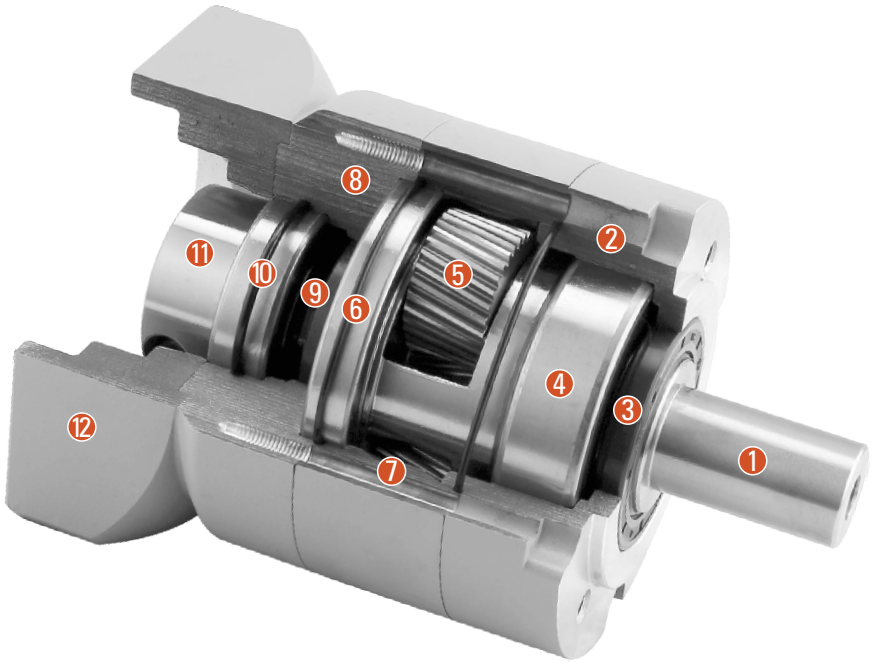
SAE/SAF SERIES GEAR BOX

Sectional drawing



① Output shaft
② Front cover
③ Oil seal
④ Output shaft front bearing
⑤ Planetary gear
⑥ Output shaft rear bearing
⑦ Inner ring gear
⑧ Rear cover
⑨ Solar wheel
⑩ Coupling bearing
⑪ Coupling
⑫ Flange

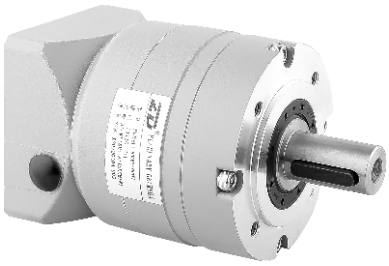
Type and model number

SAE/F Reducers						Servo motor	
60	SAE/F	10	( )	(S)	-	400	T1
①	②	③	④	⑤		⑥	⑦

①	Gear head frame size: 060			
②	Gear head series code: SAE: Round mounting flange series SAF: Square mounting flange series			
③	Gear ratio: Single stage 10			
④	Accuracy Output shaft load value at ±3% of allowable output torque	Frame	Stage	Standard (Omitted)
		60SAE/F	1	7
			2	10
		90SAE/F	1	7
			2	10
		120SAE/F	1	7
			2	10
		160SAE/F	1	7
			2	10
⑤	Input shaft type S: Overall locking (Omitted) (Can be used regardless of whether the motor has a keyway) S1: Locking with locking ring (Can be used regardless of whether the motor has a keyway) S2: Lock with keyway (Input shaft with key) K: With keyway A: Other adapters (Please contact us)			
⑥	Applicable servo motor power (W)			
⑦	Corresponding dimension table of input flange and servo motor ( )			

SAE/SAF PLANETARY GEAR BOX

Product diagram



Technical information

Product type		60	90	120	160	Reduction ratio	Stage
Rated output torque	N.M	31	85	144	342	3	1
		50	95	200	542	4	
		41	105	220	650	5	
		30	93	200	550	7	
		23	83	180	500	8	
		18	70	155	450	10	
		31	115	209	-	12	2
		31	115	209	342	15	
		50	130	275	-	16	
		50	130	275	542	20	
		41	135	280	650	25	
		50	120	260	-	32	
		41	125	265	550	35	
		41	115	245	500	40	
		41	135	280	650	50	
		23	83	180	-	64	
		23	83	180	500	80	
		18	73	165	450	100	
Life	Hour	20000					
Instant emergency stop torque	N.M	2 times rated output torque					

Product type	60	90	120	160	Unit	Stage
Radial force	750	2100	2520	7000	N	-
Axial force	375	1050	1260	5000	N	-
Full load efficiency	≥97				%	1
	≥94					2
Weight	0.9	2.5	6.5	18	Kg	1
	1.2	3.0	7.2	20		2
Operating temperature	-10～+90				℃	-
Protection level	IP65					
Lubrication method	Lifetime lubrication					
Installation method	Any					

Maximum radial force and maximum axial force, when the output is 100RPM, it acts on the center position (L/2) of the output shaft.

SAE/SAF PLANETARY GEAR BOX

Technical information

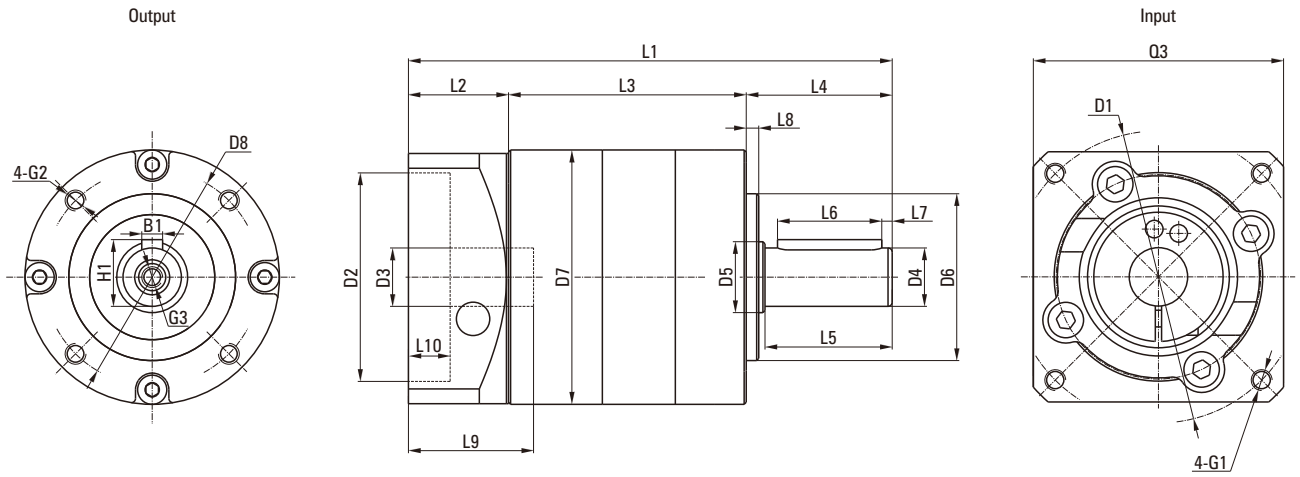
Product type		60	90	120	160	Reduction ratio	Stage
Moment of inertia	$Kgcm^2$	0.15	0.69	2.94	9.21	3	1
		0.12	0.50	2.27	7.54	4	
		0.10	0.46	2.10	7.42	5	
		0.10	0.42	2.00	7.14	7	
		0.10	0.42	2.00	7.07	8	
		0.09	0.39	1.90	7.03	10	
		0.06	0.32	1.50	-	12	2
		0.05	0.29	1.13	2.71	15	
		0.06	0.32	1.11	-	16	
		0.05	0.29	0.99	2.71	20	
		0.05	0.29	0.98	2.71	25	
		0.05	0.26	0.89	-	32	
		0.05	0.26	0.89	2.71	35	
		0.05	0.26	0.89	2.71	40	
		0.05	0.26	0.89	2.57	50	
		0.05	0.26	0.89	-	64	
		0.05	0.26	0.89	2.57	80	
		0.05	0.26	0.89	2.57	100	

Product type		60	90	120	160	Stage
Backlash	arcmin	≤7	≤7	≤7	≤7	1
		≤10	≤10	≤10	≤10	2
Torsion resistance	N.M/arcmin	1.8	4.5	12	38	-
Noise	dB(A)	63				-
Output speed	min^{-1}	4500	4500	4500	4500	-
Recommended input speed	min^{-1}	3000	3000	3000	3000	-

1. Moment of inertia is related to input shaft.
2. Noise detection standard, distance 1m, measured at input speed of 3000 rpm with no load.

SAE PLANETARY GEAR BOX-MECHANICAL PARAMETER

Dimensional drawing



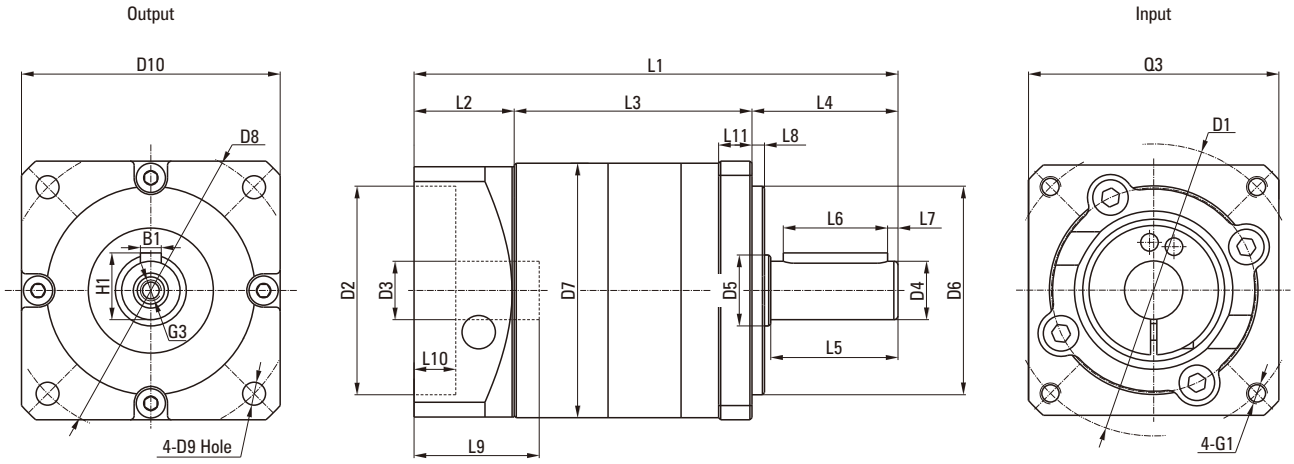
Dimensional table

Unit: mm

Product type	60SAE		90SAE		120SAE		160SAE	
Number of stage	1	2	1	2	1	2	1	2
L1 overall length	116	126	151	165.5	196	207	284.5	328.5
L3 body length	57	67	77.3	91.8	93	104	131.5	175.5
Output								
L4 output shaft length	35		40		55		87	
L5 output length to the shaft shoulder	30.5		36		50		80	
L6 key length	25		28		40		70	
L7 key length to shaft end	2.5		4		5		5	
L8 spigot diameter	3		3		4		5	
D4 output shaft diameter	Φ14h7		Φ20h7		Φ25h7		Φ40h7	
D5 shaft shoulder diameter	Φ20		Φ30		Φ40		Φ55	
D6 spigot diameter	Φ40h7		Φ60h7		Φ80h7		Φ130h7	
D7 body diameter	Φ61		Φ90		Φ115		Φ160	
D8 hole circle	Φ52		Φ70		Φ100		Φ145	
B1 key width	5		6		8		12	
H1 key height	16		22.5		28		43	
G2 mounting screw hole	M5X10		M6X12		M10X16		M12X20	
G3 center screw hole	M5X15		M6X18		M10X22		M12X25	
Input								
L2 input flange length	24		33.7		48		66	
L9 motor shaft length	30		40		58		79	
L10 spigot depth	10		10		10		10	
D1 mounting hole distribution circle	Φ70		Φ90		Φ145		Φ200	
D2 spigot diameter	Φ50G7		Φ70G7		Φ110G7		Φ114.3G7	
D3 input shaft diameter	≤14G7		≤19G7		≤24G7		≤35G7	
G1 mounting threads X depth	M4X10		M5X12		M8X21		M12X25	
Q3 input flange	□60		□80		□130		□175	

SAF PLANETARY GEAR BOX-MECHANICAL PARAMETER

Dimensional drawing



Dimensional table

Unit: mm

Product type	60SAF		90SAF		120SAF		160SAF	
Number of stage	1	2	1	2	1	2	1	2
L1 overall length	116	126	151	165.5	196	207	284.5	328.5
L3 body length	57	67	77.3	91.8	93	104	131.5	175.5
Output								
L4 output shaft length	35		40		55		87	
L5 output length to the shaft shoulder	30.5		36		50		80	
L6 key length	25		28		40		70	
L7 key length to shaft end	2.5		4		5		5	
L8 spigot diameter	3		3		4		5	
L11 output flange thickness	8		10		16		15	
D4 output shaft diameter	Φ14h7		Φ20h7		Φ25h7		Φ40h7	
D5 shaft shoulder diameter	Φ20		Φ30		Φ40		Φ55	
D6 spigot diameter	Φ50h7		Φ80h7		Φ110h7		Φ130h7	
D7 body diameter	Φ61		Φ90		Φ115		Φ160	
D8 hole circle	Φ70		Φ100		Φ130		Φ185/Φ200	
D9 mounting hole	Φ5.5		Φ6.5		Φ8.5		Φ11/Φ13.5	
D10 hole circle	□62		□90		□115		□160/□175	
B1 key width	5		6		8		12	
H1 key height	16		22.5		28		43	
G3 center screw hole	M5X15		M6X18		M10X22		M12X25	
Input								
L2 input flange length	24		33.7		48		66	
L9 motor shaft length	30		40		58		79	
L10 spigot depth	10		10		10		10	
D1 mounting hole distribution circle	Φ70		Φ90		Φ145		Φ200	
D2 spigot diameter	Φ50G7		Φ70G7		Φ110G7		Φ114.3G7	
D3 input shaft diameter	≤14G7		≤19G7		≤24G7		≤35G7	
G1 mounting threads X depth	M4X10		M5X12		M8X21		M12X25	
Q3 input flange	□60		□80		□130		□175	