

# KF-S1 series

## Overview

- Black coated steel housing, aluminum output and motor adapter flange
- Steel output shaft, smooth
- Hypoid gear design
- Nominal torques:
  - $T_{2N}$  : 18 Nm – 1.600 Nm
- Ratios
  - 1-stage : 3 / 4 / 5 / 7 / 10
  - 2-stage : 12 / 16 / 20 / 25 / 28 / 35 / 40 / 50 / 70 / 100
- Low backlash
  - 1-stage :  $\leq 3$  arcmin
  - 2-stage :  $\leq 3$  arcmin
- High efficiency
  - 1-stage :  $\geq 96\%$
  - 2-stage :  $\geq 94\%$
- Easy mount
- High accuracy
- The output shaft rotates in the same direction as the servomotor
- Available sizes: KF060 / KF075 / KF100 / KF140 / KF180 / KF210 / KF240



# Specifications

KF		Stage	Ratio <sup>(1)</sup>	KF 060	KF 075	KF 100	KF 140	KF 180	KF 210	KF 240
Nominal output torque $T_{2N}$	Nm	1	3	25	50	110	210	420	820	1.600
			4	25	60	110	210	420	820	1.600
			5	25	60	110	210	420	820	1.600
			7	23	50	100	200	390	750	1.400
			10	18	40	85	170	360	600	1.100
		2	12	25	60	110	210	420	820	1.600
			16	25	60	110	210	420	820	1.600
			20	25	60	110	210	420	820	1.600
			25	25	60	110	210	420	820	1.600
			28	25	60	110	210	420	820	1.600
			35	25	60	110	210	420	820	1.600
			40	25	60	110	210	420	820	1.600
			50	25	60	110	210	420	820	1.600
			70	23	50	100	200	390	750	1.400
100	18	40	85	170	360	600	1.100			
Emergency stop torque $T_{2NOT}$	Nm	1	3~10	2 times of nominal torque $T_{2N}$						
Max. Acceleration torque $T_{2B}$	Nm	1	3~10	1,5 times of nominal torque $T_{2N}$						
No load running torque <sup>(4)</sup>	Nm	1	3~10	0.8	1.3	2.6	3.5	8	11	17.6
		2	12~100	0.1	0.1	0.2	0.3	0.9	1.2	1.9
Backlash <sup>(2)</sup>	arcmin	1	3~10	≤3	≤3	≤3	≤3	≤3	≤3	≤3
		2	12~200	≤3	≤3	≤3	≤3	≤3	≤3	≤3
Torsional rigidity	Nm/arcmin	1,2	3~100	0.8	3.5	9	20.5	44	80	168
Nominal input speed $n_{1N}$	rpm	1	3~10	3,000	2,800	2,700	2,000	2,000	2,000	1,500
		2	12~100	5,500	4,500	4,200	3,900	3,400	2,800	2,200
Max. input speed $n_{1B}$	rpm	1	3~10	6,000	6,000	4,500	4,500	4,000	3,000	2,500
		2	12~100	7,000	7,000	7,000	6,000	5,500	5,000	4,500
Max. radial load $F_{2rB}$ <sup>(3)</sup>	N	1,2	3~100	5,700	8,200	12,200	20,100	30,700	40,900	51,900

Max. axial load $F_{2aB}^{(3)}$	N	1,2	3~100	2,850	4,100	6,100	10,050	15,350	20,450	20,950
Service Life <sup>(5)</sup>	hr	1,2	3~100				20.000			
Operating temperature	°C	1,2	3~100				0° C ~ +90°C			
Degree of Protection		1,2	3~100				IP65			
Lubrication		1,2	3~100				Synthetisch lubrication grease			
Mounting position		1,2	3~100				All directions			
Running noise <sup>(4)</sup>	dB (A)	1,2	3~100	≤64	≤66	≤66	≤68	≤68	≤70	≤72
Efficiency $\eta$	%	1	3~10				≥96%			
		2	12~100				≥94%			

(1) Ratio ( $i = N_{in} / N_{out}$ )

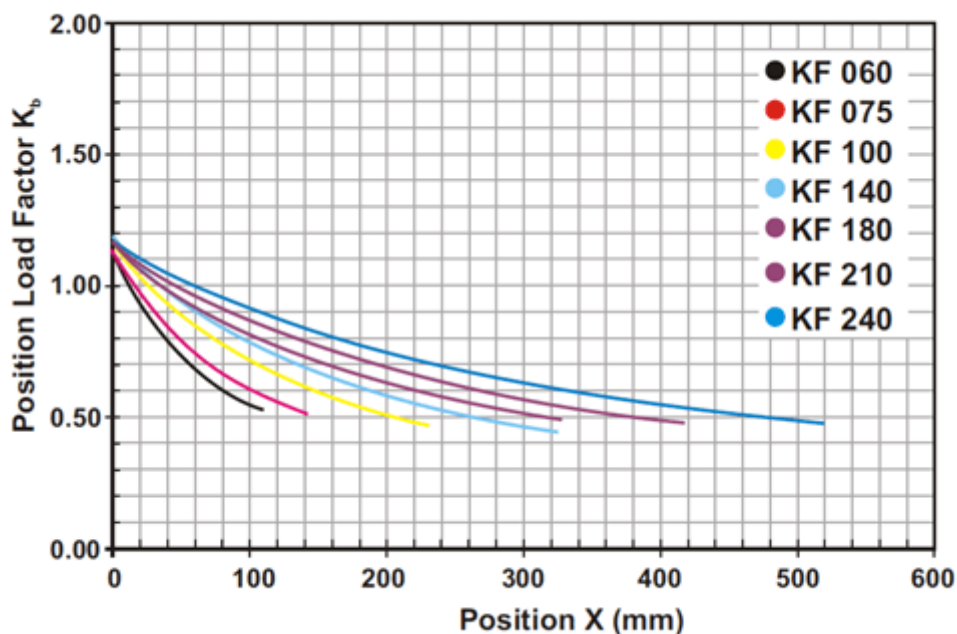
(2) Backlash is measured at 2% of Nominal output torque  $T_{2N}$ .

(3) Applied to the output shaft center @ 100 rpm .

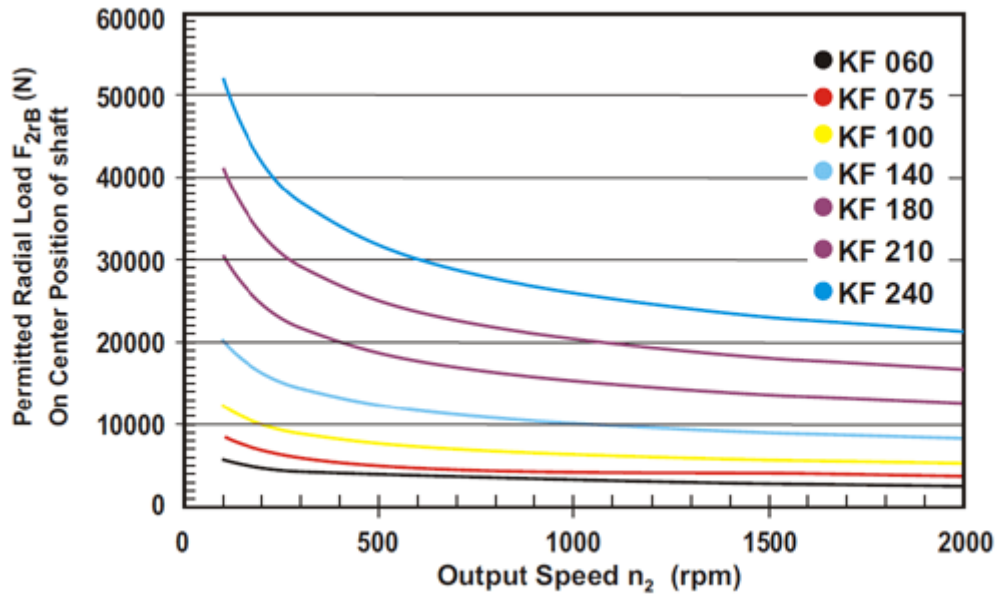
(4) These values are measured by gearbox with ratio = 10 (1-stage) or ratio = 100 (2-stage) at 3.000 rpm without load.

(5) For continuous operation, the service life is less than 10,000 hrs.

## Permitted Radial And Axial Loads



If radial force  $F_{2r}$  is not exerted on the center of the output shaft  $X < \frac{1}{2} \times L$  or  $X > \frac{1}{2} \times L$ , the permitted radial and axial loads can be calculated by the position load factor  $K_b$  on the above diagram.



Permitted radial load  $F_{2r}$  on center of output shaft  $X = \frac{1}{2} \times L$  for various output speeds. Values provided are for 20,000 hours life.

- (A)  $\varnothing$  Input shaft diameter
- (B) Permitted loading values on the output shaft. Please contact Apex Dynamics for more details.
- (C) For continue mode (S1), the service life is reduced to 50%.

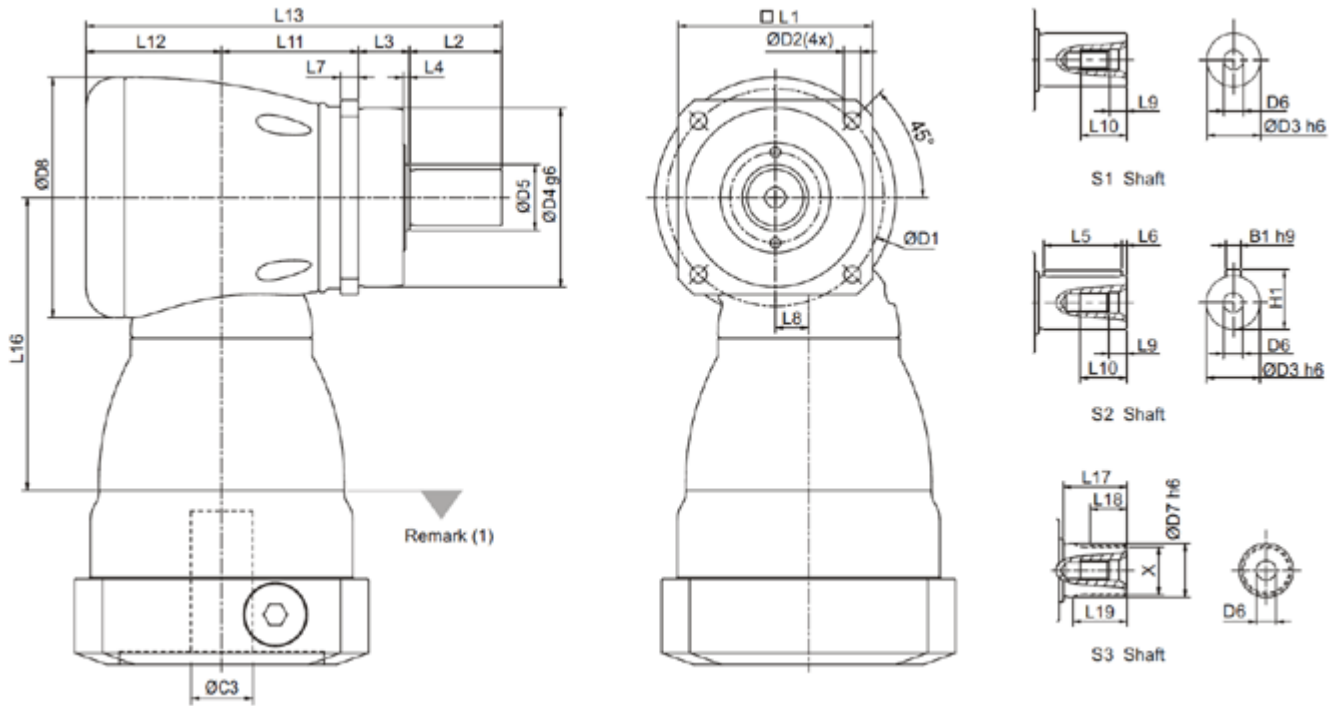
# Inertia

Model No.	KF 060		KF 075		KF 100		KF 140		KF 180		KF 210		KF 240		
	1-stage	2-stage	1-stage	2-stage	1-stage	2-stage	1-stage	2-stage	1-stage	2-stage	1-stage	2-stage	1-stage	2-stage	
Ø <sup>(A)</sup> (C3)															
8	0.10	0.10	-	-	-	-	-	-	-	-	-	-	-	-	
11	0.17	0.16	0.18	0.17	-	-	-	-	-	-	-	-	-	-	
14	0.21	0.2	0.50	0.21	-	0.53	-	-	-	-	-	-	-	-	
19	0.62	-	0.63	0.63	1.69	0.68	-	1.83	-	-	-	-	-	-	
24	-	-	4.49	-	4.89	4.52	5.05	5.04	-	5.63	-	-	-	-	
28	-	-	-	-	6.14	-	6.55	6.33	-	7.18	-	-	-	-	
32	-	-	-	-	8.54	-	9.47	8.73	10.18	10.1	-	12.63	-	-	
35	kg*cm <sup>2</sup>	-	-	-	-	13.86	-	14.91	14.04	15.21	15.54	15.68	17.75	23.46	20.80
38		-	-	-	-	18.87	-	20.69	19.05	20.7	21.32	21.69	23.26	23.46	27.05
42		-	-	-	-	-	-	22.58	-	22.83	23.2	23.59	25.40	25.28	28.95
48		-	-	-	-	-	-	55.45	-	58.45	56.07	25.40	61.02	61.61	64.66
55		-	-	-	-	-	-	-	-	-	-	61.02	-	89.67	-
60		-	-	-	-	-	-	-	-	-	-	-	-	112.49	-

(A) Ø Input shaft diameter

# Sizes

KF-S1 / S2 / S3:



	KF 060	KF 075	KF 100	KF 140	KF 180	KF 210	KF 240
	1~2-stage	1~2-stage	1~2-stage	1~2-stage	1~2-stage	1~2-stage	1~2-stage
D1	68	85	120	165	215	250	290
D2	5,5	6,6	9	11	13,5	17	17
D3 h6	16	22	32	40	55	75	85
D4 g6	60	70	90	130	160	180	200
D5	18,5	25,8	36,8	55,2	69,2	82,2	92,2
D6	M5x0,8P	M8x1,25P	M12x1,75P	M16x2P	M20x2,5P	M20x2,5P	M20x2,5P
D7 h6	16	22	32	40	55	75	85
D8	73	94	116	163	210	255	300
L1	62	76	101	141	182	215	245
L2	28	36	58	82	82	105	130
L3	20	20	30	30	30	38	40
L4	2	2,5	3	3	3	3	3
L5	25	32	50	63	70	90	125
L6	2	2	4	5	6	7	3
L7	6	7	10	12	15	17	20
L8	10	13	17	25	31	36	43
L9	4,8	7,2	10	12	15	15	15
L10	12,5	19	28	36	42	42	42
L11	43	53,5	67	90	119	141	176
L12	44,5	53	68,3	89	115	131	165

L13	135,5	162,5	223,3	291	346	415	511
L16	94	114,5	129	173,5	228	265,5	294,5
L17	26	26	26	40	41,5	52	60
L18	15	15	15	20	21,5	28	36
L19	21	22,5	23	33,5	33,5	45	53
B1 h9	5	6	10	12	16	20	22
H1	18	24,5	35	43	59	79,5	90

X  
DIN 5480

W16x0,8x30x18x6mW22x1,25x30x16x6mW32x1,25x30x24x6mW40x2x30x18x6mW55x2x30x26x6mW70x2x30x34x6mW80x2x30x38x6m

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