

AFC_{Type}

Right Angle Hollow Bore/
Right Angle Shaft

Model and Type Codes
Standard Model Lineup

P.734

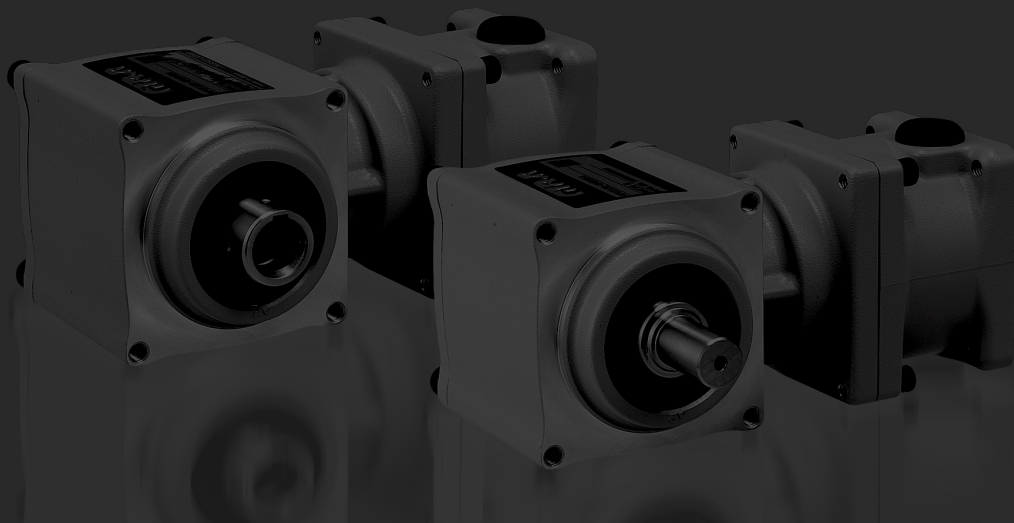
HIGH PRECISION REDUCERS FOR SERVO MOTORS

1. Compact High Precision Reducers for Servo Motors

1-1. Performance Tables

1-2. Drawings

1-3. Low Temperature Startup
Characteristics
(No Load Running Torque
(Input Shaft))





Model and Type Codes

For representative examples of servo motors of respective manufacturers that can be installed and applicable types by flange type, refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681. For more details, please contact your nearest Sales Office or the CS Center.

AFC Type

Mounting Type	Motor Type	Frame Size	Shaft Arrangement	Reduction Ratio	Backlash	Motor Power Class	Type	Option	Option Code
AFC	Z	18	S	7.5	M	400	S3		
AFC	Z	32	H	60	M	750	S4	X	B3
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

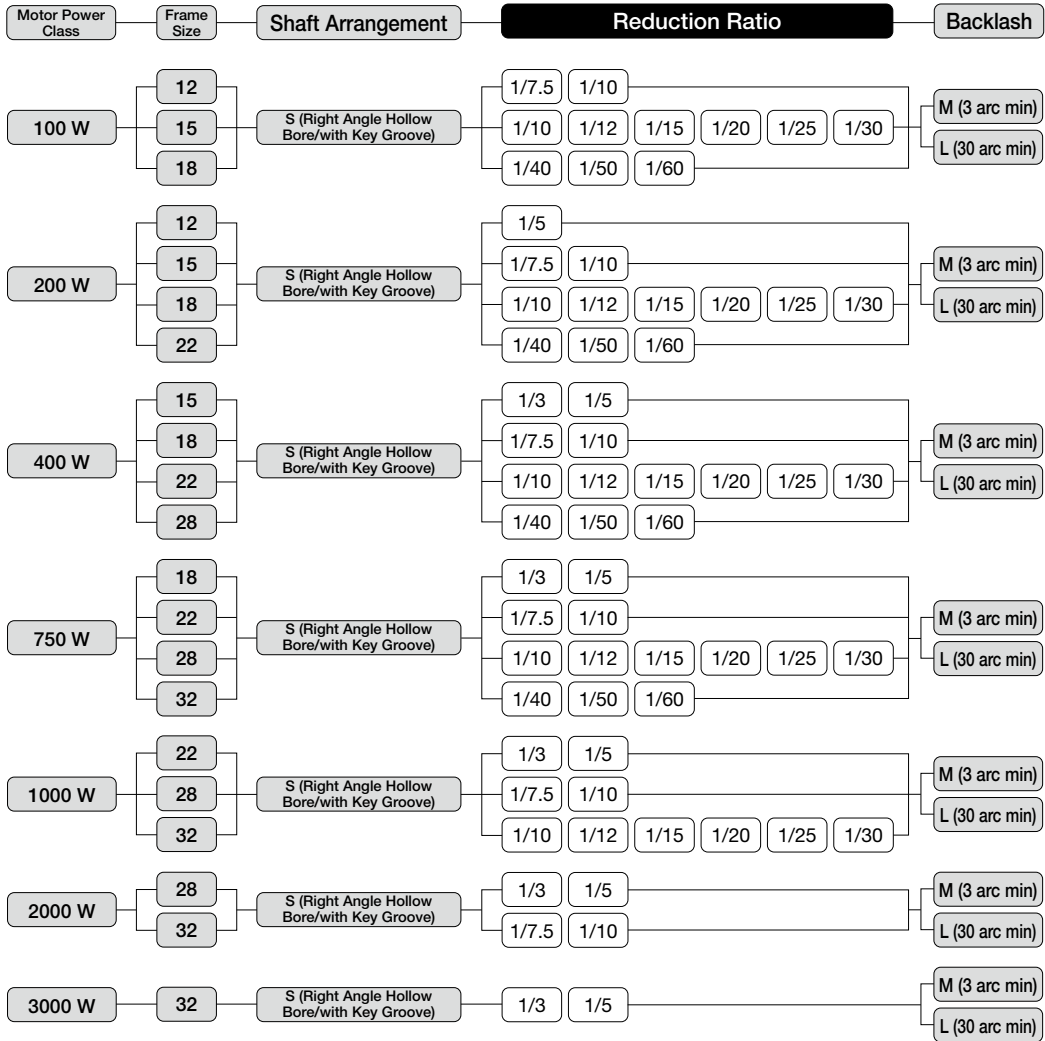
① Mounting Type	AFC : Right Angle Shaft (Compact Flange Mount)		
② Motor Type	Z : High Precision Reducers for Servo Motor (Z Type Reducer)		
③ Frame Size and Output Shaft Diameter	Output Shaft Diameter (Inner diameter is used for Right Angle Hollow Bore Type and outer diameter for Right Angle Shaft Type)		
④ Shaft Arrangement	Right Angle Hollow Bore	Right Angle Shaft	
	S : Right Angle Hollow Bore (with Key Groove)	Output shaft on the left side when viewed from the input shaft side (with a key)	Output shaft on the left side when viewed from the input shaft side (without a key)
			
		L	H
⑤ Reduction Ratio	3:1/3 7.5:1/7.5 60:1/60		
⑥ Backlash	M : Backlash 3 arc min		
	L : Backlash 30 arc min		
⑦ Motor Power Class	100 : 100 W Class		
	200 : 200 W Class		
	400 : 400 W Class		
	750 : 750 W Class		
	1000 : 1000 W Class		
	2000 : 2000 W Class		
⑧ Flange Type for Servo Motor Mounting (Note 1)	S1/K13/K61, etc.		
⑨ Option	Blank : Standard Specification		
	X : Special Specification Code		
⑩ Option Code (Note 2)	Position Code of Wrench Hole for Input Shaft Joint Tightening For details, please refer to the list of option codes on page 840.		

Note 1: Please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681.

Note 2: The option code will not be shown in the nomenclature on the nameplate. But it will be shown in the Option code row of the nameplate.

Standard Model Lineup

AFC Type <Right Angle Hollow Bore>



Motor Matching /
Motor Power Design List

APG/AG3 Type
Parallel Shaft

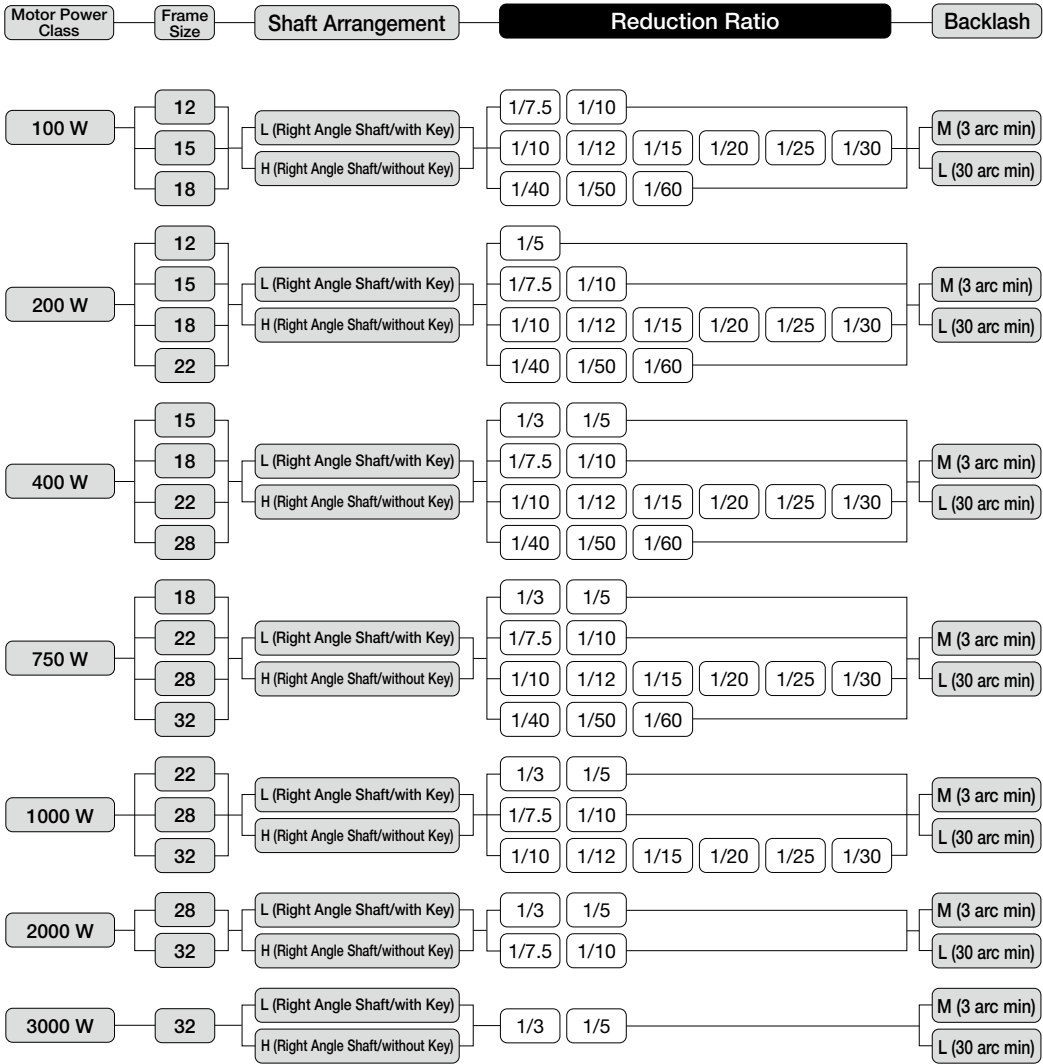
AH2 Type
Right Angle Shaft

AFC Type
Right Angle Hollow Bore/
Right Angle Shaft

AF3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

AFC Type <Right Angle Shaft>



Motor Matching /
Motor Power Design List

APG/AG3 Type
Parallel Shaft

AH2 Type
Right Angle Shaft

AFC Type
Right Angle Hollow Bore/
Right Angle Shaft

AF3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

MEMO

Technical Documentation	AF3 Type Concentric Right Angle Hollow Bore/ Concentric Right Angle Shaft	AFC Type Right Angle Hollow Bore/ Right Angle Shaft	AH2 Type Right Angle Shaft	APG/AG3 Type Parallel Shaft	Motor Matching / Motor Power Design List
-------------------------	---	---	-------------------------------	--------------------------------	---

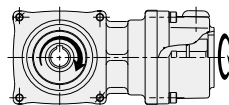
1. Compact High Precision Reducers for Servo Motors

1-1. Performance Tables

AFC Type <Right Angle Hollow Bore Backlash 3 arc min/30 arc min Specifications> Performance Table by Reduction Ratio

[Notes]

- The instantaneous input speed is 5000 r/min. The rated input speed is 3000 r/min.
- Allowable output shaft O.H.L. is the value at the load point of the O.H.L. shown on page 836.
- For the continuous rated input torque, please refer to page 839. In addition, for the servo motor-based motor rated output torque, please refer to page 818.
- The key dimensions and tolerances for output shafts conform to JIS B 1301-1996 (plain form).
- The key for the output shaft is not supplied with right angle hollow bore types.
- The internal moment of inertia (input shaft equivalent) is the value for the reducer alone, and does not include the motor's moment of inertia.
- The allowable average torque is the continuous allowable torque value.
- Adjust the gain so that the inertial load on the output shaft side does not vibrate during acceleration and deceleration.
- in the performance table indicates that the input shaft and the output shaft rotate in the opposite directions. (It does not limit the rotational directions of the input shaft and the output shaft.)
- M in the Precision column means backlash 3 arc min, and L means backlash 30 arc min.



At an input speed of 3000 r/min

Mounting Type	Output Shaft Diameter	Shaft Arrangement	Nominal Reduction Ratio	Actual Reduction Ratio	Precision	Power Class	Allowable Average Torque (3000 r/min)	Allowable Peak Torque of Startup/Stop	Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Internal Moment of Inertia (Input Shaft Equivalent)		Drawings
							N-m	N-m	N	N	Other than Flange Type K75	Flange Type K75	
											×10 ⁴ kg·m ²		
AFCZ	15	S	1/3	1/3	M/L	400	3.80	8.6	785	314	0.378	—	P.739
AFCZ	18	S	1/3	1/3	M/L	750	7.23	17.2	980	392	1.236	—	P.740
AFCZ	22	S	1/3	1/3	M/L	1000	12.42	23.2	1050	420	5.700	—	P.741
AFCZ	28	S	1/3	1/3	M/L	2000	31.90	48.7	1200	480	7.190	11.11	P.742
AFCZ	32	S	1/3	1/3	M/L	3000	42.41	73.1	1370	548	9.449	12.95	P.743
AFCZ	12	S	1/5	1/5	M/L	200	3.21	6.2	650	250	0.263	—	P.738
AFCZ	15	S	1/5	1/5	M/L	400	6.62	14.3	980	377	0.333	—	P.739
AFCZ	18	S	1/5	1/5	M/L	750	10.43	24.8	1180	454	1.101	—	P.740
AFCZ	22	S	1/5	1/5	M/L	1000	22.99	38.7	1250	481	5.459	—	P.741
AFCZ	28	S	1/5	1/5	M/L	2000	37.93	81.2	1470	565	6.215	10.14	P.742
AFCZ	32	S	1/5	1/5	M/L	3000	53.96	121.8	1670	642	8.770	12.27	P.743
AFCZ	12	S	1/7.5	2/15	M/L	100	2.31	4.2	560	215	0.132	—	P.738
AFCZ	15	S	1/7.5	2/15	M/L	200	5.70	9	800	308	0.290	—	P.739
AFCZ	18	S	1/7.5	2/15	M/L	400	8.34	19.1	1120	431	0.391	—	P.740
AFCZ	22	S	1/7.5	2/15	M/L	750	19.75	37.2	1370	527	1.311	—	P.741
AFCZ	28	S	1/7.5	2/15	M/L	1000	33.07	50.1	1480	569	5.509	—	P.742
AFCZ	32	S	1/7.5	2/15	M/L	2000	51.70	102.7	1670	642	7.229	10.73	P.743
AFCZ	12	S	1/10	1/10	M/L	100	2.90	4.4	650	232	0.130	—	P.738
AFCZ	15	S	1/10	1/10	M/L	200	6.34	9.6	980	350	0.281	—	P.739
AFCZ	18	S	1/10	1/10	M/L	400	10.30	20.4	1250	446	0.379	—	P.740
AFCZ	22	S	1/10	1/10	M/L	750	23.83	39.6	1550	554	1.229	—	P.741
AFCZ	28	S	1/10	1/10	M/L	1000	33.65	53.4	1750	625	5.291	—	P.742
AFCZ	32	S	1/10	1/10	M/L	2000	62.17	109.6	1960	700	6.849	10.35	P.743

Motor Matching /
Motor Power Design List

APG/AG3 Type
Parallel Shaft

AH2 Type
Right Angle Shaft

AFC Type
Right Angle Hollow Bore/
Right Angle Shaft

AF3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

1-1. Performance Tables

Mounting Type	Output Shaft Diameter	Shaft Arrangement	Nominal Reduction Ratio	Actual Reduction Ratio	Precision	Power Class	Allowable Average Torque (3000 r/min)	Allowable Peak Torque of Startup/ Stop	Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Internal Moment of Inertia (Input Shaft Equivalent)		Drawings
							N-m	N-m	N	N	Other than Flange Type K75	Flange Type K75	
AFCZ	15	S	1/10	1/10	M/L	100	3.76	5.7	980	350	0.136	—	P.739
AFCZ	18	S	1/10	1/10	M/L	200	6.42	12.4	1250	446	0.274	—	P.740
AFCZ	22	S	1/10	1/10	M/L	400	13.24	28.6	1550	554	0.359	—	P.741
AFCZ	28	S	1/10	1/10	M/L	750	20.86	49.5	1960	700	1.091	—	P.742
AFCZ	32	S	1/10	1/10	M/L	1000	45.98	80.2	2350	839	5.656	—	P.743
AFCZ	15	S	1/12	2/25	M/L	100	4.75	7.2	1020	364	0.133	—	P.739
AFCZ	18	S	1/12	2/25	M/L	200	8.03	15.5	1350	482	0.269	—	P.740
AFCZ	22	S	1/12	2/25	M	400	16.55	35.8	1640	586	0.347	—	P.741
AFCZ	22	S	1/12	19/235	L	400	16.55	35.8	1640	586	0.347	—	P.741
AFCZ	28	S	1/12	2/25	M	750	26.08	59.7	2110	754	1.062	—	P.742
AFCZ	28	S	1/12	19/235	L	750	26.08	59.7	2110	754	1.062	—	P.742
AFCZ	32	S	1/12	2/25	M/L	1000	57.48	97.9	2530	904	5.592	—	P.743
AFCZ	15	S	1/15	1/15	M/L	100	5.68	8.6	1060	379	0.132	—	P.739
AFCZ	18	S	1/15	1/15	M/L	200	9.63	18.6	1470	525	0.266	—	P.740
AFCZ	22	S	1/15	1/15	M/L	400	19.86	43	1720	614	0.339	—	P.741
AFCZ	28	S	1/15	1/15	M/L	750	31.29	71.6	2250	804	1.042	—	P.742
AFCZ	32	S	1/15	1/15	M/L	1000	68.97	117.5	2700	964	5.558	—	P.743
AFCZ	15	S	1/20	1/20	M/L	100	7.59	11.5	1180	421	0.130	—	P.739
AFCZ	18	S	1/20	1/20	M/L	200	12.84	26.7	1570	561	0.263	—	P.740
AFCZ	22	S	1/20	1/20	M/L	400	26.48	57.3	2010	718	0.330	—	P.741
AFCZ	28	S	1/20	1/20	M/L	750	41.72	95.5	2500	893	1.021	—	P.742
AFCZ	32	S	1/20	1/20	M/L	1000	91.96	156.6	3000	1071	5.514	—	P.743
AFCZ	15	S	1/25	1/25	M/L	100	9.44	14.3	1250	446	0.129	—	P.739
AFCZ	18	S	1/25	1/25	M/L	200	16.05	33.4	1670	596	0.260	—	P.740
AFCZ	22	S	1/25	1/25	M/L	400	33.10	71.6	2160	771	0.323	—	P.741
AFCZ	28	S	1/25	1/25	M/L	750	52.15	119.4	2740	979	1.008	—	P.742
AFCZ	32	S	1/25	1/25	M/L	1000	101.08	195.8	3280	1171	5.487	—	P.743
AFCZ	15	S	1/30	1/30	M/L	100	10.23	15.5	1330	475	0.128	—	P.739
AFCZ	18	S	1/30	1/30	M/L	200	17.74	33.4	1810	646	0.259	—	P.740
AFCZ	22	S	1/30	1/30	M/L	400	33.27	71.6	2300	821	0.319	—	P.741
AFCZ	28	S	1/30	1/30	M/L	750	60.37	143.3	2940	1050	0.999	—	P.742
AFCZ	32	S	1/30	1/30	M/L	1000	91.32	195.8	3520	1257	5.468	—	P.743
AFCZ	18	S	1/40	1/40	M/L	100	11.75	17.8	1650	550	0.128	—	P.740
AFCZ	22	S	1/40	1/40	M/L	200	25.21	38.2	2250	750	0.277	—	P.741
AFCZ	28	S	1/40	1/40	M/L	400	41.20	81.5	2900	967	0.369	—	P.742
AFCZ	32	S	1/40	1/40	M/L	750	95.32	158.5	3480	1160	1.220	—	P.743
AFCZ	18	S	1/50	1/50	M/L	100	14.72	22.3	1750	583	0.128	—	P.740
AFCZ	22	S	1/50	1/50	M/L	200	31.55	47.8	2480	827	0.275	—	P.741
AFCZ	28	S	1/50	1/50	M/L	400	63.89	101.9	3150	1050	0.366	—	P.742
AFCZ	32	S	1/50	1/50	M/L	750	101.08	198.2	3630	1210	1.209	—	P.743
AFCZ	18	S	1/60	1/60	M/L	100	17.62	26.7	1850	617	0.127	—	P.740
AFCZ	22	S	1/60	1/60	M/L	200	33.27	57.3	2700	900	0.274	—	P.741
AFCZ	28	S	1/60	1/60	M/L	400	61.10	122.3	3380	1127	0.364	—	P.742
AFCZ	32	S	1/60	1/60	M/L	750	118.90	237.8	3780	1260	1.204	—	P.743

Motor Matching / Motor Power Design List

APG/AG3 Type Parallel Shaft

AH2 Type Right Angle Shaft


AFC Type Right Angle Hollow Bore/ Right Angle Shaft

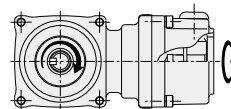
AF3 Type Concentric Right Angle Hollow Bore/ Concentric Right Angle Shaft

Technical Documentation

AFC Type <Right Angle Shaft Backlash 3 arc min/30 arc min Specifications> Performance Table by Reduction Ratio

[Notes]

- The instantaneous input speed is 5000 r/min. The rated input speed is 3000 r/min.
- Allowable output shaft O.H.L. is the value at the load point of the O.H.L. shown on page 836.
- For the continuous rated input torque, please refer to page 839. In addition, for the servo motor-based motor rated output torque, please refer to page 820.
- The key dimensions and tolerances for output shafts conform to JIS B 1301-1996 (plain form).
- The key for the output shaft is not supplied with the H shaft (without a key) of right angle shaft types.
- The internal moment of inertia (input shaft equivalent) is the value for the reducer alone, and does not include the motor's moment of inertia.
- The allowable average torque is the continuous allowable torque value.
- Adjust the gain so that the inertial load on the output shaft side does not vibrate during acceleration and deceleration.
-  in the performance table indicates that the input shaft and the output shaft rotate in the opposite directions. (It does not limit the rotational directions of the input shaft and the output shaft.)
- M in the Precision column means backlash 3 arc min, and L means backlash 30 arc min.



■ At an input speed of 3000 r/min

Mounting Type	Output Shaft Diameter	Shaft Arrangement	Nominal Reduction Ratio	Actual Reduction Ratio	Precision	Power Class	Allowable Average Torque (3000 r/min)	Allowable Peak Torque of Startup/ Stop	Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Internal Moment of Inertia (Input Shaft Equivalent)		Drawings
							N-m	N-m	N	N	Other than Flange Type K75	Flange Type K75	
AFCZ	15	L/H	1/3	1/3	M/L	400	3.80	8.6	785	314	0.378	—	P.745
AFCZ	18	L/H	1/3	1/3	M/L	750	7.23	17.2	980	392	1.236	—	P.746
AFCZ	22	L/H	1/3	1/3	M/L	1000	12.42	23.2	1050	420	5.700	—	P.747
AFCZ	28	L/H	1/3	1/3	M/L	2000	31.90	48.7	1200	480	7.190	11.11	P.749
AFCZ	32	L/H	1/3	1/3	M/L	3000	42.41	73.1	1370	548	9.449	12.95	P.750
AFCZ	12	L/H	1/5	1/5	M/L	200	3.21	6.2	650	250	0.263	—	P.744
AFCZ	15	L/H	1/5	1/5	M/L	400	6.62	14.3	980	377	0.333	—	P.745
AFCZ	18	L/H	1/5	1/5	M/L	750	10.43	24.8	1180	454	1.101	—	P.746
AFCZ	22	L/H	1/5	1/5	M/L	1000	22.99	38.7	1250	481	5.459	—	P.747
AFCZ	28	L/H	1/5	1/5	M/L	2000	37.93	81.2	1470	565	6.215	10.14	P.749
AFCZ	32	L/H	1/5	1/5	M/L	3000	53.96	121.8	1670	642	8.770	12.27	P.750
AFCZ	12	L/H	1/7.5	2/15	M/L	100	2.31	4.2	560	215	0.132	—	P.744
AFCZ	15	L/H	1/7.5	2/15	M/L	200	5.70	9	800	308	0.290	—	P.745
AFCZ	18	L/H	1/7.5	2/15	M/L	400	8.34	19.1	1120	431	0.391	—	P.746
AFCZ	22	L/H	1/7.5	2/15	M/L	750	19.75	37.2	1370	527	1.311	—	P.747
AFCZ	28	L/H	1/7.5	2/15	M/L	1000	33.07	50.1	1480	569	5.509	—	P.749
AFCZ	32	L/H	1/7.5	2/15	M/L	2000	51.70	102.7	1670	642	7.229	10.73	P.750
AFCZ	12	L/H	1/10	1/10	M/L	100	2.90	4.4	650	232	0.130	—	P.744
AFCZ	15	L/H	1/10	1/10	M/L	200	6.34	9.6	980	350	0.281	—	P.745
AFCZ	18	L/H	1/10	1/10	M/L	400	10.30	20.4	1250	446	0.379	—	P.746
AFCZ	22	L/H	1/10	1/10	M/L	750	23.83	39.6	1550	554	1.229	—	P.747
AFCZ	28	L/H	1/10	1/10	M/L	1000	33.65	53.4	1750	625	5.291	—	P.749
AFCZ	32	L/H	1/10	1/10	M/L	2000	62.17	109.6	1960	700	6.849	10.35	P.750

1-1. Performance Tables

Mounting Type	Output Shaft Diameter	Shaft Arrangement	Nominal Reduction Ratio	Actual Reduction Ratio	Precision	Power Class	Allowable Average Torque (3000 r/min)	Allowable Peak Torque of Startup/ Stop	Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Internal Moment of Inertia (Input Shaft Equivalent)		Drawings
							N-m	N-m	N	N	Other than Flange Type K75	Flange Type K75	
AFCZ	15	L/H	1/10	1/10	M/L	100	3.76	5.7	980	350	0.136	—	P.745
AFCZ	18	L/H	1/10	1/10	M/L	200	6.42	12.4	1250	446	0.274	—	P.746
AFCZ	22	L/H	1/10	1/10	M/L	400	13.24	28.6	1550	554	0.359	—	P.747
AFCZ	28	L/H	1/10	1/10	M/L	750	20.86	49.5	1960	700	1.091	—	P.748
AFCZ	32	L/H	1/10	1/10	M/L	1000	45.98	80.2	2350	839	5.656	—	P.750
AFCZ	15	L/H	1/12	2/25	M/L	100	4.75	7.2	1020	364	0.133	—	P.745
AFCZ	18	L/H	1/12	2/25	M/L	200	8.03	15.5	1350	482	0.269	—	P.746
AFCZ	22	L/H	1/12	2/25	M	400	16.55	35.8	1640	586	0.347	—	P.747
AFCZ	22	L/H	1/12	19/235	L	400	16.55	35.8	1640	586	0.347	—	P.748
AFCZ	28	L/H	1/12	2/25	M	750	26.08	59.7	2110	754	1.062	—	P.748
AFCZ	28	L/H	1/12	19/235	L	750	26.08	59.7	2110	754	1.062	—	P.750
AFCZ	32	L/H	1/12	2/25	M/L	1000	57.48	97.9	2530	904	5.592	—	P.750
AFCZ	15	L/H	1/15	1/15	M/L	100	5.68	8.6	1060	379	0.132	—	P.745
AFCZ	18	L/H	1/15	1/15	M/L	200	9.63	18.6	1470	525	0.266	—	P.746
AFCZ	22	L/H	1/15	1/15	M/L	400	19.86	43	1720	614	0.339	—	P.747
AFCZ	28	L/H	1/15	1/15	M/L	750	31.29	71.6	2250	804	1.042	—	P.748
AFCZ	32	L/H	1/15	1/15	M/L	1000	68.97	117.5	2700	964	5.558	—	P.750
AFCZ	15	L/H	1/20	1/20	M/L	100	7.59	11.5	1180	421	0.130	—	P.745
AFCZ	18	L/H	1/20	1/20	M/L	200	12.84	26.7	1570	561	0.263	—	P.746
AFCZ	22	L/H	1/20	1/20	M/L	400	26.48	57.3	2010	718	0.330	—	P.747
AFCZ	28	L/H	1/20	1/20	M/L	750	41.72	95.5	2500	893	1.021	—	P.748
AFCZ	32	L/H	1/20	1/20	M/L	1000	91.96	156.6	3000	1071	5.514	—	P.750
AFCZ	15	L/H	1/25	1/25	M/L	100	9.44	14.3	1250	446	0.129	—	P.745
AFCZ	18	L/H	1/25	1/25	M/L	200	16.05	33.4	1670	596	0.260	—	P.746
AFCZ	22	L/H	1/25	1/25	M/L	400	33.10	71.6	2160	771	0.323	—	P.747
AFCZ	28	L/H	1/25	1/25	M/L	750	52.15	119.4	2740	979	1.008	—	P.748
AFCZ	32	L/H	1/25	1/25	M/L	1000	101.08	195.8	3280	1171	5.487	—	P.750
AFCZ	15	L/H	1/30	1/30	M/L	100	10.23	15.5	1330	475	0.128	—	P.745
AFCZ	18	L/H	1/30	1/30	M/L	200	17.74	33.4	1810	646	0.259	—	P.746
AFCZ	22	L/H	1/30	1/30	M/L	400	33.27	71.6	2300	821	0.319	—	P.747
AFCZ	28	L/H	1/30	1/30	M/L	750	60.37	143.3	2940	1050	0.999	—	P.748
AFCZ	32	L/H	1/30	1/30	M/L	1000	91.32	195.8	3520	1257	5.468	—	P.750
AFCZ	18	L/H	1/40	1/40	M/L	100	11.75	17.8	1650	550	0.128	—	P.746
AFCZ	22	L/H	1/40	1/40	M/L	200	25.21	38.2	2250	750	0.277	—	P.747
AFCZ	28	L/H	1/40	1/40	M/L	400	41.20	81.5	2900	967	0.369	—	P.748
AFCZ	32	L/H	1/40	1/40	M/L	750	95.32	158.5	3480	1160	1.220	—	P.750
AFCZ	18	L/H	1/50	1/50	M/L	100	14.72	22.3	1750	583	0.128	—	P.746
AFCZ	22	L/H	1/50	1/50	M/L	200	31.55	47.8	2480	827	0.275	—	P.747
AFCZ	28	L/H	1/50	1/50	M/L	400	63.89	101.9	3150	1050	0.366	—	P.748
AFCZ	32	L/H	1/50	1/50	M/L	750	101.08	198.2	3630	1210	1.209	—	P.750
AFCZ	18	L/H	1/60	1/60	M/L	100	17.62	26.7	1850	617	0.127	—	P.746
AFCZ	22	L/H	1/60	1/60	M/L	200	33.27	57.3	2700	900	0.274	—	P.747
AFCZ	28	L/H	1/60	1/60	M/L	400	61.10	122.3	3380	1127	0.364	—	P.748
AFCZ	32	L/H	1/60	1/60	M/L	750	118.90	237.8	3780	1260	1.204	—	P.750

Motor Matching / Motor Power Design List

APG/AG3 Type Parallel Shaft

AH2 Type Right Angle Shaft

AFC Type Right Angle Hollow Bore/ Right Angle Shaft

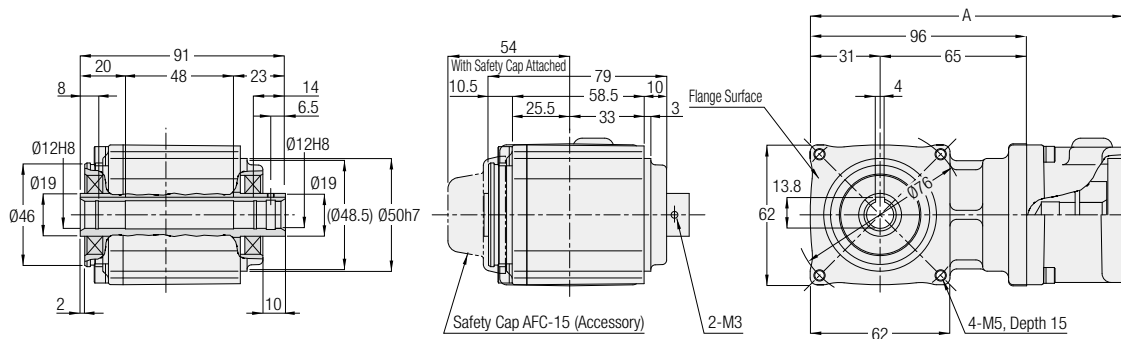
AF3 Type Concentric Right Angle Hollow Bore/ Concentric Right Angle Shaft

Technical Documentation

1-2. Drawings

AFC Type Right Angle Hollow Bore Shaft Diameter **12** Backlash 3 arc min/30 arc min

<Figure 1>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Flange Type	Approx. Weight (kg)	A
100 W	AFCZ12S-***□100△	7.5, 10	1	S1/S3	1.5	134
200 W	AFCZ12S-***□200△	5	1	S1/S2/S3	1.5	139

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, backlash will be indicated as □, and a flange type will be indicated as △.

Note: For flange type codes, please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681.

Note: Please refer to pages 803 to 805 for the detailed dimensions of the input shaft area.

Note: Please refer to page 734 for the performance table.

Motor Matching /
Motor Power Design List

APG/AG3 Type
Parallel Shaft

AH2 Type
Right Angle Shaft

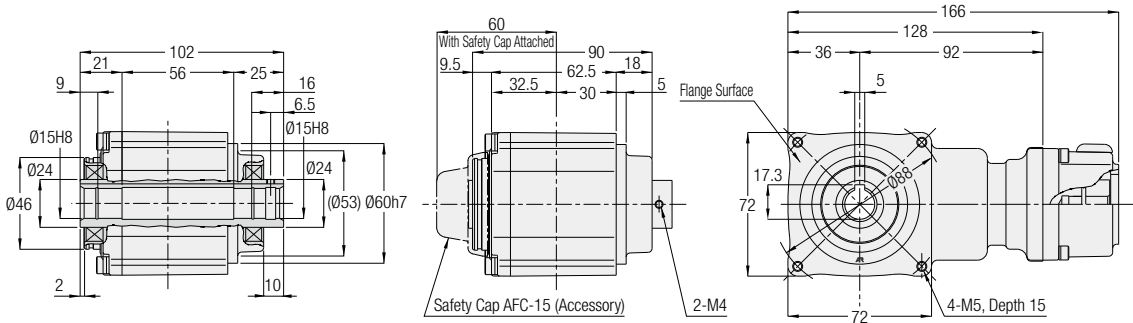
AFC Type
Right Angle Hollow Bore/
Right Angle Shaft

AF3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

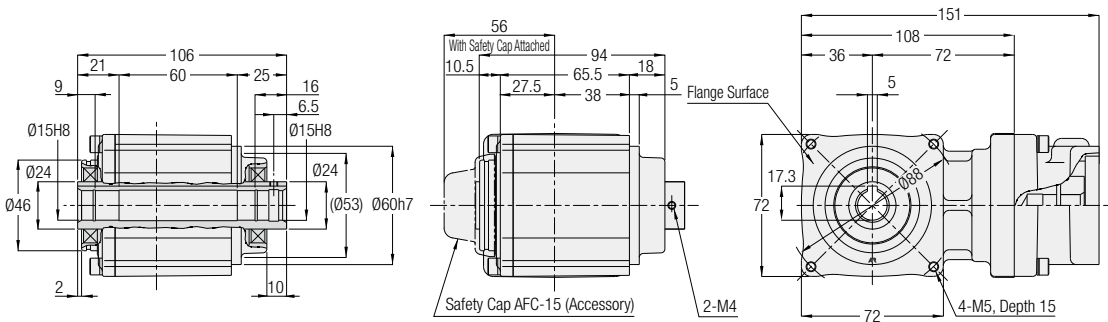
Technical Documentation

AFC Type Right Angle Hollow Bore Shaft Diameter **15** Backlash 3 arc min/30 arc min

<Figure 1>



<Figure 2>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Flange Type	Approx. Weight (kg)
100 W	AFCZ15S-***□100△	10, 12, 15, 20, 25, 30	1	S1/S3	1.9
200 W	AFCZ15S-***□200△	7.5, 10	2	S1/S2/S3	2.5
400 W	AFCZ15S-***□400△	3, 5	2	S1/S3	2.5

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, backlash will be indicated as □, and a flange type will be indicated as △.

Note: For flange type codes, please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681.

Note: Please refer to pages 803 to 805 for the detailed dimensions of the input shaft area.

Note: Please refer to page 734 for the performance table.

Motor Matching /
Motor Power Design List

APG/AG3 Type
Parallel Shaft

AH2 Type
Right Angle Shaft

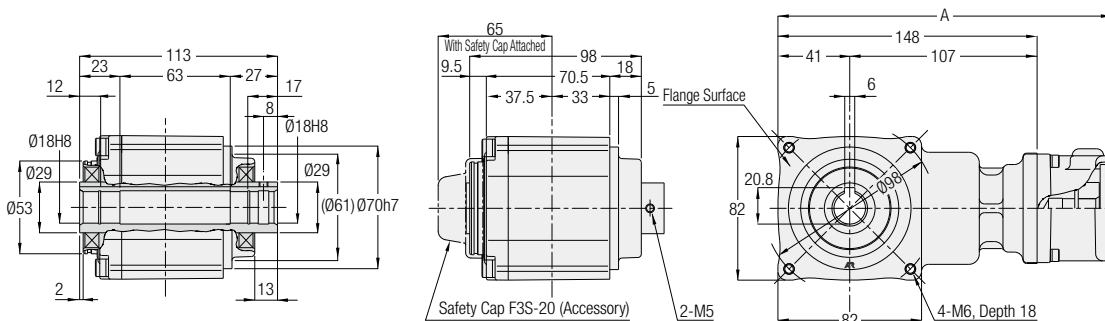
AFC Type
Right Angle Hollow Bore/
Right Angle Shaft

AF3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

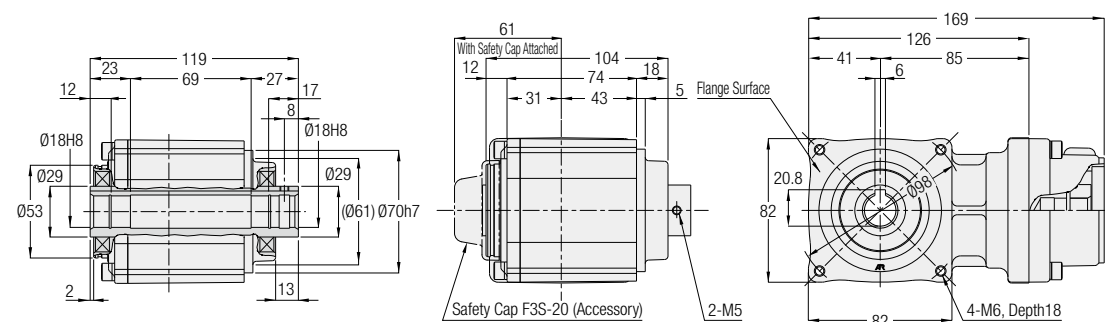
Technical Documentation

AFC Type Right Angle Hollow Bore Shaft Diameter **18** Backlash 3 arc min/30 arc min

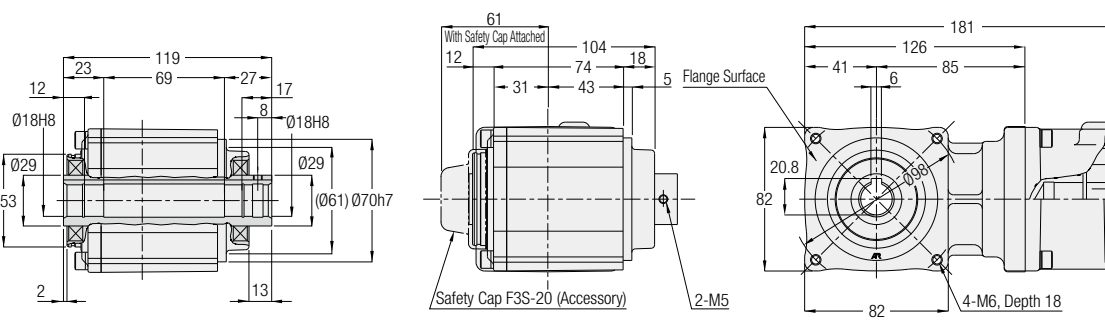
<Figure 1>



<Figure 2>



<Figure 3>

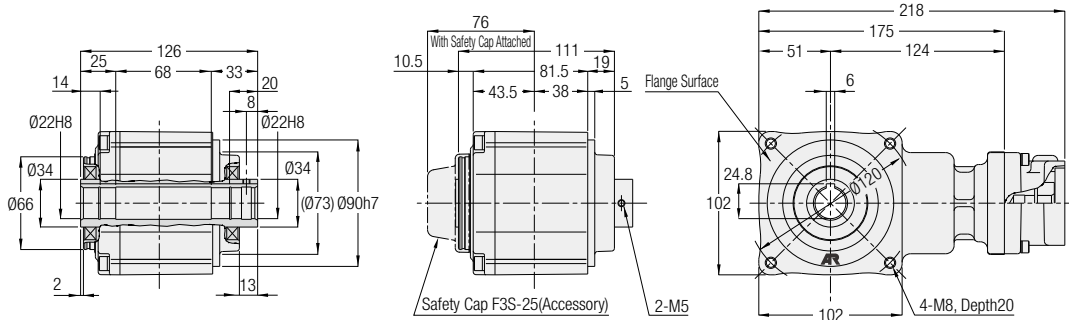


Motor Power Class	Part Number	Reduction Ratio	Figure Number	Flange Type	Approx. Weight (kg)	A
100 W	AFCZ18S-***□100△	40, 50, 60	1	S1/S3	2.7	186
200 W	AFCZ18S-***□200△	10, 12, 15, 20, 25, 30	1	S1/S2/S3	2.7	191
400 W	AFCZ18S-***□400△	7.5, 10	2	S1/S3	3.2	—
750 W	AFCZ18S-***□750△	3, 5	3	S1/S2/S3/S4	3.2	—

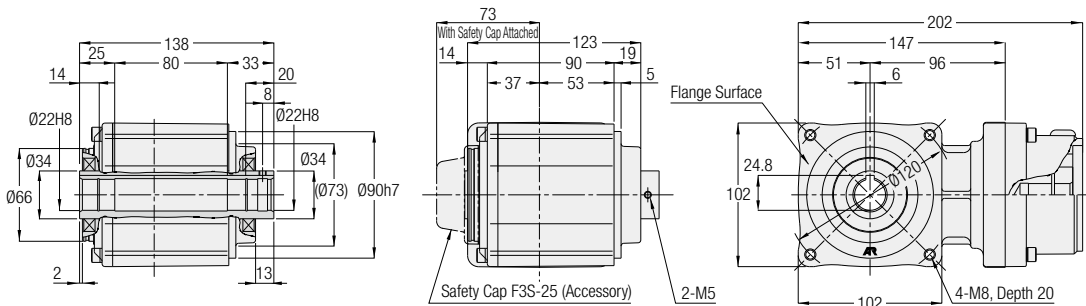
Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, backlash will be indicated as □, and a flange type will be indicated as △.
 Note: For flange type codes, please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681.
 Note: Please refer to pages 803 to 805 for the detailed dimensions of the input shaft area.
 Note: Please refer to page 734 for the performance table.

AFC Type Right Angle Hollow Bore Shaft Diameter **22** Backlash 3 arc min/30 arc min

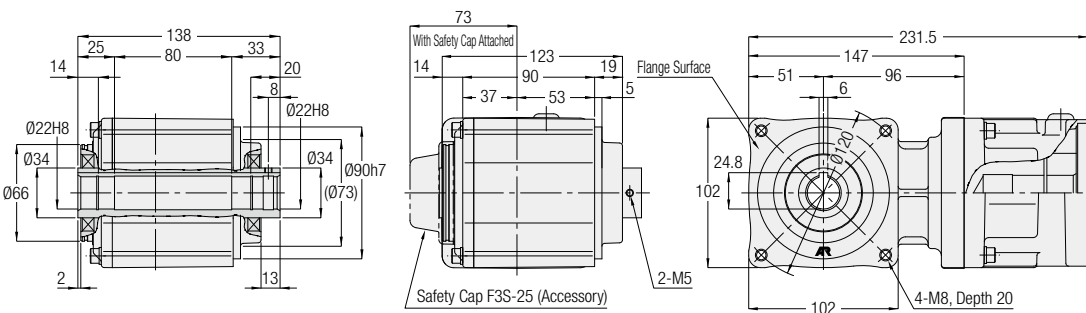
<Figure 1>



<Figure 2>



<Figure 3>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Flange Type	Approx. Weight (kg)
200 W	AFCZ22S-***□200△	40, 50, 60	1	S1/S2/S3	4.3
400 W	AFCZ22S-***□400△	10, 12, 15, 20, 25, 30	1	S1/S3	4.3
750 W	AFCZ22S-***□750△	7.5, 10	2	S1/S2/S3/S4	5.4
1000 W	AFCZ22S-***□1000△	3, 5	3	S13/K22/K23/K61	6.2

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, backlash will be indicated as □, and a flange type will be indicated as △.
 Note: For flange type codes, please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681.
 Note: Please refer to pages 803 to 805 for the detailed dimensions of the input shaft area.
 Note: Please refer to page 734 for the performance table.

Motor Matching /
Motor Power Design List

APG/AG3 Type
Parallel Shaft

AH2 Type
Right Angle Shaft

AFC Type
Right Angle Hollow Bore/
Right Angle Shaft

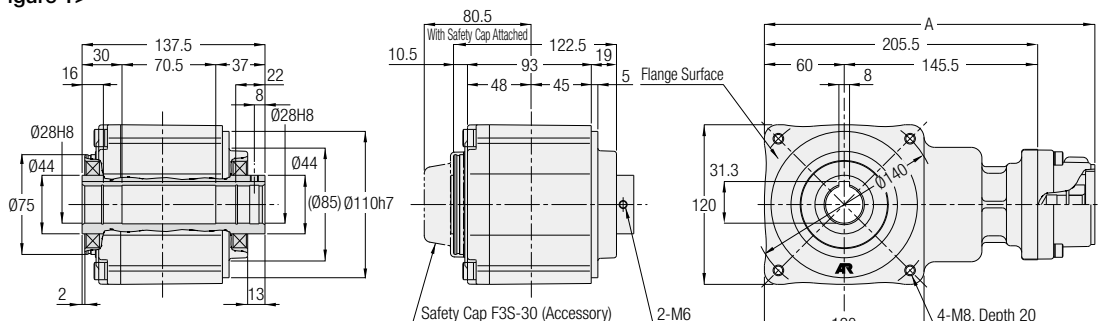
AF3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

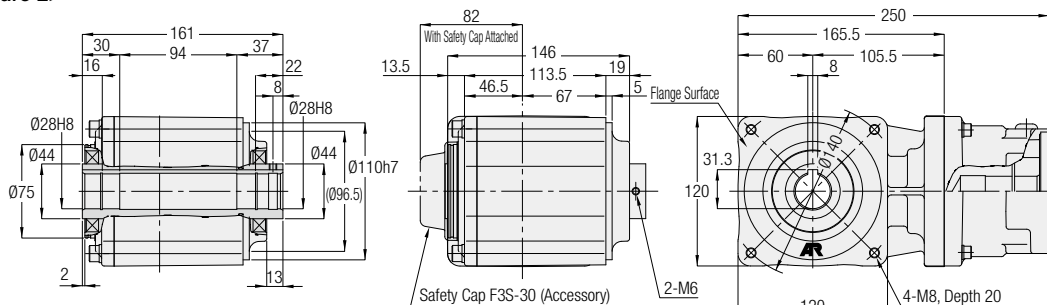
AFC Type Right Angle Hollow Bore Shaft Diameter **28** Backlash 3 arc min/30 arc min

The values in parenthesis are those for flange type K75.

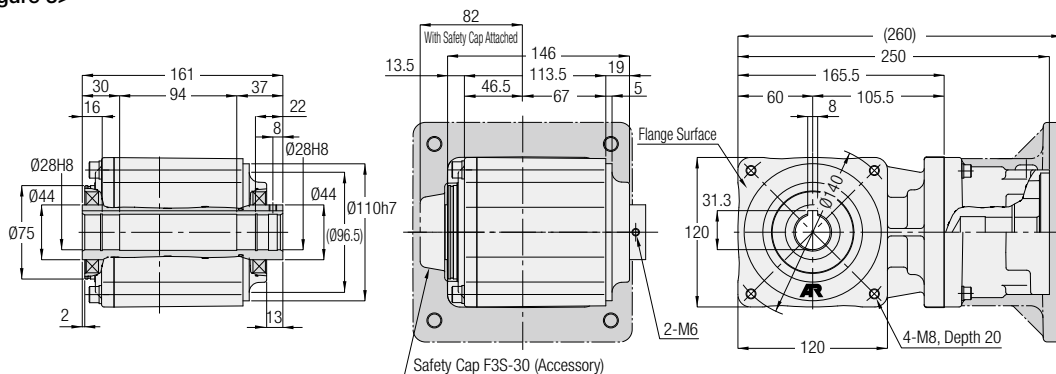
<Figure 1>



<Figure 2>



<Figure 3>



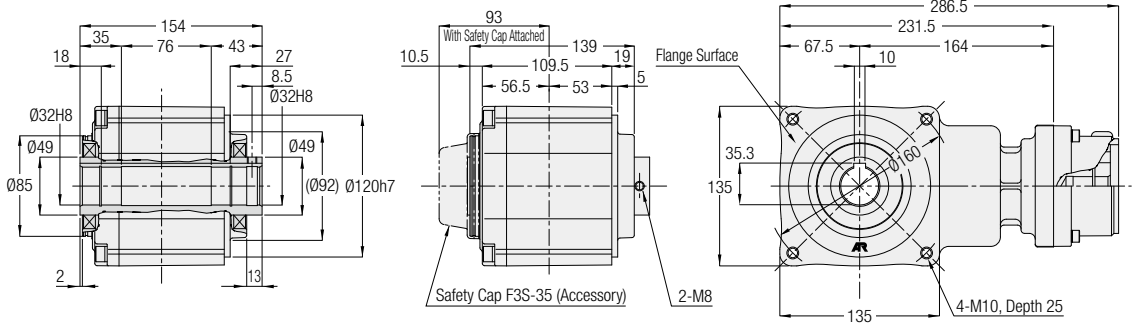
Motor Power Class	Part Number	Reduction Ratio	Figure Number	Flange Type	Approx. Weight (kg)	A
400 W	AFCZ28S-***□400△	40, 50, 60	1	S1/S3	6.6	248.5
750 W	AFCZ28S-***□750△	10, 12, 15, 20, 25, 30	1	S1/S2/S3/S4	6.6	260.5
1000 W	AFCZ28S-***□1000△	7.5, 10	2	S13/K22/K23/K61	8.8	—
2000 W	AFCZ28S-***□2000△	3, 5	3	K13/K21/K22/K23/K31/K32/K33/K41	8.8	—
2000 W	AFCZ28S-***□2000△	3, 5	3	K75	9.8	—

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, backlash will be indicated as □, and a flange type will be indicated as △.
 Note: For flange type codes, please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681.
 Note: Please refer to pages 803 to 805 for the detailed dimensions of the input shaft area.
 Note: The drawings shown in the dark color are outline drawings of flange type K75.
 Note: Please refer to page 734 for the performance table.

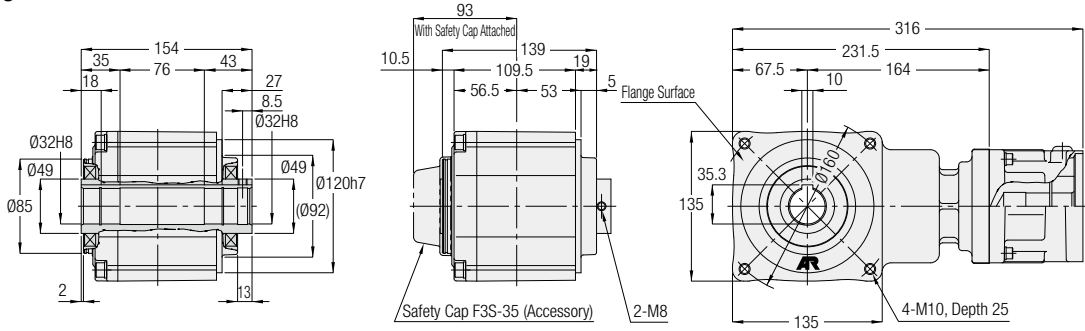
AFC Type Right Angle Hollow Bore Shaft Diameter **32** Backlash 3 arc min/30 arc min

The values in parenthesis are those for flange type K75.

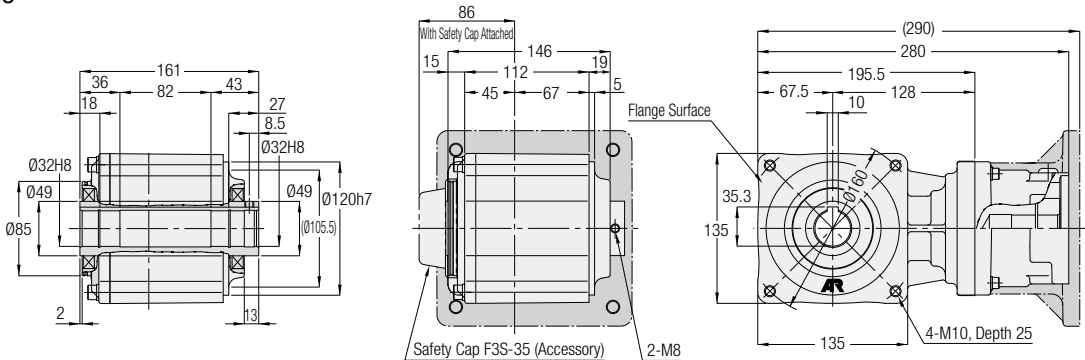
<Figure 1>



<Figure 2>



<Figure 3>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Flange Type	Approx. Weight (kg)
750 W	AFCZ32S-***□750△	40, 50, 60	1	S1/S2/S3/S4	10
1000 W	AFCZ32S-***□1000△	10, 12, 15, 20, 25, 30	2	S13/K22/K23/K61	10.5
2000 W	AFCZ32S-***□2000△	7.5, 10	3	K13/K21/K22/K23/K31/K32/K33/K41	11
2000 W	AFCZ32S-***□2000△	7.5, 10	3	K75	9.8
3000 W	AFCZ32S-***□3000△	3, 5	3	K13/K21/K22/K23/K32/K33/K34/K52	11
3000 W	AFCZ32S-***□3000△	3, 5	3	K75	12

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, backlash will be indicated as □, and a flange type will be indicated as △.

Note: For flange type codes, please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681.

Note: Please refer to pages 803 to 805 for the detailed dimensions of the input shaft area.

Note: The drawings shown in the dark color are outline drawings of flange type K75.

Note: Please refer to page 734 for the performance table.

Motor Matching /
Motor Power Design List

APG/AG3 Type
Parallel Shaft

AH2 Type
Right Angle Shaft

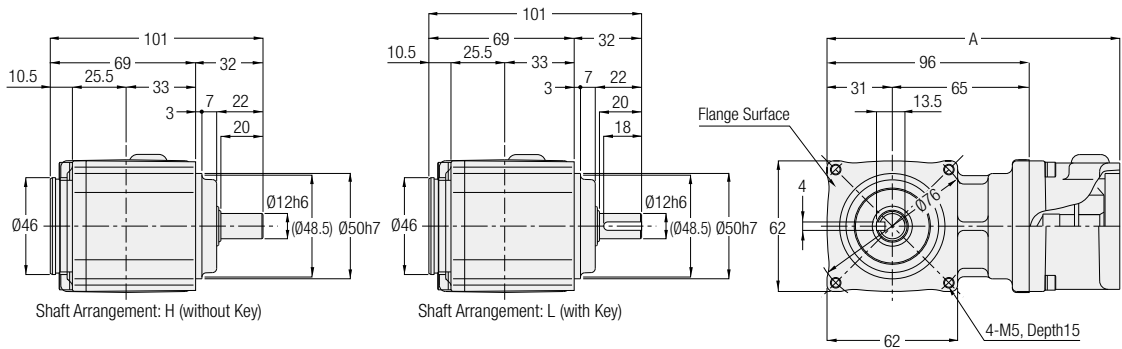
AFC Type
Right Angle Hollow Bore/
Right Angle Shaft

AF3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

AFC Type Right Angle Shaft Shaft Diameter 12 Backlash 3 arc min/30 arc min

<Figure 1>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Flange Type	Approx. Weight (kg)	A
100 W	AFCZ12#-***□100△	7.5, 10	1	S1/S3	1.5	134
200 W	AFCZ12#-***□200△	5	1	S1/S2/S3	1.5	139

Note: A shaft arrangement (H, L) will be indicated as # in the nomenclature. In addition, a reduction ratio will be indicated as ***, backlash will be indicated as □, and a flange type will be indicated as △.

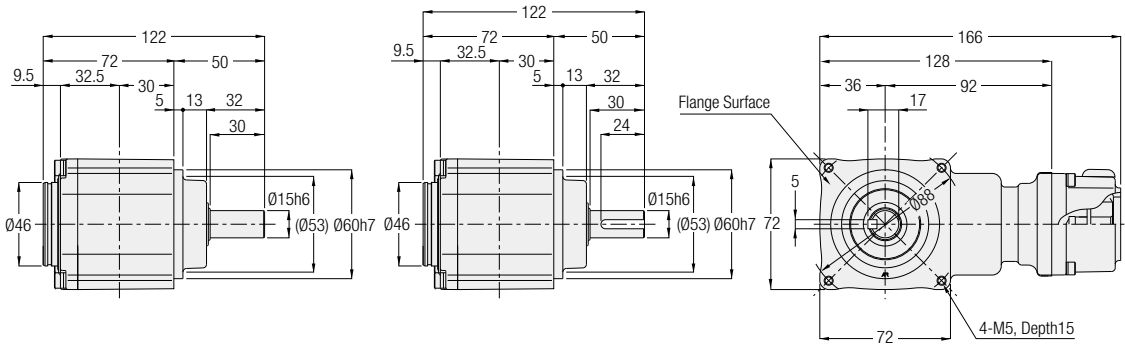
Note: For flange type codes, please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681.

Note: Please refer to pages 803 to 805 for the detailed dimensions of the input shaft area.

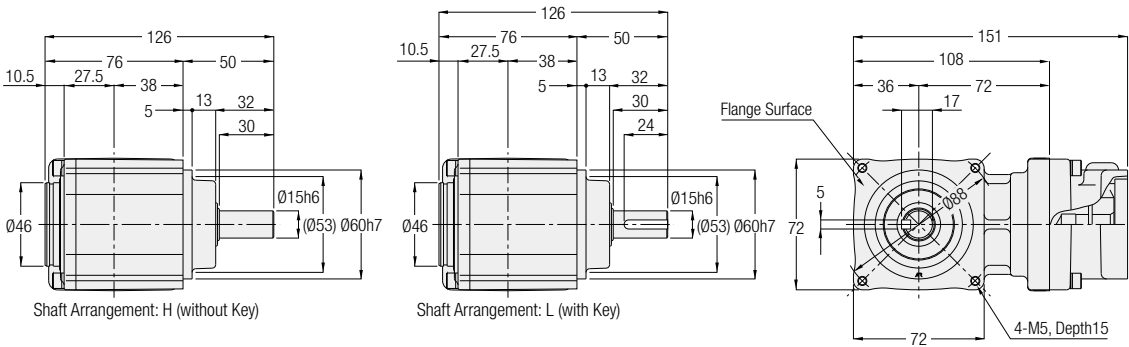
Note: Please refer to page 736 for the performance table.

AFC Type Right Angle Shaft Shaft Diameter **15** Backlash 3 arc min/30 arc min

<Figure 1>



<Figure 2>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Flange Type	Approx. Weight (kg)
100 W	AFCZ15#-***□100△	10, 12, 15, 20, 25, 30	1	S1/S3	2.0
200 W	AFCZ15#-***□200△	7.5, 10	2	S1/S2/S3	2.6
400 W	AFCZ15#-***□400△	3, 5	2	S1/S3	2.6

Note: A shaft arrangement (H, L) will be indicated as # in the nomenclature. In addition, a reduction ratio will be indicated as ***, backlash will be indicated as □, and a flange type will be indicated as △.

Note: For flange type codes, please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681.

Note: Please refer to pages 803 to 805 for the detailed dimensions of the input shaft area.

Note: Please refer to page 736 for the performance table.

Motor Matching /
Motor Power Design List

APG/AG3 Type
Parallel Shaft

AH2 Type
Right Angle Shaft

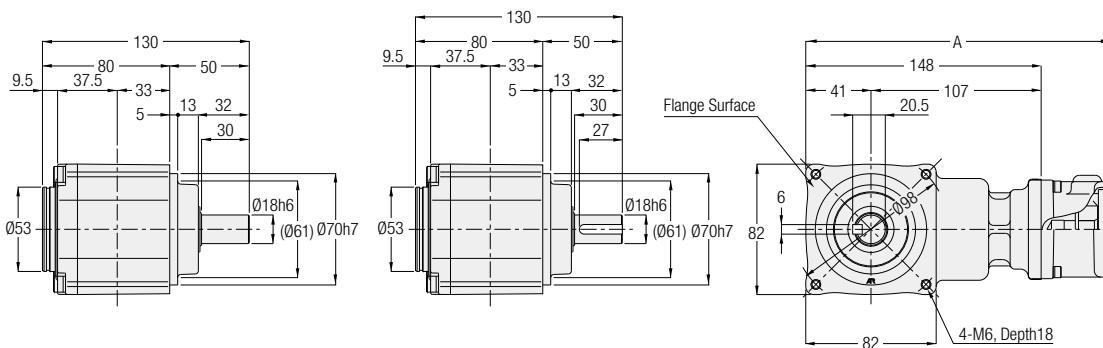
AFC Type
Right Angle Hollow Bore/
Right Angle Shaft

AFC3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

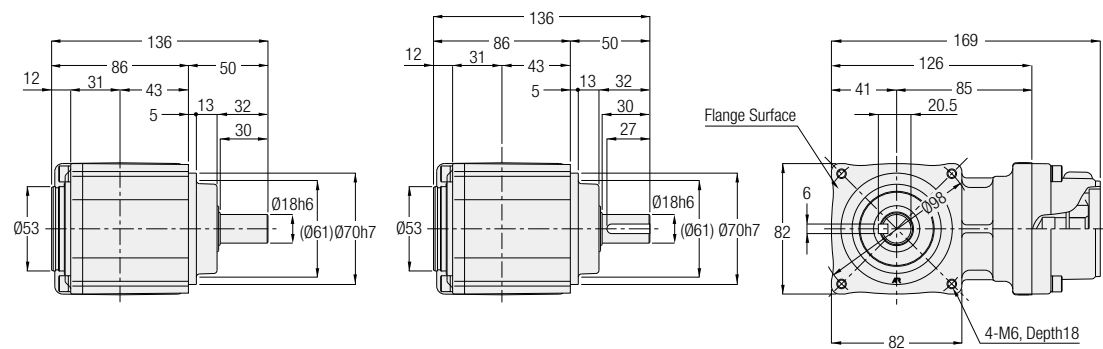
Technical Documentation

AFC Type Right Angle Shaft Shaft Diameter **18** Backlash 3 arc min/30 arc min

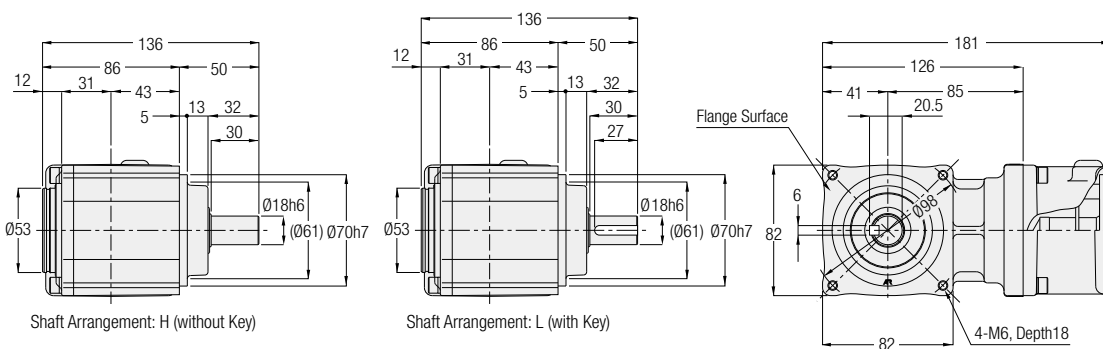
<Figure 1>



<Figure 2>



<Figure 3>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Flange Type	Approx. Weight (kg)	A
100 W	AFCZ18#-***□100△	40, 50, 60	1	S1/S3	2.8	186
200 W	AFCZ18#-***□200△	10, 12, 15, 20, 25, 30	1	S1/S2/S3	2.8	191
400 W	AFCZ18#-***□400△	7.5, 10	2	S1/S3	3.3	—
750 W	AFCZ18#-***□750△	3, 5	3	S1/S2/S3/S4	3.3	—

Note: A shaft arrangement (H, L) will be indicated as # in the nomenclature. In addition, a reduction ratio will be indicated as ***, backlash will be indicated as □, and a flange type will be indicated as △.

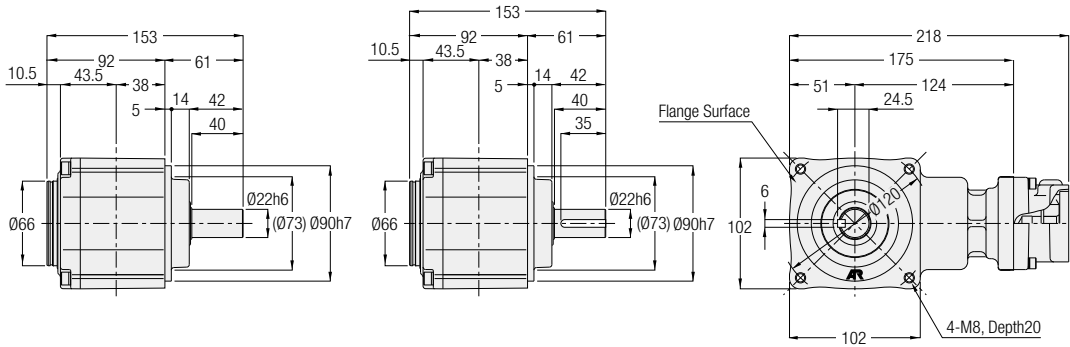
Note: For flange type codes, please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681.

Note: Please refer to pages 803 to 805 for the detailed dimensions of the input shaft area.

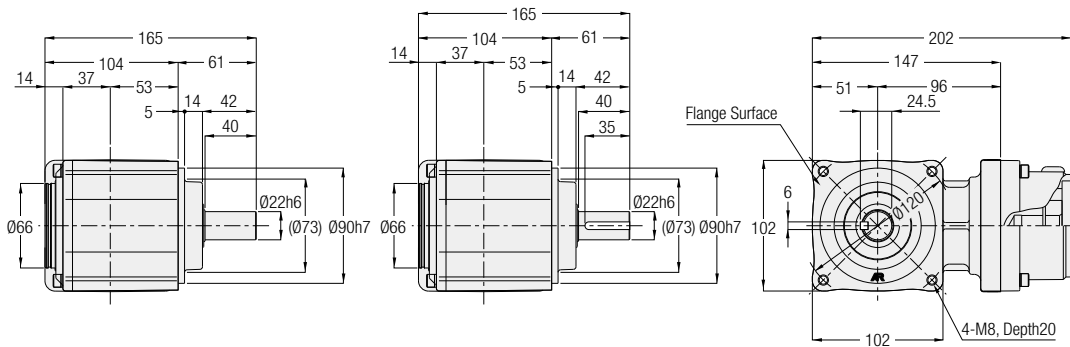
Note: Please refer to page 736 for the performance table.

AFC Type Right Angle Shaft Shaft Diameter **22** Backlash 3 arc min/30 arc min

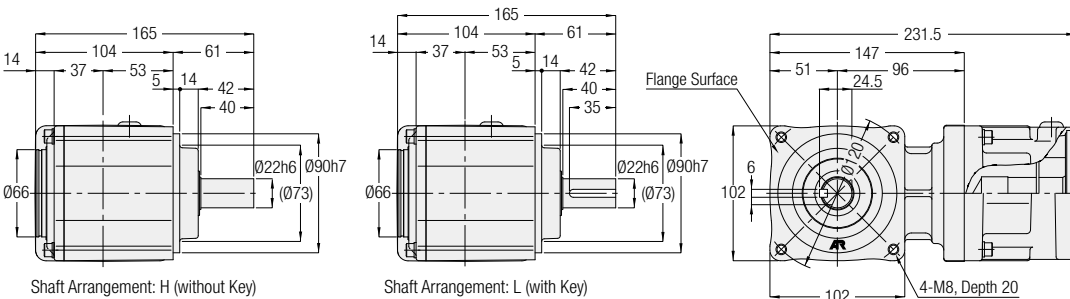
<Figure 1>



<Figure 2>



<Figure 3>



Shaft Arrangement: H (without Key)

Shaft Arrangement: L (with Key)

Motor Power Class	Part Number	Reduction Ratio	Figure Number	Flange Type	Approx. Weight (kg)
200 W	AFCZ22#-***□200△	40, 50, 60	1	S1/S2/S3	4.6
400 W	AFCZ22#-***□400△	10, 12, 15, 20, 25, 30	1	S1/S3	4.6
750 W	AFCZ22#-***□750△	7.5, 10	2	S1/S2/S3/S4	5.7
1000 W	AFCZ22#-***□1000△	3, 5	3	S13/K22/K23/K61	6.5

Note: A shaft arrangement (H, L) will be indicated as # in the nomenclature. In addition, a reduction ratio will be indicated as ***, backlash will be indicated as □, and a flange type will be indicated as △.

Note: For flange type codes, please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681.

Note: Please refer to pages 803 to 805 for the detailed dimensions of the input shaft area.

Note: Please refer to page 736 for the performance table.

Motor Matching /
Motor Power Design List

APG/AG3 Type
Parallel Shaft

AH2 Type
Right Angle Shaft

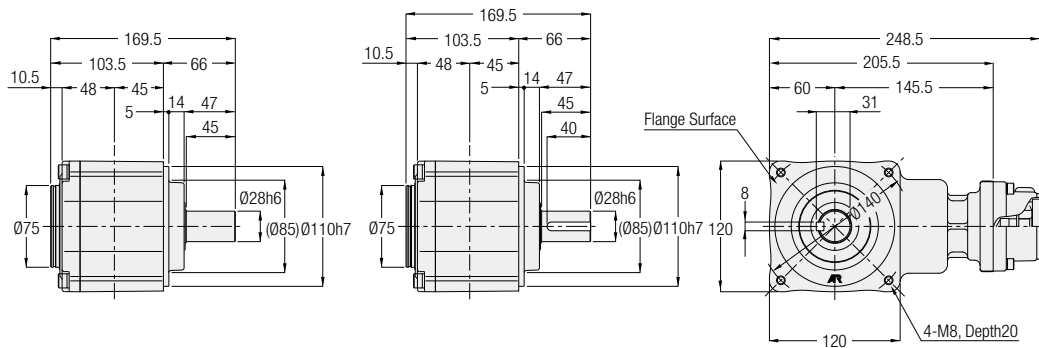
AFC Type
Right Angle Hollow Bore/
Right Angle Shaft

AF3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

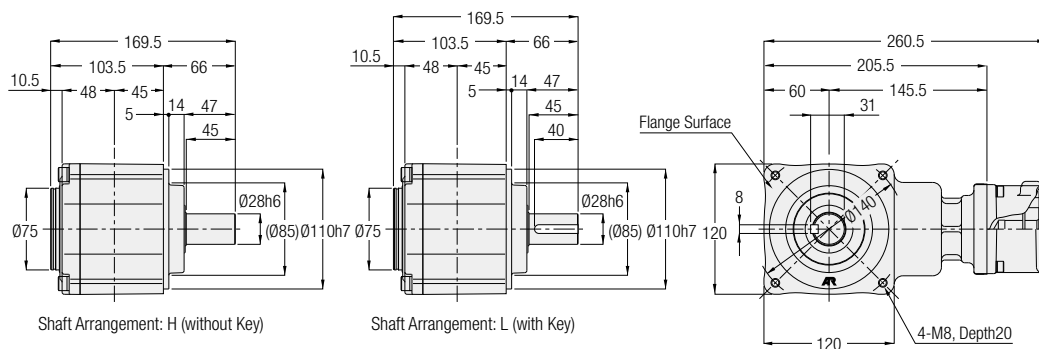
Technical Documentation

AFC Type Right Angle Shaft Shaft Diameter **28** Backlash 3 arc min/30 arc min

<Figure 1>



<Figure 2>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Flange Type	Approx. Weight (kg)
400 W	AFCZ28#-***□400△	40, 50, 60	1	S1/S3	7.2
750 W	AFCZ28#-***□750△	10, 12, 15, 20, 25, 30	2	S1/S2/S3/S4	7.2

Note: A shaft arrangement (H, L) will be indicated as # in the nomenclature. In addition, a reduction ratio will be indicated as ***, backlash will be indicated as □, and a flange type will be indicated as △.

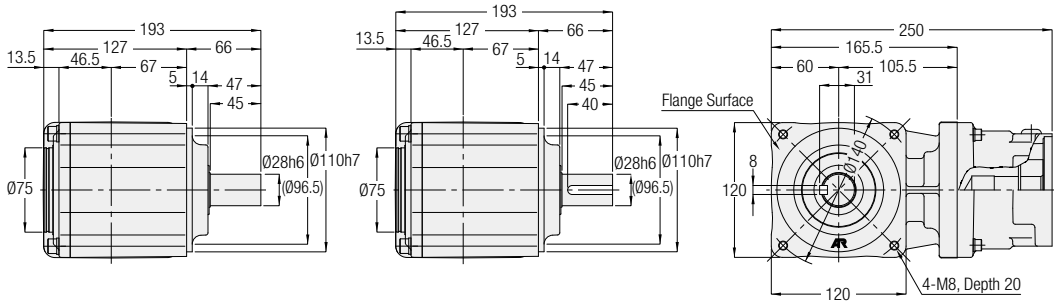
Note: For flange type codes, please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 881.

Note: Please refer to pages 803 to 805 for the detailed dimensions of the input shaft area.

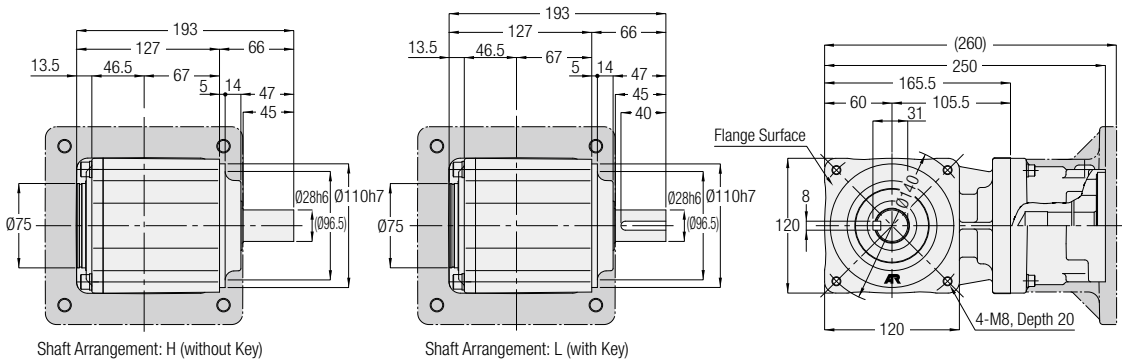
Note: Please refer to page 736 for the performance table.

The values in parenthesis are those for flange type K75.

<Figure 3>



<Figure 4>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Flange Type	Approx. Weight (kg)
1000 W	AFCZ28#-***□1000△	7.5, 10	3	S13/K22/K23/K61	9.5
2000 W	AFCZ28#-***□2000△	3, 5	4	K13/K21/K22/K23/K31/K32/K33/K41	9.5
2000 W	AFCZ28#-***□2000△	3, 5	4	K75	10.5

Note: A shaft arrangement (H, L) will be indicated as # in the nomenclature. In addition, a reduction ratio will be indicated as ***, backlash will be indicated as □, and a flange type will be indicated as △.

Note: For flange type codes, please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681.

Note: Please refer to pages 803 to 805 for the detailed dimensions of the input shaft area.

Note: The drawings shown in the dark color are outline drawings of flange type K75.

Note: Please refer to page 736 for the performance table.

Motor Matching /
Motor Power Design List

APC/AG3 Type
Parallel Shaft

AH2 Type
Right Angle Shaft

AFC Type
Right Angle Hollow Bore/
Right Angle Shaft

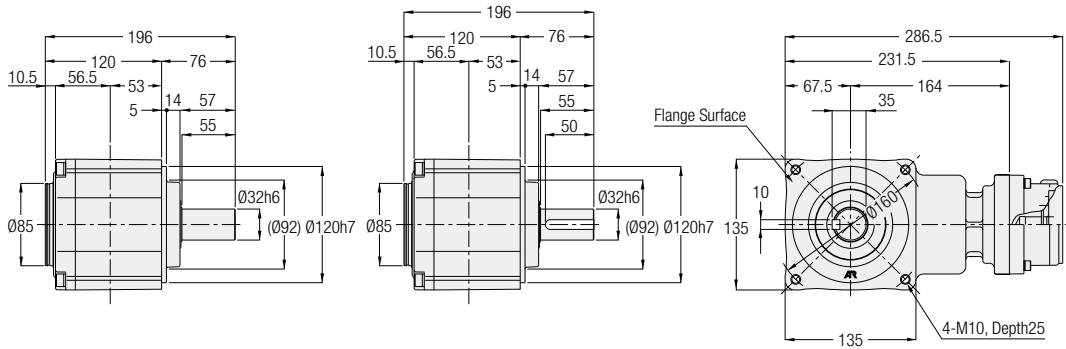
AF3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

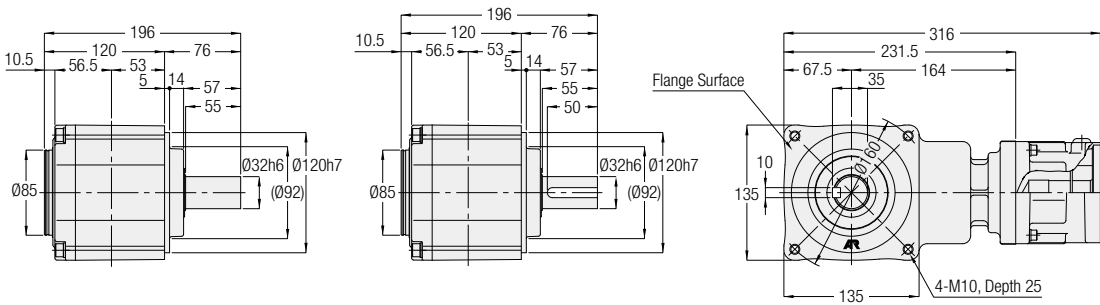
AFC Type Right Angle Shaft Shaft Diameter **32** Backlash 3 arc min/30 arc min

The values in parenthesis are those for flange type K75.

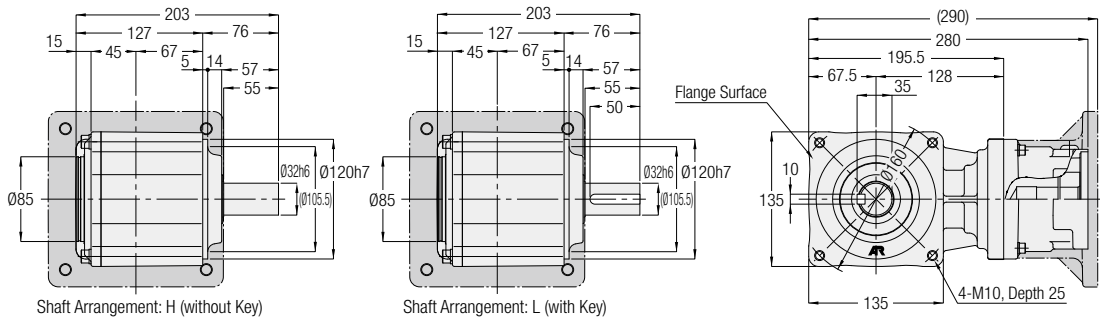
<Figure 1>



<Figure 2>



<Figure 3>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Flange Type	Approx. Weight (kg)
750 W	AFCZ32#-***□750△	40, 50, 60	1	S1/S2/S3/S4	11
1000 W	AFCZ32#-***□1000△	10, 12, 15, 20, 25, 30	2	S13/K22/K23/K61	11.5
2000 W	AFCZ32#-***□2000△	7.5, 10	3	K13/K21/K22/K23/K31/K32/K33/K41	12
2000 W	AFCZ32#-***□2000△	7.5, 10	3	K75	13
3000 W	AFCZ32#-***□3000△	3, 5	3	K13/K21/K22/K23/K32/K33/K34/K52	12
3000 W	AFCZ32#-***□3000△	3, 5	3	K75	13

Note: A shaft arrangement (H, L) will be indicated as # in the nomenclature. In addition, a reduction ratio will be indicated as ***, backlash will be indicated as □, and a flange type will be indicated as △.

Note: For flange type codes, please refer to the Motor Matching / Motor Power Design Lists on pages 678 to 681.

Note: Please refer to pages 803 to 805 for the detailed dimensions of the input shaft area.

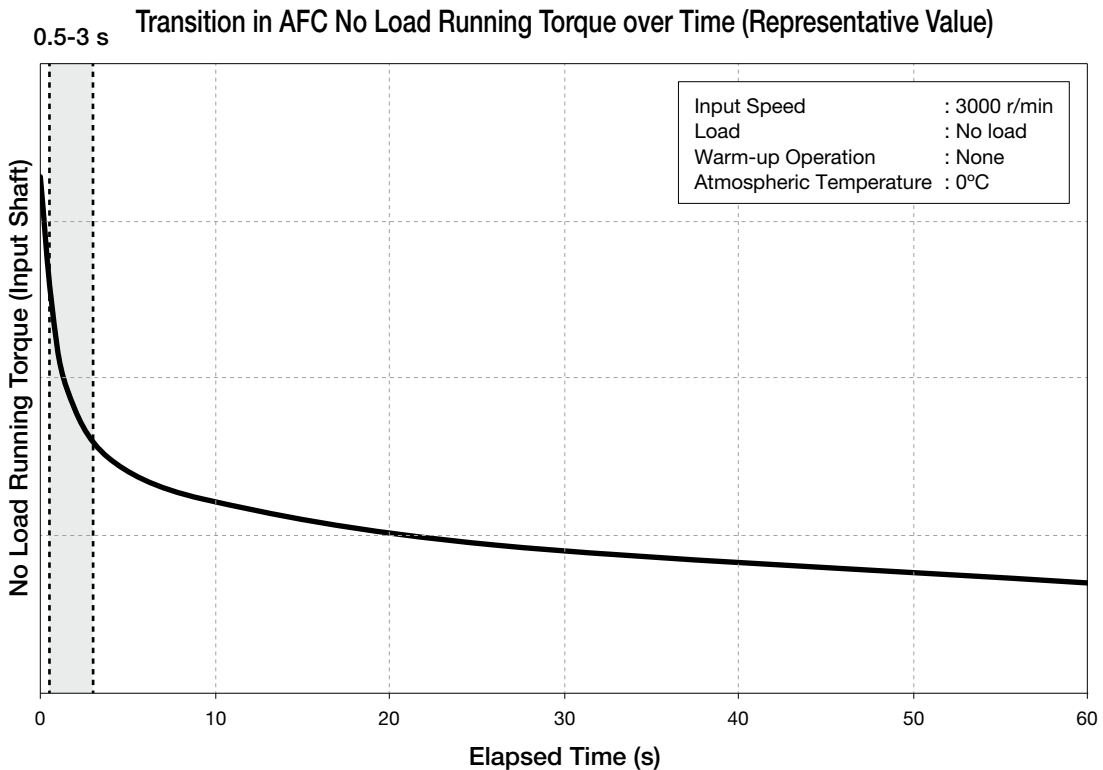
Note: The drawings shown in the dark color are outline drawings of flange type K75.

Note: Please refer to page 736 for the performance table.

1-3. Low Temperature Startup Characteristics (No Load Running Torque (Input Shaft))

No load running torque means the input shaft torque required to run the reducer at the rated input speed (3000 r/min) under no load state.

When the reducer is used at low temperature, the no load running torque at a startup will increase. When the operation is continued, the no load running torque will decrease with the temperature rise of the reducer. The rate of decrease differs depending on the model and the usage environment. The figure below shows a representative value in a state where a warm-up operation is not performed.



The figures on the pages that follow show the average value of the no load running torque of each type between 0.5 and 3 seconds.

Motor Matching /
Motor Power Design List

APG/AG3 Type
Parallel Shaft

AH2 Type
Right Angle Shaft

AFC Type
Right Angle Hollow Bore/
Right Angle Shaft

AF3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

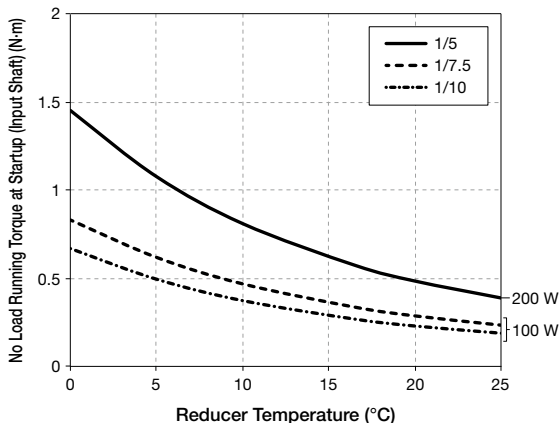
Technical Documentation

Input Speed: 3000 r/min

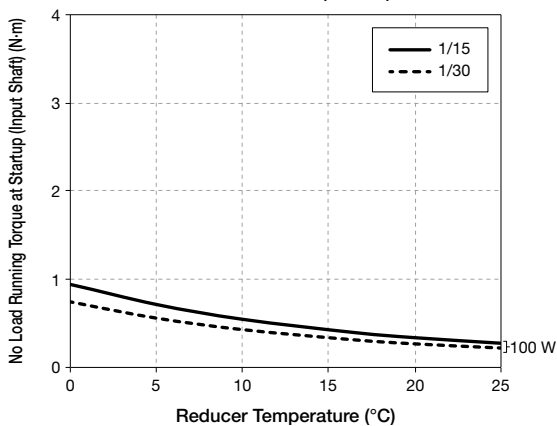
No Load Running Torque (Input Shaft): Average value between 0.5 and 3 seconds

Each figure shows a representative value in a state where a warm-up operation is not performed.

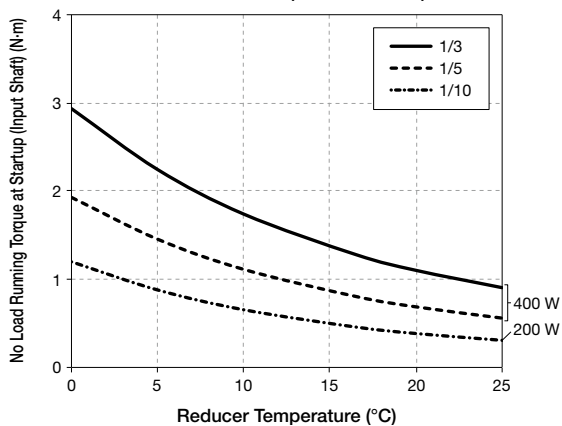
Frame Size 12 (100 W/200 W)



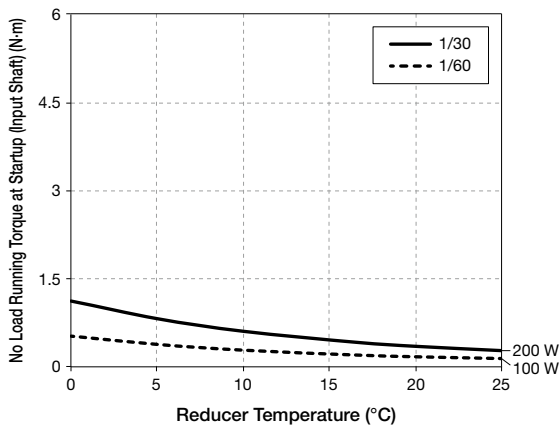
Frame Size 15 (100 W)



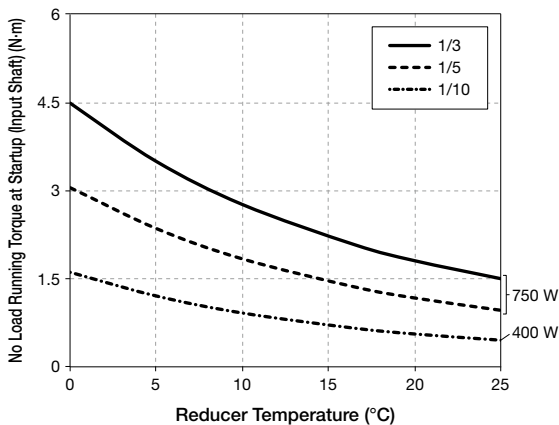
Frame Size 15 (200 W/400 W)



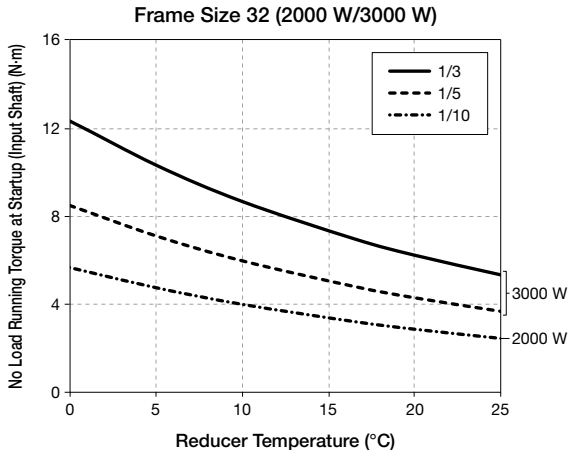
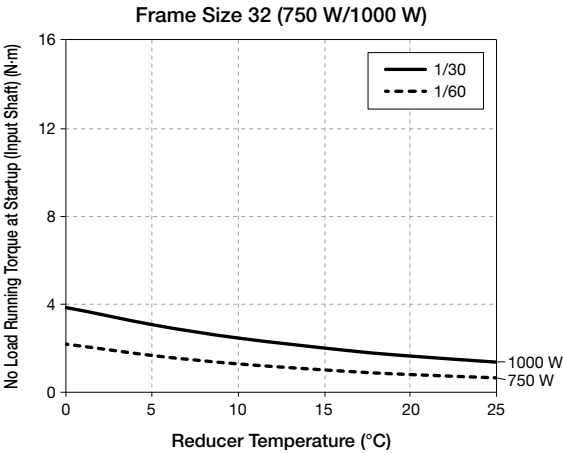
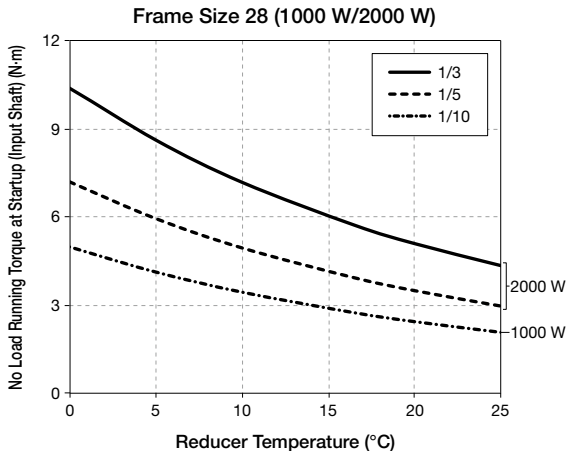
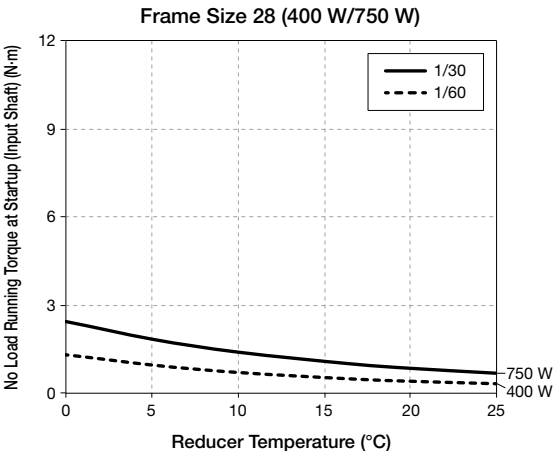
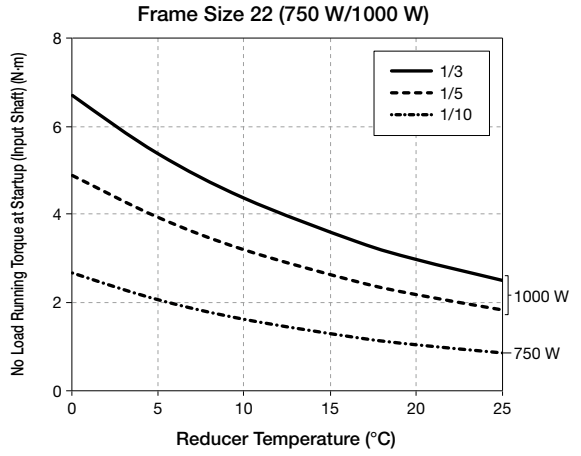
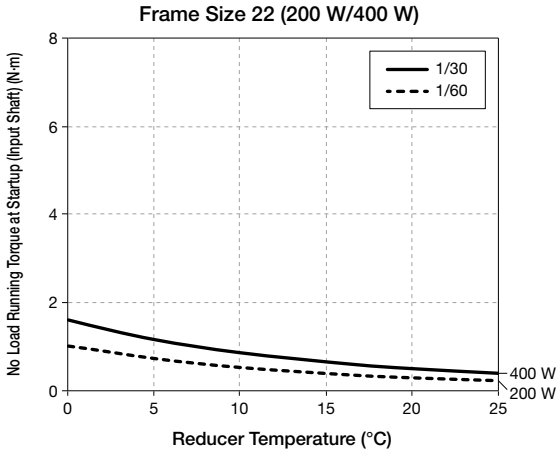
Frame Size 18 (100 W/200 W)



Frame Size 18 (400 W/750 W)



1-3. Low Temperature Startup Characteristics



Motor Matching /
Motor Power Design List

APG/AG3 Type
Parallel Shaft

AH2 Type
Right Angle Shaft

AFC Type
Right Angle Hollow Bore/
Right Angle Shaft

AF3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

MEMO

Motor Matching / Motor Power Design List	APG/AG3 Type Parallel Shaft	AH2 Type Right Angle Shaft	AFC Type Right Angle Hollow Bore/ Right Angle Shaft	AF3 Type Concentric Right Angle Hollow Bore/ Concentric Right Angle Shaft	Technical Documentation
---	--------------------------------	-------------------------------	--	---	-------------------------