

AFH series

Overview



- High torque gearbox
- Special design for continuous (S1) or cyclic (S5) duty operation
- Steel housing/aluminum, aluminum black anodized motor adapter flange
- Steel output shaft with or without key, with spline (DIN5480) or hollow shaft
- Helical gear design
- Nominal torques:
 - T_{2N} : 24 Nm – 3.805 Nm
- Ratios
 - 1-stage : 3 / 4 / 5 / 7 / 10
 - 2-stage : 16 / 20 / 25 / 28 / 35 / 40 / 50 / 70 / 100
- Low backlash
 - 1-stage : ≤ 1 arcmin / ≤ 2 arcmin
 - 2-stage : ≤ 2 arcmin / ≤ 3 arcmin
- High efficiency
 - 1-stage : $\geq 97\%$
 - 2-stage : $\geq 94\%$
- Easy mount
- Low noise
- Compact structure
- Sizes available: AFH060 / AFH075 / AFH100 / AFH140 / AFH180 / AFH210 / AFH240

Specifications

Model No.	Stage	Ratio ¹	AFH060	AFH075	AFH100	AFH140	AFH180	AFH210	AFH240	
Nominal Output Torque T_{2N}	1	3	85	150	415	630	1,485	2,255	4,090	
		4	95	195	350	600	1,290	1,960	3,715	
		5	80	165	305	525	1,145	1,745	3,285	
		7	60	130	250	435	980	1,495	2,525	
		10	24	55	160	305	700	1,070	1,810	
	2	16	95	195	360	615	1,320	2,000	3,785	
		20	95	200	360	615	1,320	2,000	3,800	
		25	80	165	310	535	1,165	1,770	3,330	
		28	60	200	360	615	1,325	2,000	3,800	
		35	70	170	310	535	1,165	1,775	3,335	
		40	40	96	220	615	1,215	2,000	3,805	
		50	50	120	275	535	1,170	1,775	3,340	
		70	60	130	250	440	990	1,510	2,550	
		100	24	55	160	295	660	1,005	1,700	
Emergency Stop Torque T_{2Not}	Nm	1,2	3~100			3 times T_{2N}				
Max. Acceleration Torque T_{2b}	Nm	1,2	3~100			1.5 times T_{2N}				
No Load Running Torque ⁽²⁾	NM	1	3~10	0.3	0.6	1.4	2.5	5	7	11
		2	16~100	0.2	0.3	0.5	1.2	1.7	3	4
Backlash ⁽³⁾	arcmin	1	3~10	≤2	≤1	≤1	≤1	≤1	≤1	≤1
		2	16~100	≤3	≤2	≤2	≤2	≤2	≤2	≤2
Torsional Rigidity	Nm/arcmin	1,2	3~100	4.6	10	30	55	175	400	550
Nominal Input Speed n_{1N}	rpm	1	3~10	5,000	3,600	3,600	3,000	2,700	2,400	2,100
		2	16~100	5,000	4,600	4,600	4,000	3,700	3,400	3,100
Max. Input Speed	rpm	1	3~10	7,000	6,000	6,000	5,000	4,500	4,000	3,500
		2	16~100	7,000	7,000	7,000	6,000	5,500	5,000	4,500
Max. Radial Load F_{2r} ⁽⁴⁾	N	1,2	3~100	3,000	4,500	6,700	10,000	15,000	22,000	30,000
Max. Axial Load F_{2a} ⁽⁴⁾	N	1,2	3~100	1,500	2,250	3,350	5,000	7,500	11,000	15,000
Max. Tilting Moment M_{2k} ⁽⁴⁾	Nm	1,2	3~100	160	270	550	1,050	1,740	3,350	5,420
Service Life ⁽⁵⁾	hr	1,2	3~100			20,000				
Operating Temp.	°C	1,2	3~100			-10° C ~ 90° C				
Degree of Gearbox Protection		1,2	3~100			IP65				
Lubrication		1,2	3~100			Synthetic lubrication grease				
Mounting Position		1,2	3~100			All directions				

Running Noise ⁽⁶⁾	dB(A)	1	3~10	≤58	≤59	≤64	≤65	≤66	≤66	≤66
		2	16~100	≤58	≤59	≤60	≤63	≤66	≤66	≤66
Efficiency	%	1	3~10	≥97%						
		2	16~100	≥94%						

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

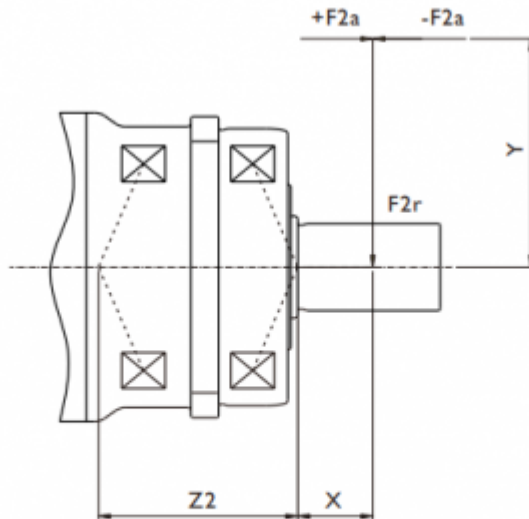
(2) These values are measured by gearbox with ratio 10 (1-stage) or ratio 100 (2-stage) at 3,000 rpm no loading.

(3) Backlash is measured at 2% of Nominal Output Torque T_{2N}

(4) Applied to the output shaft center at 100 rpm.

(5) Continuous operation is not recommended.

(6) These values are measured by gearbox with ratio 10 (1-stage) or ratio 100 (2-stage) at 3,000 rpm no loading. By lower ratio and/or higher RPM, the noise level could be 3 to 5 dB higher.



$$\text{Max. Tilting Moment } M_{\text{sk}} = \frac{F2a \cdot Y + F2r \cdot (X + Z2)}{1000}$$

M_{sk} : [Nm]
 $F2a, F2r$: [N]
 $X, Y, Z2$: [mm]

AFH / AFHK	060	075	100	140	180	210	240
Z2 [mm]	41,3	50,1	58,9	72,7	93,7	98,5	112,2

Applied to the output shaft center at 100 rpm.

Inertia

Model No.		AFH060		AFH075		AFH100		AFH140		AFH180		AFH210		AFH240	
Ø ^(A)	Stage	1	2	1	2	1	2	1	2	1	2	1	2	1	2
8		-	0.10	-	-	-	-	-	-	-	-	-	-	-	-
11		0.21	0.16	-	0.17	-	-	-	-	-	-	-	-	-	-
14		0.24	0.20	0.54	0.21	-	0.42	-	-	-	-	-	-	-	-
19		0.64	-	0.79	0.60	2.51	0.66	-	1.83	-	-	-	-	-	-
24		-	-	4.06	-	4.78	3.94	6.85	4.11	-	4.61	-	-	-	-
28		-	-	-	-	6.15	-	8.38	5.48	-	6.14	-	-	-	-
32	kg.cm ²	-	-	-	-	8.03	-	10.41	7.36	19.50	8.17	-	10.55	-	-
35		-	-	-	-	14.72	-	15.56	14.04	26.71	15.54	39.60	17.75	86.48	20.80
38		-	-	-	-	17.38	-	20.43	16.71	29.11	18.19	42.43	20.17	86.48	23.66
42		-	-	-	-	-	-	25.44	-	34.35	23.20	47.65	25.4	92.61	28.88
48		-	-	-	-	-	-	54.66	-	64.13	52.42	77.41	55.18	122.26	58.64
55		-	-	-	-	-	-	-	-	-	-	111.26	-	156.7	92.48
60		-	-	-	-	-	-	-	-	-	-	-	-	180.17	-

(A) Ø = Input shaft diameter.

(1) Dimensions are related to motor interface. Please contact APEX for details.