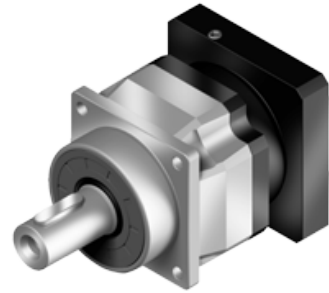


AF series

Overview



- Special design for continuous (S1) or cyclic (S5) duty operation
- Stainless steel housing, aluminum black anodized motor adapter flange
- Stainless steel output shaft with or without key
- Helical gear design
- Nominal torques:
 - T_{2N} : 14 Nm – 2000 Nm
- Ratios
 - 1-stage : 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10
 - 2-stage : 15 / 20 / 25 / 30 / 35 / 40 / 45 / 50 / 60 / 70 / 80 / 90 / 100
- Low backlash
 - 1-stage : ≤ 1 arcmin / ≤ 3 arcmin / ≤ 5 arcmin
 - 2-stage : ≤ 3 arcmin / ≤ 5 arcmin / ≤ 7 arcmin
- High efficiency
 - 1-stage : $\geq 97\%$
 - 2-stage : $\geq 94\%$
- Easy mount
- Low noise
- Compact structure
- Sizes available: AF042 / AF060 / AF060 / AF075 / AF075 / AF100 / AF140 / AF180 / AF220

Specifications

Model No.		Stage	Ratio ¹	AF042	AF060	AF060A	AF075	AF075A	AF100	AF140	AF180	AF220	
Nominal Output Torque T_{2N}	Nm	1	3	20	55	-	130	-	208	342	588	1,140	
			4	19	50	-	140	-	290	542	1,050	1,700	
			5	22	60	-	160	-	330	650	1,200	2,000	
			6	20	55	-	150	-	310	600	1,100	1,900	
			7	19	50	-	140	-	300	550	1,100	1,800	
			8	17	45	-	120	-	260	500	1,000	1,600	
			9	14	40	-	100	-	230	450	900	1,500	
			10	14	40	-	100	-	230	450	900	1,500	
			2	15	20	55	55	130	130	208	342	588	1,140
				20	19	50	50	140	140	290	542	1,050	1,700
		25		22	60	60	160	160	330	650	1,200	2,000	
		30		20	55	55	150	150	310	600	1,100	1,900	
		35		19	50	50	140	140	300	550	1,100	1,800	
		40		17	45	45	120	120	260	500	1,000	1,600	
		45		14	40	40	100	100	230	450	900	1,500	
		50		22	60	60	160	160	330	650	1,200	2,000	
		60		20	55	55	150	150	310	600	1,100	1,900	
		70		19	50	50	140	140	300	550	1,100	1,800	
		80	17	45	45	120	120	260	500	1,000	1,600		
		90	14	40	40	100	100	230	450	900	1,500		
100	14	40	40	100	100	230	450	900	1,500				
Emergency Stop Torque T_{2NOT-3}	Nm	1,2	3~100	3 times of nominal output torque T_{2N}									
Nominal Input Speed N_{1N}	rpm	1,2	3~100	5,000	5,000	5,000	4,000	4,000	4,000	3,000	3,000	2,000	
Max. Input Speed N_{1B}	rpm	1,2	3~100	10,000	10,000	10,000	8,000	8,000	8,000	6,000	6,000	4,000	
Micro Backlash P0	arcmin	1	3~10	-	-	-	≤1	≤1	≤1	≤1	≤1	≤1	
		2	15~100	-	-	-	-	-	≤3	≤3	≤3	≤3	
Reduced Backlash P1	arcmin	1	3~10	≤3	≤3	≤3	≤3	≤3	≤3	≤3	≤3	≤3	
		2	15~100	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5	
Standard Backlash P2	arcmin	1	3~10	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5	
		2	15~100	≤7	≤7	≤7	≤7	≤7	≤7	≤7	≤7	≤7	
Torsional Rigidity	Nm/arcmin	1,2	3~100	3	7	7	14	14	25	50	145	225	
Max. Radial load F_{2rB-2}	N	1,2	3~100	610	1,400	1,400	4,100	4,100	9,200	14,000	18,000	33,000	
Max. Axial load	F_{2a1B-2}	N	1,2	3~100	302	1,000	1,000	3,300	3,300	5,220	10,800	13,000	
	F_{2a2B-2}	N	1,2	3~100	320	1,100	1,100	3,700	3,700	5,800	11,400	19,500	
Service Life	hr	1,2	3~100	30,000 *									
Efficiency	%	1	3~10	≥ 97 %									
		2	15~100	≥ 94 %									
Weight	kg	1	3~10	0.6	1.3	-	3.7	-	6.9	13.7	28	48	
		2	15~100	0.8	1.5	2	4.1	5.5	8.1	16.6	33	60	
Operation Temperature	°C	1,2	3~100	-10°C~+90°C									
Lubrication		1,2	3~100	synthetic gear grease (NYOGEL 792D)									
Degree of Gearbox Protection		1,2	3~100	IP65									
Mounting Position		1,2	3~100	all directions									
Noise Level ($n_1=3000$ rpm, No Load)	dB(A)	1,2	3~100	≤ 56	≤ 58	≤ 60	≤ 60	≤ 63	≤ 63	≤ 65	≤ 67	≤ 70	

1. Ratio ($i=N$ in / N out)

2. Applied to the output shaft center @ 100 rpm

3. Maximum acceleration torque $T_{2B} = 60\%$ van T_{2NOT}

* S1 service life 15,000 hrs.

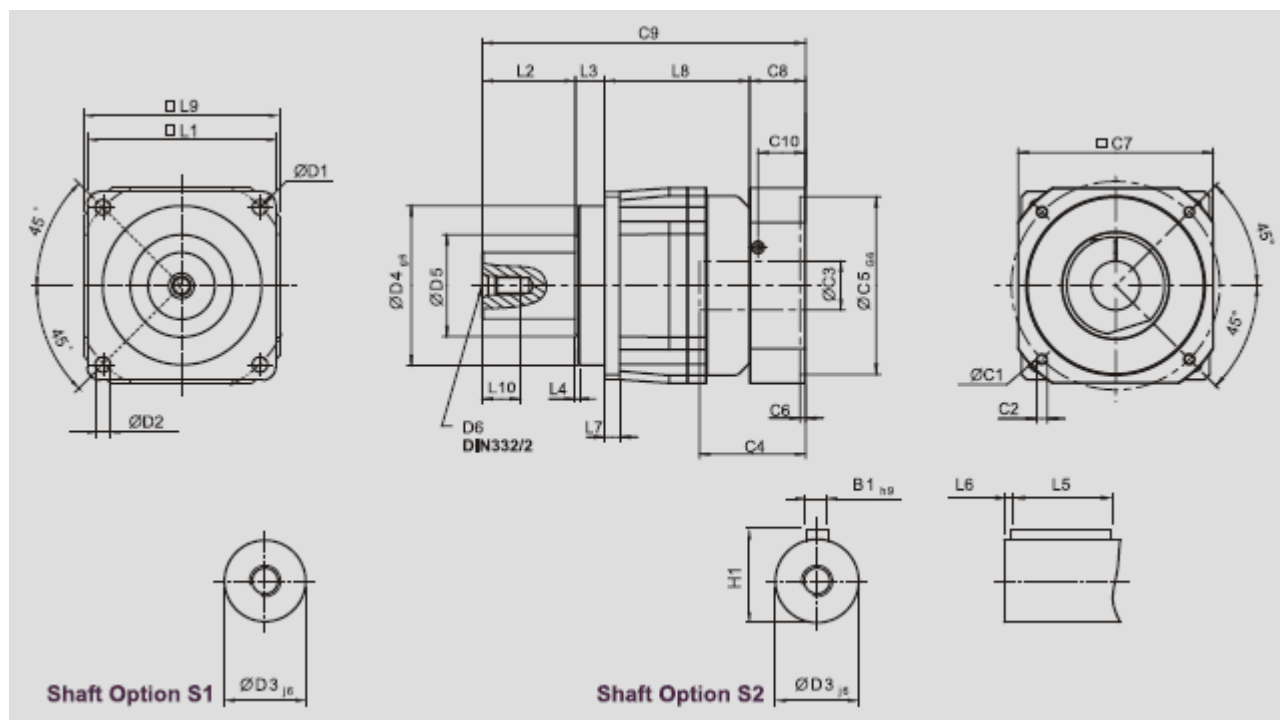
Inertia

Model No.	Stage	Ratio ¹	AF042	AF060	AF060A	AF075	AF075A	AF100	AF140	AF180	AF220
Mass Moment of inertia J _i	1	3	0.03	0.16	-	0.61	-	3.25	9.21	28.98	69.61
		4	0.03	0.14	-	0.48	-	2.74	7.54	23.67	54.37
		5	0.03	0.13	-	0.47	-	2.71	7.42	23.29	53.27
		6	0.03	0.13	-	0.45	-	2.65	7.25	22.75	51.72
		7	0.03	0.13	-	0.45	-	2.62	7.14	22.48	50.97
		8	0.03	0.13	-	0.44	-	2.58	7.07	22.59	50.84
		9	0.03	0.13	-	0.44	-	2.57	7.04	22.53	50.63
		10	0.03	0.13	-	0.44	-	2.57	7.03	22.51	50.56
		15	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
		20	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
	2	25	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
		30	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
		35	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
		40	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
		45	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
		50	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51
		60	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51
		70	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51
		80	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51
		90	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51
100	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51		

kg*cm²

Sizes

AF series 1-stage, ratio $i = 3 \sim 10$



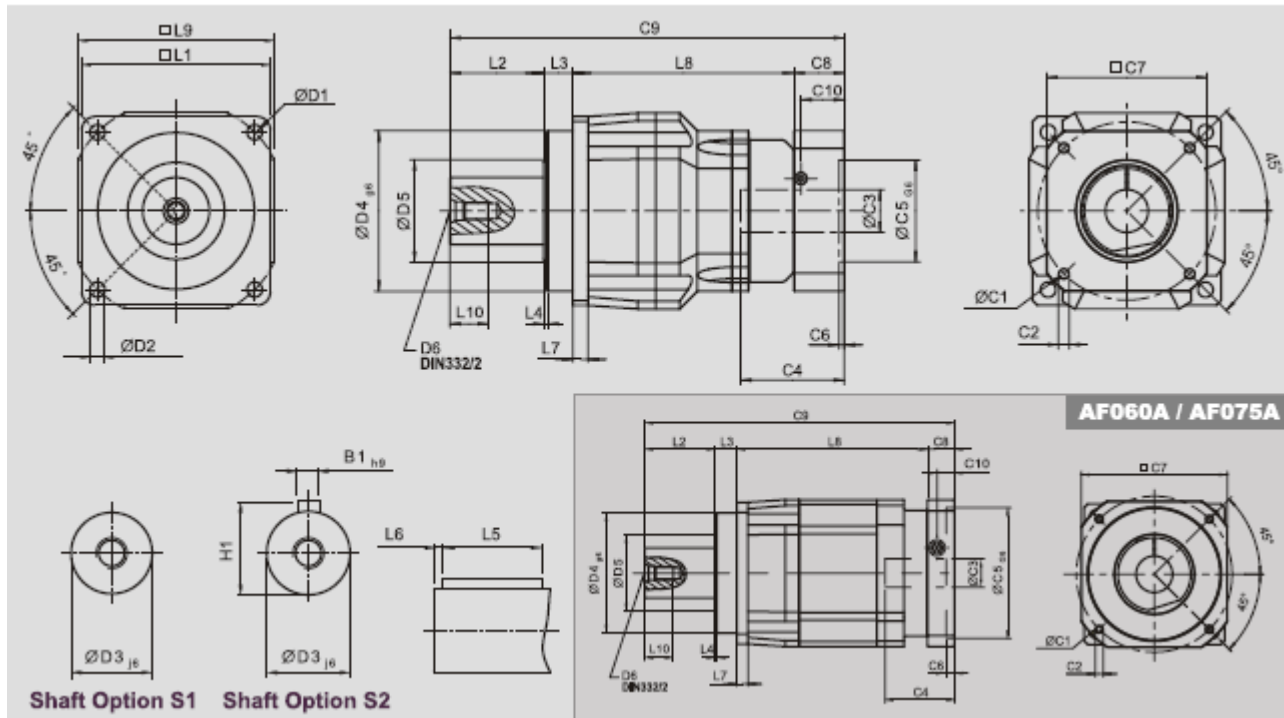
	AF042	AF060	AF075	AF100	AF140	AF180	AF220
D1	50	68	85	120	165	215	250
D2	3.4	5.5	6.8	9	11	13	17
D3 _{j6}	13	16	22	32	40	55	75
D4 _{g6}	35	60	70	90	130	160	180
D5	22	45	60	80	75	95	115
D6	M4 X 0.7P	M5 X 0.8P	M8 X 1.25P	M12X1.75P	M16 X 2P	M20 X 2.5P	M20 X 2.5P
L1	42	62	76	105	142	180	220
L2	19.5	28.5	36	58	82	82	105
L3	6.5	20	20	30	30	30	33
L4	1	1.5	2	2	3	3	3
L5	16	25	32	40	63	70	90
L6	2	2	3	5	5	6	7
L7	4	6	7	10	12	15	20
L8	31	54.5	86.5	89.5	110	150	163.5
L9	42	60	90	115	142	180	220
L10	10	12.5	19	28	36	42	42
C1 ³	46	70	100	130	165	215	235
C2 ³	M4 X 0.7P	M5 X 0.8P	M6 X 1P	M8 X 1.25P	M10 X 1.5P	M12 X 1.75P	M12 X 1.75P
C3 ³	≤11	*≤14 / ≤16	≤19 / ≤24	≤32	≤38	≤48	≤55
C4 ³	25	34	40	50	60	85	116
C5 ³ _{G6}	30	50	80	110	130	180	200
C6 ³	3.5	8	4	5	6	6	6
C7 ³	42	60	90	115	142	190	220
C8 ³	29.5	19	17	19.5	22.5	29	63
C9 ³	86.5	122	159.5	197	244.5	291	364.5
C10 ³	8.75	13.5	10.75	13	15	20.75	53
B1 _{h9}	5	5	6	10	12	16	20
H1	15	18	24.5	35	43	59	79.5

3. C1~C10 are motor specific dimensions.

* AF060M1 ratio 5,10 offers C3 ≤16 optone.

* AF075M1 offers C3 ≤24 option.

AF series 2-stage ratio $i = 15 \sim 100$



	AF042	AF060	AF060A	AF075	AF075A	AF100	AF140	AF180	AF220
D1	50	68		85		120	165	215	250
D2	3.4	5.5		6.8		9	11	13	17
D3 _{j6}	13	16		22		32	40	55	75
D4 _{g6}	35	60		70		90	130	160	180
D5	22	45		60		80	75	95	115
D6	M4 X 0.7P	M5 X 0.8P		M8 X 1.25P		M12 X 1.75P	M16 X 2P	M20 X 2.5P	M20 X 2.5P
L1	42	62		76		105	142	180	220
L2	19.5	28.5		36		58	82	82	105
L3	6.5	20		20		30	30	30	33
L4	1	1.5		2		2	3	3	3
L5	16	25		32		40	63	70	90
L6	2	2		3		5	5	6	7
L7	4	6		7		10	12	15	20
L8	58.5	65.5		93.5		100.5	125.5	157.5	178.5
L9	42	60		90		115	142	180	220
L10	10	12.5		19		28	36	42	42
C1 ⁴	46	46	91.5	119.5	134.5	131	166.5	205.5	248
C2 ⁴	M4 X 0.7P	M4 X 0.7P	M5 X 0.8P	M5 X 0.8P	M6 X 1P	M6 X 1P	M8 X 1.25P	M10 X 1.5P	M12 X 1.75P
C3 ⁴	≤11	*≤11 / ≤12	*≤14 / ≤16	*≤14 / ≤15.875 / ≤16	≤19 / ≤24	≤19 / ≤24	≤32	≤38	≤48
C4 ⁴	25	25	34	34	40	40	50	60	85
C5 ⁴ _{G6}	30	30	50	50	80	80	110	130	180
C6 ⁴	3.5	3.5	8	8	4	4	5	6	6
C7 ⁴	42	42	60	60	90	90	115	142	190
C8 ⁴	29.5	29.5	19	19	17	17	19.5	22.5	29
C9 ⁴	114	143.5	159	194.5	207.5	236	298	340	415

C10 ⁴	8.75	8.75	13.5	13.5	10.75	10.75	13	15	20.75
B1 _{h9}	5	5		6		10	12	16	20
H1	15	18		24.5		35	43	59	79.5

4. C1~C10 are motor specific dimensions.

* AF060M1 ratio 15~50 offers C3 ≤12 option.

* AF060AM1 offers C3 ≤16 option.

* AF075M1 ratio 15~50 offers C3 ≤16 option.

* AF075M2 ratio 15~50 offers C3 ≤15.875 option.

* AF075AM1 offers C3 ≤24 option.

* AF100M1 offers C3 ≤24 option.