CHIFLY

GEARBOX

Beijing CHIFLY Technology Development Co., LTD.

Precision delivery Excellence in action

CHIFLY

Beijing CHIFLY Technology Development Co., LTD.

Introduction of manufacturer

1

The total investment of the project is $100 million

24800

The newly built three-story standard workshop is 24800 square meters

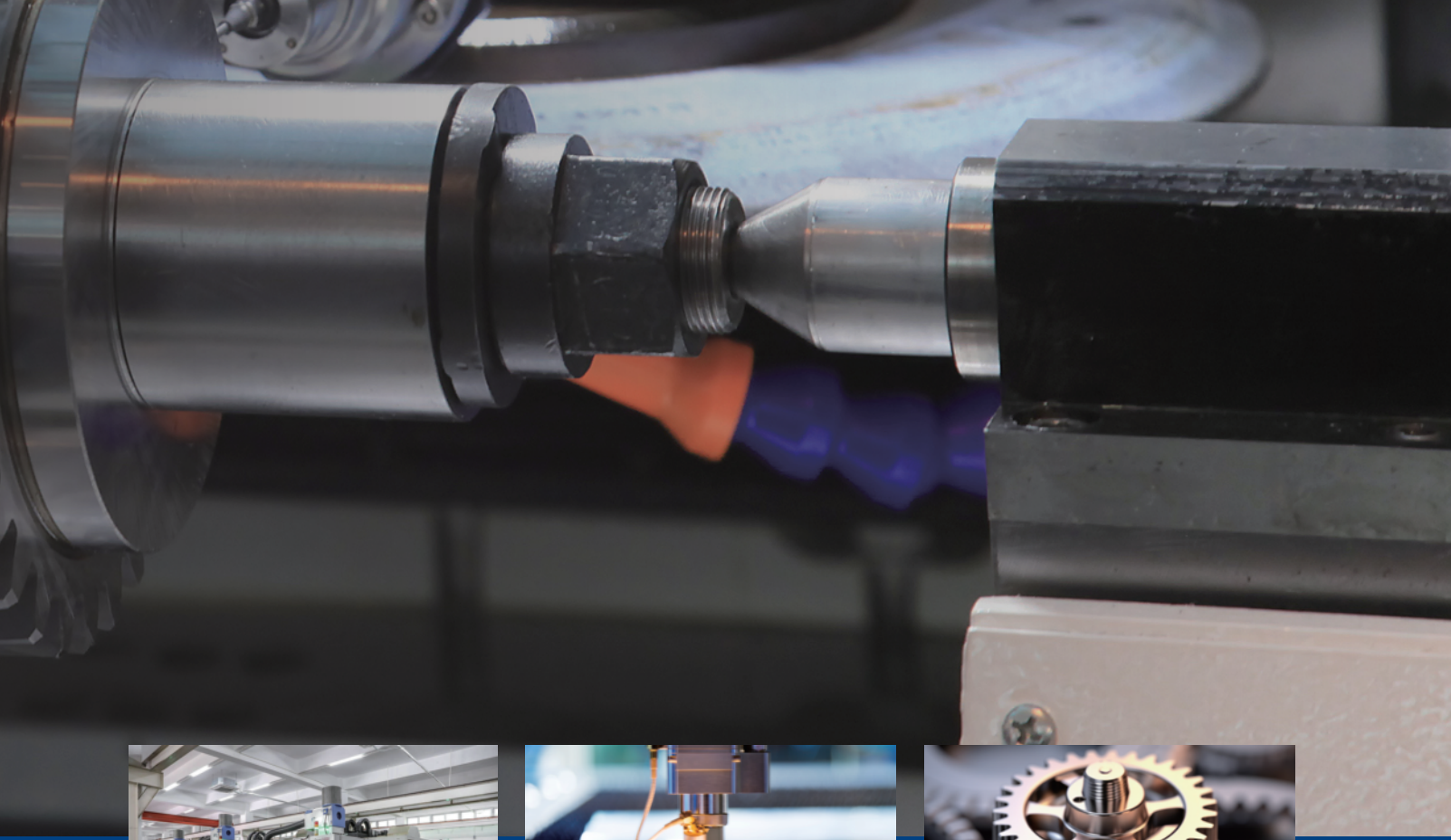
100

Production equipment and testing equipment more than 100 sets

CHIFLY

Company profile

- Beijing CHIFLY manufacturer is an integrated professional company engaged in the research and development and production of planetary gear reducer products.
- The total investment of the project is 100 million yuan, covering an area of 30 acres, and the new three-story standard factory building is 24,800 square meters; More than 100 sets of advanced production equipment and testing equipment at home and abroad such as DMG vertical machining center, Kasfki horizontal gear hobbing machine, CNC lathe imported from Japan, Qinchuan gear grinding machine and so on were purchased.
- At present, the assembly line has realized the waterline operation, and the lean production mode has been introduced in the management concept.



● Product Advantage

High precision | Diversified | Customisable

● Service concept

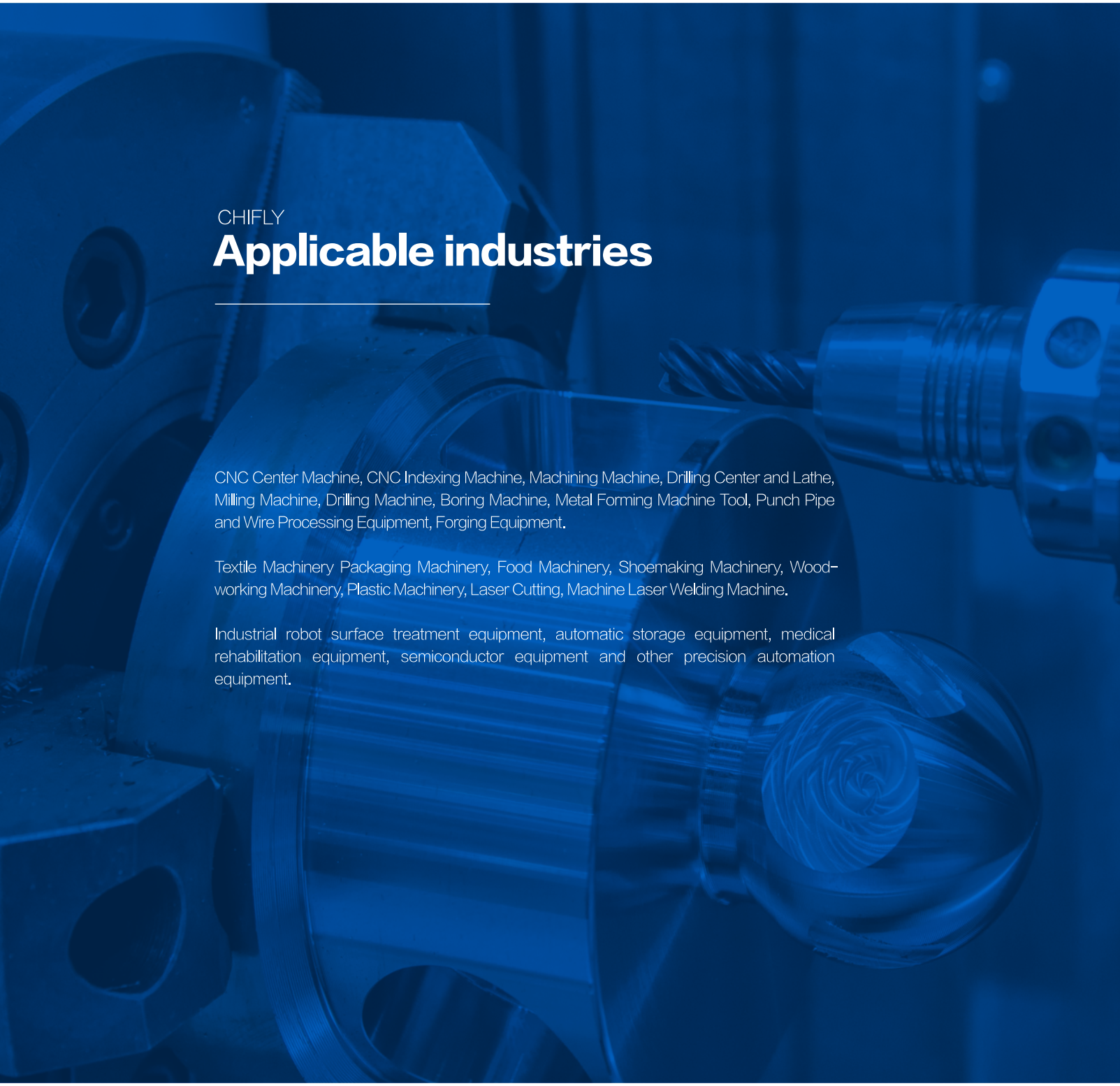
Quality orientated premium automation solutions

CHIFLY

Superiority

● Technical advantage

- CHIFLY Technology cooperates with excellent design teams at domestic and abroad, specializes in research and development of front-end products in the market, which is fully reflected in the technical strength and high-quality product stability in the field of transmission parts.
- Provide customized solutions with beautiful appearance, stable torque, reliable power transmission, longevity and other characteristics.



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Applicable industries

CNC Center Machine, CNC Indexing Machine, Machining Machine, Drilling Center and Lathe, Milling Machine, Drilling Machine, Boring Machine, Metal Forming Machine Tool, Punch Pipe and Wire Processing Equipment, Forging Equipment.

Textile Machinery Packaging Machinery, Food Machinery, Shoemaking Machinery, Wood-working Machinery, Plastic Machinery, Laser Cutting, Machine Laser Welding Machine.

Industrial robot surface treatment equipment, automatic storage equipment, medical rehabilitation equipment, semiconductor equipment and other precision automation equipment.

TABLE OF CONTENTS

BEIJING CHIFLY
TECHNOLOGY DEVELOPMENT
CO., LTD.

FAF
Series

High precision
PLANETARY GEARBOXES

CHIFLY

Model identification

Reducer					Servo motor
FAF	**090**	**-40**	**-P2**	**-S2**	**-MS1H3-13C15CD**
①	②	③	④	⑤	⑥

① **THE HELICAL GEAR REDUCER SERIES CODE:**	FAL—ROUND MOUNTING FLANGE SERIES FAF—SQUARE MOUNTING FLANGE SERIES
② GEAR HEAD FRAME SIZE:	FAF060、090、115、160; FAL060、090、115、160
③ **GEAR RATIO:**	SINGLE—3/4/5/6/7/8/10 DOUBLE—12/16/20/25/35/40/50/70/80/100

④ **Backlash:**

REDUCER TYPE NO	STAGE	STANDARD TYPE P2	LOW-BACKLASH TYPE P1	HIGH-PRECISION TYPE P0
FAF/L060 FAF/L090	1	5ARC-MIN	3ARC-MIN	2ARC-MIN
FAF/L115 FAF/L160	2	7ARC-MIN	5ARC-MIN	3ARC-MIN

⑤ **OUTPUT SHAFT FORM:**	S1 SMOOTH SHAFT S2 KEY WAY SHAFT
⑥ **MODEL OF SERVO MOTOR**	

FAF Series

● Reducer performance parameter table

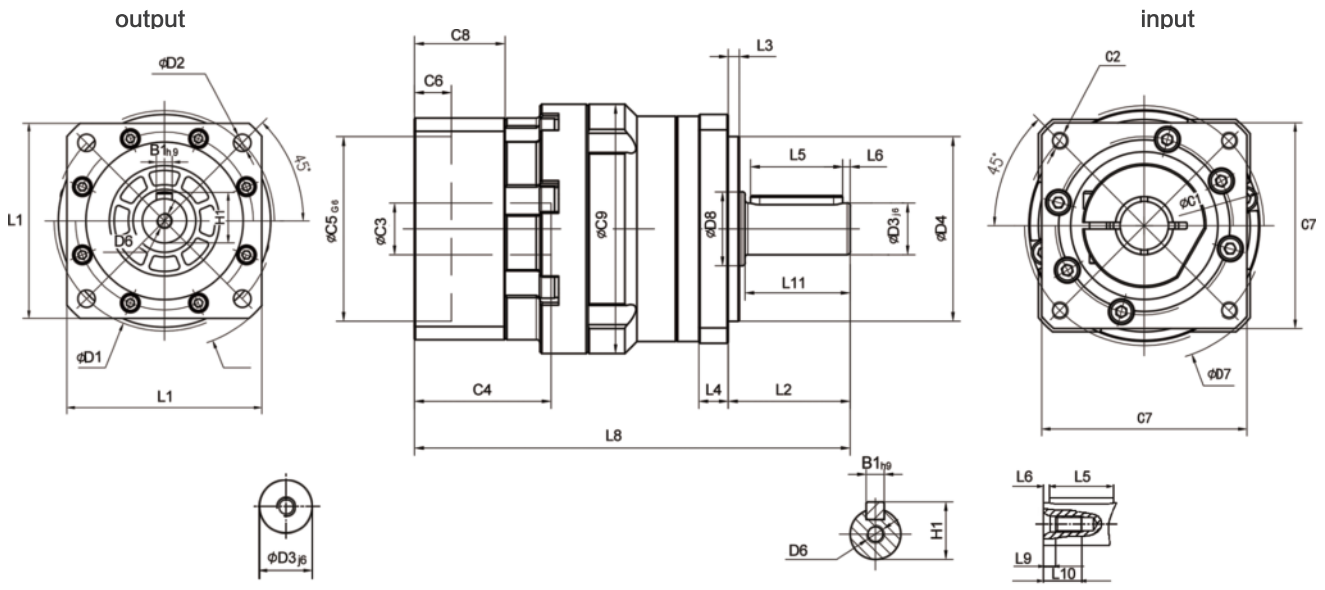
Specifications		Segments	Reduction ratio	FAF060	FAF090	FAF115	FAF160
Rated output torque T_{2N}	Nm	1	3	43	95	205	275
			4	45	97	220	435
			5	45	115	260	530
			6	44	105	240	410
			7	40	105	235	410
			8	38	100	220	400
			10	35	90	190	350
		2	12	42	105	205	275
			16	40	110	220	435
			20	45	115	260	530
			25	45	115	260	530
			35	40	105	235	410
			40	40	115	220	435
			50	45	125	260	530
			70	40	105	235	410
			80	38	100	140	400
			100	35	90	160	350
Emergency stop torque T_{2NOT}[2]	Nm	1, 2	3~100	3 times the rated output torque			
Maximum acceleration moment T_{2B}	Nm	1	3	55	151	310	495
			4	72	180	426	793
			5	84	203	492	954
			6	79	192	458	738
			7	72	192	455	738
			8	69	180	426	720
			10	63	171	368	630
		2	12	55	151	310	495
			16	72	180	426	783
			20	84	203	492	954
			25	84	203	492	954
			35	72	192	455	738
			40	72	180	426	793
			50	84	203	492	954
			70	72	792	455	738
			80	69	180	426	720
			100	63	171	368	630
Return clearance P1	Arcmin	j_t	3~10	≤3			
			12~100	≤5			
Return clearance P2	Arcmin	j_t	3~10	≤5			
			12~100	≤7			
Torsional stiffness	C_{t21}	Nm/Arcmin		7	14	25	39
Rated input speed	N_{1N}	rpm		4000	3000	3000	3000
Maximum input speed	N_{1B}	rpm		8000	6000	6000	6000
Maximum axial force	F_{2RB}	N		630	1230	2550	3780
Maximum radial force	F_{2AB}	N		1100	2200	5025	7610
Working life	L_h	hr		20000			
Operating temperature	℃			-10℃~+90℃			
Lubrication method				Lubricated for life			
Ingress protection				IP65			
Mounting direction				Any direction			
Noises	L_{PA}	DB(A)		≤58	≤60	≤63	≤65
Efficiency	η	%	3~10	≥97%			
			12~100	≥94%			
Weight	m	kg	3~10	1.2	2.9	6.8	16
			12~100	1.4	3.6	8.7	20

● Reducer moment of inertia

Specifications		Segments	Speed Ratio	FAF060	FAF090	FAF115	FAF160
Inertia J_1	kg.cm²	1	3	0.28	1.3	4.8	14.5
			4	0.25	1.3	4.6	12
			5	0.25	1.2	4.5	11
			6	0.22	1.1	4	10
			7	0.18	0.9	3.5	10
			8	0.17	0.8	2.7	9.5
			10	0.15	0.7	2.5	9
		2	12	0.18	0.7	2.2	3.3
			16	0.16	0.7	2.1	3.2
			20	0.16	0.7	2.1	3
			25	0.15	0.65	2	2.9
			35	0.15	0.65	2	2.7
			40	0.15	0.6	1.9	2.5
			50	0.15	0.6	1.8	2.3
			70	0.15	0.6	1.8	2.2
			80	0.14	0.5	1.7	2.2
			100	0.14	0.5	1.7	2

* Other speed ratios can be customized

FAF 1STAGE i=3~10



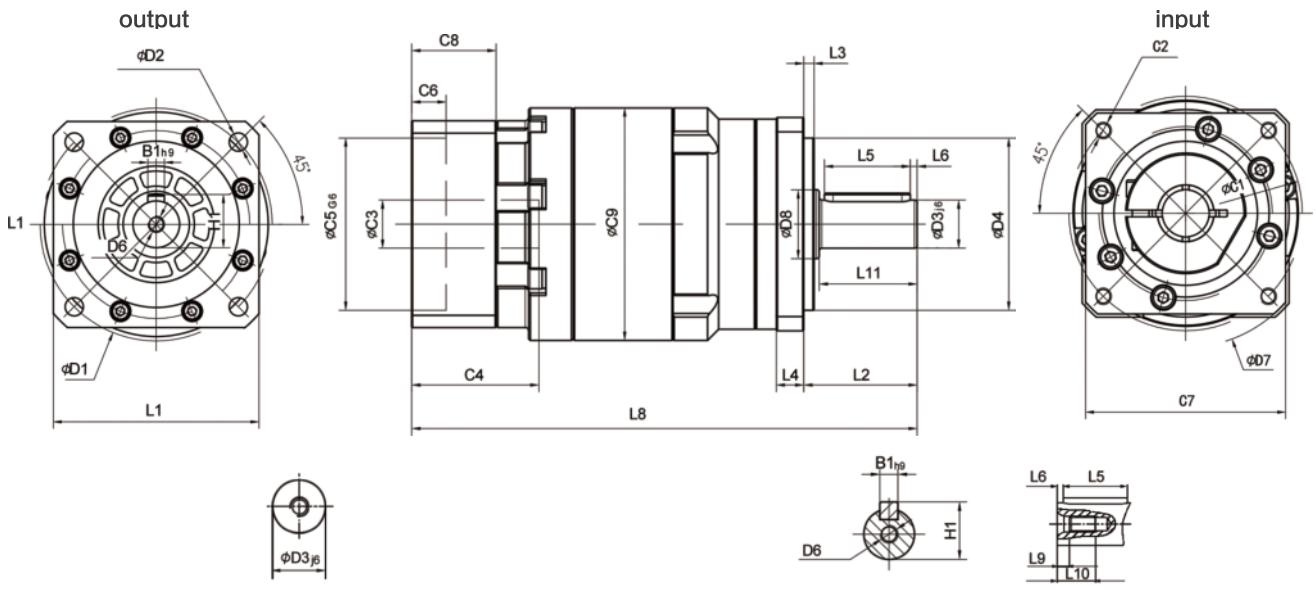
shaft form S1

shaft form S2

【Unit : mm】

	Size	FAF060	FAF090	FAF115	FAF160
Specifications	D1	70	100	130	185
	D2	5.5	7	8.5	11
	$D3_{j6}$	14	20	25	40
	$D4_{g6}$	50	80	110	130
	D5	/	/	120	/
	D6	M5*15	M6*18	M12*28	M12*20
	D7	80	116	150	235
	D8	20	/	42	/
	L1	62	90	120	175
	L2	33	40	55	87
	L3	3	2.5	4	5
	L5	25	28	40	70
	L6	2	/	5	5
	L8	118	153	186.5	267
	L9	3	3	3	3
	L10	15	18	28	20
	L11	28.5	36.5	50	80
	$C1^{3}$	66.65	70	90	200
	$C2^{3}$	M4*11	M5*12	M6*24	M12*28
	$C3^{3}$	8	14	19	35
	$C4^{3}$	37	49	49.5	82
	$C5^{3}{}_{G6}$	38.1	50	70	114.3
	$C6^{3}$	10	10	10	15
	$C7^{3}$	60	90	115	180
	$C8^{3}$	24.5	28.5	29	/
	$C9^{3}$	67.5	/	/	/
	B1	5	6	8	12
	$H1_{h9}$	16	22.5	28	43

FAF 2STAGE i=12~100



shaft form S1

shaft form S2

【Unit : mm】

	Size	FAF060	FAF090	FAF115	FAF160
Specifications	D1	70	100	130	185
	D2	5.5	7	8.5	11
	$D3_{j6}$	14	20	25	40
	$D4_{g6}$	50	80	110	130
	D5	/	/	120	/
	D6	M5*15	M6*18	M10*26	M12*20
	D7	80	116	116	230
	D8	20	/	42	/
	L1	62	90	120	175
	L2	33	40	55	87
	L3	3	3	4	5
	L5	25	28	40	70
	L6	2	4	5	5
	L8	147	191	217	311.5
	L9	3	3	3	3
	L10	15	18	26	20
	L11	28.5	36.5	50	80
	C1[3]	70	70	98.5	145
	C2[3]	M5*12	M5*15	M6*24	M8*22
	C3[3]	14	14	16	22
	C4[3]	37	49	49.5	66
	$C5^{3}_{G6}$	50	50	73	110
	C6[3]	10	10	10	15
	C7[3]	60	90	90	175
	C8[3]	24.5	28.5	28.5	/
	C9[3]	67.5	/	/	/
	B1	5	6	8	12
	$H1_{h9}$	16	22.5	28	43

BEIJING CHIFLY
TECHNOLOGY DEVELOPMENT
CO., LTD.

FAL
Series

High precision
PLANETARY GEARBOXES

FAL Series

● Reducer performance parameter table

Specifications		Segments	Reduction ratio	FAL060	FAL090	FAL115	FAL160
Rated output torque T_{2N}	Nm	1	3	43	95	205	275
			4	45	97	220	435
			5	45	115	260	530
			6	44	105	240	410
			7	40	105	235	410
			8	38	100	220	400
			10	35	90	190	350
		2	12	42	105	205	275
			16	40	110	220	435
			20	45	115	260	530
			25	45	115	260	530
			35	40	105	235	410
			40	40	115	220	435
			50	45	125	260	530
			70	40	105	235	410
			80	38	100	140	400
			100	35	90	160	350
Emergency stop torque T_{2NOT}[2]	Nm	1, 2	3~100	3 times the rated output torque			
Maximum acceleration moment T_{2B}	Nm	1	3	55	151	310	495
			4	72	180	426	793
			5	84	203	492	954
			6	79	192	458	738
			7	72	192	455	738
			8	69	180	426	720
			10	63	171	368	630
		2	12	55	151	310	495
			16	72	180	426	783
			20	84	203	492	954
			25	84	203	492	954
			35	72	192	455	738
			40	72	180	426	793
			50	84	203	492	954
			70	72	792	455	738
			80	69	180	426	720
			100	63	171	368	630
Return clearance P1	Arcmin	j_t	3~10	≤3			
			12~100	≤5			
Return clearance P2	Arcmin	j_t	3~10	≤5			
			12~100	≤7			
Torsional stiffness	C_{t21}	Nm/Arcmin		7	14	25	39
Rated input speed	N_{1N}	rpm		4000	3000	3000	3000
Maximum input speed	N_{1B}	rpm		8000	6000	6000	6000
Maximum axial force	F_{2RB}	N		630	1230	2550	3780
Maximum radial force	F_{2AB}	N		1100	2200	5025	7610
Working life	L_h	hr		20000			
Operating temperature	℃			-10℃~+90℃			
Lubrication method				Lubricated for life			
Ingress protection				IP65			
Mounting direction				Any direction			
Noises	L_{PA}	DB(A)		≤58	≤60	≤63	≤65
Efficiency	η	%	3~10	≥97%			
			12~100	≥94%			
Weight	m	kg	3~10	1.2	2.9	6.8	16
			12~100	1.4	3.6	8.7	20

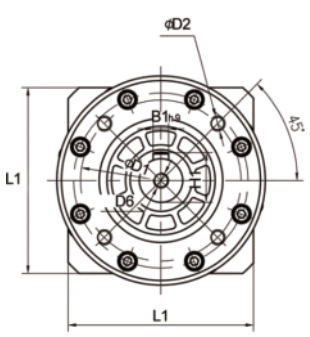
● Reducer moment of inertia

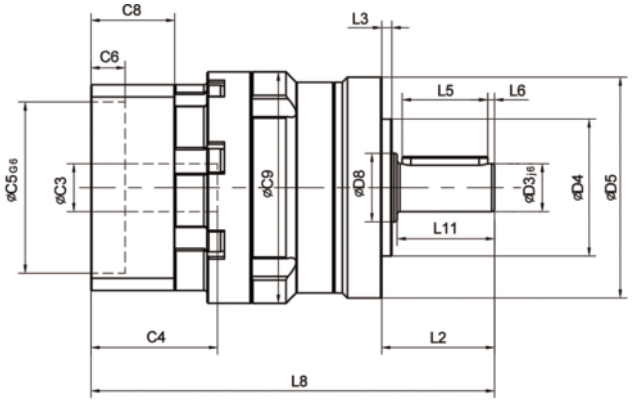
Specifications		Segments	Speed Ratio	FAL060	FAL090	FAL115	FAL160
Inertia J_1	kg.cm²	1	3	0.28	1.3	4.8	14.5
			4	0.25	1.3	4.6	12
			5	0.25	1.2	4.5	11
			6	0.22	1.1	4	10
			7	0.18	0.9	3.5	10
			8	0.17	0.8	2.7	9.5
			10	0.15	0.7	2.5	9
		2	12	0.18	0.7	2.2	3.3
			16	0.16	0.7	2.1	3.2
			20	0.16	0.7	2.1	3
			25	0.15	0.65	2	2.9
			35	0.15	0.65	2	2.7
			40	0.15	0.6	1.9	2.5
			50	0.15	0.6	1.8	2.3
			70	0.15	0.6	1.8	2.2
			80	0.14	0.5	1.7	2.2
			100	0.14	0.5	1.7	2

* Other speed ratios can be customized

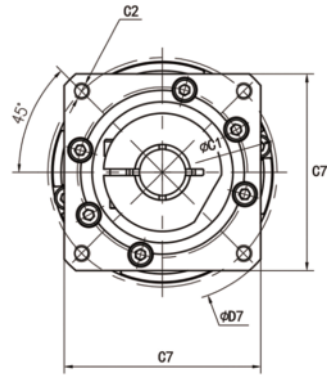
FAL 1STAGE i=3~10

output

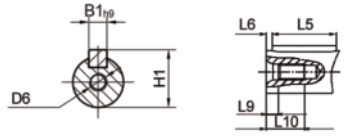




input



shaft form S1

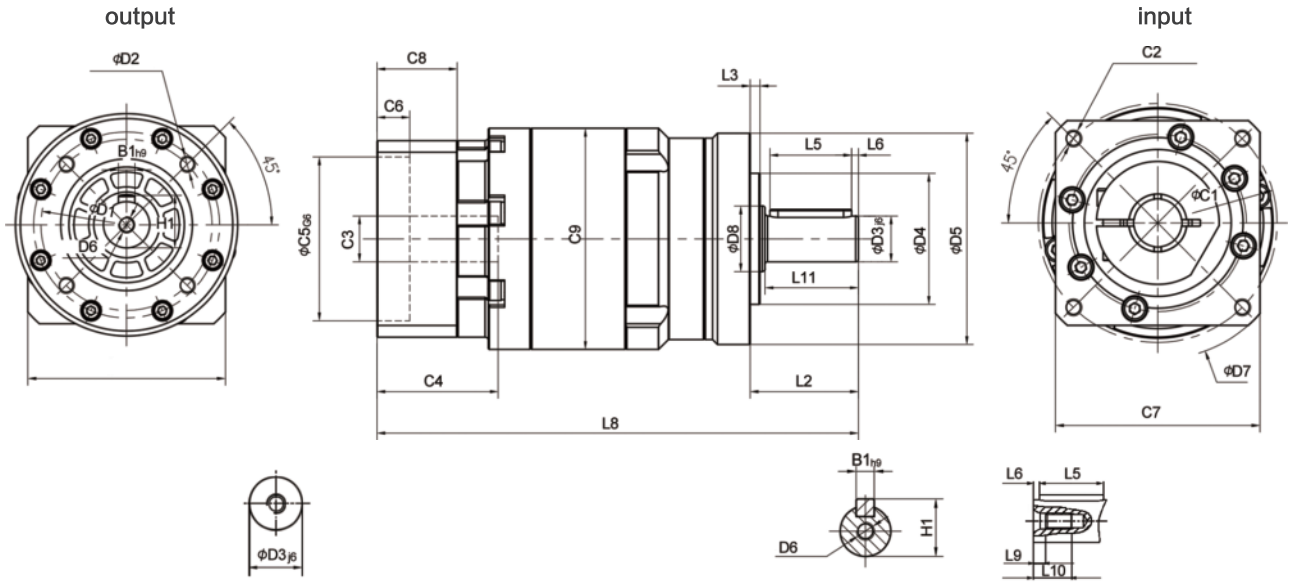


shaft form S2

【Unit：mm】

	Size	FAL060	FAL090	FAL115	FAL160
Specifications	D1	52	70	100	145
	D2	M5*8	M6*12	M10*20	M12*20
	$D3_{j6}$	14	20	25	40
	$D4_{g6}$	40	60	80	130
	D5	64.5	/	119.5	/
	D6	M5*15	M6*18	M12*28	M12*20
	D7	80	116	150	235
	L1	60	90	115	180
	L2	33	40	55	87
	L3	3	3	4	5
	L5	25	28	40	70
	L6	2	3	5	5
	L8	118	153	196.5	267
	L9	3	3	3	3
	L10	15	18	28	20
	C1[3]	70	98.5	130	200
	C2[3]	M5*12	M6*15	M8*24	M12*28
	C3[3]	14	14	19	35
	C4[3]	37	49	59.5	82
	$C5^{3}_{G6}$	50	72	95	114.3
	C6[3]	10	10	10	15
	C7[3]	60	90	115	180
	C8[3]	24.5	28.5	39	/
	C9[3]	67.5	/	/	/
	B1	5	6	8	12
	$H1_{h9}$	16	22.5	28	43

FAL 2STAGE i=12~100



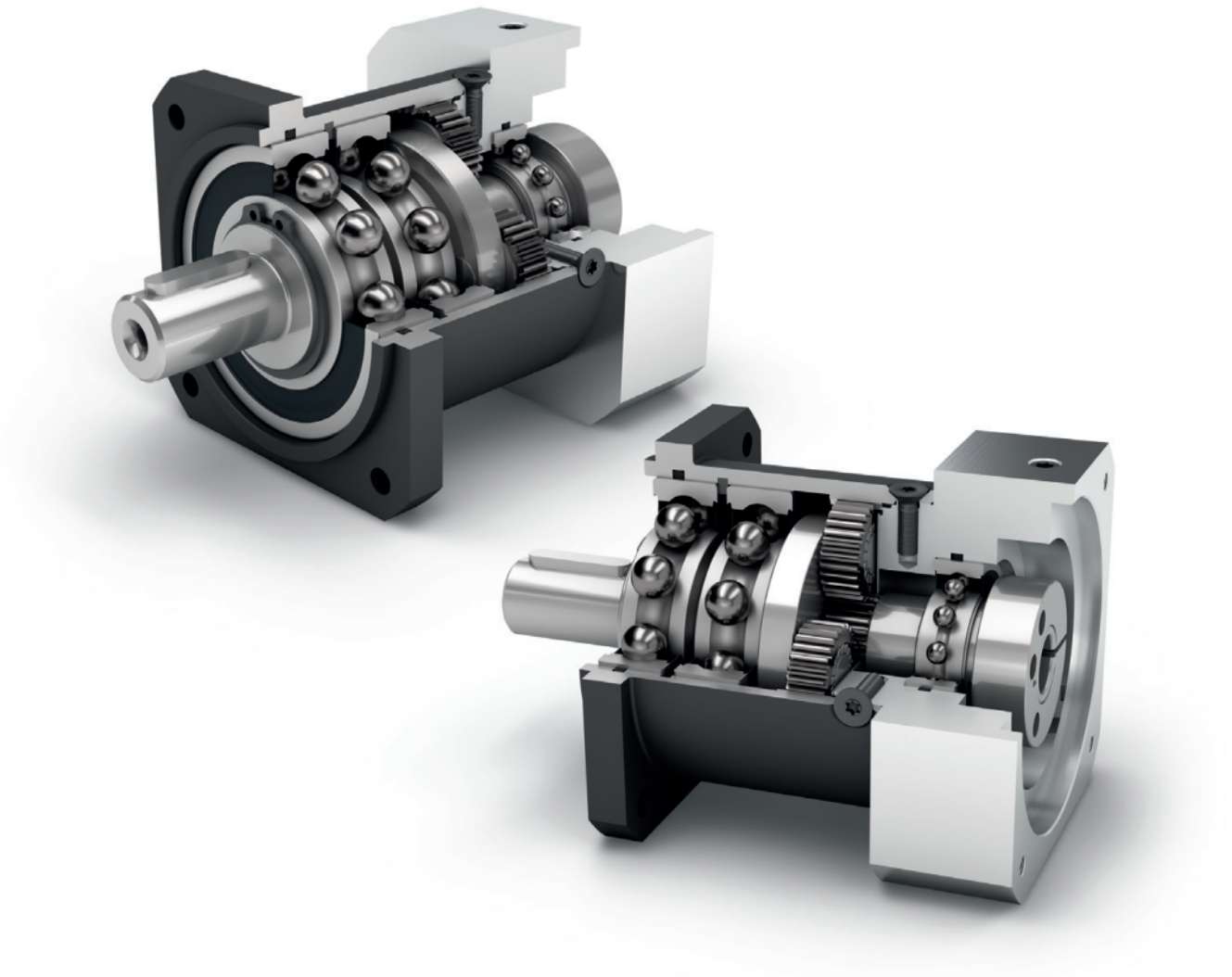
【Unit : mm】

	Size	FAL060	FAL090	FAL115	FAL160
Specifications	D1	52	70	100	145
	D2	M5*8	M6*12	M10*20	M12*20
	$D3_{j6}$	14	20	25	40
	$D4_{g6}$	40	60	80	130
	D5	64.5	/	119.5	/
	D6	M5*15	M8*20	M12*28	M12*20
	D7	80	116	165	235
	L1	60	90	130	180
	L2	33	40	55	87
	L3	3	3	4	5
	L5	25	28	40	70
	L6	2	4	5	5
	L8	147	191	228	327.5
	L9	3	3	3	3
	L10	15	20	28	20
	C1[3]	70	90	130	200
	C2[3]	M5*12	M6*15	M8*24	M12*28
	C3[3]	14	19	19	35
	C4[3]	37	49	60.5	82
	$C5^{3}_{G6}$	50	70	95	114.3
	C6[3]	10	10	10	15
	C7[3]	60	90	110	180
	C8[3]	24.5	28.5	39.5	/
	C9[3]	67.5	/	/	/
	$B1_{h9}$	5	6	8	12
	H1	16	22.5	28	43

BEIJING CHIFLY
TECHNOLOGY DEVELOPMENT
CO., LTD.

FPF
Series

High precision
PLANETARY GEARBOXES



- Economy model
- In-line gearbox
- Equidirectional rotation
- Spur gear
- Square type output flange
- Reinforced deep groove ball bearings
- High ratio variety i=3 up to i=100
- Planet carrier in disc design

CHIFLY

Model identification

Reducer					Servo motor
FPF	090	-40	-P2	-S2	-MS1H3-13C15CD
①	②	③	④	⑤	⑥

① **THE SERIAL CODE OF THE SPUR GEAR REDUCER:**

FPL—ROUND MOUNTING FLANGE SERIES
FPF—SQUARE MOUNTING FLANGE SERIES

② GEAR HEAD FRAME SIZE:

FPF040、060、090、120;
FPL040、060、090、120

③ **GEAR RATIO:**

SINGLE—3/4/5/7/10
DOUBLE—15/16/20/25/30/35/40/50/70/100

④ **Backlash:**

REDUCER TYPE NO	STAGE	STANDARD TYPE P2	LOW-BACKLASH TYPE P1	HIGH-PRECISION TYPE P0
FPL/F040	1	12ARC-MIN	10ARC-MIN	5ARC-MIN
	2	15 ARC-MIN	12ARC-MIN	8ARC-MIN
FPL/F060	1	8ARC-MIN	5ARC-MIN	3ARC-MIN
FPL/F090 FPL/F120	2	12ARC-MIN	8ARC-MIN	5ARC-MIN

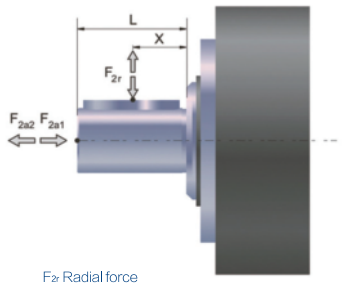
arcmin

⑤ **OUTPUT SHAFT TYPE:**

S1 SMOOTH SHAFT
S2 KEY WAY SHAFT

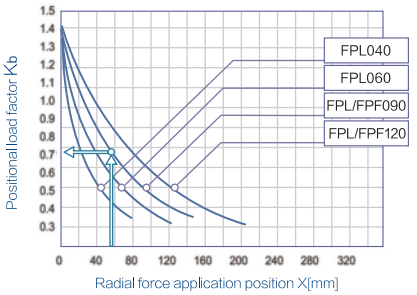
⑥ **MODEL OF SERVO MOTOR**

Reducer output shaft of the permissible radial force and shaft and axial force

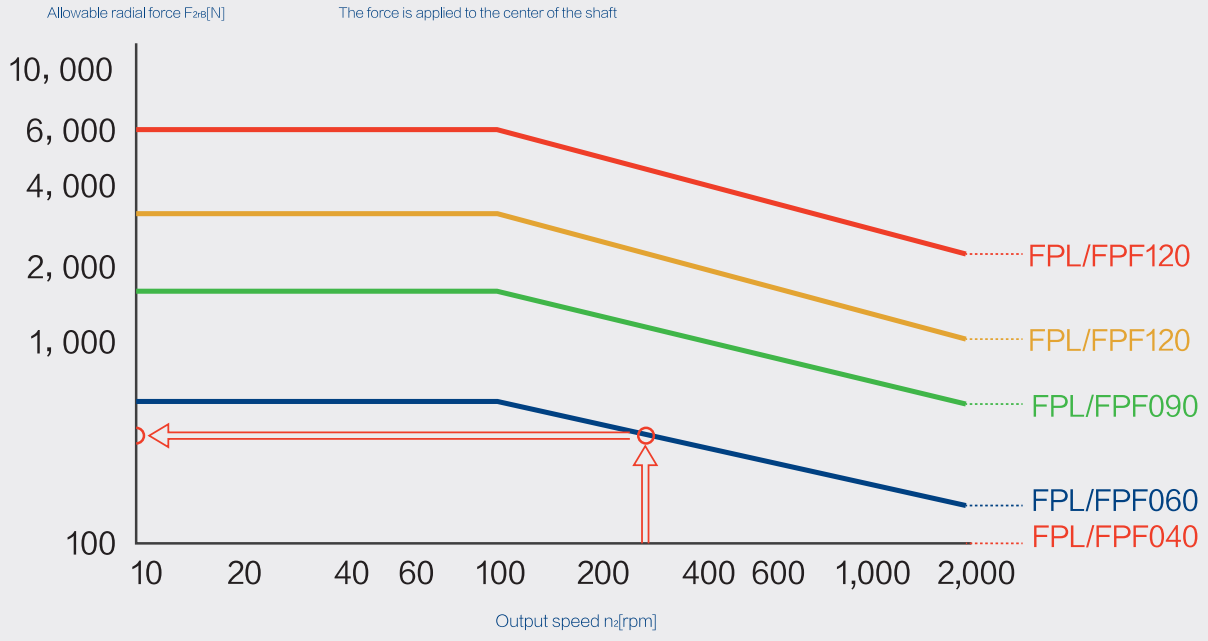


F2r Radial force
F2a Axial force

The maximum radial force and axial force that the reducer output can bear,End-view design of internal support bearings.



When the radial force F2r is not applied at the center of the shaft, the closer it is to the reducer, that is, X<1/2xL, the allowable radial force that can be borne becomes larger; The farther away from the reducer, i.e. X>1/2xL, the allowable radial force that can be withstood decreases. Based on the above figure, according to the specifications of the reducer and the radial force position X, the position load coefficient Kb can be found.



When the radial force F2r is applied to the center of the shaft, that is, X=1/2xL, different reducers are used at different output speeds.
The service life is 20,000* hours, and the allowable radial force can be withstanded, please refer to the figure above.

*Service life reduced by 50% under continuous operation (S1)

FPF Series

● Reducer performance parameter table

Specifications		Segments	Reduction ratio	FPF040	FPF060	FPF090	FPF120
Rated output torque T_{2N}	Nm	1	3	15	39	104	215
			4	15	39	104	220
			5	16	37	118	220
			7	12	35	96	195
			10	9	27	65	155
		2	15	14	38	105	215
			16	16	40	110	220
			20	16	40	110	220
			25	14	38	120	215
			30	15	38	104	215
			35	12	35	100	196
			40	16	43	104	220
			50	14	40	110	215
			70	12	35	96	210
			100	9	26	65	160
Maximum output torque T_{2B}	Nm	1, 2	3~100	3 times the rated output torque			
Rated input speed n_{1N}	rpm	1, 2	3~100	4, 500	4, 000	3, 600	3, 000
Maximum input speed n_{1B}	rpm	1, 2	3~100	8, 000	6, 000	6, 000	4, 800
Backlash *	arcmin	1	3~10	≤8	≤8	≤6	≤6
		2	15~100	≤10	≤10	≤8	≤8
Torsional rigidity	Nm/arcmin	1, 2	3~100	0.8	2. 2	7. 2	14.5
F_{2rB} Allowable radial force F_{2rB}	N	1, 2	3~100	300	680	1,750	3, 080
F_{2aB} Allowable axial force F_{2aB}	N	1, 2	3~100	150	340	875	1, 540
Service life	hr	1, 2	3~100	20,000 *			
Efficiency	%	1	3~10	≥97 %			
		2	15~100	≥94 %			
Weight	kg	1	3~10	0.7	1.7	3.6	8. 2
		2	15~100	1.0	2.4	5.0	11.4
Operating temperature	℃	1, 2	3~100	0℃~+90℃			
lubrication		1, 2	3~100	Grease(CASTROLLMX)			
Ingress protection		1, 2	3~100	IP64			
Mounting direction		1, 2	3~100	Any direction			
Noise level(n1=3000rpm)	dB	1, 2	3~100	≤68	≤70	≤72	≤74

● Reducer moment of inertia

Specifications		Segments	Reduction ratio	FPF040	FPF060	FPF090	FPF120
Inertia J_1	$kg.cm^2$	1	3	0.16	0.63	3.48	12.84
			4	0.16	0.60	3.31	12.22
			5	0.16	0.59	3.28	12.10
			7	0.16	0.59	3.27	12.05
			10	0.16	0.59	3.26	12.03
		2	15	0.16	0.59	3.28	12.10
			16	0.16	0.60	3.31	12.22
			20	0.16	0.59	3.28	12.10
			25	0.16	0.59	3.28	12.10
			30	0.16	0.59	3.26	12.03
			35	0.16	0.59	3.28	12.10
			40	0.16	0.59	3.26	12.03
			50	0.16	0.59	3.26	12.03
			70	0.16	0.59	3.26	12.03
			100	0.16	0.59	3.26	12.03

1.Reduction ratio (i=Nin / Nout)

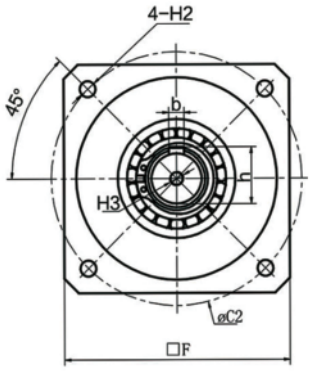
2.When the output speed of F2rB and F2aB is 100 rpm, it acts on the center of the output shaft.

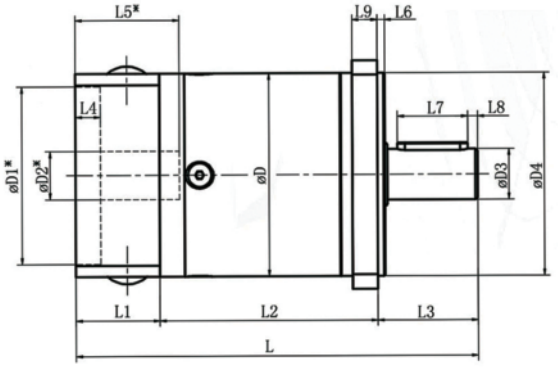
*20,000 hours in cyclic operation (S5) and 50% reduction in continuous operation (S1)

*The backlash value is measured at a torque of T2N at 2% of the rated torque

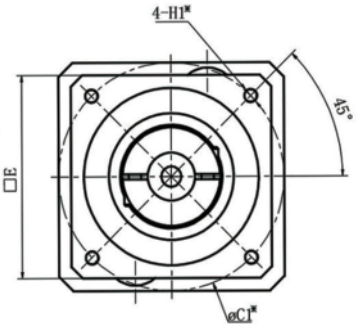
FPF Series

output





input



【Unit : mm】

	Size	FPF040	FPF060	FPF090	FPF120
Specifications	D	40	60	80	115
	D1	30F6	50F6	70H6	110F6
	D2	8G7	14G7	19G7	24G7
	D3	10h7(≤12)	14h7(≤17)	20h7(≤25)	25h7(≤35)
	D4	26f6	50f6	80f6	110f6
	L	93.5/107/120.5	116/131/145.5	143.5/162/180	202.5/230/257
	L1	24	25	33.5	65
	L2	43.5/57/70.5	56/71/85.5	70/88.5/106.5	82.5/110/137
	L3	26	31	40	55
	L4	4	6.5	10	7
	L5	26	31.5	41.5	66
	L6	2	3	3	4
	L7	16	25		40
	L8	3.5	2.5	4	5
	L9	6	8	10	15
	C1	46	70	90	145
	C2	34	70	100	100
	H1	M3(M4)*10	M4(M5)*10	M5(M6)*15	M8*19
	H2	3.5Through-holes	5.5Through-holes	6.5Through-holes	8.5Through-holes
	H3	M3*10	M5*15	M6*20	M10*22
	E	40	60	80	130
	F	45	60	90	120
	b	3	5	6	8
	h	11.2	16	22.5	28

* It is a metric standard motor connection plate size, and the actual product is produced according to the servo size selected by the customer.

BEIJING CHIFLY
TECHNOLOGY DEVELOPMENT
CO., LTD.

FPL
Series

High precision
PLANETARY GEARBOXES

FPL Series

● Reducer performance parameter table

Specifications		Segments	Reduction ratio	FPL040	FPL060	FPL090	FPL120
T_{2N}Rated output torque	Nm	1	3	15	39	104	215
			4	15	39	104	220
			5	16	37	118	220
			7	12	35	96	195
			10	9	27	65	155
		2	15	14	38	105	215
			16	16	40	110	220
			20	16	40	110	220
			25	14	38	120	215
			30	15	38	104	215
			35	12	35	100	196
			40	16	43	104	220
			50	14	40	110	215
			70	12	35	96	210
			100	9	26	65	160
Maximum output torque T_{2B}	Nm	1, 2	3~100	3 times the rated output torque			
Rated input speed n_{1N}	rpm	1, 2	3~100	4, 500	4, 000	3, 600	3, 000
Maximum input speed n_{1B}	rpm	1, 2	3~100	8, 000	6, 000	6, 000	4, 800
Backlash *	arcmin	1	3~10	≤8	≤8	≤6	≤6
		2	15~100	≤10	≤10	≤8	≤8
Torsional rigidity	Nm/arcmin	1, 2	3~100	0.8	2. 2	7. 2	14.5
Allowable radial force F_{2rB}	N	1, 2	3~100	300	680	1,750	3, 080
Allowable axial force F_{2aB}	N	1, 2	3~100	150	340	875	1, 540
Service life	hr	1, 2	3~100	20,000 *			
Efficiency	%	1	3~10	≥97 %			
		2	15~100	≥94 %			
Weight	kg	1	3~10	0.7	1.7	3.6	8. 2
		2	15~100	1.0	2.4	5.0	11.4
Operating temperature	℃	1, 2	3~100	0℃~+90℃			
lubrication		1, 2	3~100	Grease(CASTROLLMX)			
Ingress protection		1, 2	3~100	IP64			
Mounting direction		1, 2	3~100	Any direction			
Noise level(n1=3000rpm)	dB	1, 2	3~100	≤68	≤70	≤72	≤74

● Reducer moment of inertia

Specifications		Segments	Reduction ratio	FPL040	FPL060	FPL090	FPL120
Inertia J_1	kg.cm²	1	3	0.16	0.63	3.48	12.84
			4	0.16	0.60	3.31	12.22
			5	0.16	0.59	3.28	12.10
			7	0.16	0.59	3.27	12.05
			10	0.16	0.59	3.26	12.03
		2	15	0.16	0.59	3.28	12.10
			16	0.16	0.60	3.31	12.22
			20	0.16	0.59	3.28	12.10
			25	0.16	0.59	3.28	12.10
			30	0.16	0.59	3.26	12.03
			35	0.16	0.59	3.28	12.10
			40	0.16	0.59	3.26	12.03
			50	0.16	0.59	3.26	12.03
			70	0.16	0.59	3.26	12.03
			100	0.16	0.59	3.26	12.03

1.Reduction ratio (i=Nin / Nout)

2.When the output speed of F2rB and F2aB is 100 rpm, it acts on the center of the output shaft.

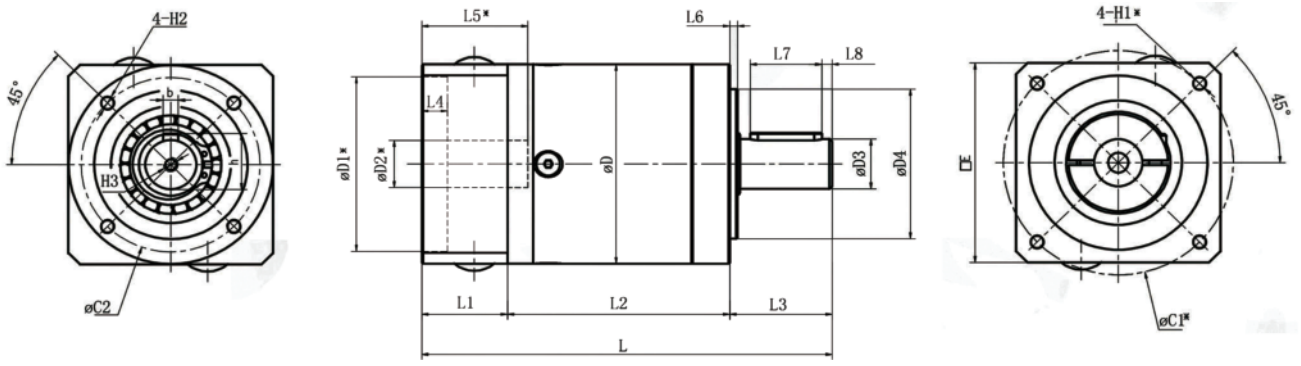
*20,000 hours in cyclic operation (S5) and 50% reduction in continuous operation (S1)

*The backlash value is measured at a torque of T2N at 2% of the rated torque

FPL Series

output

input



【Unit : mm】

	Size	FPL040	FPL060	FPL090	FPL120
Specifications	D	40	60	80	115
	D1	30F6	50F6	70H6	110F6
	D2	8G7	14G7	19G7	24G7
	D3	10h7(≤12)	14h7(≤17)	20h7(≤25)	25h7(≤35)
	D4	26f6	40f6	60f6	80f6
	L	93.5/107/120.5	116/131/145.5	143.5/162/180	202.5/230/257
	L1	24	25	33.5	65
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	L3	26	35	40	55
	L4	4	6.5	10	7
	L5	26	31.5	41.5	66
	L6	2	3	3	4
	L7	16	25	28	40
	L8	3.5	2.5	4	5
	C1	46	70	90	145
	C2	34	52	70	100
	H1	M3(M4)*10	M4(M5)*10	M5(M6)*15	M8*19
	H2	M4*6	M5*8	M6*12	M10*16
	H3	M3*10	M5*15	M6*20	M10*22
	E	40	60	80	130
	b	3	5	6	8
	h	11.2	16	22.5	28

* It is a metric standard motor connection plate size, and the actual product is produced according to the servo size selected by the customer.

CHIFLY
ASSEMBLY

ASSEMBLY PROCEDURE

When installing a servo motor by customer, please follow the guidelines below. Since servo motors come in a variety of sizes and some motors other than those specified may not be able to be connected to adapter, so be sure to use the motor you specified when ordering.

01 Spec.in case of assembling a motor without key

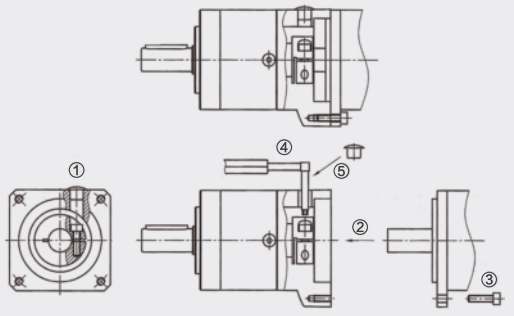
① Take off the rubber cap,turn the input shaft,and match the head of the bolt to the rubber cap.make sure that the set bolt is loosened.

② Smoothly insert the motor shaft into the reducer input.

③ Attach the motor to the reducer and fasten the bolt with designated fastening torque.table 1.

④ Fasten the set bolt of the input shaft with designated fastening torque using torque wrench,etc.table 2.

⑤ Put on a rubber cap.it is the end of asembling.



FPL/FPF series schematic diagram

Motor combination bolt	Fastening torque	
	N.m	kgf.cm
M3	1.0	10
M4	3.0	30
M5	5.8	60
M6	9.8	100
M8	19.6	200
M10	39.2	400
M12	68.6	700
M16	168	1650

TABLE1

Combination bolt	Fastening torque	
	N.m	kgf.cm
M3	1.5	15
M4	3.5	35
M5	7.1	71
M6	12	120
M8	30	300
M10	60	612

TABLE2

You can assemble the motor with keyway like above when take off the key.there is no risk of dislocation.

02 Spec.in case of assembling a motor with key

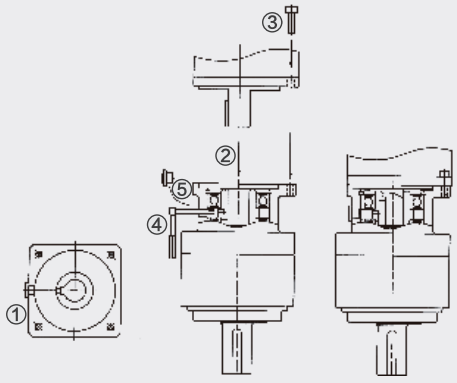
① Take off the rubber cap,turn the input shaft, and match the head of the bolt to the hole of the rubber cap.

② Coat carbon formation inbibitors(molybdenum dioxide etc.)onto the motor shaft,match the key to the key slot,and gradually.

③ Combine the motor with the reducer and fasten with the designated fastening bolt.table1

④ For set bolt of the input shaft,using torque wrench with the designated fastening torque with the key firmly pressed.table 3

⑤ Puton a rubber cap.the is the end.



Combination bolt	Fastening torque	
	N.m	kgf.cm
M4	2.0	20
M5	4.3	43
M6	7.3	73
M8	16.8	168

TABLE3

REDUCER ASSEMBLY

Jointing with reducer in case of jointing a reducer with the device,make sure that the combining sige is plane without inconsistency,and when assemble reducer outo equipment,ensuring assembly surface smooth and without burr.table 4.

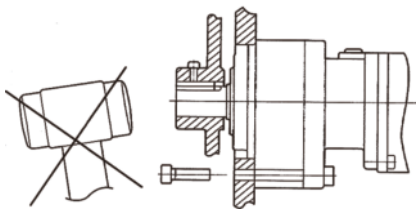
Reducercombination bolt	Fastening torque	
	N.m	kgf.cm
M5	5.8	60
M6	9.8	100
M8	19.6	200
M10	39.2	400
M12	68.6	700
M16	168	1650

TABLE4

CONNECTION TO THE OUTPUT SHAFT

CAUTIONS:

- When assemble a coupling,pullley,etc.onto the output shaft,make sure that excessive axial load not be given to the output shaft.
- Do not use strong external force to knock the shaft into the input side of the reducer to avoid damaging to the bearings or inside structures of the reducer.
- If the shaft or key of a coupling assembled is loosed,it may cause carbonization,so be careful whtn assembling.
- For assmbling of a coupling,fix the key with a set bolt.
- Please adjust shaft centre carefully in connecting.



Motor matching table(WHEN INPUT SPEED IS 3000RPM)

MOTOR MANUFACTURER	MOTOR SERIES	MOTOR POWER(W)				
		50W	100W	200W	400W	750W
PANASONIC	MSM	T1				
	MSMA	T1				
	MSMD	T1				
	MUMA	OUT OF STANDARD	OUT OF STANDARD	T1		
	MBMK	T1	OUT OF STANDARD	T1		
	MUMS	OUT OF STANDARD				
YASKAWA ELECTRIC	SGM	T2				
	SGMAH	T2				
	SGMAS	T2				
	SJME	NO SUBJECT	T2			
	SGMJV	T3				
	SGMAV	T3				
MITSUBISHI WLECTRIC	HC-KF	T3				
	HC-KFS	T3				
	HC-MF	T3				
	HC-MFS	T3				
	HA-ME	T3				
	HC-PQ	T3				NO SUBJECT
	HC-KQ	T3				NO SUBJECT
	HF-KP	T3				
	HF-MP	T3				
OMROM	R88N-U	T2				
	R88M-W	T2				
	R7M-A	T2				
	R7M-Z	T2				
FUJI ELECTRIC SYSTEMS	GYS%%	T2				
SANYO DENKI	P30B	T3				T2
	Q1	T3				OUT OF STANDARD
KEYENCE	MV	T3				OUT OF STANDARD
TOSHIBA MACHINE	VLBSV-Z%%	OUT OF STANDARD		T3		
	VLBSV-ZA%%	OUT OF STANDARD		T3		
	VLBST	OUT OF STANDARD		T3		OUT OF STANDARD
TAMAGAWA SEIKI	TBL-i %%	T3				NO SUBJECT
	TBL-i II%%	T3				OUT OF STANDARD
NIKKI DENSO	NA50	T1				
	NA70%%	T3				NO SUBJECT
	NA80%%	T3				OUT OF STANDARD
SANMEI	TS%%	T3				OUT OF STANDARD
	SS%%	T3				OUT OF STANDARD
HITACHI INDUSTRIAL EQUIPMENT SYSTEMS	ADMA	T3				OUT OF STANDARD
MIKI PULLEY	SA3	T1				

Note 1: if an oil-seal is not present and the size is different,attachment of the oil-seal may correspond to specia order in some cases.
Note 2: if the motor shaft is of d-cut and taper type,is corresponds to a special order.
Note 3: note that thrust power arsing out of instantaneous max.output torque bu the combination of motor capactith(motor of the motor series table)and reduction ratio may exceed permissible thrust power of the servo motor.see the thrust load table.
Note 4: out-of-standard may correspond to a special order in some cases.for details,contact us.

MOTOR MANUFACTURER	MOTOR SERIES	MOTOR POWER(W)								
		1000W	1500W	2000W	2500W	3000W	3500W	4000W	4500W	5000W
PANASONIC	MSM	T1								
	MSMA	T1								
YASKAWA ELECTRIC	SGMS	T2			NO SUBJECT	T2	NO SUBJECT	T2	NO SUBJECT	T2
	SGMSH	T2			NO SUBJECT	T2	NO SUBJECT	T2	NO SUBJECT	T2
	SGMSS	T2					NO SUBJECT	T2	NO SUBJECT	T2
MITSUBISHI WLECTRIC	HC-RF	T3			NO SUBJECT		T3	NO SUBJECT		T3
	HC-RFS	T3			NO SUBJECT		T3	NO SUBJECT		T3
	HC-RP	T3			NO SUBJECT		T3	NO SUBJECT		T3
OMROM	R88M-U	T2			NO SUBJECT	T2	NO SUBJECT	T2	NO SUBJECT	T2
	R88M-W	T2			NO SUBJECT	T2	NO SUBJECT	T2	NO SUBJECT	T2
FUJI ELECTRIC SYSTEMS	GYS	T3			NO SUBJECT	T2	NO SUBJECT	T2	NO SUBJECT	T2

STANDARD COMPATIBILITY WITH THE FOLLWING MOTOR SERIES

MOTOR MANUFACTURER	MOTOR SERIES	MOTOR POWER(W)								
		1000W	1500W	2000W	2500W	3000W	3500W	4000W	4500W	5000W
MITSUBISHI WLECTRIC	HC-SFS%%	500W,1000W,1500W,2000W,3500W								
	HF-SP									
YASKAWA ELECTRIC	SGMP	100W,200W,400W,750W,1500W								
	SGMPH									
	SGMPS									
PANASONIC	MQMA	100W,200W,400W								
OMROM	R88M-WP	100W,200W,400W,750W,1500W								
	R7M-AP	100W,200W,400W,750W								
FUJI ELECTRIC SYSTEMS	GYS	100W,200W,400W								
FANUC	BiS%%	200W,400W,500W,750W,1200W								

Note 1: if an oil-seal is not present and the size is different,attachment of the oil-seal may correspond to specia order in some cases.
Note 2: if the motor shaft is of d-cut and taper type,is corresponds to a special order.
Note 3: note that thrust power arsing out of instantaneous max.output torque bu the combination of motor capactith(motor of the motor series table)and reduction ratio may exceed permissible thrust power of the servo motor.see the thrust load table.
Note 4: out-of-standard may correspond to a special order in some cases.for details,contact us.

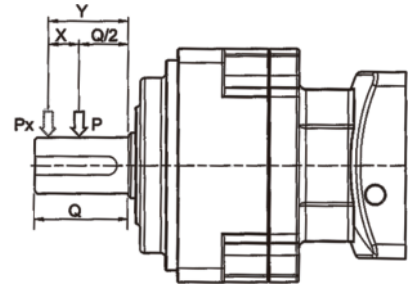
- **Our gearbox can match to servo motor of followings manufacturers,including aboves.please ask us about the assembly.**

Kobelco Electric Co., Ltd. | Japan Densan Sankyo | Zhongda Dentsu | Rust | Bosch Rexroth | Others

- **Permissible radial load(to reducer)**

If radial load is out of the center of the output shaft,calculate using the following equations and positive numbers:

Px={K/(K+X)}xP
X=Y-Q/2
P: PERMISSIBLE RADIAL LOAD(N)
Q:POSITIVE NUMBER
K: POSITIVE NUMBER
X: LOAD POINT DISPLACEMENT DISTANCE(MM)
Y: LOAD POINT(MM)



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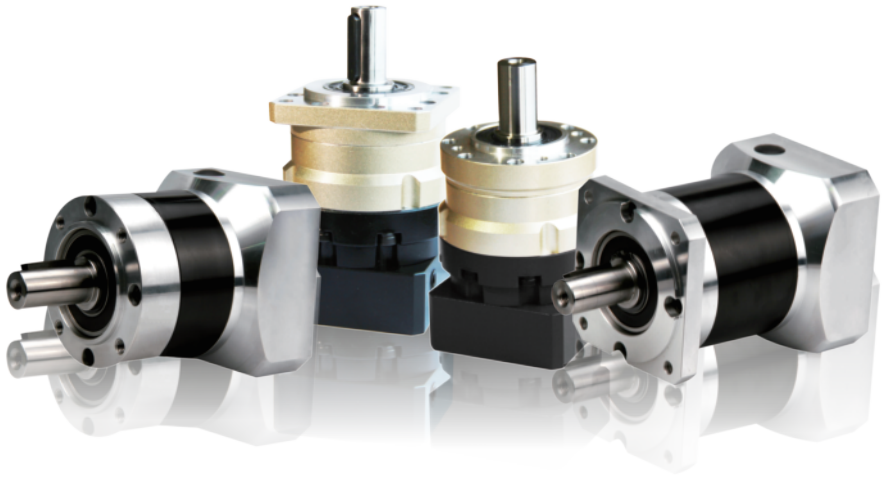

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