

品质源三凯 口碑自然来
SUCCESS BREEDS SUCCESS

SKGR三凯

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浙江三凯机电有限公司
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2025年7月版



传动装置 专业制造商

螺旋伞齿轮减速机

随着传动技术的高速发展

全球范围内的传统传动设备发生了翻天覆地的重大变革

传动产品也迎来全新的机遇

特别是智能化技术的应用和普及也为其注入了新鲜的血液

使得整体行业的生命力更加旺盛

螺旋伞齿轮减速机正在转变

.....

三凯也在改变

.....

With the rapid development of transmission technology

Traditional transmission equipment has undergone a significant transformation worldwide

Transmission products also welcome new opportunities

Especially the application and popularization of intelligent technology have injected fresh blood into it, making the

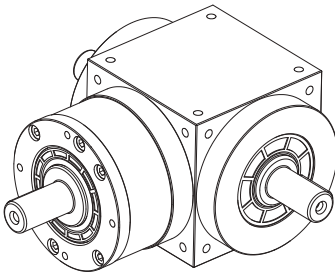
Overall vitality of the industry even stronger

Reducers undergoing a transformation

.....

SKGR is also changing

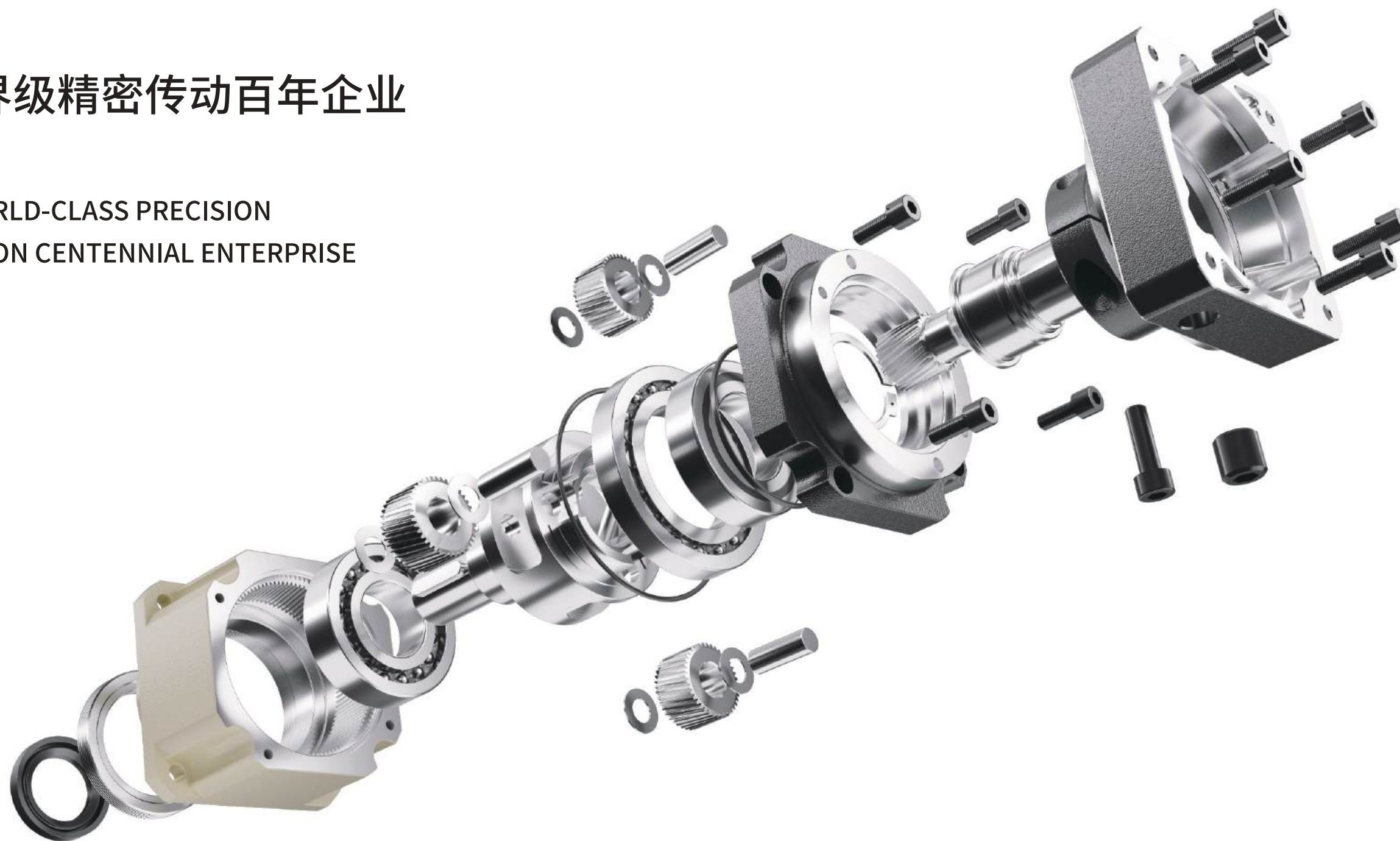
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愿景

成为世界级精密传动百年企业

BECOME WORLD-CLASS PRECISION
TRANSMISSION CENTENNIAL ENTERPRISE



企业介绍

COMPANY PROFILE



使命

MISSION 以技术为本, 弘扬工业精神

愿景

VISION 成为世界级精密传动百年企业

浙江三凯机电有限公司，传动行业知名创新企业。总部位于中国东南沿海浙江省台州市，是一家集科研、生产、销售于一体的动力传动装置研发制造商，在全国精密行星减速机行业细分领域排名前列。

三凯生产的减速机型号齐全，拥有精密行星减速机、工程行星减速机、谐波减速器、斜齿-准双曲面齿轮减速机、蜗轮蜗杆减速机、伺服电机、伺服驱动等产品。广泛服务于人形机器人、太阳能光伏、新能源动力、3C电子、钢铁冶金、智能物流、医疗设备、航空航天等行业领域。是美的库卡、西门子医疗、京东、大族激光等知名企业的终端供应商。

公司拥有浙江台州温岭两大制造基地（滨海、东部新区）、杭州销售及研发中心。拥有13项发明专利，33项实用新型专利，68项外观设计专利，以及ISO9001、ISO14001、ISO45001等体系认证。

相继荣获国家级专精特新“小巨人”企业、国家高新技术企业、国家知识产权优势企业、浙江省级企业技术中心、浙江省级高新技术企业研究院、浙江省隐形冠军培育企业、浙江省级制造精品企业、中国机械工业名牌产品等多项荣誉资信。

“三凯”品牌服务于五十多个行业，国内服务商500多家，出口东南亚、欧美等国家和地区。

三凯携手浙江工业大学等各类院校科研院所，深化产学研合作，实施智能制造及技术创新。作为中国通用机械协会减速机分会的重要成员企业、温岭市3项机床装备行业团体标准制定单位，三凯积极推动中国传动行业发展。“以技术为本，弘扬工业精神”为使命，秉承“诚信利他，进取敬畏，成就客户，同心同德，创新发展，追求卓越”的核心价值观，致力于开发生产高效、节能、环保型传动产品，为中国梦尽献三凯力量。

Zhejiang Sankai Mechanical and Electrical Co., Ltd is a well-known innovative enterprise in transmission industry. Headquartered in Taizhou City, Zhejiang Province, southeast coast of China, it is a R&D and manufacturer of power transmission devices integrating scientific research, production and sales, and ranks among the top in the national precision planetary gearbox industry segment.

SKGR produces a complete range of gear box models, including precision planetary gearbox, industrial planetary gearbox, harmonic reducer, helical-hypoid gearbox, worm gearbox, servo motor, servo drive and other products. It is widely used in humanoid robots, solar photovoltaics, new energy power, 3C electronics, iron and steel metallurgy, Intelligent logistics, medical equipment, aerospace and other industries. It is the terminal supplier of well-known enterprises such as Midea Kuka, Siemens Healthineers, JD.com, Han's Laser, etc.

The company has two major manufacturing bases in Wenling, Taizhou, Zhejiang Province (Binhai and Eastern New Area) and Hangzhou sales and R&D center. It has 13 invention patents, 33 utility model patents, 68 design patents, and ISO9001, ISO14001, ISO45001 and other system certifications. It has successively won many honorary credits such as national specialized and special new "little giant" enterprises, National High-tech Enterprises, National Intellectual Property Advantage Enterprises, Zhejiang provincial

enterprise technology centers, Zhejiang provincial high-tech enterprise research institutes, Zhejiang hidden champion cultivation enterprises, Zhejiang provincial manufacturing boutique enterprises, and famous brand products of China's machinery industry.

The "SKGR" brand serves more than 50 industries, with more than 500 domestic service providers, and is exported to Southeast Asia, Europe and the United States and other countries and regions.

SKGR has joined hands with Zhejiang University of Technology and other universities and research institutes to deepen industry-university-research cooperation and implement intelligent manufacturing and technological innovation. As an important member of the reducer branch of China General Machinery Association and the standard setting unit of three machine tool equipment industry groups in Wenling City, SKGR actively promotes the development of China's transmission industry. With the mission of "technology-oriented, carrying forward the industrial spirit" and adhering to the core values of "integrity and altruism, enterprising and awe-inspiring, customer achievement, one heart and one mind, innovation and development, and the pursuit of excellence", we are committed to developing and producing efficient, energy-saving and environmentally friendly transmission products, and contributing to the Chinese dream.



应用领域

APPLICATION
AREA

辐射多个行业，助力产业升级。

The vision radiates across multiple industries and assists in industrial upgrading.

帮助企业实现工业设备升级，
Assist enterprises in upgrading industrial equipment,

提高生产效率和产品质量。
improving production efficiency and product quality.



生产智造
PRODUCTION
INTELLIGENCE

把握每个环节,力求精进完善。
Grasp Each Link And Strive For Refinement And Improvement.

严格把控原料采购，
Strictly control the procurement of raw materials,

精细管理生产流程，
Fine management of production processes,

确保产品质量安全。
Ensure product quality and safety.



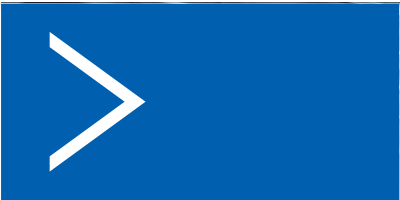
精密检测
PRECISION
TESTING

把关每个细节, 品质源于严格。
Check Every Detail, Quality Comes From Strictness.

对产品严格质量控制、
Strict quality control of products、

高标准要求,
High standard requirements,

为客户提供安全可靠的优质产品。
Provide customers with safe and reliable high-quality products.



客户服务

CUSTOMER SERVICE

提供专业、周到的，
Provide professional、considerate,

售前、售中、售后服务，
Pre-sales、in sales、and after-sales service,

为客户创造价值。
Create value for customers.



服务每个客户，真诚收获信任。
Serve Every Customer And Sincerely Gain Trust.

三凯传动，驱动未来。

SKGR TRANSMISSION, DRIVING THE FUTURE.

随着传动技术的持续发展和进步，
高效、环保和智能已成为工业设备升级换代的核心趋势。
未来，传动技术将驱动智能制造，推动人类文明迈向新的高度。

With the continuous development and progress of transmission technology,
Efficiency, environmental protection, and intelligence have become the core trends in the
upgrading and upgrading of industrial equipment.
In the future, transmission technology will drive intelligent manufacturing and push human
civilization to new heights.

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**SUCCESS BREEDS
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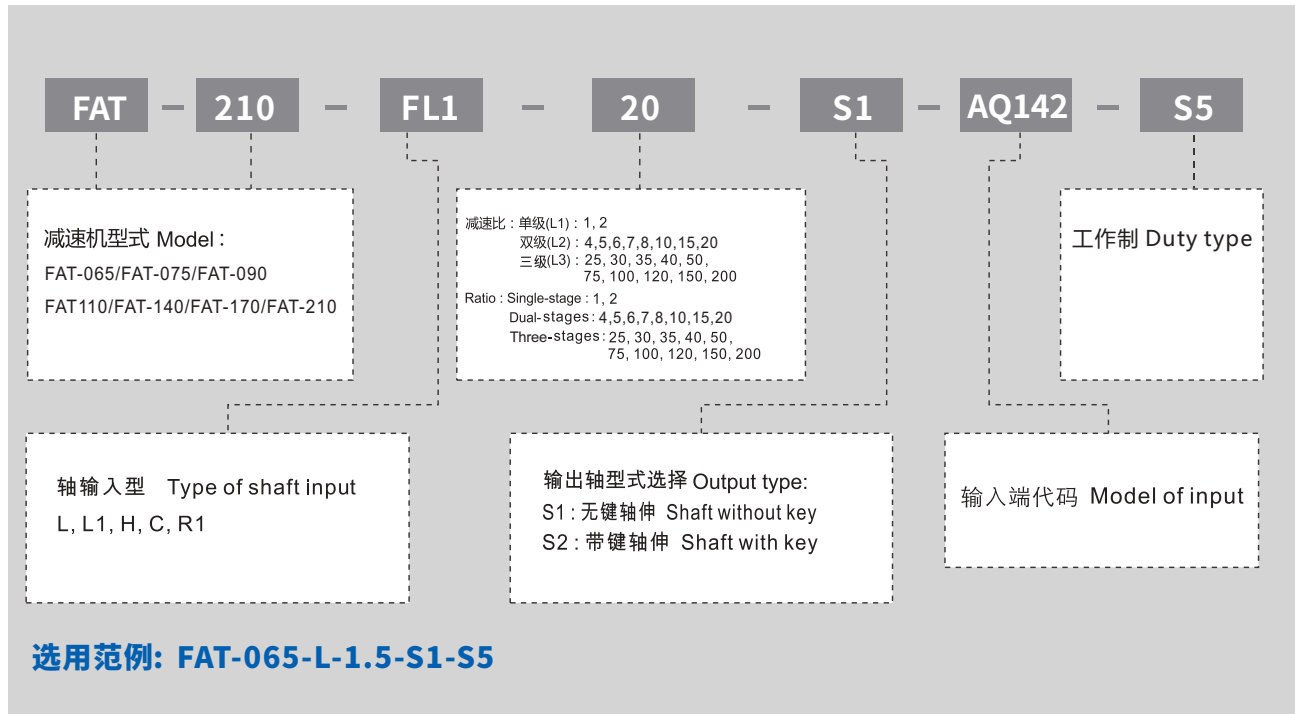
FAT
SERIES

PRECISION PLANETARY
GEAR BOX

精密行星减速机

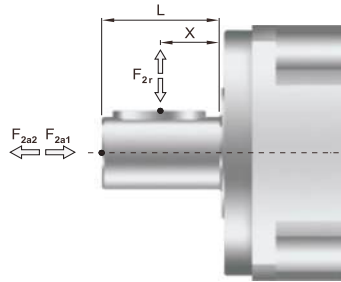
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型号说明 / model description



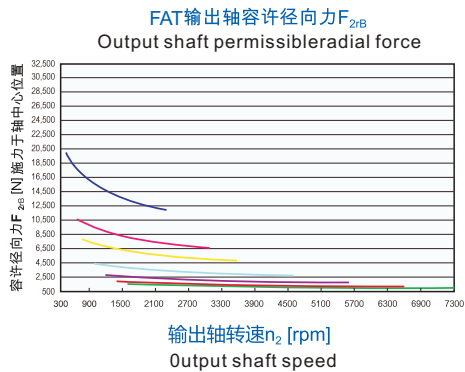
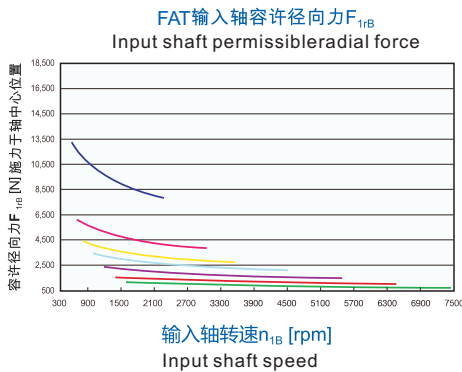
减速机输出轴之容许径向力及轴向力

ALLOWABLE RADIAL AND AXIAL FORCES ON THE OUTPUT SHAFT OF THE GEAR REDUCER



减速机输出轴所能承受的最大径向力和轴向力，取决于内部支撑轴承的设计。采用大跨距设计，选择大承载力轴承，获得最大的径向力和轴向力承载能力。

The permitted radial and axial loads on output shaft depends on the design of the gearbox supporting bearing. Large span design and large bearing capacity are adopted, to obtain the maximum bearing capacity of radial and axial loads.

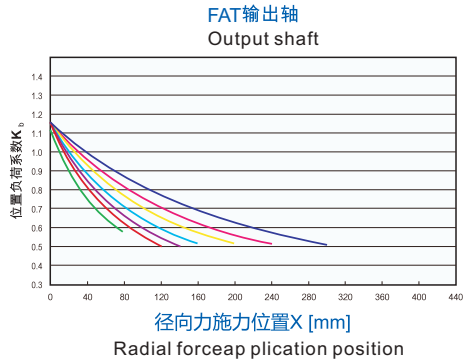
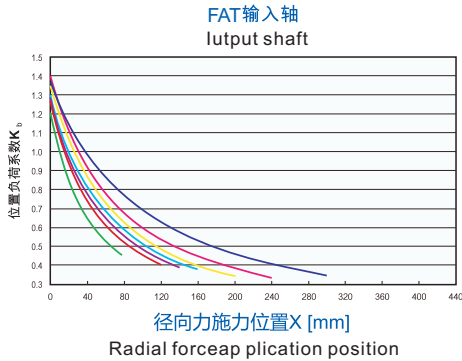
 F_{2r} 径向力 Radial force F_{2a} 轴向力 Axial force

当径向力 F_{2r} 施力于轴中心位置即 $X=1/2 \times L$ 时，不同规格之减速机在不同输出转速运用下使用寿命为20,000hr*时所能承受之容许径向力 F_{2rB} ，请参照左图，而能承受之容许轴向力 F_{2aB} ，为

When the radial force F_{2r} is applied to the center of the shaft, i.e. $X=1/2 \times L$, the allowable radial force F_{2rB} that can be withstood by different specifications of reducers with a service life of 20,000hr* under different output speeds is as follows:

$$F_{2a1B} = 0.2 \times F_{2rB}$$

$$F_{2a2B} = 0.1 \times F_{2rB}$$



当径向力 F_{2r} 施力不在轴中心位置时，越靠近减速机即 $X < 1/2 \times L$ ，所能承受之容许径向力变大，越远离减速机即 $X > 1/2 \times L$ 时，所能承受之容许径向力则变小，藉由左图，依减速机规格及径向力施力位置 X ，查出位置负荷系数 K_b ，在代入下列公式求出容许

When the radial force F_{2r} is not in the center of the shaft, the closer to the gearbox, that is, $X < 1/2 \times L$, the allowable radial force that can be borne becomes larger, and the farther away from the reducer, i.e., $X > 1/2 \times L$, the allowable force that can be borne becomes smaller.

径向力 : Radial force

$$F'_{2rB} = K_b \times F_{2rB}$$

轴向力 : Axial force

$$F'_{2a1B} = 0.2 \times F'_{2rB}$$

$$F'_{2a2B} = 0.1 \times F'_{2rB}$$

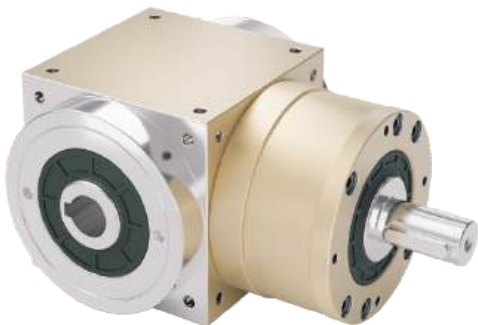
产品图片 / product dimension



FAT-L



FAT-FL



FAT-H



FAT-FH



FAT-C



FAT-FC

技术参数 / technical specification

轴输入型 Shaft input type

(单位: mm) (Unit:mm)

规 格 Model		级 数 Stage	减 速 比 ¹ Ratio	FAT065 L FAT065 L1 FAT065 H FAT065 C FAT065 R1	FAT075 L FAT075 L1 FAT075 H FAT075 C FAT075 R1	FAT090 L FAT090 L1 FAT090 H FAT090 C FAT090 R1	FAT110 L FAT110 L1 FAT110 H FAT110 C FAT110 R1	FAT140 L FAT140 L1 FAT140 H FAT140 C FAT140 R1	FAT170 L FAT170 L1 FAT170 H FAT170 C FAT170 R1	FAT210 L FAT210 L1 FAT210 H FAT210 C FAT210 R1
额定输出力矩 T _{2N} Rated output torque	Nm	1	1	25	45	78	150	360	585	1,300
			1.5	25	45	78	150	360	585	1,300
			2	24	42	68	150	330	544	1,220
			3	18	33	54	120	270	450	1,020
最大加速力矩 T _{2a} Maximum acceleration moment	Nm	1	1~3	1.5 倍额定输出力矩 (1.5 times of Nominal Output Torque)						
最大加速输入转速 n _{1a} Maximum acceleration input speed	rpm	1	1~3	7,500	6,500	5,500	4,500	3,500	3,000	2,200
背隙 ² Backlash	arcmin	1	1~3	≤6	≤6	≤6	≤6	≤6	≤6	6
最大输入轴径向力 F _{1rB} Maximum input shaft radial force	N	1	1~3	700	950	1,450	2,100	2,700	3,800	7,800
最大输出轴径向力 F _{2rB} Maximum loutput shaft radial force	N	1	1~3	900	1,100	1,700	2,700	4,800	6,600	11,500
最大输入轴轴向力 F _{1aB} Maximum input shaft axial force	N	1	1~3	350	425	725	1,050	1,350	1,900	3,900
最大输出轴轴向力 F _{2aB} Maximum output shaft axial force	N	1	1~3	450	550	850	1,350	2,400	3,300	5,750
使用寿命 Life time	h	1	1~3	20,000(S5工作制/S5 working mode)						
效率 η Efficiency	%	1	1~3	≥95%						
使用温度 Operating temperature	°C	1	1~3	-10°C ~ 90°C						
润滑 lubrication				合成润滑油 (Synthetic lubrication oils)						
噪音值 (n ₁ =1500rpm,无负载) ⁵ Noise level(n1=1500rpm, no load)	dB (A)	1	1~3	≤68	≤70	≤74	≤76	≤77	≤78	≤80

转动惯量 Moment of inertia

(单位: mm) (Unit:mm)

规 格 Model	级 数 Stage	减 速 比 ¹ Ratio	FAT065 L FAT065 L1 FAT065 H FAT065 C FAT065 R1	FAT075 L FAT075 L1 FAT075 H FAT075 C FAT075 R1	FAT090 L FAT090 L1 FAT090 H FAT090 C FAT090 R1	FAT110 L FAT110 L1 FAT110 H FAT110 C FAT110 R1	FAT140 L FAT140 L1 FAT140 H FAT140 C FAT140 R1	FAT170 L FAT170 L1 FAT170 H FAT170 C FAT170 R1	FAT210 L FAT210 L1 FAT210 H FAT210 C FAT210 R1
转动惯量 J ₁ (kg · cm ²) Mass Moments of Inertia J ₁	1	1	0.51	1.30	3.16	7.70	23.57	58.99	195.40
		1.5	0.64	1.16	2.82	6.74	19.37	49.28	155.45
		2	0.44	1.11	2.70	6.31	17.75	45.35	140.24
		3	0.43	1.09	2.66	6.17	17.18	44.01	134.95

重量 Weight

(单位: mm) (Unit:mm)

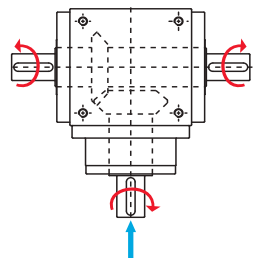
规 格 Model		级 数 Stage	减 速 比 ¹ Ratio	FAT065	FAT075	FAT090	FAT110	FAT140	FAT170	FAT210
L 系列 (Series)	kg	1	1~3	2.6	4.2	6.8	11.6	19.8	34.8	66.2
L1 系列 (Series)		1	1~3	2.6	4.1	6.7	11.5	19.5	34.2	65.1
H 系列 (Series)		1	1~3	2.5	3.9	6.4	11.0	18.1	31.6	60.0
C 系列 (Series)		1	1~3	2.8	4.2	6.9	11.4	19.6	33.7	63.3
R1 系列 (Series)		1	1~3	2.6	4.1	6.7	11.5	19.5	34.2	65.1

1.上述性能参数,均基于减速器运行在S5工作制下。如在S1工作制下运行,请与三凯联系。
2.:背隙值在2%额定力矩T_{2N}的扭力下所测得。

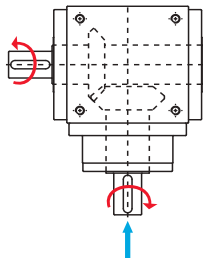
1. The above performance parameters are based on the gearbox operating at duty type S5 If it operates at duty type S1, please contact SKGR.
2. The above backlash is measured under at 2% rated tbrque T_{2N}

旋向/ rotate directions

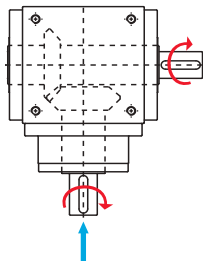
轴输入型 Shaft input type



FAT-L FAT-H FAT-C
FAT-FL FAT-FH FAT-FC

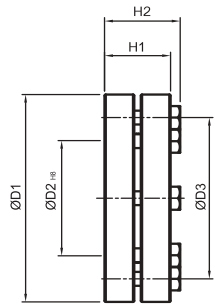


FAT-L1 FAT-FL1



FAT-R1 FAT-FR1

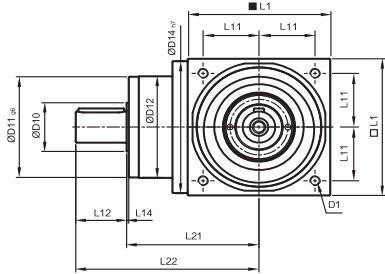
轴胀紧套 Shrink discs



FAT...C FAT...TC	D1	D2	D3	H1	H2
SSD-d16xdw14	41	16	26	15	18.5
SSD-d22xdw18	50	22	36	19.5	23
SSD-d25xdw22	50	25	38	19.5	23
SSD-d44xdw32	80	44	61	25.5	29.5
SSD-d50xdw40	90	50	70	27.5	31.5
SSD-d62xdw50	110	62	86	30.5	34.5
SSD-d68xdw55	115	68	86	30.5	34.5
SSD-d75xdw60	138	75	100	32.5	38

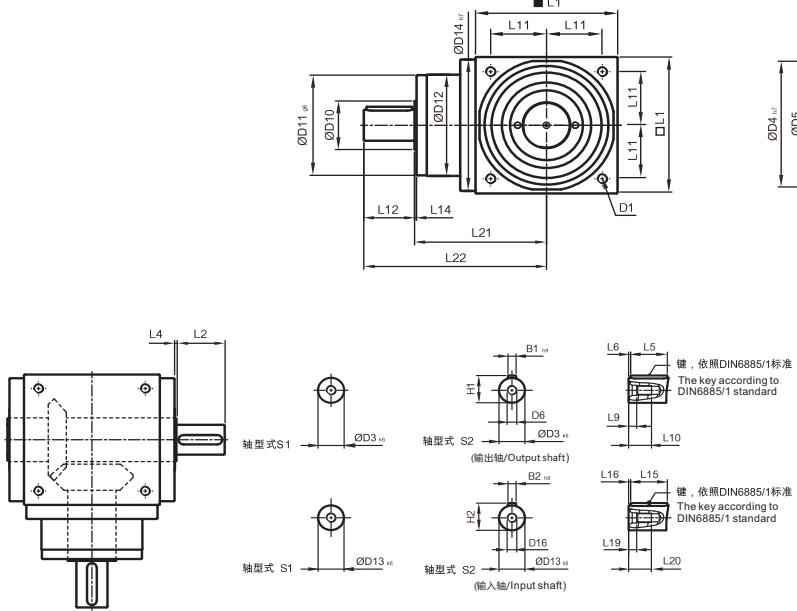
产品尺寸 / product dimension

FAT-L, 1 stage

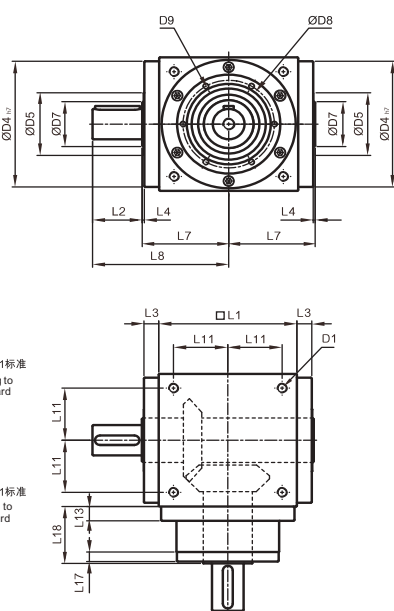


产品尺寸 / product dimension

FAT-R1, 1 stage



FAT-L1, 1 stage

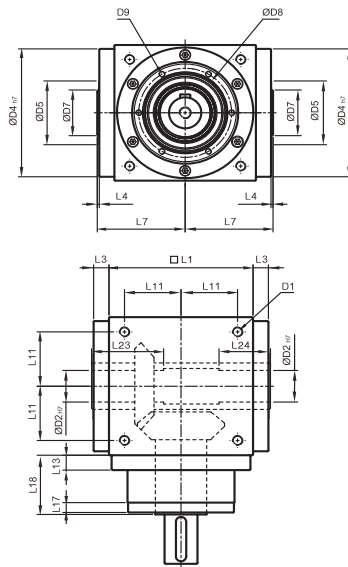
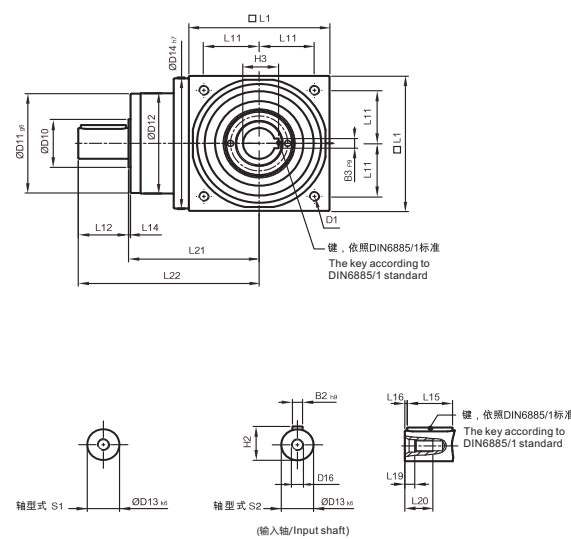


(单位: mm) (Unit:mm)

规格 Model	FAT065 L1/R1	FAT075 L1/R1	FAT090 L1/R1	FAT110 L1/R1	FAT140 L1/R1	FAT170 L1/R1	FAT210 L1/R1
D1	M4	M6	M6	M8	M10	M12	M16
D3 k6	13	16	18	22	32	40	50
D4 h7	63	73	88	108	135	165	205
D5	31	35	43	53	68	83	104
D6	M4	M5	M5	M8	M12	M16	M16
D7	21	22	28	33	47	55	75
D8	53	62	76	95	92	114	142
D9	4xM4xL7	4xM5xL8	4xM5xL8	6xM6xL10	6xM6xL10	6xM8xL12.5	6xM8xL12.5
D10	15.4	20.4	25.8	35.8	49.8	59.3	79.3
D11 g6	62.9	72.9	87	107	103	127	158
D12	62	72	86	106	104	128	160
D13 k6	13	16	18	22	32	40	50
D14 h7	63	73	88	108	135	165	205
D16	M4	M5	M5	M8	M12	M16	M16
L1	65	75	90	110	140	170	210
L2	19.5	30	35	40	50	60	75
L3	13	14.5	15	15	15	15	20
L4	2	2	2	2	2	2	2
L5	16	25	28	32	45	50	70
L6	2	2.5	3.5	4	2.5	5	2.5
L7	47.5	54	62	72	87	102	127
L8	67	84	97	112	137	162	202
L9	4.5	4.8	4.8	7.2	10	12	12
L10	10	12.5	12.5	19	28	36	36
L11	27	30	36	44	55	67	85
L12	19.5	30	35	40	50	60	75
L13	13	15	15	15	15	15	20
L14	2	2	2	2	2	2	2
L15	16	25	28	32	45	50	70
L16	2	2.5	3.5	4	2.5	5	2.5
L17	6	8	8	8	10	10	10
L18	43	52.5	55	60	60	70	90
L19	4.5	4.8	4.8	7.2	10	12	12
L20	10	12.5	12.5	19	28	36	36
L21	75.5	90	100	115	130	155	195
L22	95	120	135	155	180	215	270
B1 h9	5	5	6	6	10	12	14
B2 h9	5	5	6	6	10	12	14
H1	15	18	20.5	24.5	35	43	53.5
H2	15	18	20.5	24.5	35	43	53.5

产品尺寸 / product dimension

FAT-H, 1 stage

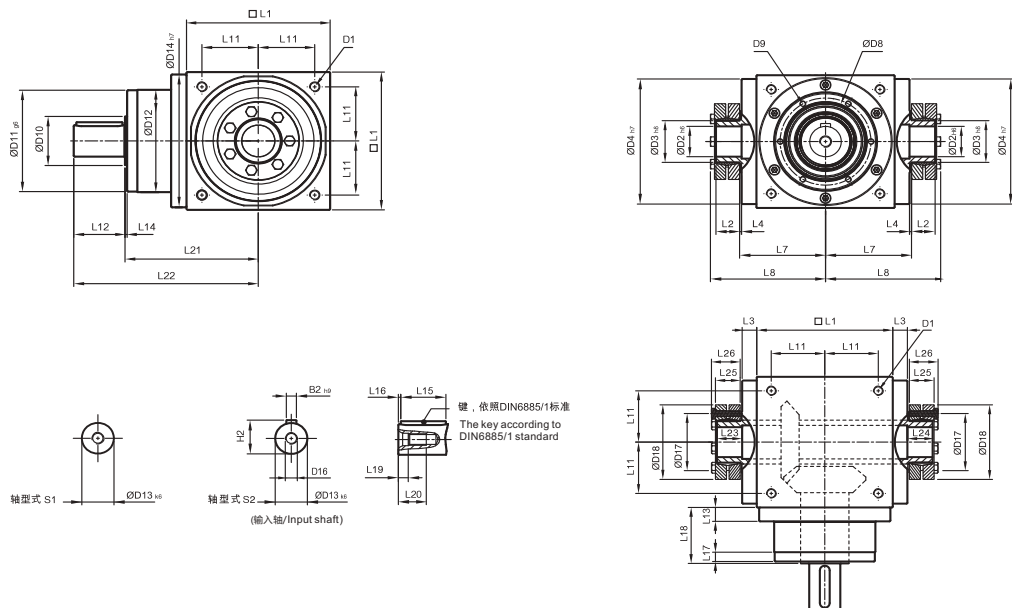


(单位: mm) (Unit:mm)

规格 Model	FAT065 H	FAT075 H	FAT090 H	FAT110 H	FAT140 H	FAT170 H	FAT210 H
D1	M4	M6	M6	M8	M10	M12	M16
D2 H7	13	14	18	22	32	40	50
D4 h7	63	73	88	108	135	165	205
D5	31	35	43	53	68	83	104
D7	21	22	28	33	47	55	75
D8	53	62	76	95	92	114	142
D9	4xM4xL7	4xM5xL8	4xM5xL8	6xM6xL10	6xM6xL10	6xM8xL12.5	6xM8xL12.5
D10	15.4	20.4	25.8	35.8	49.8	59.3	79.3
D11 g6	62.9	72.9	87	107	103	127	158
D12	62	72	86	106	104	128	160
D13 k6	13	16	18	22	32	40	50
D14 h7	63	73	88	108	135	165	205
D16	M4	M5	M5	M8	M12	M16	M16
L1	65	75	90	110	140	170	210
L3	13	14.5	15	15	15	15	20
L4	2	2	2	2	2	2	2
L7	47.5	54	62	72	87	102	127
L11	27	30	36	44	55	67	85
L12	19.5	30	35	40	50	60	75
L13	13	15	15	15	15	15	20
L14	2	2	2	2	2	2	2
L15	16	25	28	32	45	50	70
L16	2	2.5	3.5	4	2.5	5	2.5
L17	6	8	8	8	10	10	10
L18	43	52.5	55	60	60	70	90
L19	4.5	4.8	4.8	7.2	10	12	12
L20	10	12.5	12.5	19	28	36	36
L21	75.5	90	100	115	130	155	195
L22	95	120	135	155	180	215	270
L23	40	47	52	53	70	80	95
L24	30	32	35	35	50	55	65
B2 h9	5	5	6	6	10	12	14
B3 P9	5	5	6	6	10	12	14
H2	15	18	20.5	24.5	35	43	53.5
H3	15.3	16.3	20.8	24.8	35.3	43.3	53.8

产品尺寸 / product dimension

FAT-C, 1 stage



(单位: mm) (Unit:mm)

Model	FAT065 C	FAT075 C	FAT090 C	FAT110 C	FAT140 C	FAT170 C	FAT210 C
D1	M4	M6	M6	M8	M10	M12	M16
D2 _{H6}	13	14	18	22	32	40	50
D3 _{h8}	16	16	22	25	44	50	62
D4 _{h7}	63	73	88	108	135	165	205
D8	53	62	76	95	92	114	142
D9	4xM4xL7	4xM5xL8	4xM5xL8	6xM6xL10	6xM6xL10	6xM8xL12.5	6xM8xL12.5
D10	15.4	20.4	25.8	35.8	49.8	59.3	79.3
D11 _{g6}	62.9	72.9	87	107	103	127	158
D12	62	72	86	106	104	128	160
D13 _{k6}	13	16	18	22	32	40	50
D14 _{h7}	63	73	88	108	135	165	205
D16	M4	M5	M5	M8	M12	M16	M16
D17	26	26	36	38	61	70	86
D18	41	41	50	50	80	90	110
L1	65	75	90	110	140	170	210
L2	14	14	18	18	24	26	29
L3	13	14.5	15	15	15	15	20
L4	2	2	2	2	2	2	2
L7	47.5	54	62	72	87	102	127
L8	66	72.5	85	95	116.5	133.5	161.5
L11	27	30	36	44	55	67	85
L12	19.5	30	35	40	50	60	75
L13	13	15	15	15	15	15	20
L14	2	2	2	2	2	2	2
L15	16	25	28	32	45	50	70
L16	2	2.5	3.5	4	2.5	5	2.5
L17	6	8	8	8	10	10	10
L18	43	52.5	55	60	60	70	90
L19	4.5	4.8	4.8	7.2	10	12	12
L20	10	12.5	12.5	19	28	36	36
L21	75.5	90	100	115	130	155	195
L22	95	120	135	155	180	215	270
L23	15	15	20	20	26	28	31
L24	15	15	20	20	26	28	31
L25	15	15	19.5	19.5	25.5	27.5	30.5
L26	18.5	18.5	23	23	29.5	31.5	34.5
B2 _{h9}	5	5	6	6	10	12	14
H2	15	18	20.5	24.5	35	43	53.5

技术参数 / technical specification

法兰输入型 Flange input type

(单位: mm) (Unit:mm)

规 格 Model		级 数 Stage	减 速 比 ¹ Ratio	FAT065 FL FAT065 FL1 FAT065 FH FAT065 FC FAT065 FR1	FAT075 FL FAT075 FL1 FAT075 FH FAT075 FC FAT075 FR1	FAT090 FL FAT090 FL1 FAT090 FH FAT090 FC FAT090 FR1	FAT110 FL FAT110 FL1 FAT110 FH FAT110 FC FAT110 FR1	FAT140 FL1 FAT140 FH FAT140 FC FAT140 FR1	FAT170 FL FAT170 FH FAT170 FC FAT170 FR1	FAT210 FL FAT210 FL1 FAT210 FH FAT210 FC FAT210 FR1
额定输出力矩 T _{2N} Rated output torque	Nm	1	1	25	45	78	150	360	585	1,300
			1.5	25	45	78	150	360	585	1,300
			2	24	42	68	150	330	544	1,220
			3	18	33	54	120	270	450	1,020
			4	25	45	78	150	360	585	1,300
		2	5	25	45	78	150	360	585	1,300
			6	25	45	78	150	360	585	1,300
			7	25	45	78	150	360	585	1,300
			8	24	42	68	150	330	544	1,220
			9	24	42	68	150	330	544	1,220
		3	10	24	42	68	150	330	544	1,220
			15	18	33	54	120	270	450	1,020
			20	24	42	68	150	330	544	1,220
			25	25	45	78	150	360	585	1,300
			30	25	45	78	150	360	585	1,300
			35	25	45	78	150	360	585	1,300
			40	25	45	78	150	360	585	1,300
			50	24	42	68	150	330	544	1,220
			75	-	-	-	120	270	450	1,020
			100	-	-	-	150	330	544	1,220
120	-	-	-	120	270	450	1,020			
150	-	-	-	120	270	450	1,020			
200	-	-	-	150	330	544	1,220			
300	-	-	-	120	270	450	1,020			
最大加速力矩 T _{2a} Maximum acceleration moment	Nm	1,2,3	1~300	1.5 倍额定输出力矩 （1.5 times of Nominal Output Torque）						
最大加速输入转速 n _{1a} Maximum acceleration input speed	rpm	1	1~3	7,500	6,500	5,500	4,500	3,500	3,000	2,200
		2	4~20	8,000	8,000	6,000	6,000	6,000	6,000	4,800
		3	25~300	-	-	-	8,000	8,000	6,000	6,000
背 隙 Backlash	arcmin	1	1~3	≤6	≤6	≤6	≤6	≤6	≤6	≤6
		2	4~20	≤10	≤10	≤10	≤10	≤10	≤10	≤10
		3	25~300	-	-	-	≤12	≤12	≤12	≤12
最大输出轴径向力 F _{2rB} Maximum input shaft radial force	N	1,2,3	1~300	900	1,100	1,700	2,700	4,800	6,600	11,500
最大输出轴轴向力 F _{2aB} Maximum input shaft axial force	N	1,2,3	1~300	450	550	850	1,350	2,400	3,300	5,750
使用寿命 Life time	h	1,2,3	1~300	20,000(S5工作制/S5 working mode)						
效率 η Efficiency	%	1	1~3	≥ 95%						
		2,3	4~300	≥ 92%						
使用温度 Operating temperature	°C	1,2,3	1~300	-10°C ~ 90°C						
润滑 lubrication				合成润滑油（Synthetic lubrication oils）						
噪音值（n ₁ =1500rpm,无负载） ⁶ Noise level(n ₁ =1500rpm, no load) ⁶	dB (A)	1,2,3	1~300	≤71	≤72	≤76	≤77	≤78	≤79	≤81

1.上述性能参数,均基于减速器运行在S5工作制下。如在S1工作制下运行,请与三凯联系。
2.:背隙值在2%额定力矩 T_{2N} 的扭力下所测得。

1. The above performance parameters are based on the gearbox operating at duty type S5 If it operates at duty type S1, please contact SKGR.

2. The above backlash is measured under at 2% rated torque T_{2N}

转动惯量/ moment of inertia

法兰输入型 Flange input type

(单位: mm) (Unit:mm)

规 格 Model	级 数 Stage	减 速 比 ¹ Ratio	FAT065 FL FAT065 FL1 FAT065 FH FAT065 FC FAT065 FR1	FAT075 FL FAT075 FL1 FAT075 FH FAT075 FC FAT075 FR1	FAT090 FL FAT090 FL1 FAT090 FH FAT090 FC FAT090 FR1	FAT110 FL FAT110 FL1 FAT110 FH FAT110 FC FAT110 FR1	FAT140 FL FAT140 FL1 FAT140 FH FAT140 FC FAT140 FR1	FAT170 FL FAT170 FL1 FAT170 FH FAT170 FC FAT170 FR1	FAT210 FL FAT210 FL1 FAT210 FH FAT210 FC FAT210 FR1
转动惯量 J ₁ (kg · cm ²) Mass Moments of Inertia J ₁	1	1	0.51	1.30	3.14	7.62	23.54	59.09	195.96
		1.5	0.46	1.15	2.80	6.65	19.34	49.38	156.02
		2	0.44	1.10	2.68	6.23	17.72	45.44	140.80
		3	0.43	1.09	2.64	6.08	17.16	44.11	135.51
	2	4	0.43	1.08	2.63	6.05	17.03	43.79	134.14
		5	0.43	1.08	2.63	6.04	16.99	43.69	133.71
		6	0.15	0.15	0.50	2.79	2.79	2.79	9.91
		7	0.15	0.15	0.50	2.79	2.79	2.79	9.91
		8	0.15	0.15	0.50	2.80	2.80	2.80	9.96
		10	0.15	0.15	0.50	2.80	2.80	2.80	9.96
		15	0.15	0.15	0.50	2.80	2.80	2.80	9.96
		20	0.15	0.15	0.50	2.80	2.80	2.80	9.96
	3	25	0.15	0.15	0.50	2.80	2.80	2.80	9.96
		30	0.15	0.15	0.50	2.80	2.80	2.80	9.96
		35	0.15	0.15	0.50	2.79	2.79	2.79	9.91
		40	0.15	0.15	0.50	2.79	2.79	2.79	9.91
		50	0.15	0.15	0.50	2.79	2.79	2.79	9.89
		75	-	-	-	0.15	0.15	0.50	0.50
		100	-	-	-	0.15	0.15	0.50	0.50
		120	-	-	-	0.15	0.15	0.50	0.50
		150	-	-	-	0.15	0.15	0.50	0.50
		200	-	-	-	0.15	0.15	0.50	0.50
		300	-	-	-	0.15	0.15	0.50	0.50

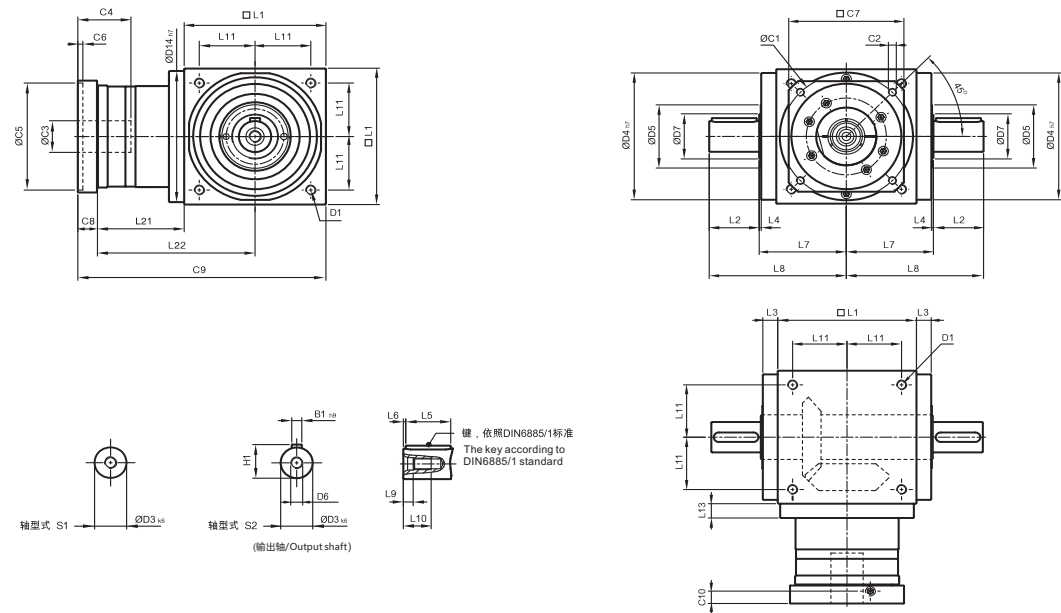
重量 Weight

(单位: mm) (Unit:mm)

规 格 Model		级 数 Stage	减速比 ¹ Ratio	PT065	PT075	PT090	PT110	PT140	PT170	PT210
FL 系列 (Series)	kg	1	1~3	2.8	4.4	7.1	12.1	20.9	36.1	69.4
		2	4~20	3.2	4.8	8.1	14.3	24.2	38.5	74.1
		3	25~300	-	-	-	13.9	23.7	38.8	73.4
FL1系列 (Series)		1	1~3	2.7	4.3	7.1	11.9	20.3	35.5	68.3
		2	4~20	3.2	4.8	8.0	14.2	23.9	37.9	73.0
		3	25~300	-	-	-	13.8	23.4	38.2	72.3
FH 系列 (Series)		1	1~3	2.6	4.1	6.7	11.4	18.9	32.9	63.2
		2	4~20	3.1	4.6	7.7	13.6	22.4	35.3	67.9
		3	25~300	-	-	-	13.3	21.9	35.6	67.2
FC 系列 (Series)		1	1~3	2.9	4.4	7.2	11.8	20.4	35.0	66.5
		2	4~20	3.3	4.9	8.2	14.1	24.1	37.4	71.2
		3	25~300	-	-	-	13.7	23.5	37.5	70.5
FR1 系列 (Series)	1	1~3	2.7	4.3	7.1	11.9	20.3	35.5	68.3	
	2	4~20	3.2	4.8	8.0	14.2	23.9	37.9	73.0	
	3	25~300	-	-	-	13.8	23.4	38.2	72.3	

产品尺寸 / product dimension

FAT-FL, 1 stage



(单位: mm) (Unit:mm)

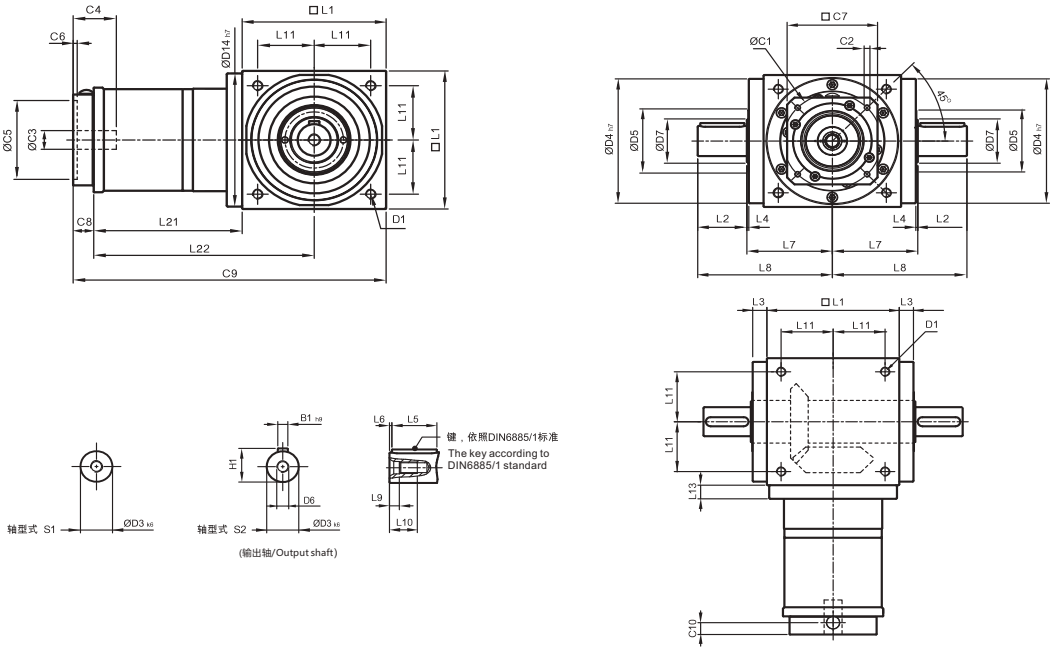
规格Model	FAT065 FL	FAT075 FL	FAT090 FL	FAT110 FL	FAT140 FL	FAT170 FL	FAT210 FL
D1	M4	M6	M6	M8	M10	M12	M16
D3 _{k6}	13	16	18	22	32	40	50
D4 _{h7}	63	73	88	108	135	165	205
D5	31	35	43	53	68	83	104
D6	M4	M5	M5	M8	M12	M16	M16
D7	21	22	28	33	47	55	75
D14 _{h7}	63	73	88	108	135	165	205
L1	65	75	90	110	140	170	210
L2	19.5	30	35	40	50	60	75
L3	13	14.5	15	15	15	15	20
L4	2	2	2	2	2	2	2
L5	16	25	28	32	45	50	70
L6	2	2.5	3.5	4	2.5	5	2.5
L7	47.5	54	62	72	87	102	127
L8	67	84	97	112	137	162	202
L9	4.5	4.8	4.8	7.2	10	12	12
L10	10	12.5	12.5	19	28	36	36
L11	27	30	36	44	55	67	85
L13	13	15	15	15	15	15	20
L21	49	60.5	63	69.5	85.5	95	130
L22	81.5	98	108	124.5	155.5	180	235
C1 ¹	46	70	100	100	130	165	215
C2 ¹	M4	M5	M6	M6	M8	M10	M12
C3 ¹	≤11 / ≤12 ²	≤14 / ≤15.875 / ≤16 ²	≤19	≤24	≤32	≤38	≤42
C4 ¹	30	34	40	40	50	60	85
C5 ¹	30	50	80	80	110	130	180
C6 ¹	3.5	8	4	4	5	6	6
C7 ¹	42	60	90	90	115	142	190
C8 ¹	19.5	19	17	17	19.5	22.5	29
C9 ¹	133.5	154.5	170	196.5	245	287.5	369
C10 ¹	13.25	13.5	10.75	10.75	13	15	20.75
B1 _{h9}	5	5	6	6	10	12	14
H1	15	18	20.5	24.5	35	43	53.5

减速器的部分尺寸参考了ISO9409的标准。
如需更详细的资料，或设计特殊的尺寸请与三凯联系。

Some dimensions of gearbox refer to IS09409 standard.
For more detailed information, or special sizes, please:contact SKGR.

产品尺寸 / product dimension

FAT-FL, 2 stages



(单位: mm) (Unit:mm)

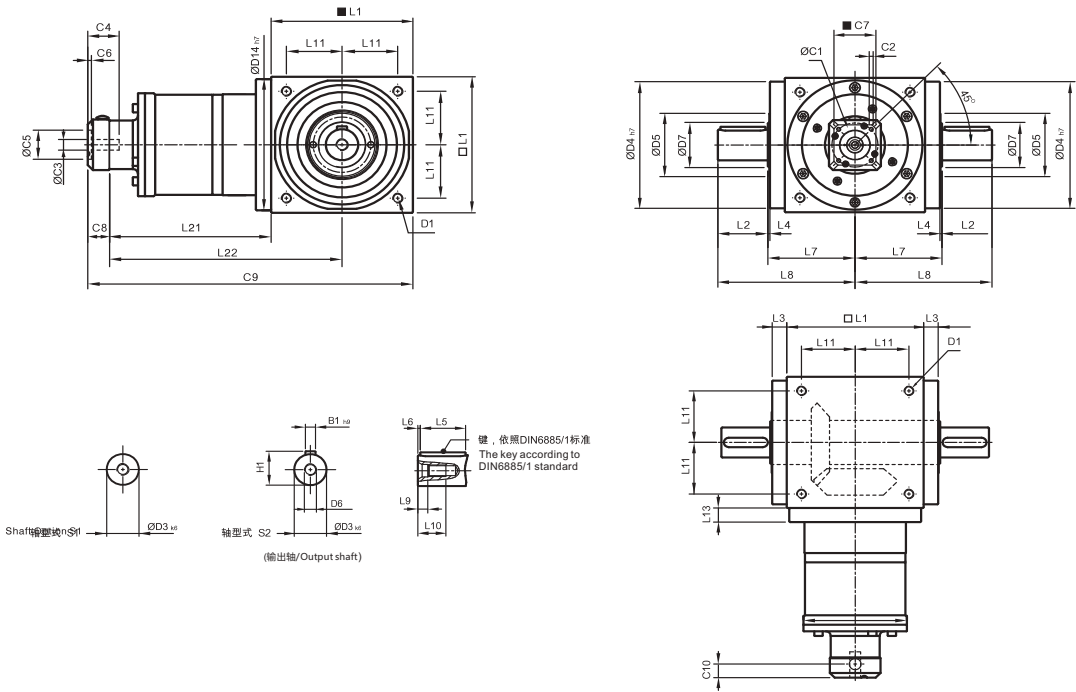
规格Model	PT065 FL	PT075 FL	PT090 FL	PT110 FL	PT140 FL	PT170 FL	PT210 FL
D1	M4	M6	M6	M8	M10	M12	M16
D3 k6	13	16	18	22	32	40	50
D4 h7	63	73	88	108	135	165	205
D5	31	35	43	53	68	83	104
D6	M4	M5	M5	M8	M12	M16	M16
D7	21	22	28	33	47	55	75
D14 h7	63	73	88	108	135	165	205
L1	65	75	90	110	140	170	210
L2	19.5	30	35	40	50	60	75
L3	13	14.5	15	15	15	15	20
L4	2	2	2	2	2	2	2
L5	16	25	28	32	45	50	70
L6	2	2.5	3.5	4	2.5	5	2.5
L7	47.5	54	62	72	87	102	127
L8	67	84	97	112	137	162	202
L9	4.5	4.8	4.8	7.2	10	12	12
L10	10	12.5	12.5	19	28	36	36
L11	27	30	36	44	55	67	85
L13	13	15	15	15	15	15	20
L21	75	84.5	99	122	144.5	157.5	206.5
L22	107.5	122	144	177	214.5	242.5	311.5
C1	46	46	70	100	100	100	130
C2	M4	M4	M5	M6	M6	M6	M8
C3	≤12	≤12	≤16	≤24	≤24	≤24	≤32
C4	30	30	34	40	40	40	50
C5	30	30	50	80	80	80	110
C6	3.5	3.5	8	4	4	4	5
C7	42	42	60	92	92	92	115
C8	21.5	21.5	21.5	20	20	20	24
C9	161.5	181	210.5	252	304.5	347.5	440.5
C10	14.5	14.5	15.5	13	13	13	16
B1 h9	5	5	6	6	10	12	14
H1	15	18	20.5	24.5	35	43	53.5

减速器的部分尺寸参考了ISO9409的标准。
如需更详细的资料, 或设计特殊的尺寸请与三凯联系。

Some dimensions of gearbox refer to ISO9409 standard.
For more detailed information, or special sizes, please:contact SKGR.

产品尺寸 / product dimension

FAT-FL, 3stages



(单位: mm) (Unit:mm)

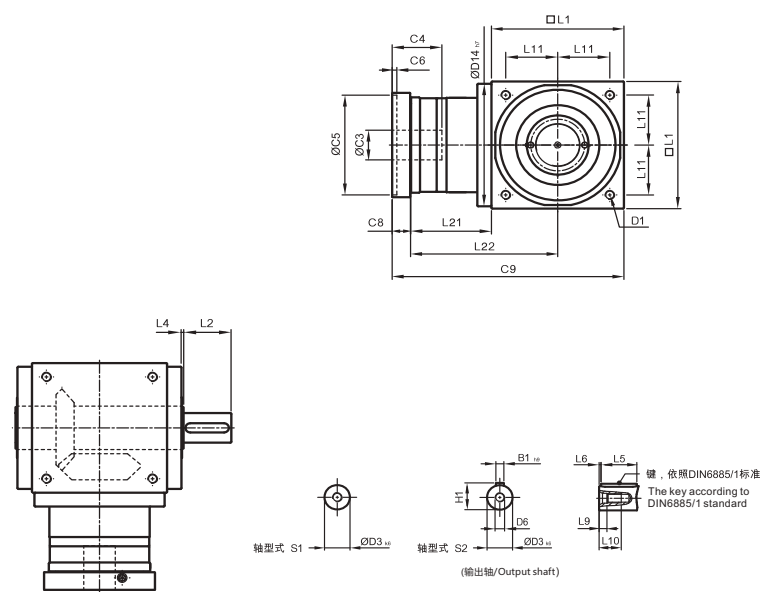
规格Model	FAT110 FL	FAT140 FL	FAT170 FL	FAT210 FL
D1	M8	M10	M12	M16
D3 k6	22	32	40	50
D4 h7	108	135	165	205
D5	53	68	83	104
D6	M8	M12	M16	M16
D7	33	47	55	75
D14 h7	108	135	165	205
L1	110	140	170	210
L2	40	50	60	75
L3	15	15	15	20
L4	2	2	2	2
L5	32	45	50	70
L6	4	2.5	5	2.5
L7	72	87	102	127
L8	112	137	162	202
L9	7.2	10	12	12
L10	19	28	36	36
L11	44	55	67	85
L13	15	15	15	20
L21	136.5	159.5	183.5	226
L22	191.5	229.5	268.5	331
C1	46	46	70	70
C2	M4	M4	M5	M5
C3	≤12	≤12	≤16	≤16
C4	30	30	34	34
C5	30	30	50	50
C6	3.5	3.5	8	8
C7	42	42	60	60
C8	21.5	21.5	21.5	21.5
C9	268	321	375	457.5
C10	14.5	14.5	15.5	15.5
B1 h9	6	10	12	14
H1	24.5	35	43	53.5

减速器的部分尺寸参考了ISO9409的标准。
如需更详细的资料, 或设计特殊的尺寸请与三凯联系。

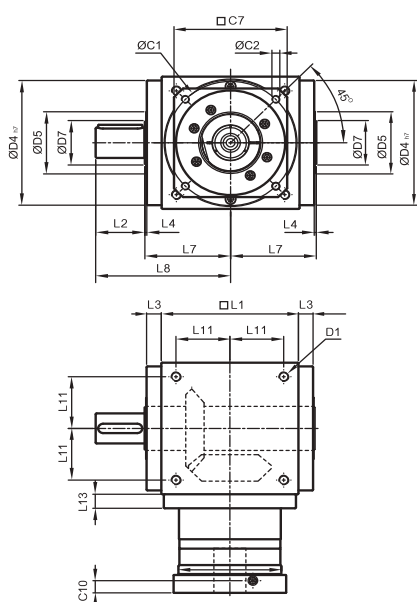
Some dimensions of gearbox refer to ISO9409 standard.
For more detailed information, or special sizes, please:contact SKGR.

产品尺寸 / product dimension

FAT-FR1, 1 stage



FAT-FL1, 1 stage



(単位: mm) (Unit:mm)

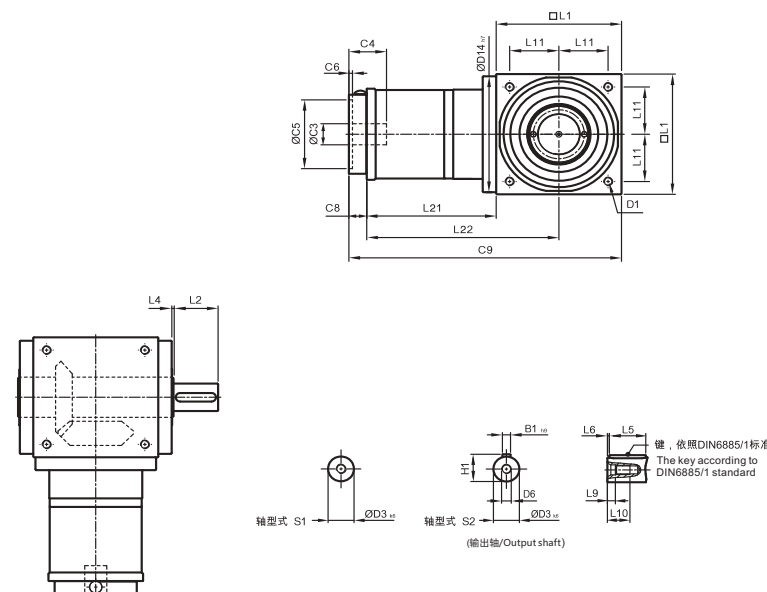
规格Model	FAT065 FL1/FR1	FAT075 FL1/FR1	FAT090 FL1/FR1	FAT110 FL1/FR1	FAT140 FL1/FR1	FAT170 FL1/FR1	FAT210 FL1/FR1
D1	M4	M6	M6	M8	M10	M12	M16
D3 _{k6}	13	16	18	22	32	40	50
D4 _{h7}	63	73	88	108	135	165	205
D5	31	35	43	53	68	83	104
D6	M4	M5	M5	M8	M12	M16	M16
D7	21	22	28	33	47	55	75
D14 _{h7}	63	73	88	108	135	165	205
L1	65	75	90	110	140	170	210
L2	19.5	30	35	40	50	60	75
L3	13	14.5	15	15	15	15	20
L4	2	2	2	2	2	2	2
L5	16	25	28	45	45	50	70
L6	2	2.5	3.5	4	2.5	5	2.5
L7	47.5	54	62	72	87	102	127
L8	67	84	97	112	137	162	202
L9	4.5	4.8	4.8	7.2	10	12	12
L10	10	12.5	12.5	19	28	36	36
L11	27	30	36	44	55	67	85
L13	13	15	15	15	15	15	20
L21	49	60.5	63	69.5	85.5	95	130
L22	81.5	98	108	124.5	155.5	180	235
C1	46	70	100	100	130	165	215
C2	M4	M5	M6	M6	M8	M10	M12
C3	≤11/≤12	≤14/≤15.875/≤16	≤19	≤24	≤32	≤38	≤42
C4	30	34	40	40	50	60	85
C5	30	50	80	80	110	130	180
C6	3.5	8	4	4	5	6	6
C7	42	60	90	90	115	142	190
C8	19.5	19	17	17	19.5	22.5	29
C9	133.5	154.5	170	196.5	245	287.5	369
C10	13.25	13.5	10.75	10.75	13	15	20.75
B1 _{h9}	5	5	6	6	10	12	14
H1	15	18	20.5	24.5	35	43	53.5

减速器的部分尺寸参考了ISO9409的标准。
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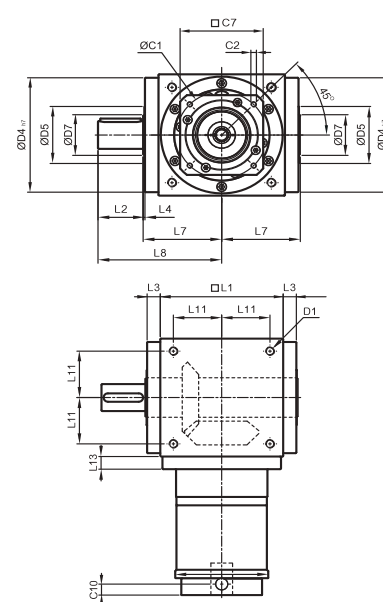
Some dimensions of gearbox refer to ISO9409 standard.
For more detailed information, or special sizes, please:contact SKGR.

产品尺寸 / product dimension

FAT-FR1, 2stages



FAT-FL1, 2stages



(单位: mm) (Unit:mm)

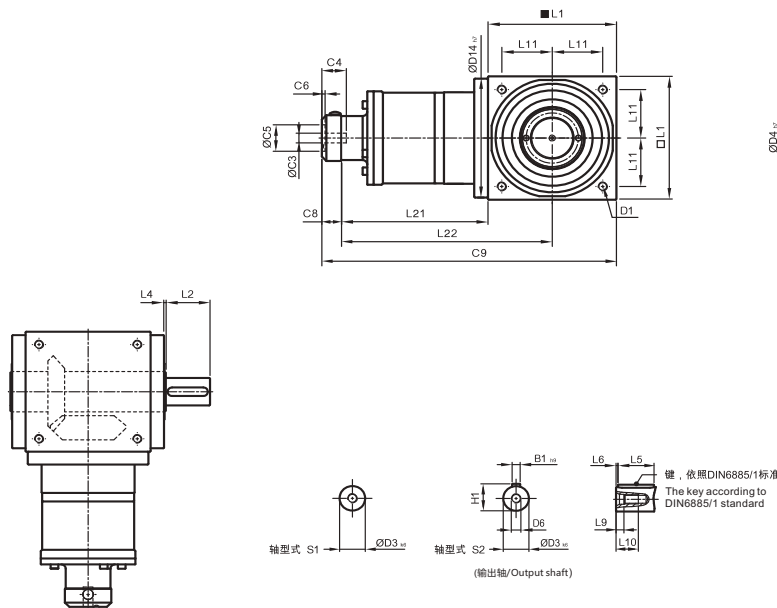
规格Model	FAT065 FL1/FR1	FAT075 FL1/FR1	FAT090 FL1/FR1	FAT110 FL1/FR1	FAT140 FL1/FR1	FAT170 FL1/FR1	FAT210 FL1/FR1
D1	M4	M6	M6	M8	M10	M12	M16
D3 k6	13	16	18	22	32	40	50
D4 h7	63	73	88	108	135	165	205
D5	31	35	43	53	68	83	104
D6	M4	M5	M5	M8	M12	M16	M16
D7	21	22	D8	33	47	55	75
D14 h7	63	73	88	108	135	165	205
L1	65	75	90	110	140	170	210
L2	19.5	30	35	40	50	60	75
L3	13	14.5	15	15	15	15	20
L4	2	2	2	2	2	2	2
L5	16	25	28	32	45	50	70
L6	2	2.5	3.5	4	2.5	5	2.5
L7	47.5	54	62	72	87	102	127
L8	67	84	97	112	137	162	202
L9	4.5	4.8	4.8	7.2	10	12	12
L10	10	12.5	12.5	19	28	36	36
L11	27	30	36	44	55	67	85
L13	13	15	15	15	15	15	20
L21	75	84.5	99	122	144.5	157.5	206.5
L22	107.5	122	144	177	214.5	242.5	311.5
C1	46	46	70	100	100	100	130
C2	M4	M4	M5	M6	M6	M6	M8
C3	≤12	≤12	≤16	≤24	≤24	≤24	≤32
C4	30	30	34	40	40	40	50
C5	30	30	50	80	80	80	110
C6	3.5	3.5	8	4	4	4	5
C7	42	42	60	92	92	92	115
C8	21.5	21.5	21.5	20	20	20	24
C9	161.5	181	210.5	252	304.5	347.5	440.5
C10	14.55	14.5	15.5	13	13	13	16
B1 h9	5	5	6	6	10	12	14
H1	15	18	20.5	24.5	35	43	53.5

减速器的部分尺寸参考了ISO9409的标准。
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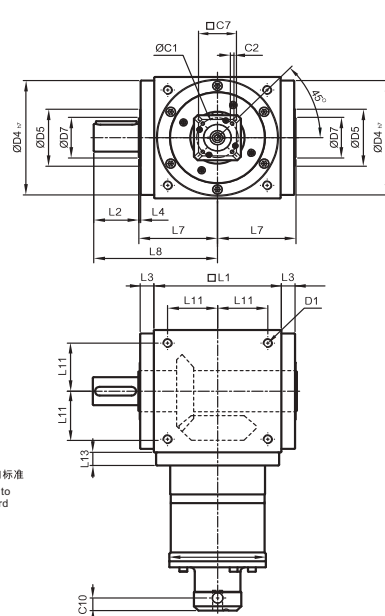
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产品尺寸 / product dimension

FAT-FR1, 3stages



FAT-FL1, 3 stages



(单位: mm) (Unit:mm)

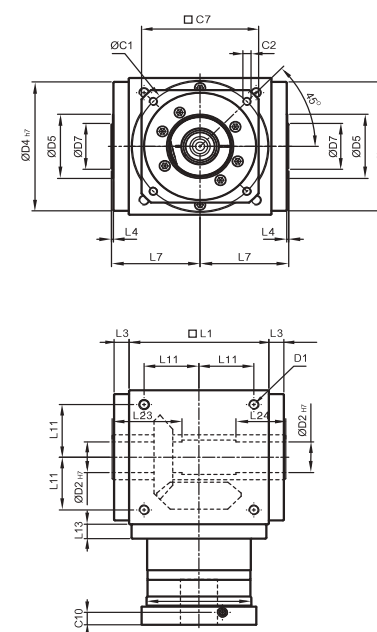
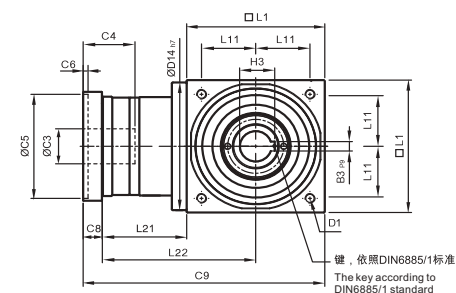
规格Model	FAT110 FL1/FR1	FAT140 FL1/FR1	FAT170 FL1/FR1	FAT210 FL1/FR1
D1	M8	M10	M12	M16
D3 _{k6}	22	32	40	50
D4 _{h7}	108	135	165	205
D5	53	68	83	104
D6	M8	M12	M16	M16
D7	33	47	55	75
D14 _{h7}	108	135	165	205
L1	110	140	170	210
L2	40	50	60	75
L3	15	15	15	20
L4	2	2	2	2
L5	32	45	50	70
L6	4	2.5	5	2.5
L7	72	87	102	127
L8	112	137	162	202
L9	7.2	10	12	12
L10	19	28	36	36
L11	44	55	67	85
L13	15	15	15	20
L21	136.5	159.5	183.5	226
L22	191.5	229.5	268.5	331
C1	46	46	70	70
C2	M4	M4	M5	M5
C3	≤12	≤12	≤16	≤16
C4	30	30	34	34
C5	30	30	50	50
C6	3.5	3.5	8	8
C7	42	42	60	60
C8	21.5	21.5	21.5	21.5
C9	268	321	375	457.5
C10	14.5	14.5	15.5	15.5
B1 _{h9}	6	10	12	14
H1	24.5	35	43	53.5

减速器的部分尺寸参考了ISO9409的标准。
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产品尺寸 / product dimension

FAT-FH, 1 stage



(单位: mm) (Unit:mm)

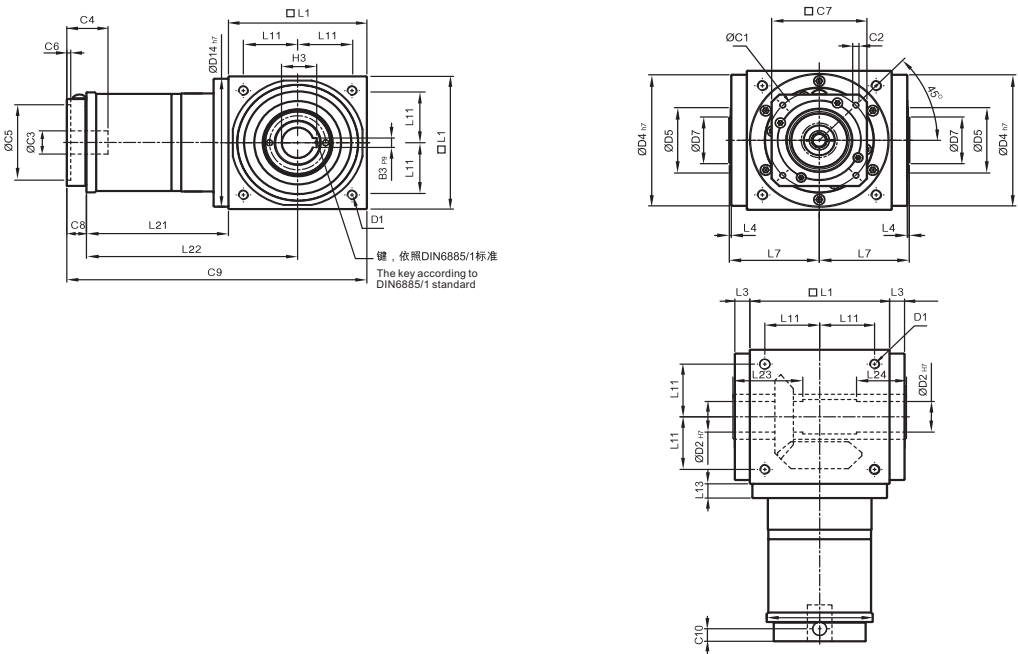
规格Model	FAT065 FH	FAT075 FH	FAT090 FH	FAT110 FH	FAT140 FH	FAT170 FH	FAT210 FH
D1	M4	M6	M6	M8	M10	M12	M16
D2 _{H7}	13	14	18	22	32	40	50
D4 _{H7}	63	73	88	108	135	165	205
D5	31	35	43	53	68	83	104
D7	21	22	28	33	47	55	75
D14 _{H7}	63	73	88	108	135	165	205
L1	65	75	90	110	140	170	210
L3	13	14.5	15	15	15	15	20
L4	2	2	2	2	2	2	2
L7	47.5	54	62	72	87	102	127
L11	27	30	36	44	55	67	85
L13	13	15	15	15	15	15	20
L21	49	60.5	63	69.5	85.5	95	130
L22	81.5	98	108	124.5	155.5	180	235
L23	40	47	52	53	70	80	95
L24	30	32	35	35	50	55	65
C1	46	70	100	100	130	165	215
C2	M4	M5	M6	M6	M8	M10	M12
C3	≤11/≤12	≤114/≤15.875/≤16	≤19	≤24	≤32	≤38	≤42
C4	30	34	40	40	50	60	85
C5	30	50	80	80	110	130	180
C6	3.5	8	4	4	5	6	6
C7	42	60	90	90	115	142	190
C8	19.5	19	17	17	19.5	22.5	29
C9	133.5	154.5	170	196.5	245	287.5	369
C10	13.25	13.5	10.75	10.75	13	15	20.75
B3 _{P9}	5	5	6	6	10	12	14
H3	15.3	16.3	20.8	24.8	35.3	43.3	53.8

减速器的部分尺寸参考了ISO9409的标准。
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产品尺寸 / product dimension

FAT-FH, 2stages



(单位: mm) (Unit:mm)

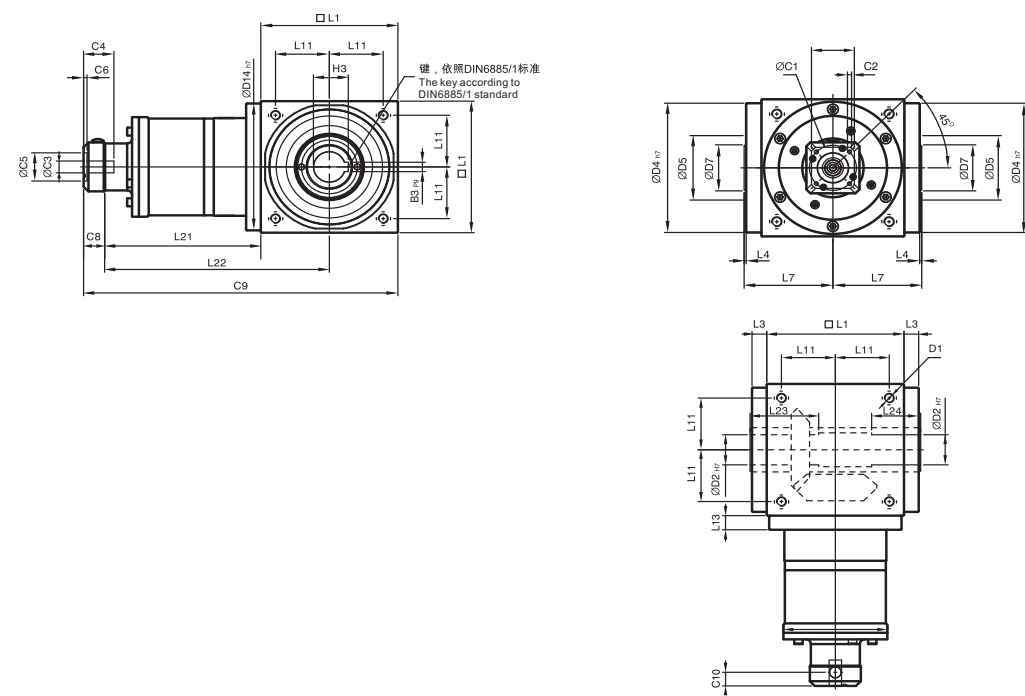
规格Model	FAT065 FH	FAT075 FH	FAT090 FH	FAT110 FH	FAT140 FH	FAT170 FH	FAT210 FH
D1	M4	M6	M6	M8	M10	M12	M16
D2 H7	13	14	18	22	32	40	50
D4 h7	63	73	88	108	135	165	205
D5	31	35	43	53	68	83	104
D7	21	22	28	33	47	55	75
D14 h7	63	73	88	108	135	165	205
L1	65	75	90	110	140	170	210
L3	13	14.5	15	15	15	15	20
L4	2	2	2	2	2	2	2
L7	47.5	54	62	72	87	102	127
L11	27	30	36	44	55	67	85
L13	13	15	15	15	15	15	20
L21	75	84.5	99	122	144.5	157.5	206.5
L22	107.5	122	144	177	214.5	242.5	311.5
L23	40	47	52	53	70	80	95
L24	30	32	35	35	50	55	65
C1	46	46	70	100	100	100	130
C2	M4	M4	M5	M6	M6	M6	M8
C3	≤12	≤12	≤16	≤24	≤24	≤24	≤32
C4	30	30	34	40	40	40	50
C5	30	30	50	80	80	80	110
C6	3.5	3.5	8	4	4	4	5
C7	42	42	60	92	92	92	115
C8	21.5	21.5	21.5	20	20	20	24
C9	161.5	181	210.5	252	304.5	347.5	440.5
C10	14.5	14.5	15.5	13	13	13	16
B3 Pg	5	5	6	6	10	12	14
H3	15.3	16.3	20.8	24.8	35.3	43.3	53.8

减速器的部分尺寸参考了ISO9409的标准。
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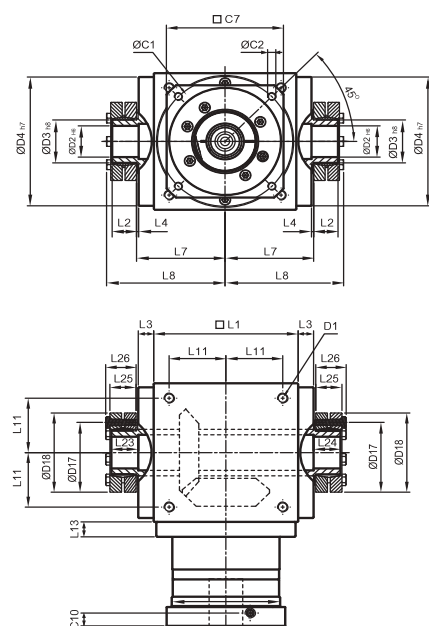
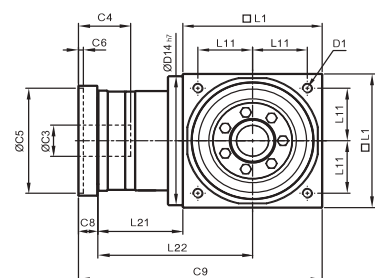
产品尺寸 / product dimension

FAT-FH, 3stages



产品尺寸 / product dimension

FAT-FC, 1 stage



(单位: mm) (Unit:mm)

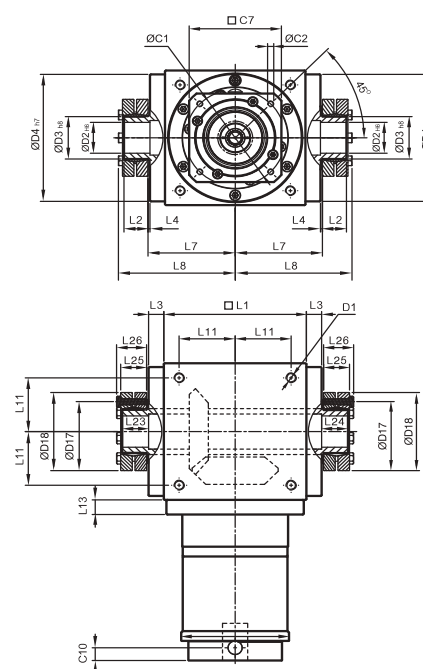
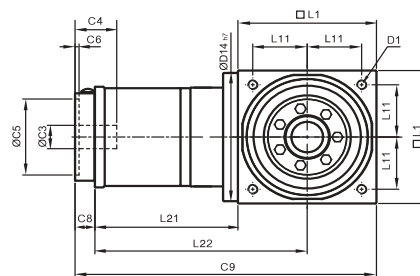
规格Model	FAT065 FC	FAT075 FC	FAT090 FC	FAT110 FC	FAT140 FC	FAT170 FC	FAT210 FC
D1	M4	M6	M6	M8	M10	M12	M16
D2 H6	13	14	18	22	32	40	50
D3 h8	16	16	22	25	44	50	62
D4 h7	63	73	88	108	135	165	205
D14 h7	63	73	88	108	135	165	205
D17	26	26	36	38	61	70	86
D18	41	41	50	50	80	90	110
L1	65	75	90	110	140	170	210
L2	14	14	18	18	24	26	29
L3	13	14.5	15	15	15	15	20
L4	2	2	2	2	2	2	2
L7	47.5	54	62	72	87	102	127
L8	66	72.5	85	95	116.5	133.5	161.5
L11	27	30	36	44	55	67	85
L13	13	15	15	15	15	15	20
L21	49	60.5	63	69.5	85.5	95	130
L22	81.5	98	108	124.5	155.5	180	235
L23	15	15	20	20	26	28	31
L24	15	15	20	20	26	28	31
L25	15	15	19.5	19.5	25.5	27.5	30.5
L26	18.5	18.5	23	23	29.5	31.5	34.5
C1	46	70	100	100	130	165	215
C2	M4	M5	M6	M6	M8	M10	M12
C3	≤11/ ≤12	≤14/≤15.875/≤16	≤19	≤24	≤32	≤38	≤42
C4	30	34	40	40	50	60	85
C5	30	50	80	80	110	130	180
C6	3.5	8	4	4	5	6	6
C7	42	60	90	90	115	142	190
C8	19.5	19	17	17	19.5	22.5	29
C9	133.5	154.5	170	196.5	245	287.5	369
C10	13.25	13.5	10.75	10.75	13	15	20.75

减速器的部分尺寸参考了ISO9409的标准。
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产品尺寸 / product dimension

FAT-FC, 2 stages



(单位: mm) (Unit:mm)

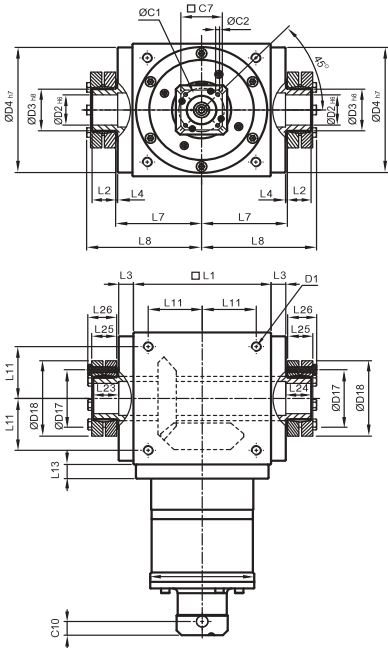
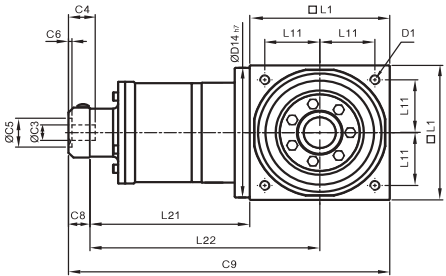
规格Model	FAT065-FC	FAT075-FC	FAT090-FC	FAT110-FC	FAT140-FC	FAT170-FC	FAT210-FC
D1	M4	M6	M6	M8	M10	M12	M16
D2 _{H6}	13	14	18	22	32	40	50
D3 _{H8}	16	16	22	25	44	50	62
D4 _{H7}	63	73	88	108	135	165	205
D14 _{H7}	63	73	88	108	135	165	205
D17	26	26	36	38	61	70	86
D18	41	41	50	50	80	90	110
L1	65	75	90	110	140	170	210
L2	14	14	18	18	24	26	29
L3	13	14.5	15	15	15	15	20
L4	2	2	2	2	2	2	2
L7	47.5	54	62	72	87	102	127
L8	66	72.5	85	95	116.5	133.5	161.5
L11	27	30	36	44	55	67	85
L13	13	15	15	15	15	15	20
L21	75	84.5	99	122	144.5	157.5	206.5
L22	107.5	122	144	177	214.5	242.5	311.5
L23	15	15	20	20	26	28	31
L24	15	15	20	20	26	28	31
L25	15	15	19.5	19.5	25.5	27.5	30.5
L26	18.5	18.5	23	23	29.5	31.5	34.5
C1	46	46	70	100	100	100	130
C2	M4	M4	M5	M6	M6	M6	M8
C3	≤12	≤12	≤16	≤24	≤24	≤24	≤32
C4	30	30	34	40	40	40	50
C5	30	30	50	80	80	80	110
C6	3.5	3.5	8	4	4	4	5
C7	42	42	60	92	92	92	115
C8	21.5	21.5	21.5	20	20	20	24
C9	161.5	181	210.5	252	304.5	347.5	440.5
C10	14.5	14.5	15.5	13	13	13	16

减速器的部分尺寸参考了ISO9409的标准。
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产品尺寸 / product dimension

FAT-FC. 3 stages



(单位: mm) (Unit:mm)

规格Model	FAT110-FC	FAT140-FC	FAT170-FC	FAT210-FC
D1	M8	M10	M12	M16
D2 H6	22	32	40	50
D3 h8	25	44	50	62
D4 h7	108	135	165	205
D14 h7	108	135	165	205
D17	38	61	70	86
D18	50	80	90	110
L1	110	140	170	210
L2	18	24	26	29
L3	15	15	15	20
L4	2	2	2	2
L7	72	87	102	127
L8	95	116.5	133.5	161.5
L11	44	55	67	85
L13	15	15	15	20
L21	136.5	159.5	183.5	226
L22	191.5	229.5	268.5	331
L23	20	26	28	31
L24	20	26	28	31
L25	19.5	25.5	27.5	30.5
L26	23	29.5	31.5	34.5
C1	46	46	70	70
C2	M4	M4	M5	M5
C3	≤12	≤12	≤16	≤16
C4	30	30	34	34
C5	30	30	50	50
C6	3.5	3.5	8	8
C7	42	42	60	60
C8	21.5	21.5	21.5	21.5
C9	268	321	375	457.5
C10	14.5	14.5	15.5	15.5

减速器的部分尺寸参考了ISO9409的标准。
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安装说明 / INSTALLATION INSTRUCTION

表一 马达锁紧螺丝扭力建议表 Suggested torque table for motor locking screws

螺丝尺寸	六角头尺寸 Hexagon head size	强度8.8 Strength 8.8		强度10.9 Strength 10.9		强度12.9 Strength 12.9	
	[mm]	[Nm]	[In-lbs]	[Nm]	[In-lbs]	[Nm]	[In-lbs]
M3x0.5P	2.5	1.3	12	1.8	16	2.1	19
M4x0.7P	3	3	27	4.1	37	4.9	44
M5x0.8P	4	6.1	55	8.2	73	9.8	87
M6x1P	5	11	98	14	124	17	151
M8x1.25P	6	25	222	34	302	41	364
M10x1.5P	8	49	434	67	594	80	709
M12x1.75P	10	85	753	116	1028	139	1232
M14x2P	12	137	1214	186	1648	223	1976
M16x2P	14	210	1860	286	2534	343	3038

表二 减速机锁紧螺丝扭力建议表 Suggested torque table for the locking screw of the gearbox

减速机型号 Reducer model				马达轴径 Motor shaft diameter	螺丝尺寸 Screw Size	六角头尺寸 Hexagon head size	锁紧扭力 Locking torque	
				[mm]	[mm]	[mm]	[Nm]	[In-lbs]
FAB042 FABR042 FAD047 FADR047 FG040 FGA040 FB042 FBR042	单级 Single stage			≤12	M3x0.5Px10L	2.5	2.1	19
	双级 Dual stages			≤12	M3x0.5Px10L	2.5	2.1	19
FAB060 FABR060 FAD064 FADR064 FB060 FBR060 FE070 FER070 FG060 FGA060 FGR060 FGAR060 FAF060 FAFR060	单级 Single stage			≤19	M5x0.8Px14L	4	9.8	87
	双级 Dual stages			≤19	M5x0.8Px14L	4	9.8	87
FAB090 FABR090 FAD090 FADR090 FB090 FBR090 FE090 FER090 FG080 FGA080 FGR080 FGAR080 FAF070 FAFR070	单级 Single stage			≤24	M6x1Px 20L	5	17	151
	双级 Dual stages			≤19	M5x0.8Px14L	4	9.8	87
FAB115 FABR115 FAD110 FADR110 FB115 FBR115 FE120 FER120 FG120 FGR120 FGA120 FGAR120 FAF100 FAFR100	单级 Single stage			≤35	M8x1.25Px25L	6	41	364
	双级 Dual stages			≤24	M6x1Px 20L	5	17	151
FAB142 FABR142 FAD140 FADR140 FB142 FBR142 FE155 FER155 FG160 FGR160 FGA160 FGAR160 FAF140 FAFR140	单级 Single stage			≤38	M10x1.5Px30L	8	80	709
	双级 Dual stages			≤35	M8x1.25Px25L	6	41	364
FAB180 FABR180 FAD200 FADR200 FB180 FBR180 FBR180 FER205 FAF180 FAFR180	单级 Single stage			≤50	M12x1.75Px35L	10	139	1232
	双级 Dual stages			≤38	M10x1.5Px30L	8	80	709
FAB220 FABR220 FAD255 FADR255 FE235 FB220 FBR220 FER235	单级 Single stage			≤55	M16x2Px40L	14	343	3038
	双级 Dual stages			≤50	M12x1.75Px35L	10	139	1232

备注：螺丝锁紧扭力必须大于上述值。若有需要时，可将锁紧扭力多增加上述建议值之20%，以避免打滑。
Note: The screw tightening torque must be greater than the above value. If necessary, the tightening torque can be increased by 20% of the above recommended value to avoid slipping.

安装说明 / INSTALLATION INSTRUCTION

1 减速机外观的确认

*请先确认减速机型号是否正确

2 伺服马达的安装

* 伺服马达的安装根据以下步骤实施

* 请使用根据订单提供的伺服电机进行安装

1.Confirm the appearance of the reducer

Please confirm if the reducer model is correct

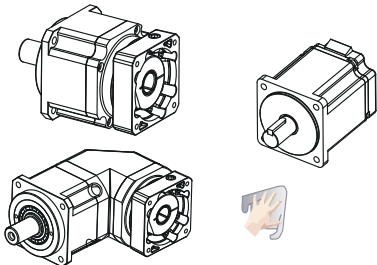
2.Installation of the servo motor

The installation of servo motor according to the following steps

Please proceed the installation of the servo motor according to the order

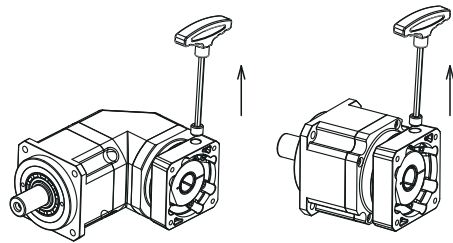
1 确认马达与减速机规格，并将马达及减速机之安装面擦拭干净。

Confirm the specifications of motor and reducer, and wipe the mounting surface of motor and reducer clean.



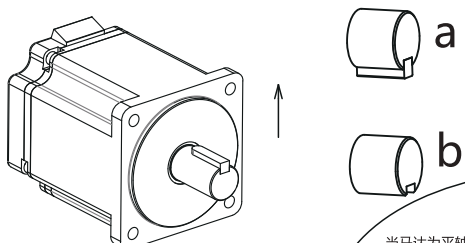
2 将入力法兰侧孔堵头螺丝取出，转动马达锁紧鞍，直到锁紧鞍螺丝对准法兰侧孔。

Take the plug screw out of the flange side hole, and rotate the motor locking hub until the locking hub screw is aligned with the flange side hole.



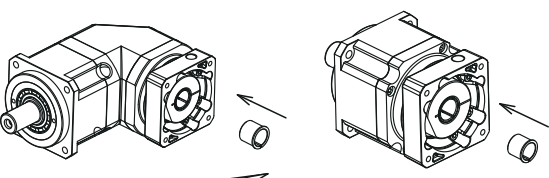
3 取下马达上原先之平键；如有必要，请安装平衡键。

Remove the original flat key from the motor; If necessary, install the balance key.



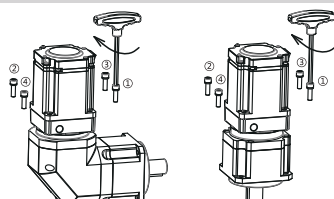
4 确认马达轴心尺寸，若有必要，装上轴套。

Confirm the axis size of the motor and install the sleeve if necessary.



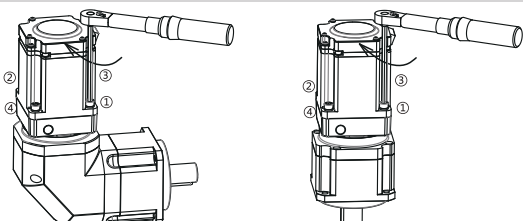
5 直立式的装入马达，以螺丝扭力表（表一）建议扭力值之5%，依1~4顺序，用扳手将附垫片之螺丝轻轻锁上。

Install the motor in a vertical position, and use a wrench to gently lock the screws with gasket according to the order of 1 ~ 4 with 5% of the recommended torque value in the screw torque table (Table 1).



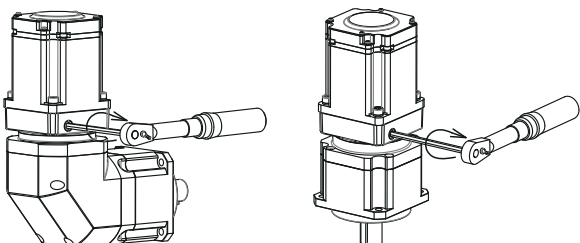
6 将马达与减速机直立摆设，以螺丝扭力表（表一）建议扭力值，依1~4的顺序，用扭力扳手将螺丝锁紧。

Place the motor and reducer vertically. Lock the screws with torque wrench in the order of 1~4, according to the recommended torque value in the screw torque table (Table 1).



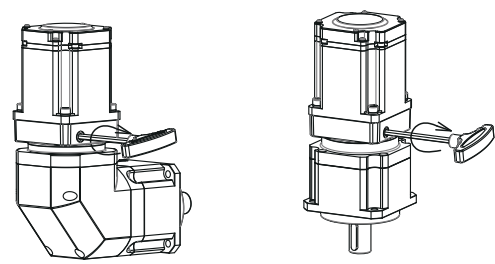
7 参照表二建议之扭力值，用扭力扳手将马达锁紧鞍螺丝锁紧。

According to the recommended torque value in Table 2, lock the locking hub screw with torque wrench.



8 锁回法兰侧孔堵头螺丝。

Lock the flange side hole plug screw.



正确的锁固方式

当马达为平轴状，对准轴夹缝在平轴中心线，使锁紧鞍螺丝与平轴呈垂直。

Correct locking method

When the motor is in the shape of a flat shaft, the opposite shaft is clamped on the center line of the flat shaft, so that the locking hub screw is perpendicular to the flat shaft.

