d)]			T_{012}	Nm	4.2	3.3	2.5	3.9	3.1	0.7	0.7	0.6	0.4	0.4	0.3	0.2	0.2	0.2	0.2
				in.lb	37	29	22	35	27	6.2	6.2	5.3	3.5	3.5	2.7	1.8	1.8	1.8	1.8
Max. torsional backlash			j_t	arcmin	≤ 4														
Torsional rigidity			C_{t21}	Nm/ arcmin	10.7	12.1	14.0	14.2	14.4	12.1	12.1	12.1	12.1	12.1	12.1	12.1	14.0	14.2	14.4
				in.lb/ arcmin	95	107	124	126	127	107	107	107	107	107	107	107	124	126	127
Max. axial force [e)]			F_{2AMax}	N	5700														
				lb_f	1283														
Max. radial force [e)]			F_{2RMax}	N	6300														
				lb_f	1418														
Max. tilting moment			M_{2KMax}	Nm	833														
				in.lb	7370														
Efficiency at full load			η	%	96					94									
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000														
Weight incl. standard adapter plate			*m*	kg	9.3					9.5									
				lb_m	21					21									
Operating noise (with n_1 = 3000 rpm no load)			L_{PA}	dB(A)	≤ 66														
Max. permitted housing temperature				°C	+90														
				F	194														
Ambient temperature				°C	0 to +40														
				F	32 to 104														
Lubrication					Lubricated for life														
Paint					Blue RAL 5002														
Direction of rotation					Motor and gearhead opposite directions														
Protection class					IP 65														
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	E	19	J_1	kgcm²	–	–	–	–	–	1.02	0.97	0.86	0.84	0.75	0.74	0.69	0.69	0.68	0.68
				10^{-3} in.lb.s²						0.91	0.86	0.76	0.74	0.66	0.66	0.61	0.61	0.60	0.60
	G	24	J_1	kgcm²	–	–	–	–	–	2.59	2.54	2.42	2.40	2.31	2.30	2.26	2.25	2.25	2.25
				10^{-3} in.lb.s²						2.29	2.25	2.14	2.13	2.05	2.04	2.00	1.99	1.99	1.99
	H	28	J_1	kgcm²	4.64	3.80	3.34	2.98	2.79	–	–	–	–	–	–	–	–	–	–
				10^{-3} in.lb.s²	4.10	3.36	2.95	2.64	2.47										
	K	38	J_1	kgcm²	11.8	11.0	10.6	10.2	10.0	–	–	–	–	–	–	–	–	–	–
				10^{-3} in.lb.s²	10.4	9.73	9.34	9.04	8.88										

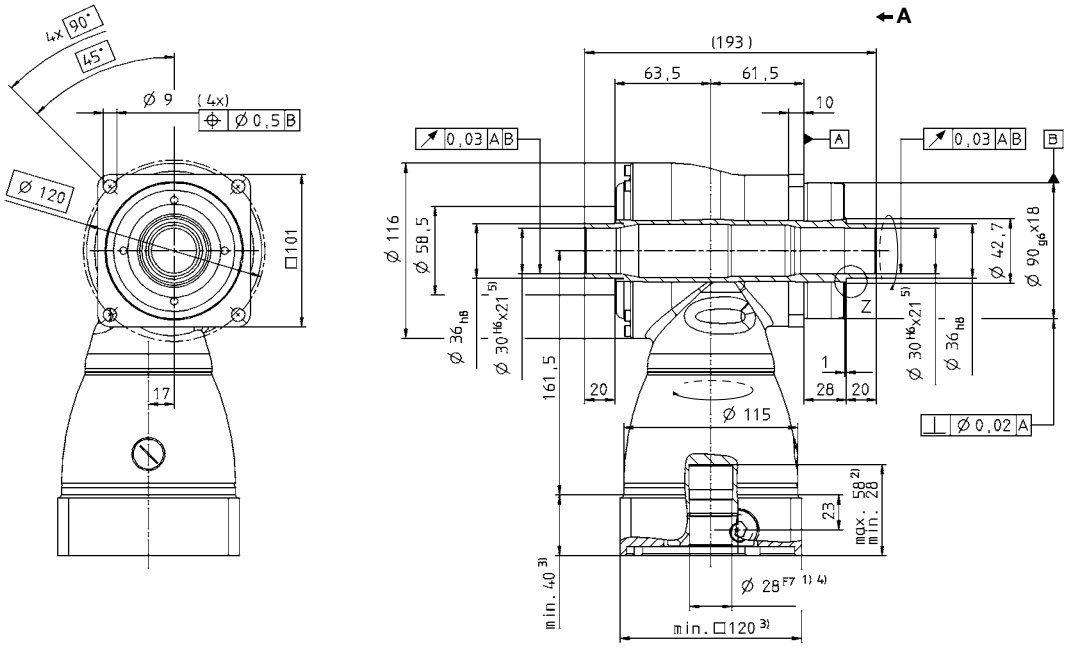
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

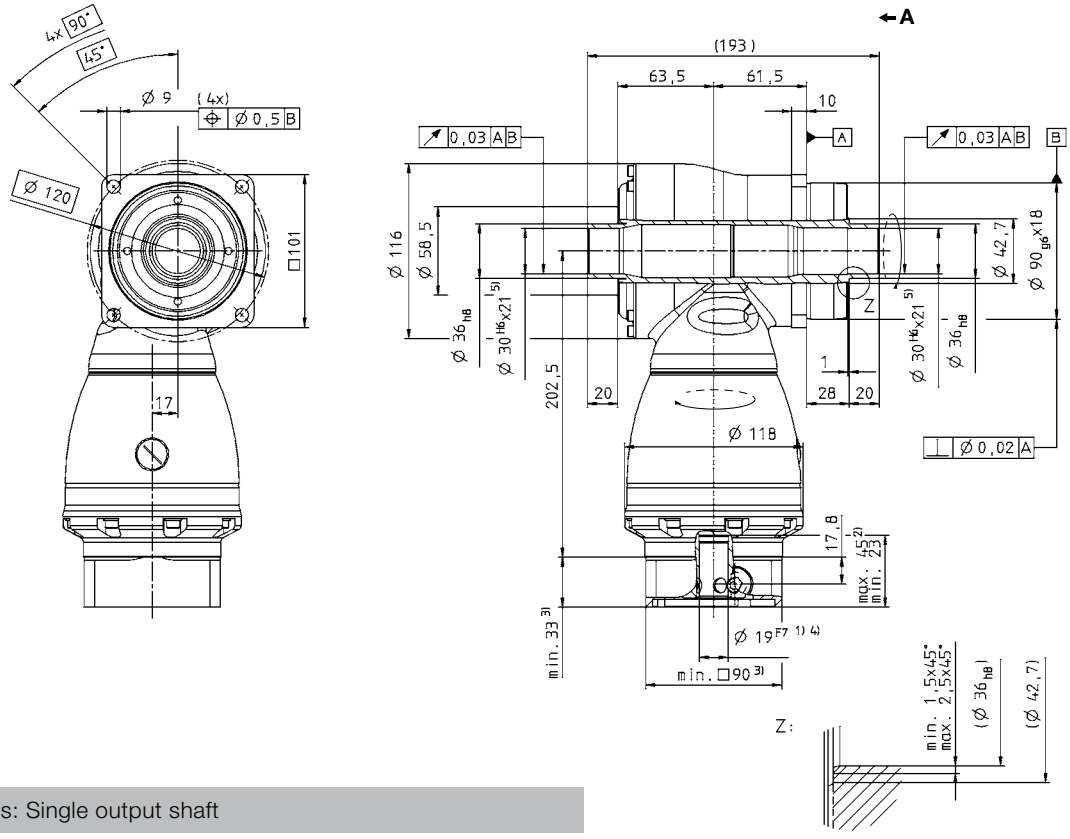
All technical data for front output side applies.
Technical data for rearward output versions, see page 428.

View A

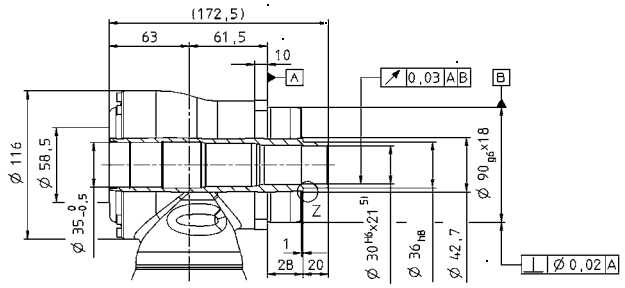
1-stage:



2-stage:



Alternatives: Single output shaft



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

HG+ 140 MF 1/2-stage

				1-stage					2-stage									
Ratio [a]			*i*	**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	300	300	300	250	210	300	300	300	300	300	300	300	300	250	210
			in.lb	2655	2655	2655	2213	1859	2655	2655	2655	2655	2655	2655	2655	2655	2213	1859
Nominal output torque (with n_{1N})			T_{2N} Nm	190	190	190	175	160	190	190	190	190	190	190	190	190	175	160
			in.lb	1682	1682	1682	1549	1416	1682	1682	1682	1682	1682	1682	1682	1682	1549	1416
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	400	500	500	450	400	500	500	500	500	500	500	500	500	450	400
			in.lb	3540	4425	4425	3983	3540	4425	4425	4425	4425	4425	4425	4425	4425	3983	3540
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N} rpm	1900	2000	2200	2000	2000	2900	2900	2900	2900	2900	2900	2900	3200	3200	3900
Max. continuous speed (with 20% T_{2N} and 20°C ambient temperature)			n_{1Ncym} rpm	2500	2800	3100	2800	2800	4000	4000	4000	4000	4000	4000	4000	4200	4200	4200
Max. input speed			n_{1Max} rpm	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [d)]			T_{012} Nm	7.7	5.7	5.0	8.3	6.1	1.5	1.0	0.8	0.6	0.6	0.4	0.4	0.3	0.3	0.3
			in.lb	68	50	44	73	54	13.3	8.9	7.1	5.3	5.3	3.5	3.5	2.7	2.7	2.7
Max. torsional backlash			j_t arcmin	≤ 4														
Torsional rigidity			C_{t21} Nm/ arcmin	32	36	41	39	38	36	36	36	36	36	36	36	41	39	38
			in.lb/ arcmin	287	321	360	346	337	319	319	319	319	319	319	319	363	345	336
Max. axial force [e)]			F_{2AMax} N	9900														
			lb_f	2228														
Max. radial force [e)]			F_{2RMax} N	9500														
			lb_f	2138														
Max. tilting moment			M_{2KMax} Nm	1692														
			in.lb	14974														
Efficiency at full load			η %	96					94									
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000														
Weight incl. standardadapter plate			*m* kg	22.6					24									
			lb_m	50					53									
Operating noise (with n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 68														
Max. permitted housing temperature			°C	+90														
			F	194														
Ambient temperature			°C	0 to +40														
			F	32 to 104														
Lubrication				Lubricated for life														
Paint				Blue RAL 5002														
Direction of rotation				Motor and gearhead opposite directions														
Protection class				IP 65														
Moment of inertia (relates to the drive)	G	24	J_1 kgcm²	–	–	–	–	–	4.20	3.84	3.27	3.16	2.78	2.73	2.48	2.45	2.43	2.42
			10^{-3} in.lb.s²						3.71	3.40	2.90	2.80	2.46	2.41	2.20	2.17	2.15	2.14
Clamping hub diameter [mm]	K	38	J_1 kgcm²	25.0	19.1	16.3	14.1	12.8	11.1	10.7	10.2	10.1	9.69	9.64	9.39	9.37	9.34	9.33
			10^{-3} in.lb.s²	22.1	16.9	14.4	12.4	11.3	9.83	9.51	9.01	8.92	8.58	8.53	8.31	8.29	8.27	8.26

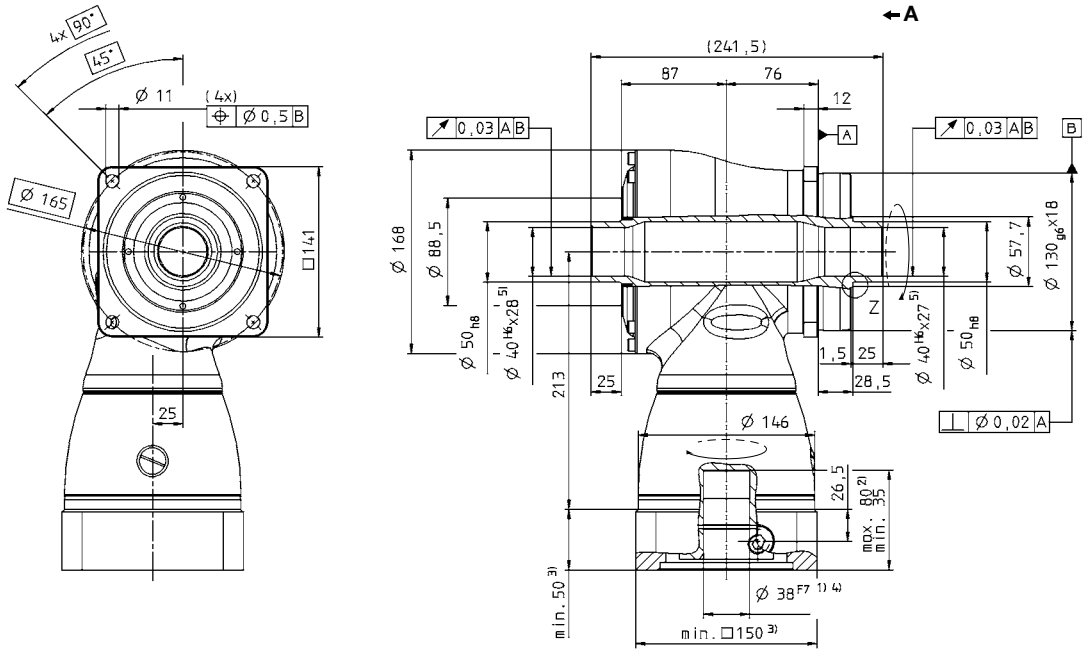
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

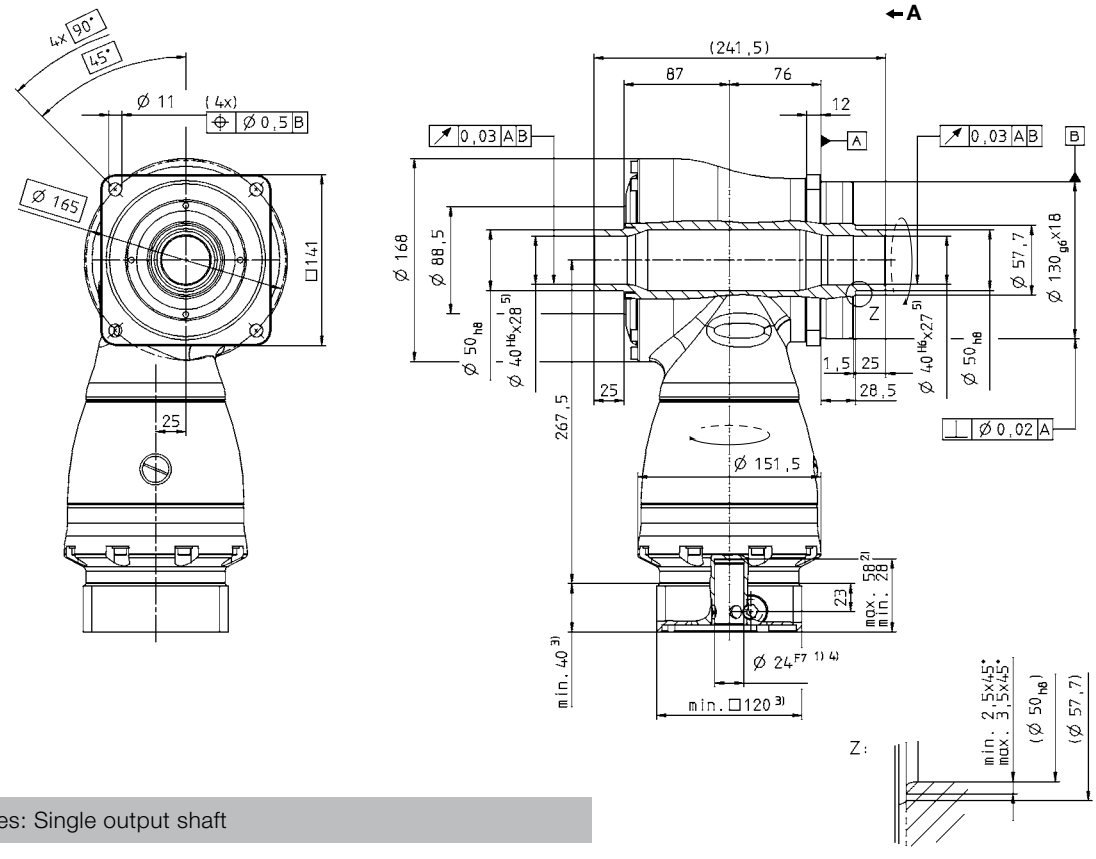
All technical data for front output side applies.
Technical data for rearward output versions, see page 428.

View A

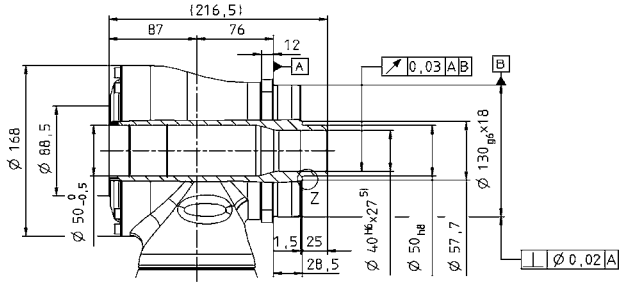
1-stage:



2-stage:



Alternatives: Single output shaft



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

CAD data is available under www.wittenstein-alpha.com

Motor mounting according to operating manual

HG+ 180 MF 1/2-stage

				1-stage					2-stage									
Ratio [a]			*i*	**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**25**	**28**	**35**	**40**	**50**	**70**	**100**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	640	640	640	550	470	640	640	640	640	640	640	640	640	550	470
			T_{2B} in.lb	5664	5664	5664	4868	4160	5664	5664	5664	5664	5664	5664	5664	5664	4868	4160
Nominal output torque (with n_{1N})			T_{2N} Nm	400	400	400	380	360	400	400	400	400	400	400	400	400	380	360
			T_{2N} in.lb	3540	3540	3540	3363	3186	3540	3540	3540	3540	3540	3540	3540	3540	3363	3186
Emergency stop torque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	900	1050	1050	970	900	1050	1050	1050	1050	1050	1050	1050	1050	970	900
			T_{2Not} in.lb	7965	9293	9293	8585	7965	9293	9293	9293	9293	9293	9293	9293	9293	8585	7965
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N} rpm	1600	1800	2000	1800	1800	2700	2700	2700	2700	2700	2700	2700	2900	3200	3400
Max. continuous speed (with 20% T_{2N} and 20°C ambient temperature)			n_{1Ncym} rpm	2000	2400	2800	2500	2500	3500	3500	3500	3500	3500	3500	3500	3500	3800	3800
Max. input speed			n_{1Max} rpm	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Mean no load running torque (with n_1 = 3000 rpm and 20°C gearhead temperature) [d)]			T_{012} Nm	16.0	13.0	11.0	16.5	14.0	3.3	2.5	2.0	1.8	1.4	1.3	1.0	1.0	1.0	1.0
			T_{012} in.lb	142	115	97	146	124	29.2	22.1	17.7	15.9	12.4	11.5	8.9	8.9	8.9	8.9
Max. torsional backlash			j_t arcmin	≤ 4														
Torsional rigidity			C_{t21} Nm/ arcmin	71	80	91	89	88	80	80	80	80	80	80	80	91	89	88
			C_{t21} in.lb/ arcmin	633	711	803	791	780	708	708	708	708	708	708	708	805	788	779
Max. axial force [e)]			F_{2AMax} N	14200														
			F_{2AMax} lb_f	3195														
Max. radial force [e)]			F_{2RMax} N	14700														
			F_{2RMax} lb_f	3308														
Max. tilting moment			M_{2KMax} Nm	3213														
			M_{2KMax} in.lb	28435														
Efficiency at full load			η %	96					94									
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000														
Weight incl. standardadapter plate			*m* kg	45.4					47									
			m lb_m	100					104									
Operating noise (with n_1 = 3000 rpm no load)			L_{PA} dB(A)	≤ 68														
Max. permitted housing temperature			°C	+90														
			F	194														
Ambient temperature			°C	0 to +40														
			F	32 to 104														
Lubrication				Lubricated for life														
Paint				Blue RAL 5002														
Direction of rotation				Motor and gearhead opposite directions														
Protection class				IP 65														
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	K	38	J_1 kgcm²	–	–	–	–	–	15.3	13.9	12.3	12.0	10.9	10.7	10.1	10.0	9.95	9.91
			J_1 10^{-3} in.lb.s²						13.5	12.3	10.9	10.6	9.65	9.48	8.96	8.88	8.80	8.77
	M	48	J_1 kgcm²	73.3	51.6	42.1	34.0	29.7	30.0	28.7	27.0	26.7	25.6	25.4	24.8	24.7	24.7	24.6
			J_1 10^{-3} in.lb.s²	64.9	45.6	37.3	30.1	26.3	26.6	25.4	23.9	23.6	22.7	22.5	22.0	21.9	21.8	21.8

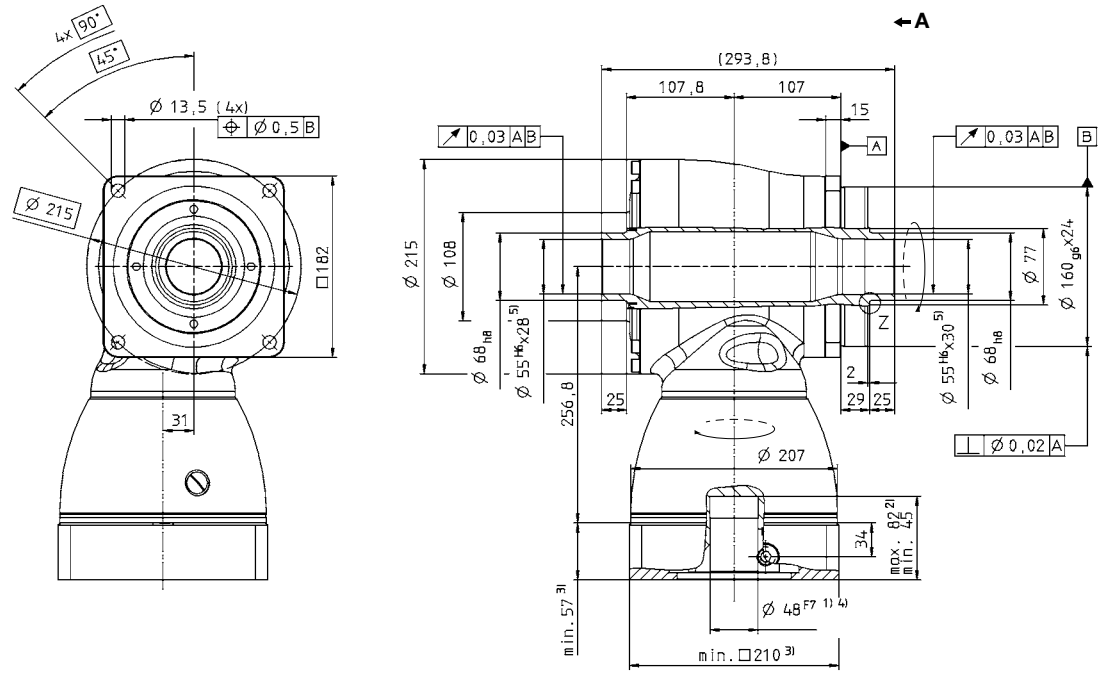
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a)] Other ratios available on request
[b)] Higher speeds are possible if the nominal torque is reduced
[c)] For higher ambient temperatures, please reduce input speed
[d)] Idling torques decrease during operation
[e)] Refers to center of the output shaft or flange

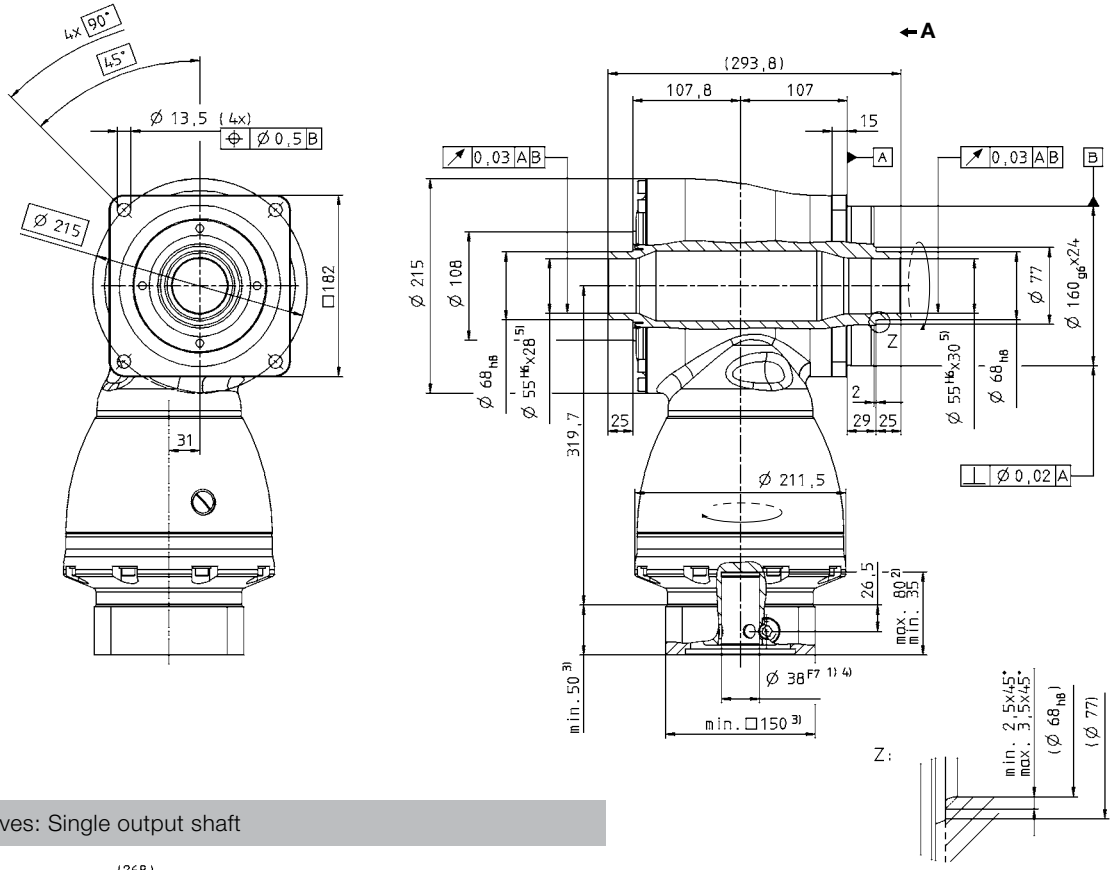
All technical data for front output side applies.
Technical data for rearward output versions, see page 428.

View A

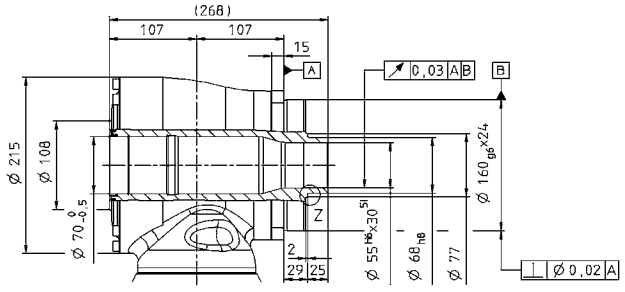
1-stage:



2-stage:



Alternatives: Single output shaft



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.
5) Tolerance h6 for mounted shaft.

CAD data is available under www.wittenstein-alpha.com

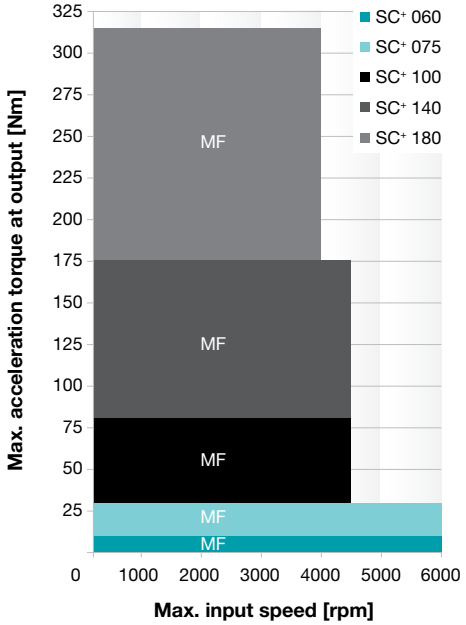
Motor mounting according to operating manual

SC+/SPC+/TPC+ – High performance with low ratios

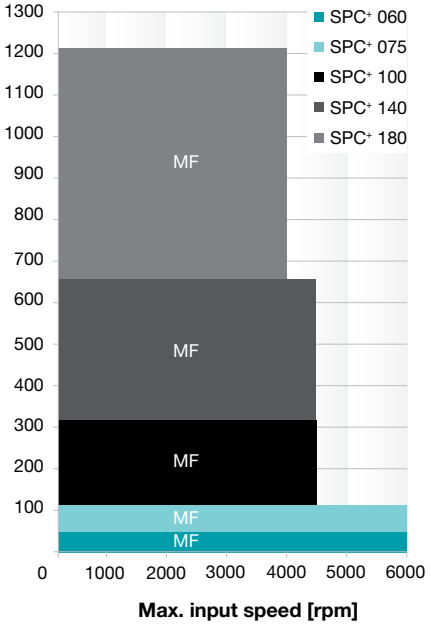
Low backlash right-angle gearheads with output shaft or output flange. This gearhead series is used in dynamic applications with low transmission ratios and demanding requirements with regard to precision, torque, and efficiency.

Quick size selection

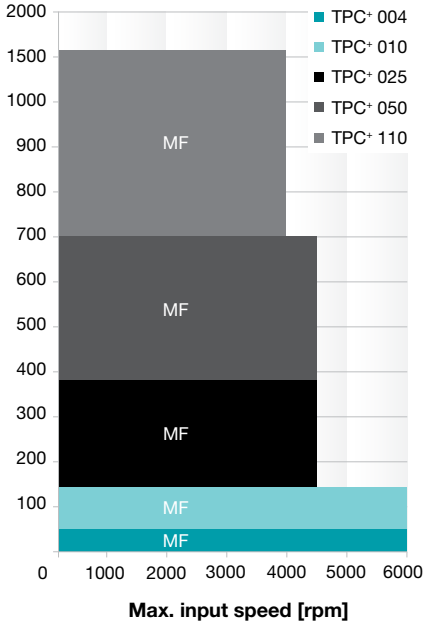
SC+ MF (example for i = 1)
For applications in cyclic operation
(duty cycle ≤ 60 %) or continuous operation
(duty cycle ≥ 60%)



SPC+ MF (example for i = 5)
For applications in cyclic operation
(duty cycle ≤ 60 %) or continuous operation
(duty cycle ≥ 60%)



TPC+ MF (example for i = 5)
For applications in cyclic operation
(duty cycle ≤ 60%) or continuous operation
(duty cycle ≥ 60%)



Versions and their uses

Features	SC+ MF version Catalog page 262	SPC+ MF version Catalog page 272	TPC+ MF version Catalog page 282
Power density	• • •	• • •	• • •
Positioning accuracy (e.g clamped drives)	• •	• • •	• • •
Highly dynamic applications	• •	• •	• •
High output speeds	• • •	• •	• •

Product features

Ratios [c]		1 - 2	4 - 20	4 - 20
Backlash [arcmin] [c]	Standard	≤ 4	≤ 4	≤ 4
	Reduced	-	≤ 2	≤ 2
Output type				
Smooth output shaft		•	•	
Keywayed output shaft		•	•	
Output shaft with involute toothing			•	
Mounted shaft			•	
Output flange				•
System output with pinion				•
Input type				
Motor attachment version		•	•	•
Model				
Food-grade lubrication [a] [b]		•	•	•
Accessories				
Coupling		•	•	•
Rack		•	•	•
Pinion		•	•	•
Shrink disk			•	

[a] Power reduction: Technical data available upon request [b] Please contact WITTENSTEIN alpha [c] Based on reference sizes

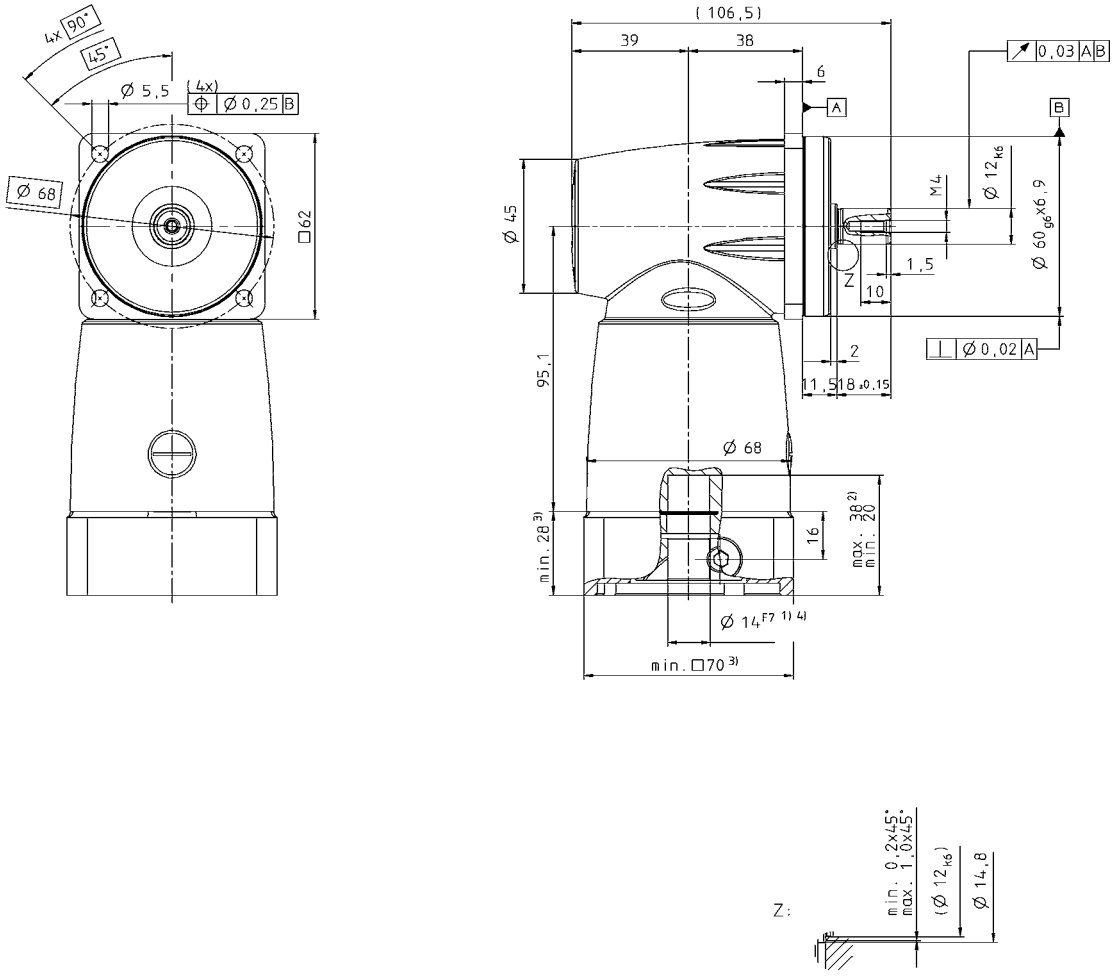
					1-stage	
Ratio [a]			***i***		**1**	**2**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	10	10
				in.lb	89	89
Nominal output torque (with n_{1N})			T_{2N}	Nm	7	7
				in.lb	62	62
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	25	25
				in.lb	221	221
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	5000	5500
Max. input speed			n_{1max}	rpm	6000	6000
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	0.5	0.3
				in.lb	4.4	2.7
Max. torsional backlash			j_t	arcmin	≤ 5	
Torsional rigidity			C_{t21}	Nm/ arcmin	0.4	0.6
				in.lb/ arcmin	3.5	5.3
Max. axial force			F_{2AMax}	N	500	
				lb_f	113	
Max. radial force			F_{2RMax}	N	950	
				lb_f	214	
Max. tilting moment			M_{2KMax}	Nm	71	
				in.lb	628	
Efficiency at full load			η	%	97	
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000	
Weight incl. standard adapter plate			*m*	kg	1.9	
				lb_m	4.2	
Operating noise (with n_1 = 3000 rpm without load)			L_{PA}	dB(A)	≤ 66	
Max. permitted housing temperature				°C	+90	
				F	194	
Ambient temperature				°C	0 to +40	
				F	32 to 104	
Lubrication					Lubricated for life	
Paint					no paint	
Mounting position					any	
Direction of rotation					Motor and gearhead same direction	
Protection class					IP 65	
Moment of inertia (relates to the drive)	C	14	J_1	kgcm²	0.66	0.42
				10^{-3} in.lb.s²	0.58	0.37
Clamping hub diameter [mm]	E	19	J_1	kgcm²	0.99	0.75
				10^{-3} in.lb.s²	0.88	0.66

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

View A

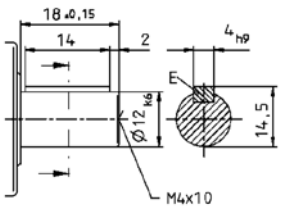
1-stage:



Alternatives: Output shaft variants

Keywayed output shaft in mm

E = key as per DIN 6885, sheet 1, form A



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

Motor mounting according to operating manual

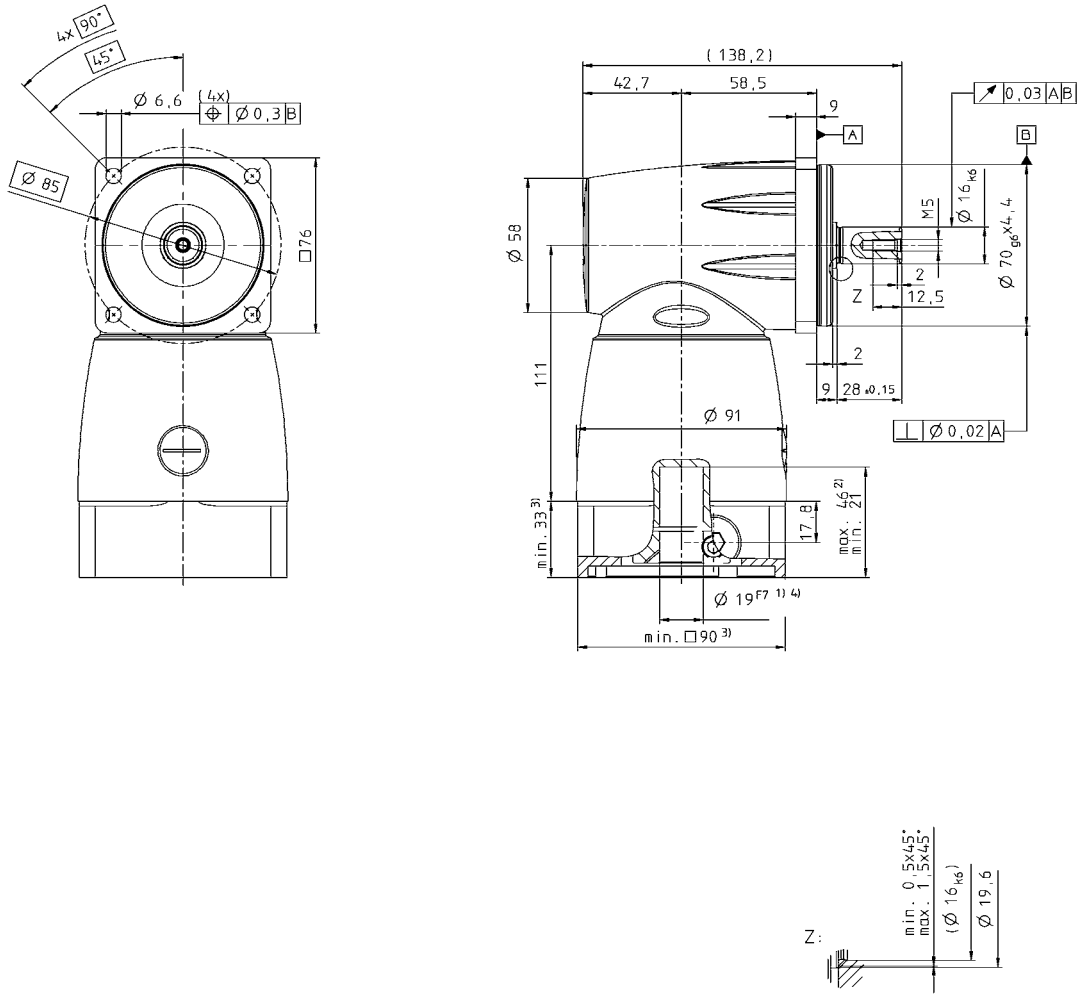
					1-stage	
Ratio [a]			***i***		**1**	**2**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	30	30
				in.lb	266	266
Nominal output torque (with n_{1N})			T_{2N}	Nm	20	20
				in.lb	177	177
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	48	62
				in.lb	425	549
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	2600	4000
Max. input speed			n_{1max}	rpm	6000	6000
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	0.9	0.3
				in.lb	8.0	2.7
Max. torsional backlash			j_t	arcmin	≤ 4	
Torsional rigidity			C_{t21}	Nm/ arcmin	1.0	1.5
				in.lb/ arcmin	8.9	13.3
Max. axial force			F_{2AMax}	N	700	
				lb_f	158	
Max. radial force			F_{2RMax}	N	1300	
				lb_f	293	
Max. tilting moment			M_{2KMax}	Nm	131	
				in.lb	1159	
Efficiency at full load			η	%	97	
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000	
Weight incl. standard adapter plate			*m*	kg	3.6	
				lb_m	8.0	
Operating noise (with n_1 = 3000 rpm without load)			L_{PA}	dB(A)	≤ 68	
Max. permitted housing temperature				°C	+90	
				F	194	
Ambient temperature				°C	0 to +40	
				F	32 to 104	
Lubrication					Lubricated for life	
Paint					no paint	
Mounting position					any	
Direction of rotation					Motor and gearhead same direction	
Protection class					IP 65	
Moment of inertia (relates to the drive)	E	19	J_1	kgcm²	1.99	1.19
				10^{-3} in.lb.s²	1.76	1.05
Clamping hub diameter [mm]	H	28	J_1	kgcm²	3.43	2.63
				10^{-3} in.lb.s²	3.04	2.33

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

View A

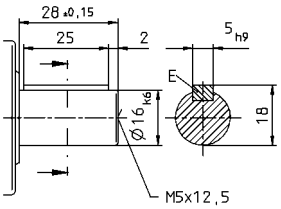
1-stage:



Alternatives: Output shaft variants

Keywayed output shaft in mm

E = key as per DIN 6885, sheet 1, form A



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

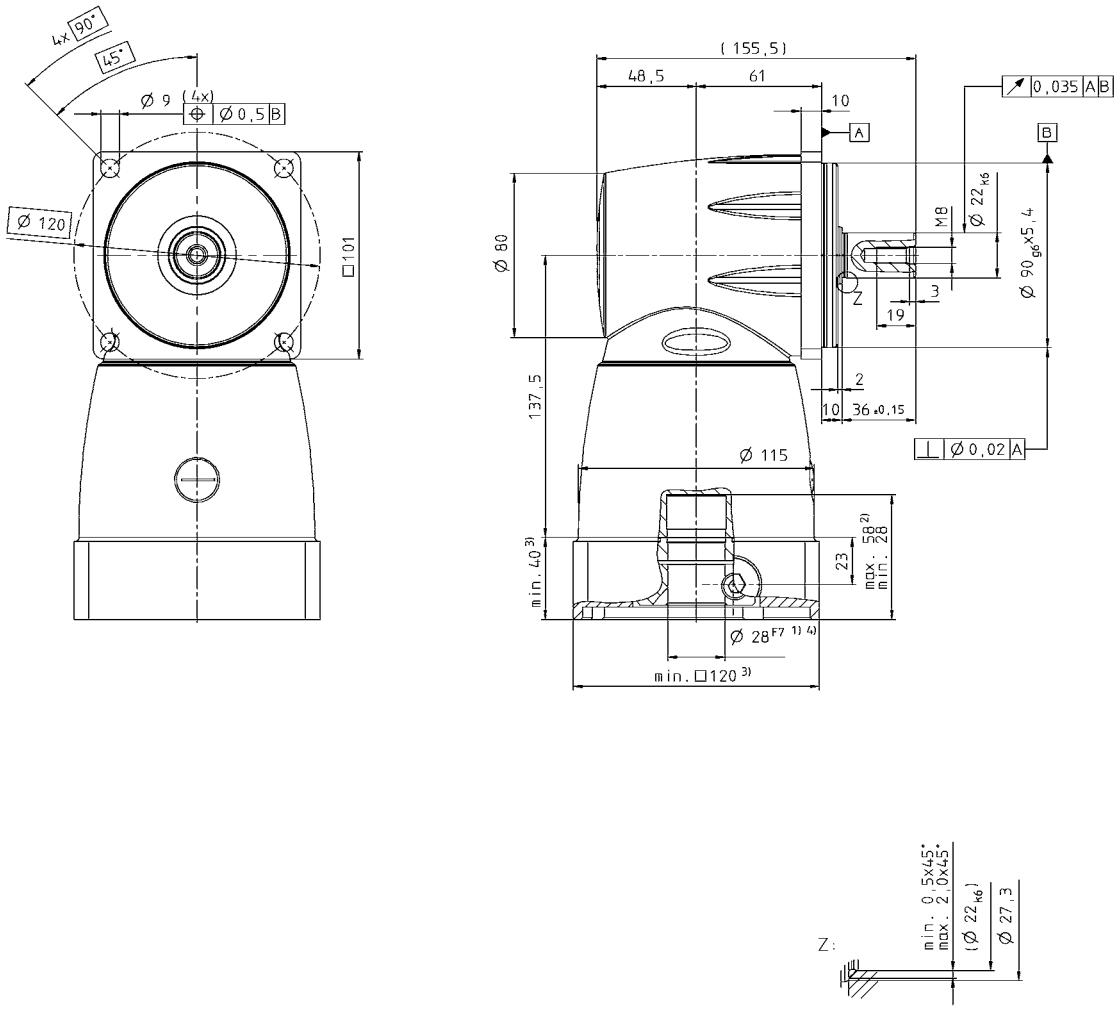
Motor mounting according to operating manual

					1-stage	
Ratio [a]			***i***		**1**	**2**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	81	81
				in.lb	717	717
Nominal output torque (with n_{1N})			T_{2N}	Nm	50	50
				in.lb	443	443
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	135	200
				in.lb	1195	1770
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	2500	2800
Max. input speed			n_{1max}	rpm	4500	4500
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	2.5	1.5
				in.lb	22.1	13.3
Max. torsional backlash			j_t	arcmin	≤ 4	
Torsional rigidity			C_{t21}	Nm/ arcmin	2.9	4.6
				in.lb/ arcmin	25.7	40.7
Max. axial force			F_{2AMax}	N	1900	
				lb_f	428	
Max. radial force			F_{2RMax}	N	3800	
				lb_f	855	
Max. tilting moment			M_{2KMax}	Nm	439	
				in.lb	3885	
Efficiency at full load			η	%	97	
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000	
Weight incl. standard adapter plate			*m*	kg	7.0	
				lb_m	15.5	
Operating noise (with n_1 = 3000 rpm without load)			L_{PA}	dB(A)	≤ 68	
Max. permitted housing temperature				°C	+90	
				F	194	
Ambient temperature				°C	0 to +40	
				F	32 to 104	
Lubrication					Lubricated for life	
Paint					no paint	
Mounting position					any	
Direction of rotation					Motor and gearhead same direction	
Protection class					IP 65	
Moment of inertia (relates to the drive)	H	28	J_1	kgcm²	7.1	4.8
				10^{-3} in.lb.s²	6.28	4.25
Clamping hub diameter [mm]	K	38	J_1	kgcm²	14.2	11.9
				10^{-3} in.lb.s²	12.57	10.53

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

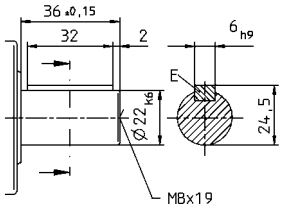
1-stage:



Alternatives: Output shaft variants

Keywayed output shaft in mm

E = key as per DIN 6885, sheet 1, form A



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

Motor mounting according to operating manual

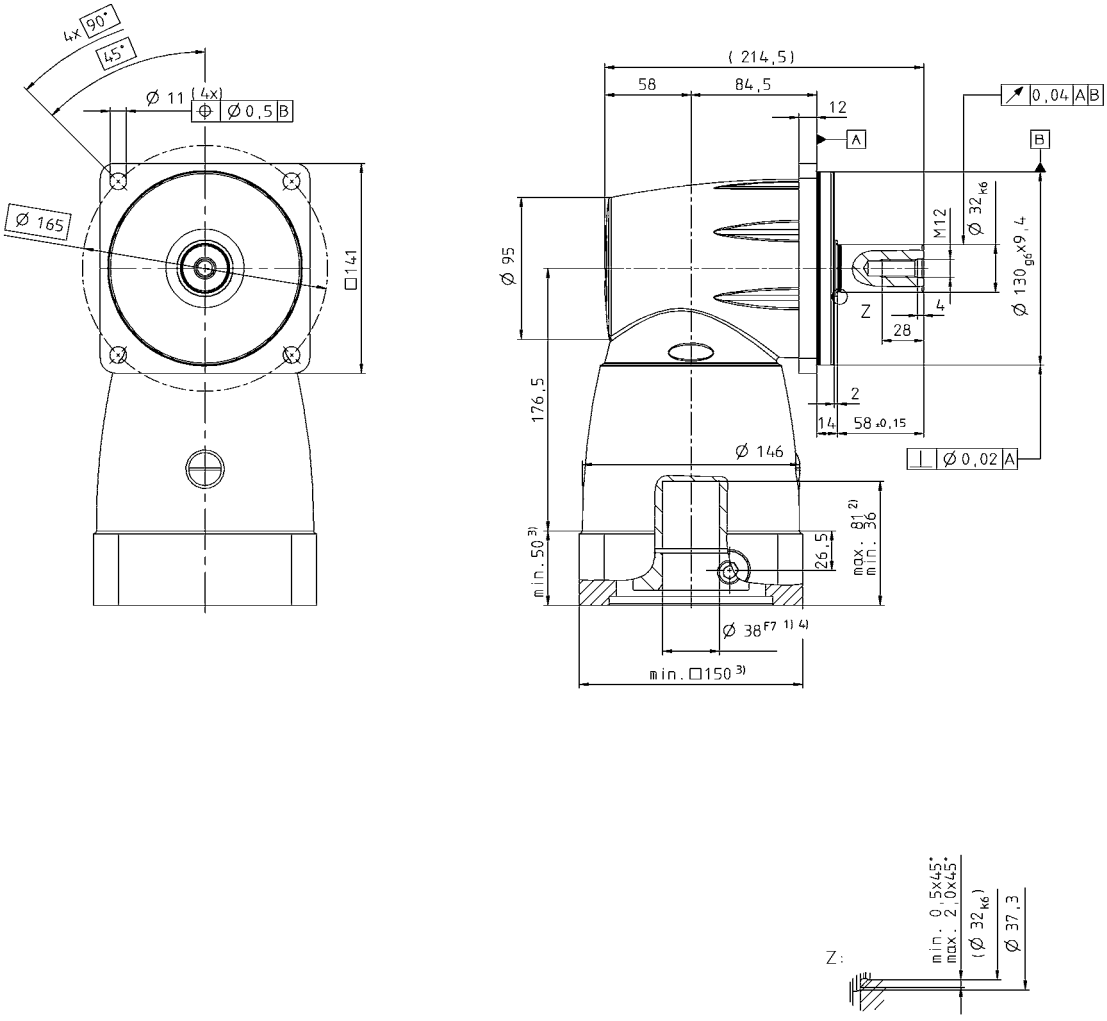
					1-stage	
Ratio [a]			***i***		**1**	**2**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	175	175
				in.lb	1549	1549
Nominal output torque (with n_{1N})			T_{2N}	Nm	110	110
				in.lb	974	974
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	240	310
				in.lb	2124	2744
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	1600	2100
Max. input speed			n_{1max}	rpm	4500	4500
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	4.0	1.7
				in.lb	35.4	15.0
Max. torsional backlash			j_t	arcmin	≤ 4	
Torsional rigidity			C_{t21}	Nm/ arcmin	6.4	9.1
				in.lb/ arcmin	56.6	80.5
Max. axial force			F_{2AMax}	N	3000	
				lb_f	675	
Max. radial force			F_{2RMax}	N	6000	
				lb_f	1350	
Max. tilting moment			M_{2KMax}	Nm	957	
				in.lb	8469	
Efficiency at full load			η	%	97	
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000	
Weight incl. standard adapter plate			*m*	kg	14.7	
				lb_m	32.5	
Operating noise (with n_1 = 3000 rpm without load)			L_{PA}	dB(A)	≤ 70	
Max. permitted housing temperature				°C	+90	
				F	194	
Ambient temperature				°C	0 to +40	
				F	32 to 104	
Lubrication					Lubricated for life	
Paint					no paint	
Mounting position					any	
Direction of rotation					Motor and gearhead same direction	
Protection class					IP 65	
Moment of inertia (relates to the drive)	K	38	J_1	$kgcm^2$	41.3	21.3
Clamping hub diameter [mm]				10^{-3} in.lb.s²	36.55	18.85

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

View A

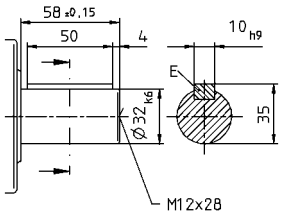
1-stage:



Alternatives: Output shaft variants

Keywayed output shaft in mm

E = key as per DIN 6885, sheet 1, form A



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

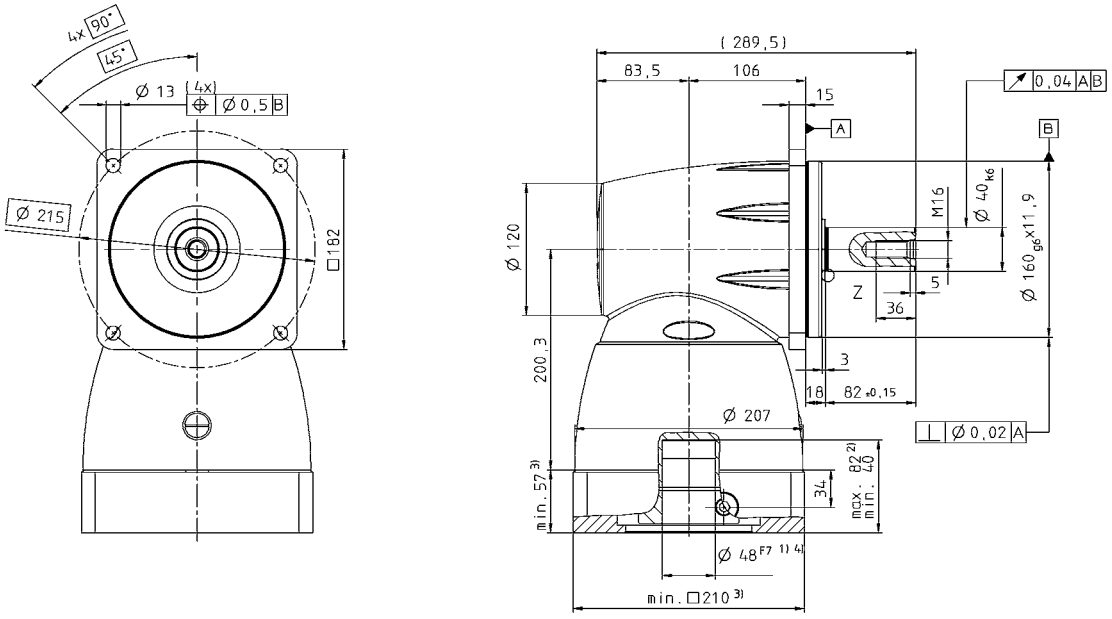
Motor mounting according to operating manual

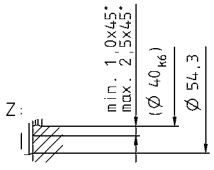
					1-stage	
Ratio [a]			***i***		**1**	**2**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	315	315
				in.lb	2788	2788
Nominal output torque (with n_{1N})			T_{2N}	Nm	200	200
				in.lb	1770	1770
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	390	685
				in.lb	3452	6062
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	1200	1500
Max. input speed			n_{1max}	rpm	4000	4000
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	9.5	5.5
				in.lb	84.1	48.7
Max. torsional backlash			j_t	arcmin	≤ 3	
Torsional rigidity			C_{t21}	Nm/ arcmin	13	22
				in.lb/ arcmin	115.1	194.7
Max. axial force			F_{2AMax}	N	4500	
				lb_f	1013	
Max. radial force			F_{2RMax}	N	9000	
				lb_f	2025	
Max. tilting moment			M_{2KMax}	Nm	1910	
				in.lb	16904	
Efficiency at full load			η	%	97	
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000	
Weight incl. standard adapter plate			*m*	kg	31.4	
				lb_m	69.4	
Operating noise (with n_1 = 3000 rpm without load)			L_{PA}	dB(A)	≤ 70	
Max. permitted housing temperature				°C	+90	
				F	194	
Ambient temperature				°C	0 to +40	
				F	32 to 104	
Lubrication					Lubricated for life	
Paint					no paint	
Mounting position					any	
Direction of rotation					Motor and gearhead same direction	
Protection class					IP 65	
Moment of inertia (relates to the drive)	M	48	J_t	kgcm²	99.5	46.7
Clamping hub diameter [mm]				10^{-3} in.lb.s²	88.06	41.33

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

1-stage:

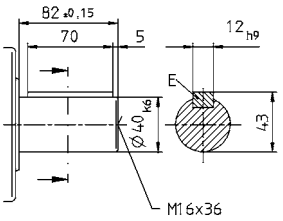




Alternatives: Output shaft variants

Keywayed output shaft in mm

E = key as per DIN 6885, sheet 1, form A



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

Motor mounting according to operating manual

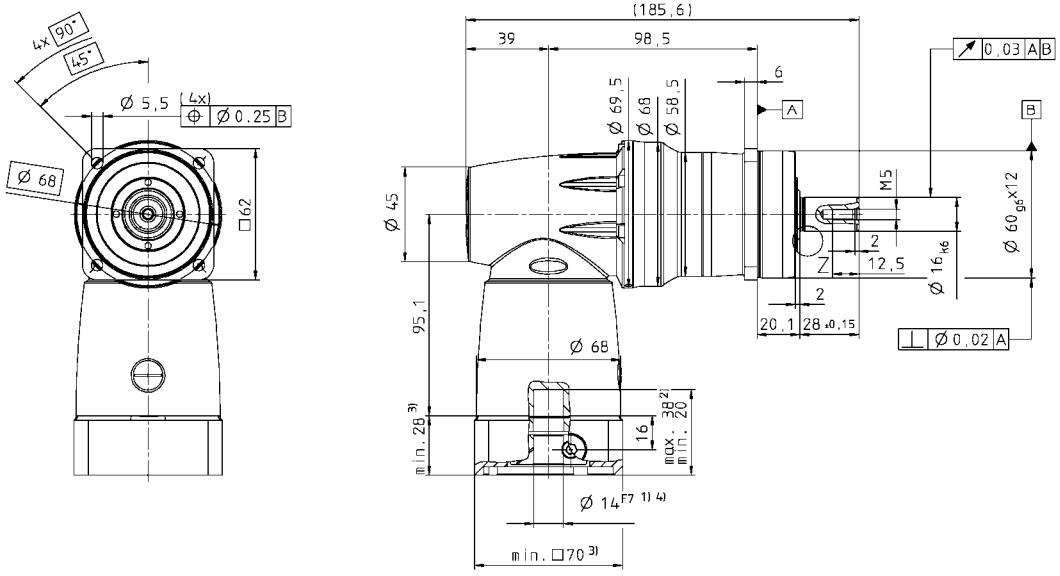
				2-stage						
Ratio [a]			***i***	**4**	**5**	**7**	**8**	**10**	**14**	**20**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	40	42	42	40	42	42	32
			T_{2B} in.lb	354	372	372	354	372	372	283
Nominal output torque (with n_{1N})			T_{2N} Nm	26	26	26	26	26	26	17
			T_{2N} in.lb	230	230	230	230	230	230	150
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	100	100	100	100	100	100	80
			T_{2Not} in.lb	885	885	885	885	885	885	708
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N} rpm	3000	3000	3200	3400	3400	3600	3600
Max. input speed			n_{1max} rpm	6000	6000	6000	6000	6000	6000	6000
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012} Nm	1.2	1.1	0.9	0.6	0.6	0.5	0.4
			T_{012} in.lb	11	10	8	5	5	4	4
Max. torsional backlash			j_t arcmin	Standard ≤ 5 / Reduced ≤ 3						
Torsional rigidity			C_{t21} Nm/ arcmin	2.4	2.7	3.1	2.7	3.0	3.2	3.3
			C_{t21} in.lb/ arcmin	21	24	27	24	27	28	29
Max. axial force			F_{2AMax} N	2400						
			F_{2AMax} lb_f	540						
Max. radial force			F_{2RMax} N	2800						
			F_{2RMax} lb_f	630						
Max. tilting moment			M_{2KMax} Nm	152						
			M_{2KMax} in.lb	1345.2						
Efficiency at full load			η %	95						
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000						
Weight incl. standard adapter plate			*m* kg	3.1						
			m lb_m	6.851						
Operating noise (with n_1 = 3000 rpm without load)			L_{PA} dB(A)	≤ 68						
Max. permitted housing temperature			°C	+90						
			F	194						
Ambient temperature			°C	0 to +40						
			F	32 to 104						
Lubrication				Lubricated for life						
Paint				Blue RAL 5002						
Mounting position				any						
Direction of rotation				Motor and gearhead same direction						
Protection class				IP 65						
Moment of inertia (relates to the drive)	C	14	J_1 kgcm²	0.72	0.7	0.66	0.44	0.43	0.43	0.43
			J_1 10^{-3} in.lb.s²	0.64	0.62	0.58	0.39	0.38	0.38	0.38
Clamping hub diameter [mm]	E	19	J_1 kgcm²	1.05	1.03	0.99	0.77	0.76	0.76	0.75
			J_1 10^{-3} in.lb.s²	0.93	0.91	0.88	0.68	0.67	0.67	0.66

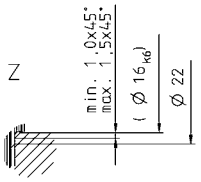
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

View A

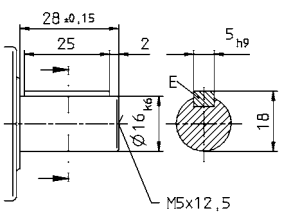
2-stage:



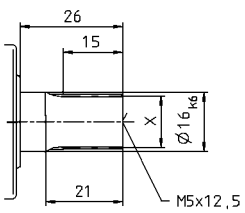


Alternatives: Output shaft variants

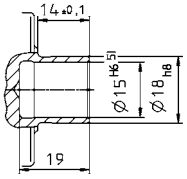
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 16 x 0,8 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

Motor mounting according to operating manual

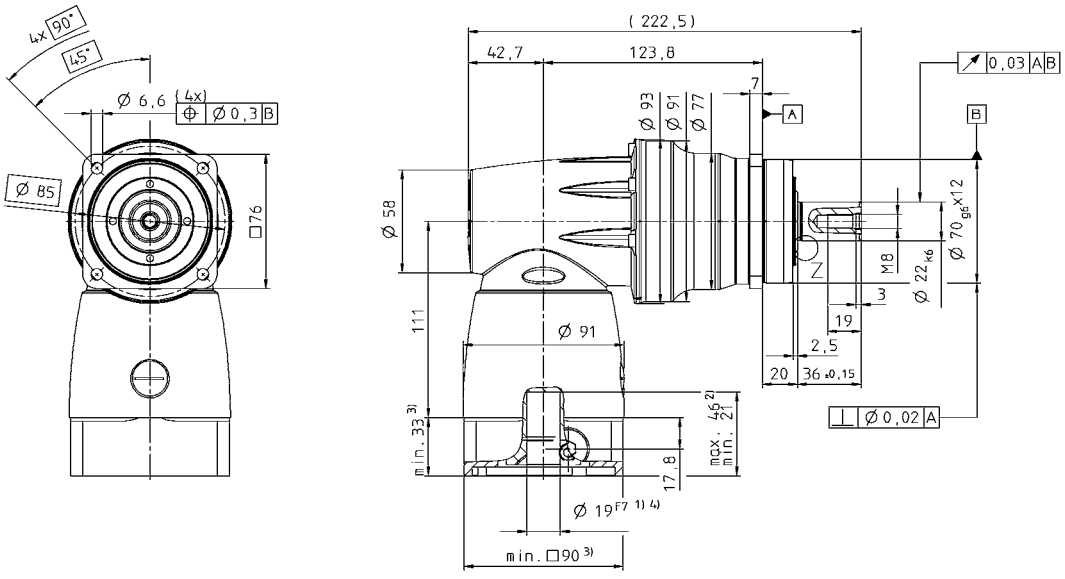
				2-stage						
Ratio [a]			***i***	**4**	**5**	**7**	**8**	**10**	**14**	**20**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	110	110	110	110	110	110	95
			T_{2B} in.lb	974	974	974	974	974	974	841
Nominal output torque (with n_{1N})			T_{2N} Nm	75	75	75	75	75	75	52
			T_{2N} in.lb	664	664	664	664	664	664	460
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	195	245	250	250	250	250	200
			T_{2Not} in.lb	1726	2168	2213	2213	2213	2213	1770
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N} rpm	2200	2200	2400	2650	2650	2800	2800
Max. input speed			n_{1max} rpm	6000	6000	6000	6000	6000	6000	6000
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012} Nm	2.3	2.0	1.7	1.0	0.9	0.7	0.6
			T_{012} in.lb	20	18	15	9	8	6	5
Max. torsional backlash			j_t arcmin	Standard ≤ 4 / Reduced ≤ 2						
Torsional rigidity			C_{t21} Nm/ arcmin	6.6	7.5	8.6	7.6	8.3	9.1	9.5
			C_{t21} in.lb/ arcmin	58	66	76	67	73	81	84
Max. axial force			F_{2AMax} N	3350						
			F_{2AMax} lb_f	753.75						
Max. radial force			F_{2RMax} N	4200						
			F_{2RMax} lb_f	945						
Max. tilting moment			M_{2KMax} Nm	236						
			M_{2KMax} in.lb	2088.6						
Efficiency at full load			η %	95						
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000						
Weight incl. standard adapter plate			*m* kg	5.9						
			m lb_m	13.039						
Operating noise (with n_1 = 3000 rpm without load)			L_{PA} dB(A)	≤ 68						
Max. permitted housing temperature			°C	+90						
			F	194						
Ambient temperature			°C	0 to +40						
			F	32 to 104						
Lubrication				Lubricated for life						
Paint				Blue RAL 5002						
Mounting position				any						
Direction of rotation				Motor and gearhead same direction						
Protection class				IP 65						
Moment of inertia (relates to the drive)	E	19	J_1 kgcm²	2.23	2.15	1.99	1.25	1.23	1.21	1.2
			J_1 10^{-3} in.lb.s²	1.97	1.90	1.76	1.11	1.09	1.07	1.06
Clamping hub diameter [mm]	H	28	J_1 kgcm²	3.66	3.59	3.43	2.68	2.67	2.65	2.64
			J_1 10^{-3} in.lb.s²	3.24	3.18	3.04	2.37	2.36	2.35	2.34

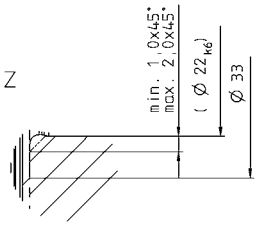
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

View A

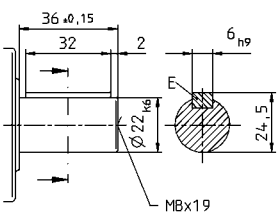
2-stage:



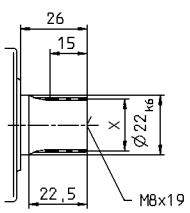


Alternatives: Output shaft variants

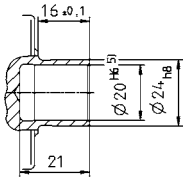
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 16 x 0,8 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

Motor mounting according to operating manual

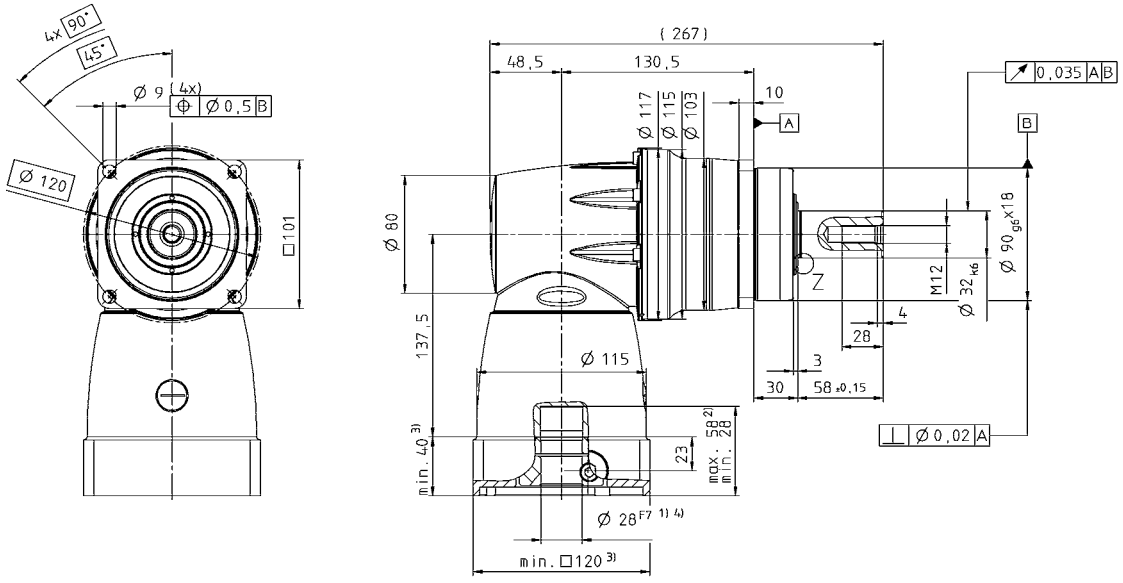
					2-stage						
Ratio [a]			***i***		**4**	**5**	**7**	**8**	**10**	**14**	**20**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	315	315	315	315	315	315	235
				in.lb	2788	2788	2788	2788	2788	2788	2080
Nominal output torque (with n_{1N})			T_{2N}	Nm	180	175	170	180	175	170	120
				in.lb	1593	1549	1505	1593	1549	1505	1062
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	540	625	625	625	625	625	500
				in.lb	4779	5531	5531	5531	5531	5531	4425
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	2000	2000	2200	2300	2300	2400	2400
Max. input speed			n_{1max}	rpm	4500	4500	4500	4500	4500	4500	4500
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	5.2	4.9	4.1	2.9	2.7	2.3	2.2
				in.lb	46	43	36	26	24	20	19
Max. torsional backlash			j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2						
Torsional rigidity			C_{t21}	Nm/ arcmin	20.0	23.0	26.0	24.0	26.0	28.0	30.0
				in.lb/ arcmin	177	204	230	212	230	248	266
Max. axial force			F_{2AMax}	N	5650						
				lb_f	1271.25						
Max. radial force			F_{2RMax}	N	6600						
				lb_f	1485						
Max. tilting moment			M_{2KMax}	Nm	487						
				in.lb	4309.95						
Efficiency at full load			η	%	95						
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000						
Weight incl. standard adapter plate			*m*	kg	11.7						
				lb_m	25.857						
Operating noise (with n_1 = 3000 rpm without load)			L_{PA}	dB(A)	≤ 68						
Max. permitted housing temperature				°C	+90						
				F	194						
Ambient temperature				°C	0 to +40						
				F	32 to 104						
Lubrication					Lubricated for life						
Paint					Blue RAL 5002						
Mounting position					any						
Direction of rotation					Motor and gearhead same direction						
Protection class					**IP 65**						
Moment of inertia (relates to the drive)	H	28	J_1	$kgcm^2$	8	7.6	7	5	4.9	4.9	4.8
				10^{-3} in.lb.s²	7.08	6.73	6.20	4.43	4.34	4.34	4.25
Clamping hub diameter [mm]	K	38	J_1	$kgcm^2$	15	14.7	14.1	12.1	12	11.9	11.9
				10^{-3} in.lb.s²	13.28	13.01	12.48	10.71	10.62	10.53	10.53

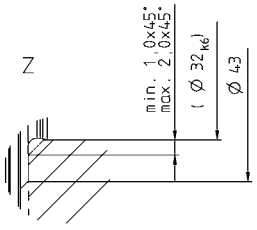
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

View A

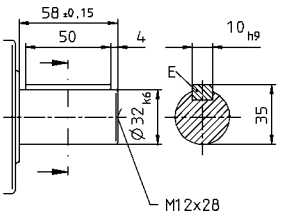
2-stage:



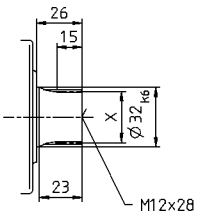


Alternatives: Output shaft variants

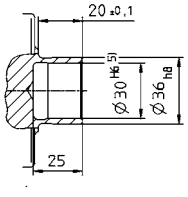
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 16 x 0,8 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

Motor mounting according to operating manual

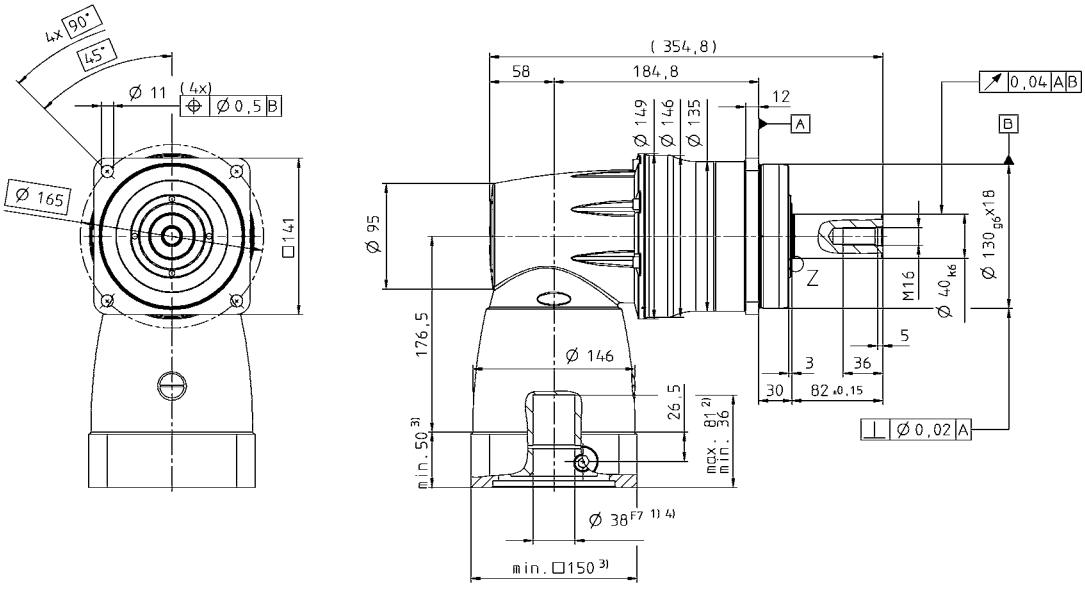
				2-stage						
Ratio [a]			*i*	**4**	**5**	**7**	**8**	**10**	**14**	**20**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	660	660	660	660	660	660	530
			T_{2B} in.lb	5841	5841	5841	5841	5841	5841	4691
Nominal output torque (with n_{1N})			T_{2N} Nm	360	360	360	360	360	360	220
			T_{2N} in.lb	3186	3186	3186	3186	3186	3186	1947
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	960	1200	1250	1250	1250	1250	1000
			T_{2Not} in.lb	8496	10620	11063	11063	11063	11063	8850
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N} rpm	1300	1300	1400	1500	1500	1600	1600
Max. input speed			n_{1max} rpm	4500	4500	4500	4500	4500	4500	4500
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012} Nm	9.8	8.7	7.4	4.6	4.0	3.4	2.9
			T_{012} in.lb	87	77	65	41	35	30	26
Max. torsional backlash			j_t arcmin	Standard ≤ 4 / Reduced ≤ 2						
Torsional rigidity			C_{t21} Nm/ arcmin	37.0	41.0	46.0	41.0	45.0	48.0	51.0
			C_{t21} in.lb/ arcmin	327	363	407	363	398	425	451
Max. axial force			F_{2AMax} N	9870						
			F_{2AMax} lb_f	2220.75						
Max. radial force			F_{2RMax} N	9900						
			F_{2RMax} lb_f	2227.5						
Max. tilting moment			M_{2KMax} Nm	952						
			M_{2KMax} in.lb	8425.2						
Efficiency at full load			η %	95						
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000						
Weight incl. standard adapter plate			*m* kg	24.7						
			m lb_m	54.587						
Operating noise (with n_1 = 3000 rpm without load)			L_{PA} dB(A)	≤ 70						
Max. permitted housing temperature			°C	+90						
			F	194						
Ambient temperature			°C	0 to +40						
			F	32 to 104						
Lubrication				Lubricated for life						
Paint				Blue RAL 5002						
Mounting position				any						
Direction of rotation				Motor and gearhead same direction						
Protection class				IP 65						
Moment of inertia (relates to the drive)	K	38	J_t kgcm²	30.6	29.7	27.9	18.9	18.7	18.5	18.4
Clamping hub diameter [mm]			J_t 10^{-3} in.lb.s²	27.08	26.28	24.69	16.73	16.55	16.37	16.28

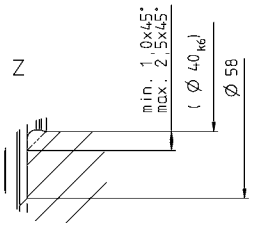
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

View A

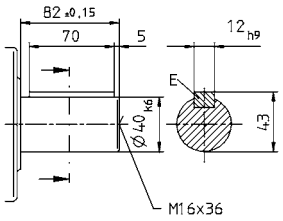
2-stage:



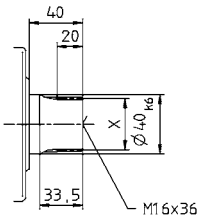


Alternatives: Output shaft variants

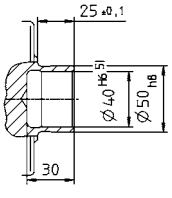
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 16 x 0,8 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

Motor mounting according to operating manual

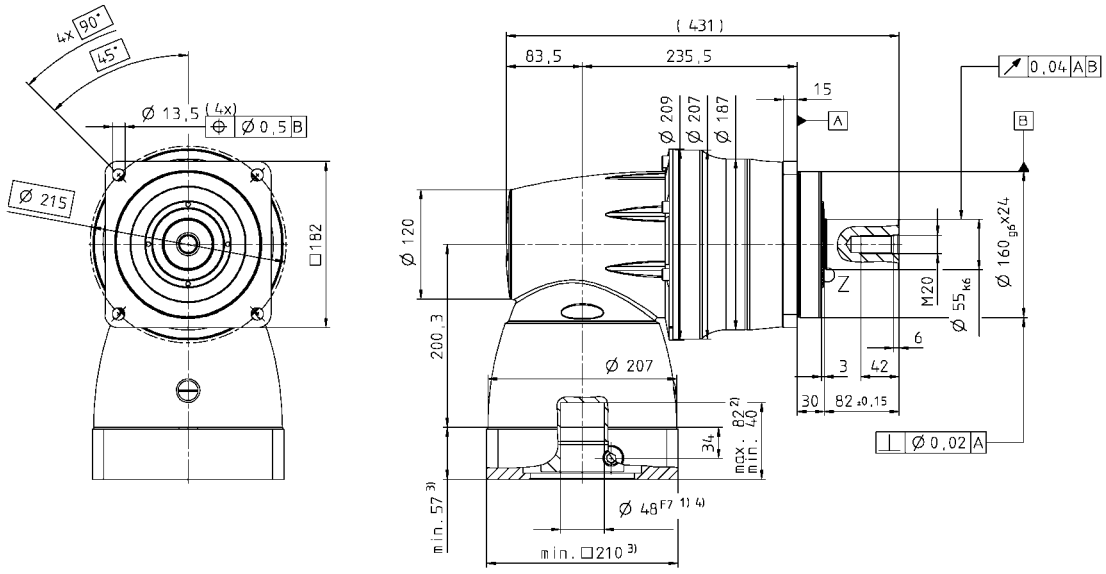
				2-stage						
Ratio [a]			***i***	**4**	**5**	**7**	**8**	**10**	**14**	**20**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	1210	1210	1210	1210	1210	1210	970
			T_{2B} in.lb	10709	10709	10709	10709	10709	10709	8585
Nominal output torque (with n_{1N})			T_{2N} Nm	750	750	750	750	750	750	750
			T_{2N} in.lb	6638	6638	6638	6638	6638	6638	6638
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	1560	1955	2735	2750	2750	2750	2200
			T_{2Not} in.lb	13806	17302	24205	24338	24338	24338	19470
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N} rpm	1000	1000	1100	1200	1200	1300	1300
Max. input speed			n_{1max} rpm	4000	4000	4000	4000	4000	4000	4000
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012} Nm	20.5	18.5	16.5	11.0	10.0	9.0	8.0
			T_{012} in.lb	181	164	146	97	89	80	71
Max. torsional backlash			j_t arcmin	Standard ≤ 4 / Reduced ≤ 2						
Torsional rigidity			C_{t21} Nm/ arcmin	104.0	122.0	143.0	130.0	144.0	157.0	166.0
			C_{t21} in.lb/ arcmin	920	1080	1266	1151	1274	1389	1469
Max. axial force			F_{2AMax} N	14150						
			F_{2AMax} lb_f	3183.75						
Max. radial force			F_{2RMax} N	15400						
			F_{2RMax} lb_f	3465						
Max. tilting moment			M_{2KMax} Nm	1600						
			M_{2KMax} in.lb	14160						
Efficiency at full load			η %	95						
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000						
Weight incl. standard adapter plate			*m* kg	54.7						
			m lb_m	120.887						
Operating noise (with n_1 = 3000 rpm without load)			L_{PA} dB(A)	≤ 70						
Max. permitted housing temperature			°C	+90						
			F	194						
Ambient temperature			°C	0 to +40						
			F	32 to 104						
Lubrication				Lubricated for life						
Paint				Blue RAL 5002						
Mounting position				any						
Direction of rotation				Motor and gearhead same direction						
Protection class				IP 65						
Moment of inertia (relates to the drive)	M	48	J_1 kgcm²	109.5	105	94.7	49.2	48.1	46.9	46.2
Clamping hub diameter [mm]			J_1 10^{-3} in.lb.s²	96.91	92.93	83.81	43.54	42.57	41.51	40.89

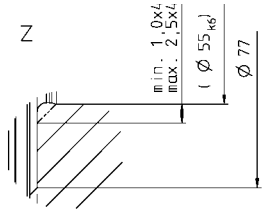
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

View A

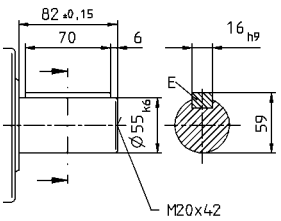
2-stage:



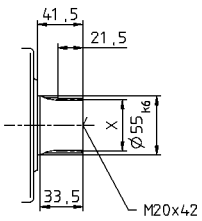


Alternatives: Output shaft variants

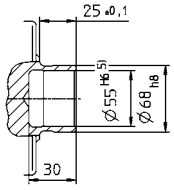
Keywayed output shaft in mm
E = key as per DIN 6885, sheet 1, form A



Involute gearing DIN 5480 in mm
X = W 16 x 0,8 x 30 x 18 x 6m, DIN 5480



Shaft mounted
Mounted via shrink disc



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

Motor mounting according to operating manual

TPC+ 004 MF 2-stage

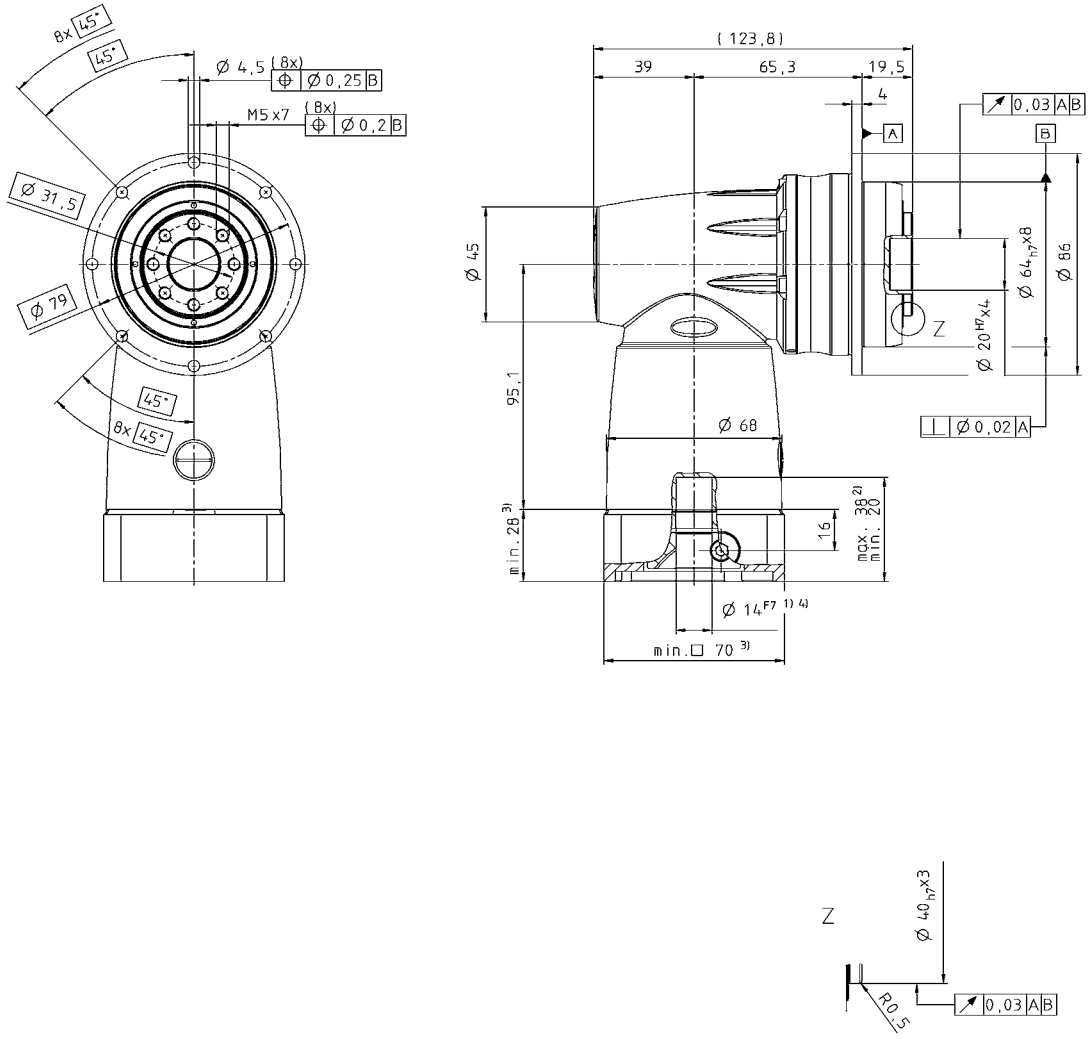
				2-stage						
Ratio [a]			***i***	**4**	**5**	**7**	**8**	**10**	**14**	**20**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B} Nm	40	50	55	40	50	55	35
			T_{2B} in.lb	354	443	487	354	443	487	310
Nominal output torque (with n_{1N})			T_{2N} Nm	28	28	28	28	28	28	18
			T_{2N} in.lb	248	248	248	248	248	248	159
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not} Nm	100	100	100	100	100	100	100
			T_{2Not} in.lb	885	885	885	885	885	885	885
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N} rpm	2900	2900	3100	3400	3400	3600	3600
Max. input speed			n_{1max} rpm	6000	6000	6000	6000	6000	6000	6000
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012} Nm	1.5	1.3	1.1	0.8	0.7	0.6	0.5
			T_{012} in.lb	13	12	10	7	6	5	4
Max. torsional backlash			j_t arcmin	Standard ≤ 5 / Reduced ≤ 3						
Torsional rigidity			C_{t21} Nm/ arcmin	4.8	6.2	7.6	6.1	7.4	8.5	7.3
			C_{t21} in.lb/ arcmin	42	55	67	54	65	75	65
Tilting rigidity			C_{2K} Nm/ arcmin	-						
			C_{2K} in.lb/ arcmin	-						
Max. axial force			F_{2AMax} N	1630.0						
			F_{2AMax} lb_f	366.8						
Max. tilting moment			M_{2KMax} Nm	110.0						
			M_{2KMax} in.lb	973.5						
Efficiency at full load			η %	95.0						
Service life (For calculation, see the Chapter "Information")			L_h h	> 20000						
Weight incl. standard adapter plate			*m* kg	2.6						
			m lb_m	5.7						
Operating noise (with n_1 = 3000 rpm without load)			L_{PA} dB(A)	≤ 68						
Max. permitted housing temperature			°C	+90						
			F	194						
Ambient temperature			°C	0 to +40						
			F	32 to 104						
Lubrication				Lubricated for life						
Paint				Blue RAL 5002						
Mounting position				any						
Direction of rotation				Motor and gearhead same direction						
Protection class				IP 65						
Moment of inertia (relates to the drive)	C	14	J_1 kgcm²	0.72	0.7	0.66	0.44	0.43	0.43	0.43
			J_1 10^{-3} in.lb.s²	0.64	0.62	0.58	0.39	0.38	0.38	0.38
Clamping hub diameter [mm]	E	19	J_1 kgcm²	1.05	1.03	0.99	0.77	0.76	0.76	0.75
			J_1 10^{-3} in.lb.s²	0.93	0.91	0.88	0.68	0.67	0.67	0.66

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

View A

2-stage:



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

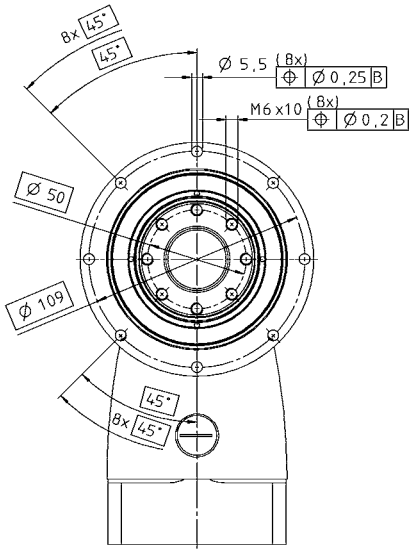
Motor mounting according to operating manual

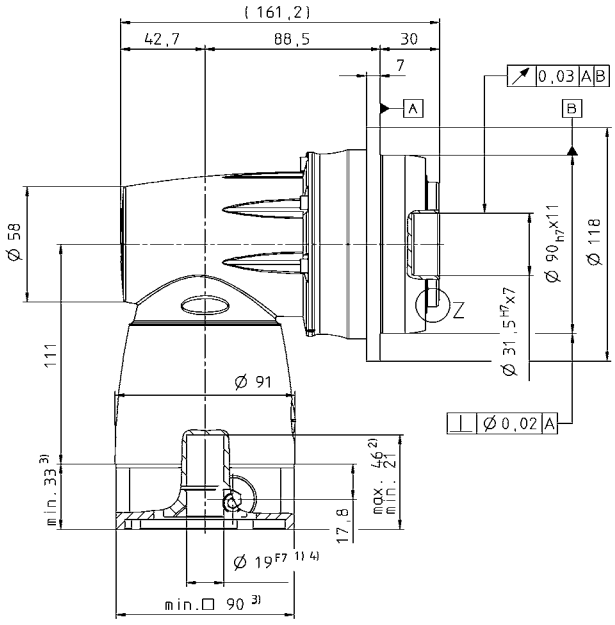
					2-stage						
Ratio [a]			***i***		**4**	**5**	**7**	**8**	**10**	**14**	**20**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	120	143	143	120	143	143	105
				in.lb	1062	1266	1266	1062	1266	1266	929
Nominal output torque (with n_{1N})			T_{2N}	Nm	75	75	75	75	75	75	60
				in.lb	664	664	664	664	664	664	531
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	195	245	250	250	250	250	250
				in.lb	1726	2168	2213	2213	2213	2213	2213
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	2100	2100	2300	2650	2650	2800	2800
Max. input speed			n_{1max}	rpm	6000	6000	6000	6000	6000	6000	6000
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	2.5	2.2	1.9	1.1	1.0	0.8	0.7
				in.lb	22	19	17	10	9	7	6
Max. torsional backlash			j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2						
Torsional rigidity			C_{t21}	Nm/ arcmin	12.0	16.0	20.0	16.0	20.0	23.0	21.0
				in.lb/ arcmin	106	142	177	142	177	204	186
Tilting rigidity			C_{2K}	Nm/ arcmin	225						
				in.lb/ arcmin	1991						
Max. axial force			F_{2AMax}	N	2150						
				lb_f	484						
Max. tilting moment			M_{2KMax}	Nm	270						
				in.lb	2390						
Efficiency at full load			η	%	95						
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000						
Weight incl. standard adapter plate			*m*	kg	6						
				lb_m	13						
Operating noise (with n_1 = 3000 rpm without load)			L_{PA}	dB(A)	≤ 68						
Max. permitted housing temperature				°C	+90						
				F	194						
Ambient temperature				°C	0 to +40						
				F	32 to 104						
Lubrication					Lubricated for life						
Paint					Blue RAL 5002						
Mounting position					any						
Direction of rotation					Motor and gearhead same direction						
Protection class					IP 65						
Moment of inertia (relates to the drive)	E	19	J_1	kgcm²	2.41	2.27	1.99	1.29	1.26	122	1.21
				10^{-3} in.lb.s²	2.13	2.01	1.76	1.14	1.12	107.97	1.07
Clamping hub diameter [mm]	H	28	J_1	kgcm²	3.85	3.71	3.43	2.73	2.7	2.66	2.64
				10^{-3} in.lb.s²	3.41	3.28	3.04	2.42	2.39	2.35	2.34

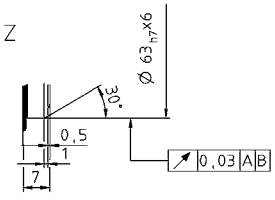
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

2-stage:







See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

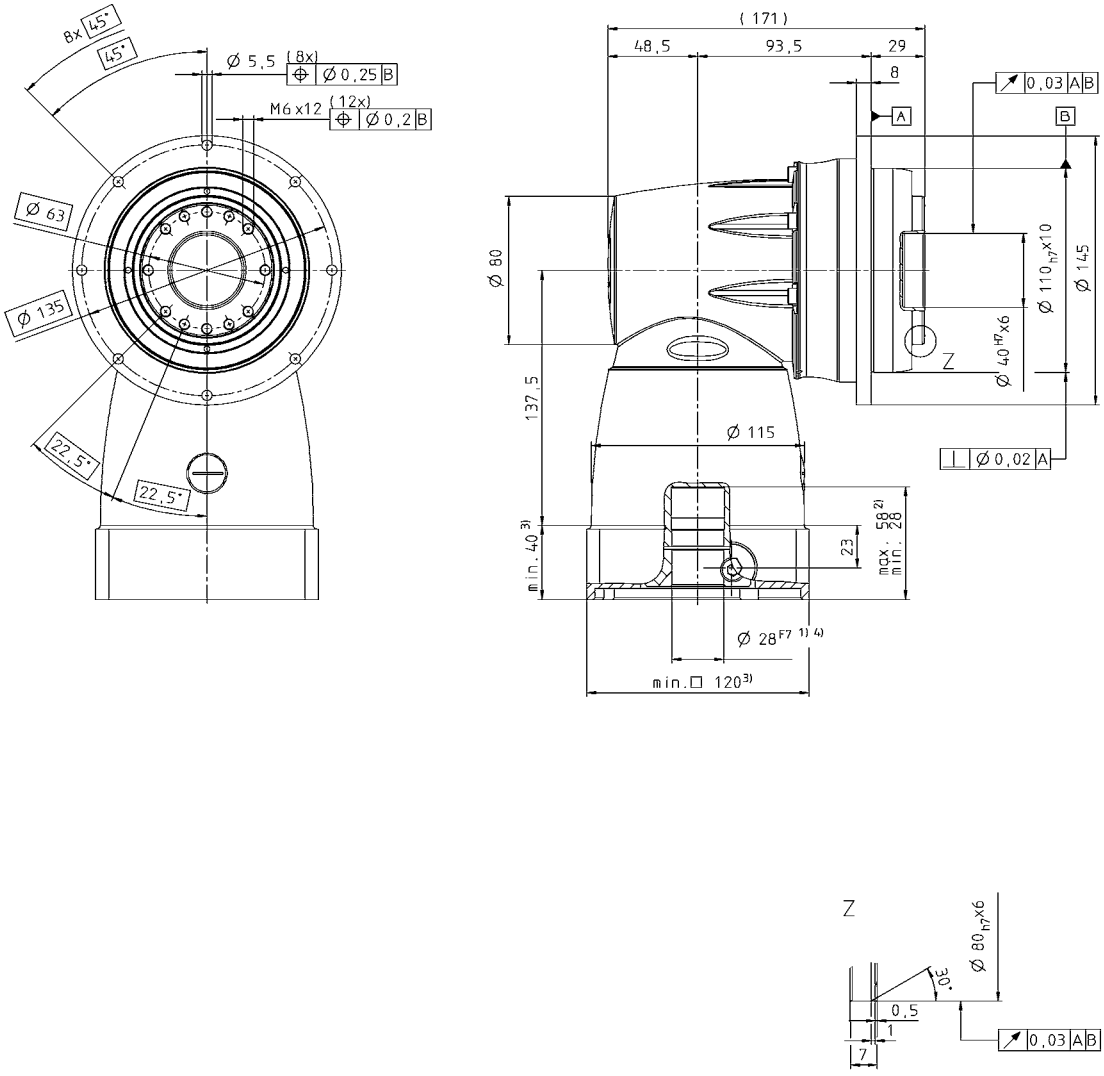
Motor mounting according to operating manual

					2-stage						
Ratio [a]			*i*		**4**	**5**	**7**	**8**	**10**	**14**	**20**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	320	380	330	320	380	330	265
				in.lb	2832	3363	2921	2832	3363	2921	2345
Nominal output torque (with n_{1N})			T_{2N}	Nm	170	170	170	170	170	170	120
				in.lb	1505	1505	1505	1505	1505	1505	1062
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	540	625	625	625	625	625	625
				in.lb	4779	5531	5531	5531	5531	5531	5531
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	1900	1900	2100	2300	2300	2400	2400
Max. input speed			n_{1max}	rpm	4500	4500	4500	4500	4500	4500	4500
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	5.8	5.2	4.5	3.2	2.9	2.5	2.2
				in.lb	51	46	40	28	26	22	19
Max. torsional backlash			j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2						
Torsional rigidity			C_{t21}	Nm/ arcmin	33.0	43.0	53.0	45.0	56.0	61.0	57.0
				in.lb/ arcmin	292	381	469	398	496	540	504
Tilting rigidity			C_{2K}	Nm/ arcmin	550						
				in.lb/ arcmin	4868						
Max. axial force			F_{2AMax}	N	4150						
				lb_f	934						
Max. tilting moment			M_{2KMax}	Nm	440						
				in.lb	3894						
Efficiency at full load			η	%	95						
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000						
Weight incl. standard adapter plate			*m*	kg	11						
				lb_m	23						
Operating noise (with n_1 = 3000 rpm without load)			L_{PA}	dB(A)	≤ 68						
Max. permitted housing temperature				°C	+90						
				F	194						
Ambient temperature				°C	0 to +40						
				F	32 to 104						
Lubrication					Lubricated for life						
Paint					Blue RAL 5002						
Mounting position					any						
Direction of rotation					Motor and gearhead same direction						
Protection class					IP 65						
Moment of inertia (relates to the drive)	H	28	J_1	kgcm²	8.3	7.9	7	5.1	5	4.9	4.8
				10^{-3} in.lb.s²	7.35	6.99	6.20	4.51	4.43	4.34	4.25
Clamping hub diameter [mm]	K	38	J_1	kgcm²	15.4	14.9	14.1	12.2	12.1	12	11.9
				10^{-3} in.lb.s²	13.63	13.19	12.48	10.80	10.71	10.62	10.53

Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

2-stage:



See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

Motor mounting according to operating manual

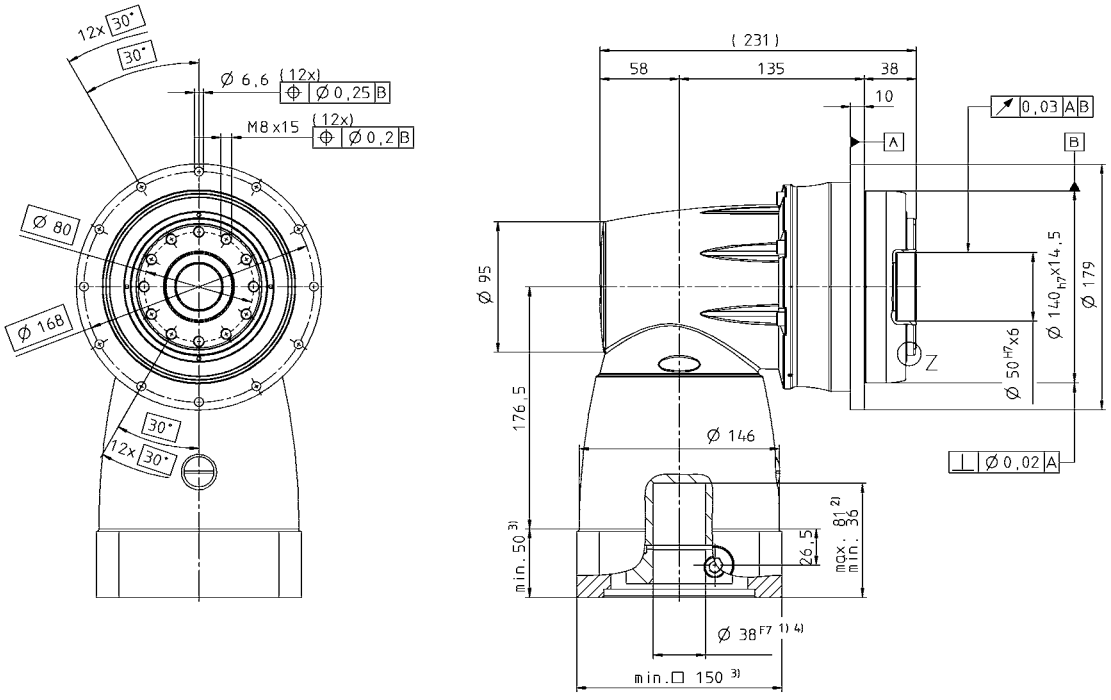
				2-stage						
Ratio [a]	i			**4**	**5**	**7**	**8**	**10**	**14**	**20**
Max. acceleration torque (max. 1000 cycles per hour)	T_{2B}	Nm		700	700	700	700	700	700	540
		in.lb		6195	6195	6195	6195	6195	6195	4779
Nominal output torque (with n_{1N})	T_{2N}	Nm		370	370	370	370	370	370	240
		in.lb		3275	3275	3275	3275	3275	3275	2124
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)	T_{2Not}	Nm		960	1200	1250	1250	1250	1250	1250
		in.lb		8496	10620	11063	11063	11063	11063	11063
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]	n_{1N}	rpm		1200	1200	1300	1500	1500	1600	1600
Max. input speed	n_{1max}	rpm		4500	4500	4500	4500	4500	4500	4500
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)	T_{012}	Nm		12.0	10.5	8.8	5.7	5.0	4.1	3.4
		in.lb		106	93	78	50	44	36	30
Max. torsional backlash	j_t	arcmin		Standard ≤ 4 / Reduced ≤ 2						
Torsional rigidity	C_{t21}	Nm/ arcmin		73.0	93.0	111.0	93.0	113.0	124.0	111.0
		in.lb/ arcmin		646	823	982	823	1000	1097	982
Tilting rigidity	C_{2K}	Nm/ arcmin		560						
		in.lb/ arcmin		4956						
Max. axial force	F_{2AMax}	N		6130						
		lb_f		1379						
Max. tilting moment	M_{2KMax}	Nm		1335						
		in.lb		11815						
Efficiency at full load	η	%		95						
Service life (For calculation, see the Chapter "Information")	L_h	h		> 20000						
Weight incl. standard adapter plate	m	kg		22						
		lb_m		48						
Operating noise (with n_1 = 3000 rpm without load)	L_{PA}	dB(A)		≤ 70						
Max. permitted housing temperature		°C		+90						
		F		194						
Ambient temperature		°C		0 to +40						
		F		32 to 104						
Lubrication				Lubricated for life						
Paint				Blue RAL 5002						
Mounting position				any						
Direction of rotation				Motor and gearhead same direction						
Protection class				IP 65						
Moment of inertia (relates to the drive)	J_1	$kgcm^2$		32.3	30.8	27.90	19.4	19.00	18.7	18.50
Clamping hub diameter [mm]		10^{-3} in.lb.s²		28.59	27.26	24.69	17.17	16.82	16.55	16.37
	K	38								

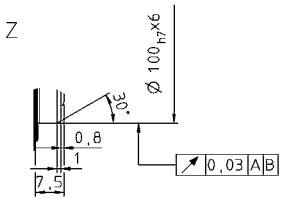
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

View A

2-stage:





See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

Motor mounting according to operating manual

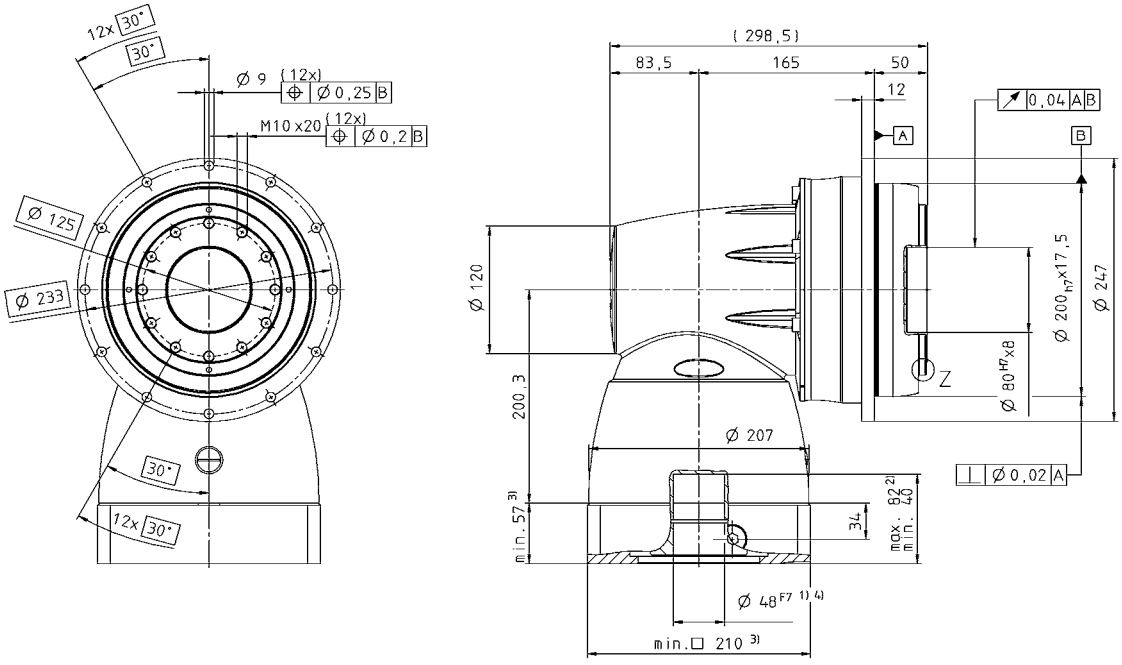
					2-stage						
Ratio [a]			*i*		**4**	**5**	**7**	**8**	**10**	**14**	**20**
Max. acceleration torque (max. 1000 cycles per hour)			T_{2B}	Nm	1260	1575	1600	1260	1575	1600	1400
				in.lb	11151	13939	14160	11151	13939	14160	12390
Nominal output torque (with n_{1N})			T_{2N}	Nm	700	750	750	700	750	750	750
				in.lb	6195	6638	6638	6195	6638	6638	6638
Emergency stop tourque (permitted 1000 times during the service life of the gearhead)			T_{2Not}	Nm	1560	1955	2735	2750	2750	2750	2750
				in.lb	13806	17302	24205	24338	24338	24338	24338
Nominal input speed (with T_{2N} and 20°C ambient temperature) [b), c)]			n_{1N}	rpm	900	900	1000	1200	1200	1300	1300
Max. input speed			n_{1max}	rpm	4000	4000	4000	4000	4000	4000	4000
Average no-load running torque (with n_1=3000 rpm and 20°C gearhead temperature)			T_{012}	Nm	25.0	22.0	19.0	13.5	12.0	10.0	9.0
				in.lb	221	195	168	119	106	89	80
Max. torsional backlash			j_t	arcmin	Standard ≤ 4 / Reduced ≤ 2						
Torsional rigidity			C_{t21}	Nm/ arcmin	181.0	242.0	324.0	278.0	345.0	407.0	390.0
				in.lb/ arcmin	1602	2142	2867	2460	3053	3602	3452
Tilting rigidity			C_{2K}	Nm/ arcmin	1452						
				in.lb/ arcmin	12850						
Max. axial force			F_{2AMax}	N	10050						
				lb_f	2261						
Max. tilting moment			M_{2KMax}	Nm	3280						
				in.lb	29028						
Efficiency at full load			η	%	95						
Service life (For calculation, see the Chapter "Information")			L_h	h	> 20000						
Weight incl. standard adapter plate			*m*	kg	51						
				lb_m	112						
Operating noise (with n_1 = 3000 rpm without load)			L_{PA}	dB(A)	≤ 70						
Max. permitted housing temperature				°C	+90						
				F	194						
Ambient temperature				°C	0 to +40						
				F	32 to 104						
Lubrication					Lubricated for life						
Paint					Blue RAL 5002						
Mounting position					any						
Direction of rotation					Motor and gearhead same direction						
Protection class					IP 65						
Moment of inertia (relates to the drive)	M	48	J_1	$kgcm^2$	121.2	112.6	94.7	52.1	50	47.9	46.7
Clamping hub diameter [mm]				10^{-3} in.lb.s²	107.26	99.65	83.81	46.11	44.25	42.39	41.33

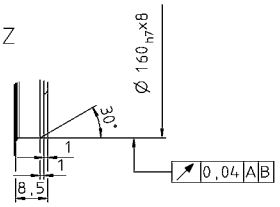
Please contact us for information on the best configuration for S1 conditions of use (continuous operation).

[a] Other ratios available on request
[b] Higher speeds are possible if the nominal torque is reduced
[c] For higher ambient temperatures, please reduce input speed
[d] Refers to center of the output shaft or flange

View A

2-stage:





See technical data sheet for available clamping hub diameters (mass moment of inertia). Dimensions available on request.

Non-tolerated dimensions ±1 mm

1) Check motor shaft fit.
2) Min./Max. permissible motor shaft length. Longer motor shafts are adaptable, please contact us.
3) The dimensions depend on the motor.
4) Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm.

CAD data is available under
http://www.wittenstein-alpha.de/en/info-and-cad-finder.html

Motor mounting according to operating manual