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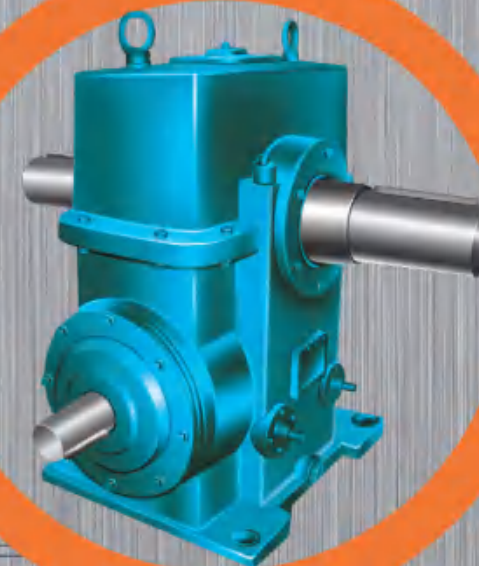
中国名牌产品 CHINA TOP BRAND



国家大型企业 NATIONAL LARGE ENTERPRISE



中国驰名商标
CHINA WELL-KNOWN
TRADEMARK



包络蜗轮蜗杆 减速器



TAILONG MACHINERY



中国驰名商标
CHINA WELL-KNOWN
TRADEMARK

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JIANGSU TAILONG MACHINERY GROUP COMPANY

江苏泰隆减速机股份有限公司

JIANGSU TAILONG DECELERATOR MACHINERY CO.,LTD.

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公司简介

泰隆集团地处扬子江畔的泰兴市区，是泰兴人引以为豪的国家大型企业。泰隆集团东临沪宁高速，西靠南京禄口机场，南有江阴大桥，交通便捷，物流畅通，具有得天独厚的区位优势。

集团在全国优秀企业家、江苏省劳动模范董事长殷根章的领导下，经过20多年的悉心经营，昂首迈进了中国机械工业500强，成为全国减速机行业排头兵企业。集团现拥有总资产12.06亿元，固定资产6.92亿元，占地面积80万平方米，员工3162人，专业工程技术人员991人。拥有美国、德国、日本、俄罗斯、奥地利等国家引进的大型数控磨齿机、大型数控镗铣床、蜗杆磨床、加工中心、碳氮共渗炉等一批高精尖的生产设备和检测设备达48%。建立了全国同行业中检测功能最全、仪器最先进的2000kW测试中心，创建了江苏省技术中心、江苏省传动机械与控制工程技术研究中心、泰隆集团-哈工大工程技术研究中心、博士后科研工作站。公司的主导产品减速机在原有十几个系列，几十万种规格的基础上，采用先进的模块化、点线啮合等技术开发出了TL模块化齿轮减速机、TXP行星模块化减速机、重载模块化齿轮减速机、点线啮合减速机、立式磨齿及边缘传动磨齿齿轮箱、铝冶行业的联合开卷卷取齿轮箱、三环减速机、星轮减速机、风电齿轮箱、水力发电变速装置、核电循环水泵驱动变速装置等高新技术产品，以及各类特殊非标齿轮箱。泰隆工业园区已经成为国内最大的钢帘线设备生产基地，双叶、三叶罗茨风机及高温风机批量出口东南亚及欧美。

我们的产品成功应用于中华世纪坛、三峡大坝、嫦娥一号发射、杭州湾跨海大桥、北京奥体馆、上海世博会等国家重点工程。重点客户有宝钢集团、首钢集团、上海振华港机、燕山石化、葛州坝集团、北京水工、中国铝业、伊拉克泵站、桂林橡塑、乐山成发、三一重工等。

公司现为全国减速机标准化技术委员会秘书处单位，荣获“全国首批守合同重信用企业”，“国家重点高新技术企业”，“全国机械工业质量效益型先进企业”，“全国机械工业质量管理奖”，“全国用户满意服务”，“全国机械工业质量管理小组活动优秀企业”等殊荣。在同行业中率先通过了国家AAAA标准化良好行为企业认证、一级安全质量标准化机械制造企业认证、GB/T19022-2003完善计量检测体系认证、ISO9001-2008质量体系认证、ISO14001-2004环境体系认证、OHSAS18001-1999职业健康安全认证。产品通过矿用产品安全标志认证、起重行业型式试验认可认证，泰隆牌商标被国家工商总局认定为中国驰名商标，泰隆牌减速机被评为中国名牌产品。

泰隆人将遵循自己一贯的质量承诺、服务承诺和信誉承诺，把顾客满意当作我们的最高追求！

Company Brief

Tailong Group, located in Taixing city along riverside of the Yangzi River, is a national giant enterprise which Taixing people are proud of. Tailong Group is east to Highway of Shanghai-Nanjing, west to Nanjing Lukou airport and south to the Jiangyin Bridge. Convenient transportation and smooth physical distribution build the unparalleled location advantages for Tailong Group.

With effortful operation for over 20 years, Tailong Group, under leadership of national outstanding entrepreneur, chairman Mr. Yin genzhang, a model worker of Jiangsu Province, has developed in one of top 500 machinery industrial enterprises in China, playing a leading role in domestic reducer/transmission industry.

At present, the group has total assets of RMB1206million, and fixed assets of RMB 692 million, and it covers an area of 800,000 square meters and more than 3000 employees, where professional technicians account for 991. 48% of our equipments are sophisticated and advanced manufacturing equipments and testing equipments such as large CNS gear grinding machine, large CNC boring and milling machine, worm grinder, machining centre, and carbonitriding furnace that are imported from USA, Germany, Japan, Russia, Australia and so on. Diameter of machining work piece reaches 5m to the maximum. Single reducer we produced reaches 120 tons to the maximum. We have established a 2000kW testing center with most complete testing function and most advanced instruments of the industry national wide, and established a provincial engineering technical center, mechanical transmission and control Engineering Research Center of Jiangsu Province, Tailong Group - Harbin Technology Engineering Research Center and a post-doctoral research station. The dominant product, the reducer is available in decades of series and several hundred thousand specifications. Equipped with advanced modular and dot line engagement technology, we have additionally developed series of high tech products such as TL modular gear retarded machine, TXP modular planet reducer, heavy load modular gear retarded machine, dot line engaged reducer, vertical grinder and edge drive grinder gearbox, joint, open-book, take-up gearbox used for aluminum metallurgy industry, three ring gear reducer, planetary wheel speed reducer, wind driven gearbox, transmission for hydro-power generation, nuclear circling pump driven gearbox, and various special non-standard gearboxes. Tailong Industrial Park has become the largest steel cord production base of national wide. Our two-vane and three-vane Roots blowers and high temperature blower are exported to South East Asia, Europe and America in batches.

Our products are successfully used in the China Millennium Monument, the Three Gorges Dam, the Chang'e launch, Hangzhou Bay Bridge, Beijing Olympic Gymnasium, the Shanghai World Expo and other national key projects. Key customers include Baosteel Group, Shougang Group, Shanghai Zhenhua Port Machinery, Yanshan Petrochemical, Gezhouba Group, Beijing hydraulic, China aluminium, Iraqi pump station, Guilin Rubber, Leshan Chengfa, Sany Heavy Industry and so on.

The company is now a secretariat unit for national technical committee for standardization of reducer. We are ever granted as "national first contract respecting and credit-keeping enterprise", "national key high-tech enterprise", "national high quality and efficiency unit in machinery industry", "quality management award of national machinery industry", "national custom satisfied service", "excellent enterprise of quality management team activity of national machinery industry" and so on. We are certified as the good enterprise with better standardization with national AAAA certification and the first grade safety quality standardized machinery manufacturing enterprise and have passed such certifications as GB/T 19022-2003 perfect measurement test system, ISO 9001-2008 quality system, ISO 14001-2004 environment system, and OHSAS 18001-1999 occupational health and safety. Our products are certified with safety marks for mining products and recognized pass lifting industry type test. Tailong brand is recognized as the Chinese famous brand by national industrial and commercial bureau and Tailong reducer is awarded as the Chinese famous brand product.

Tailong people will keep to its persistent quality guarantee, service guarantee and credit, satisfying customer as our topmost pursuit.

本册目录 Catalogue

一、 包络蜗轮蜗杆减速器概述	1
Brief of enveloping worm gearing reducer	
二、 TP 系列平面二次包络环面蜗杆减速器	1
TP series planar double-enveloping worm gearing reducer	
三、 PW 系列平面二次包络环面蜗杆减速器	11
PW series planar double-enveloping worm gearing reducer	
四、 HW 系列直廓环面蜗杆减速器	17
HW series enveloping worm with straight line generatrix reducer	
五、 KW 系列锥面包络圆柱蜗杆减速器	21
KW series milled helicoids worm reducer	
六、 所有平面包络减速器的润滑	30
Reducer lubrication	
七、 所有平面包络减速器的承载能力及传动效率	30
Carrying capacity and transmission efficiency of reducer	
八、 减速器的选用方法	40
Reducer selection method	
九、 干粉压机专用减速器	44
Special-purpose reducers for dried powder press	
十、 RD 系列连铸机用减速器	46
RD series special-purpose reducer for Continuous casting plant	

包络蜗轮蜗杆减速器概述

Brief of enveloping worm gearing reducer

环面蜗轮蜗杆减速器一种新型的传动装置。其承载能力大，传动效率高，结构紧凑、合理，主要适用于冶金、矿山、起重、运输、石油、化工，建筑、橡塑、船舶等机械设备的减速传动。

Enveloping worm gearing reducer is a new type gearing. It has large loading capacity, high efficiency, compact reasonable dimension. They are mainly used for decelerate drive of metallurgy, mining, lifting, transportation, oil, chemistry, building, rubber & plastic, shipping etc.

适用的工作条件 The working :

- 两轴交交错角为 90° ;
 - 蜗杆转速不超过 1500r/min;
 - 蜗杆中间平面分度圆滑动速度不超过 16m/s;
 - 工作环境温度为 $0-40^{\circ}\text{C}$, 当环境温度低于 0°C 或高于 40°C 时，润滑油要相应加热或冷却;
 - 蜗杆轴可正、反向运转。
- The interlaced degree of two shafts is 90° .
 - Worm rotation speed $\leq 1500\text{m/min}$.
 - Sliding velocity of reference toroid of worm is less than 16m/s.
 - Service ambient temperature: $0-40^{\circ}\text{C}$.if the temperature is below 0°C or over 40°C ,the lubricating oil must be heated up or cooling.
 - The worm shaft can rotate towards positive and negative.

TP 系列平面二次包络环面蜗杆减速器

TP series planar double-enveloping worm gearing reducer (引用标准 JB/T9051-2010 Reference standard JB/T9051-2010)

一、型式与基本参数 Type and basic datas

1、型式 Type

- TPG 型——通用型平面包络环面蜗杆减速器。蜗杆可在蜗轮之上、之下、水平之侧或垂直在侧，见图 1、图 2、图 3、图 4。
TPG-common type plane envelope ring surface worm decelerators.worm can be above,under or in the side of worm wheel horizontaly or vertically,see graph 1,graph 2,graph 3,graph 4.
- TPU 型——蜗杆在蜗轮之下，见图 5、图 6：
TPU type——worm below worm gear, see graph 5,6;
- TPS 型——蜗杆在蜗轮之侧，见图 7、图 8：
TPS type——worm beside worm gear, see graph 7,8;
- TPA 型——蜗杆在蜗轮之上，见图 9、图 10。
TPA type——worm on worm gear, see graph 9,10;

2、基本参数 Basic datas

2.1 减速器的中心距 a 应符合表 1 的规定。

The center space a of reducer should be in accordance with stipulation in table 1.



表 1 减速器中心距 a

Table 1. Center space a of reducer

mm

中心距 a		Center space a							
80	100	125	160	200	250	315	400	500	

2.2 减速器的公称传动比 i 应符合表 2 的规定。

The reducer's nominal transmission ratio i should be in accordance with stipulation in table 2.

表 2 传动比 i

Table 2. Transmission ratio i

型式 Type	TPG	TPU	TPS	TPA					
第一系列 No.1 series	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0
第二系列 No.2 series		14.0	18.0	22.4	28.0	35.5	45.0	56.0	

注：优先选用第一系列

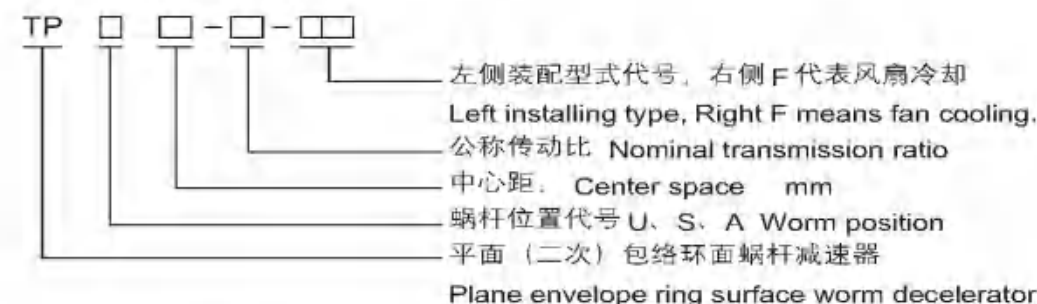
Note: No.1 series reducer is superior.

2.3 减速器可以承受的短时间峰值负荷为额定转矩的 1.5 倍。

The temporary peak load reducer can sustain is 1.5 times of the rated torque.

3、型号与标记示例 Type and symbol example

3.1 型号 Type



3.2 标记示例 Symbol example

例 蜗杆在蜗轮之下，中心距为 200mm，公称传动比为 10，第二种装配型式，有风扇冷却的平面包络环面蜗杆减速器：

Example: Worm under worm gear, center space of 200m, nominal transmission ratio of 10, the second installing form fan cooling.

减速器 Symbol: reducer TPU200-10-2F JB/T 9051-1999

4、减速器的结构尺寸 Structure size

4.1 TPG 系列蜗杆减速器尺寸见图 1、图 2、图 3、图 4 及表 3、表 4、表 5、表 6

Drawing 1,Drawing 2,Drawing 3,Drawing 4 and table 3,table 4,table 5,table6 show size of TPG series worm reducer

4.2 TPU 系列蜗杆减速器 TPU series worm decelerator

a) 整体箱体，中心距为 100mm 的减速器尺寸见图 5、表 7：

Drawing 5 and table 7 show size of mono-box decelerator with center space of 100mm

b) 分箱式箱体，中心距为 125-500mm 的减速器尺寸见图 6、表 8。

Drawing 6 and table 8 show size of sub-box decelerator with center space of 125-500mm.

4.3 TPS 系列蜗杆减速器 TPS series worm decelerator

a) 整体箱体，中心距为 100mm 的减速器尺寸见图 7、表 9：

Drawing 7 and table 9 show size of mono-box decelerator with center space of 100mm.

b) 分箱式箱体，中心距为 125-500mm 的减速器尺寸见图 8、表 10。

Drawing 8 and table 10 show size of sub-box decelerator with center space of 125-500mm.

4.4 TPA 系列蜗杆减速器 TPA series worm decelerator

a) 整体箱体，中心距为 100mm 的减速器尺寸见图 9、表 11:

Drawing 9 and table 11 show size of mono-box decelerator with center space of 100mm.

b) 分箱式箱体，中心距为 125-500mm 的减速器尺寸见图 10、表 12.

Drawing 10 and table 12 show size of sub-box decelerator with center space of 125-500mm.

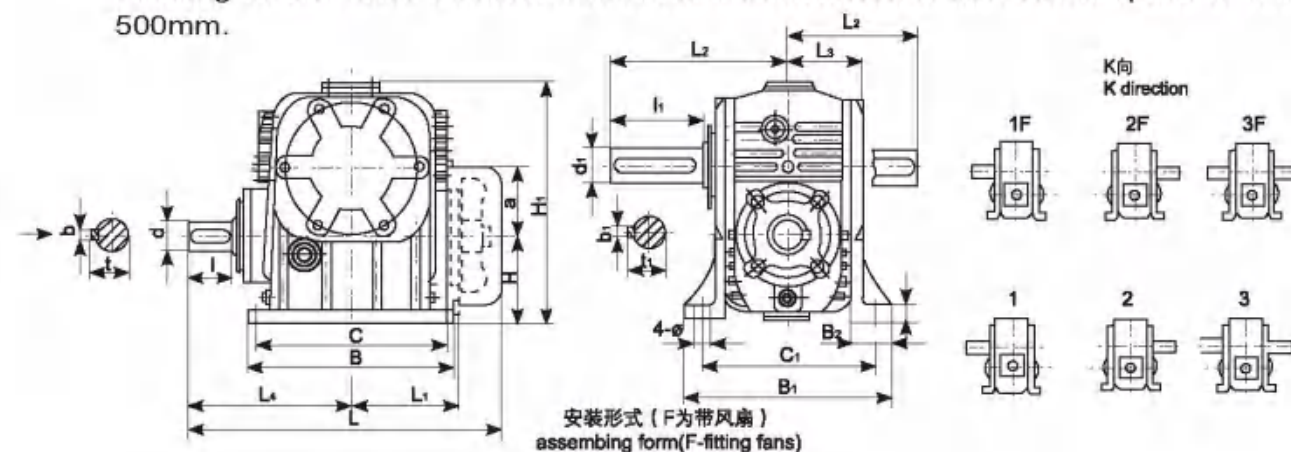


图 1 Drawing 1

表 3 Table 3

型号 Type	a	B	B ₁	B ₂	C	C ₁	H	H ₁	L	L ₁	L ₂	L ₃	L ₄	l	h	d	d ₁	b	b ₁	t	t ₁	h	e	重量 kg weight
TPG80	80	250	242	50	220	206	100	280	381	130	210	86	201	58	110	35	45	10	14	38	48.5	18	19	53
TPG100	100	290	284	58	250	240	110	334	464	160	235	102	230	58	110	40	55	12	16	43	59	20	19	85

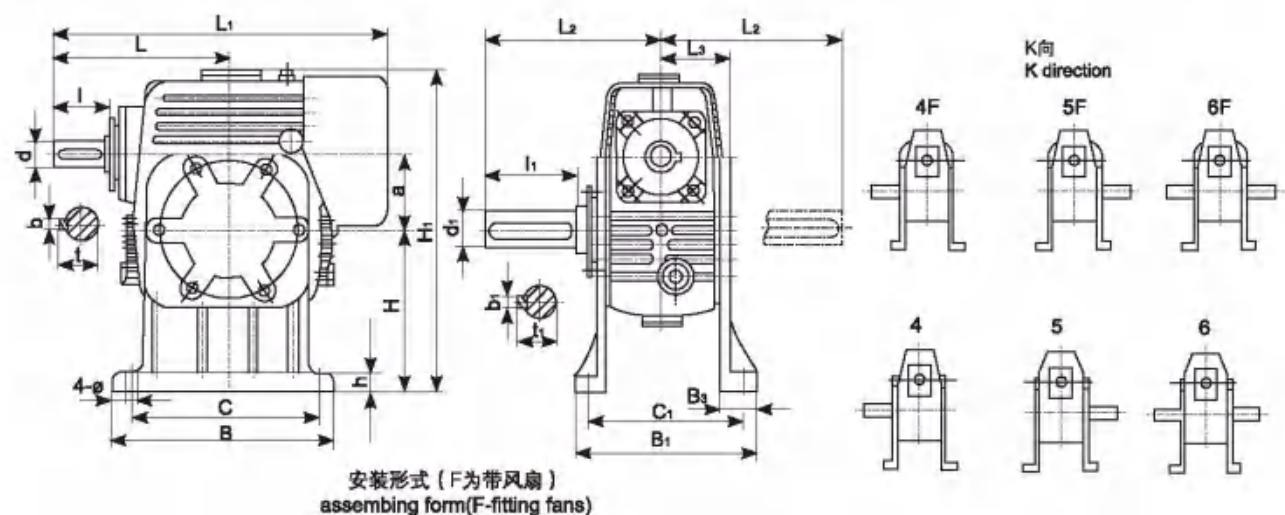


图 2 Drawing 2

表 4 Table 4

型号 Type	a	B	B ₁	C	C ₁	H	H ₁	L	L ₁	L ₂	L ₃	B ₂	l	l ₁	d	d ₁	t	t ₁	b	b ₁	h	ø	重量 kg weight
TPG80	80	250	242	220	206	180	360	201	381	210	86	50	58	110	35	45	38	48.5	10	14	18	19	53
TPG100	100	290	284	250	240	210	415	230	464	235	102	58	58	110	40	55	43	59	12	16	20	19	85

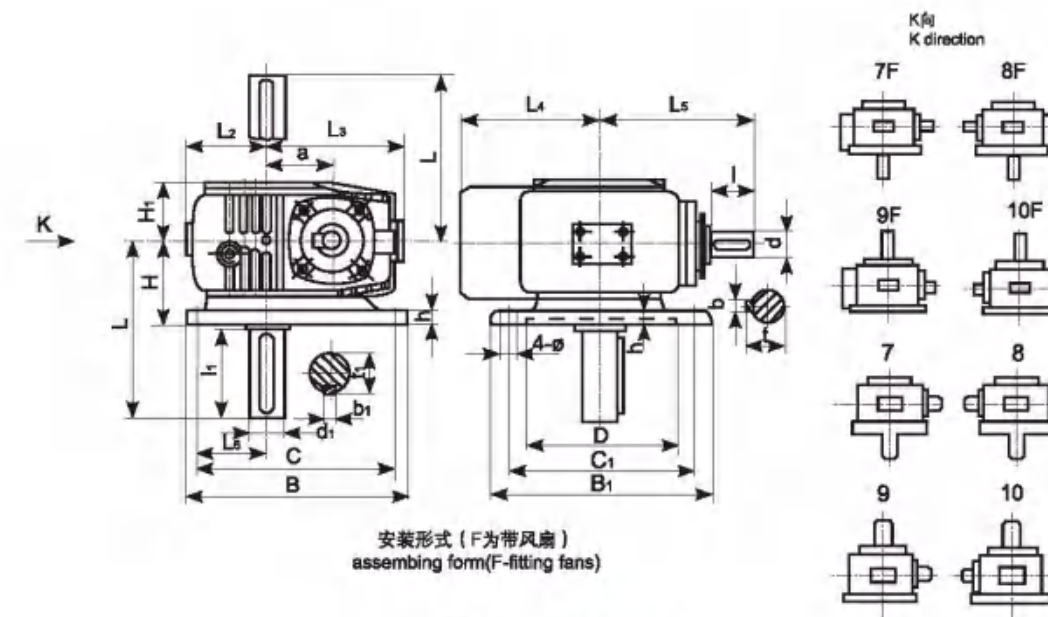


图 3 Drawing 3

表 5 Table 5

型号 Type	a	øD	h	B	B ₁	C	C ₁	H	H ₁	L	L ₂	L ₃	L ₄	L ₅	l	l ₁	d	d ₁	b	b ₁	t	t ₁	L ₆	h	ø	重量 Kg weight
TPG80	80	140	5	270	260	240	230	110	86	210	100	180	18	201	58	110	35	45	10	14	38	48.5	75	18	19	53
TPG100	100	170	5	300	300	260	260	125	102	235	125	206	210	230	58	110	40	55	12	16	43	59	90	20	19	85

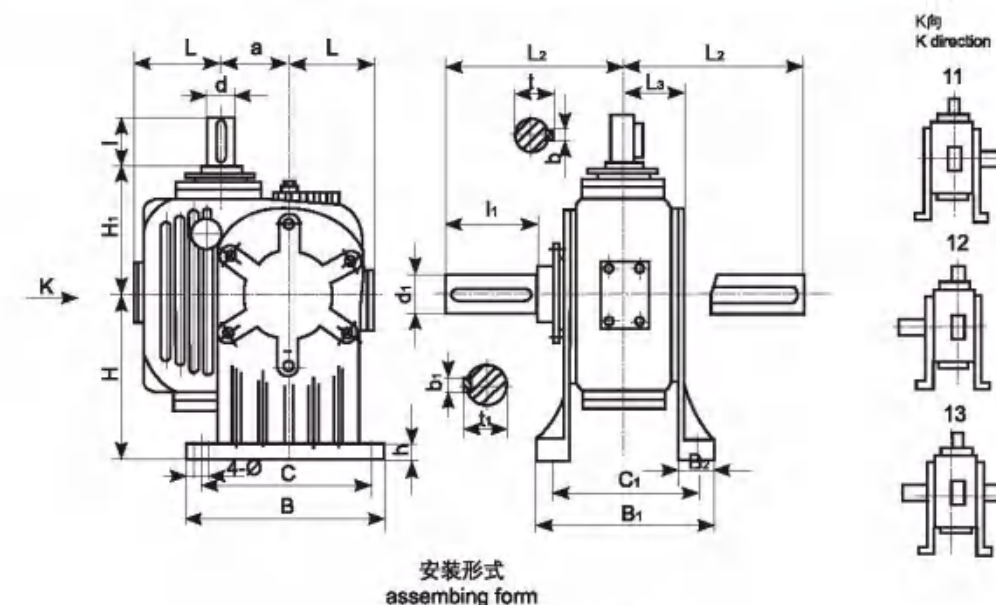
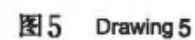


图 4 Drawing 4

表 6 Table 6

型号 Type	a	B	B ₁	C	C ₁	H ₁	H	B ₂	L	L ₁	L ₂	L ₃	L	h	d	d ₁	t	t ₁	b	b ₁	h	s	重量 kg weight
TPG80	80	250	242	220	206	143	180	50	100	98	210	86	58	110	35	45	38	48.5	10	14	18	19	53
TPG100	100	290	284	250	240	172	210	58	106	123	235	108	58	110	40	55	43	59	12	16	20	19	85



型 号 Type	a	B	B1	C	C1	E	E1	H	H1	L	L1	L2	I	I1	d	d1	b	b1	t	t1	h	ø	重量 Weight kg
TPU100	100	320	260	280	220	160	130	150	382	235	237	200	82	110	40	55	12	16	43	59	30	19	88

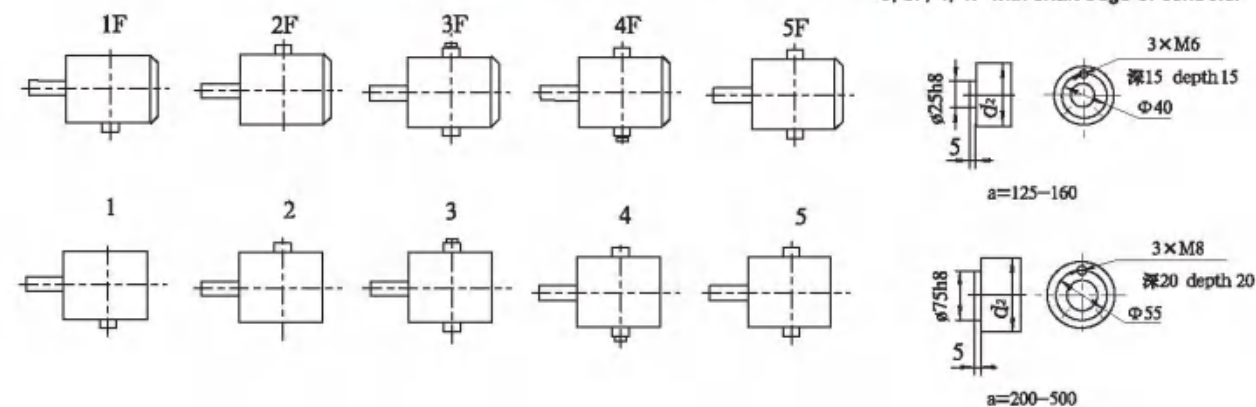
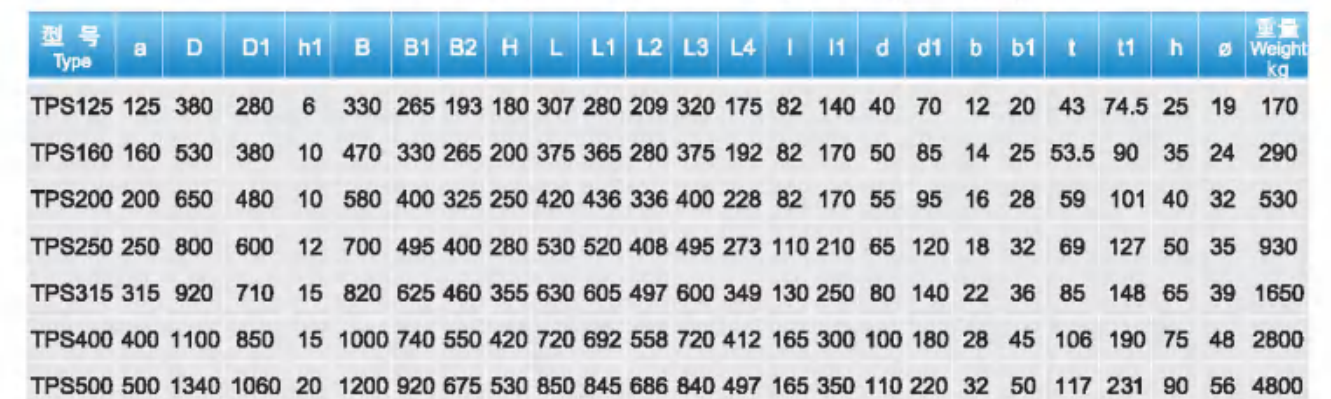


图6 Drawing 6

型 号 Type	A	B	B1	B2	C	C1	H	H1	h	L	L1	L2	L3	L4	L5	I	I1	d	d1	d2	b	b1	t	t1	e	重量 Weight kg
TPU125	125	300	300	70	250	250	125	422	30	307	320	195	290	205	175	82	140	40	70	80	12	20	43	74.5	19	157
TPU160	160	380	375	100	320	310	160	540	40	375	375	210	360	280	192	82	170	50	85	95	14	25	53.5	90	24	258
TPU200	200	450	450	125	370	370	200	650	40	420	400	235	435	345	228	82	170	55	95	110	16	28	59	101	28	475
TPU250	250	600	550	150	500	450	225	820	50	530	495	290	520	408	273	110	210	65	120	140	18	32	69	127	35	800
TPU315	315	720	590	150	630	500	280	990	65	630	600	380	605	492	349	130	250	80	140	160	22	36	85	148	39	1450
TPU400	400	850	720	180	750	620	320	1200	75	720	720	425	692	558	412	165	300	100	180	200	28	45	106	190	48	2500
TPU500	500	1060	900	200	920	780	400	1490	90	850	840	495	845	686	497	165	350	110	220	240	32	50	117	231	56	4500



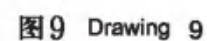
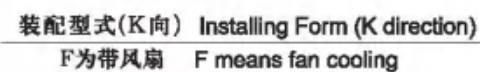
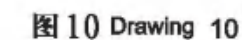
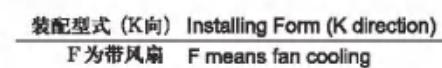


表 11 TPA 型减速器的尺寸 (整箱式) mm
Table 11. Dimension of TPA decelerator (mono-box)

表 12 TPA 型减速器的尺寸 (分箱式) mm
Table 12. Dimension of TPA decelerator (sub-box)

型 号 Type	a	B	B1	B2	C	C1	H	H1	h	L	L1	L2	L3	L4	L5	l	l1	d	d1	d2	b	b1	t	t1	e	重量 Weight
TPA125	125	360	300	50	310	250	180	438	30	307	320	185	280	205	175	82	140	40	70	80	12	20	43	74.5	19	185
TPA160	160	460	320	80	400	260	225	550	40	375	375	210	365	280	190	82	170	50	85	95	14	25	53.5	90	24	285
TPA200	200	540	400	100	450	320	250	658	40	420	400	235	436	345	228	82	170	55	95	110	16	28	58	101	28	510
TPA250	250	720	480	120	620	380	315	792	50	530	495	290	520	406	270	110	210	65	120	140	18	32	69	127	35	900
TPA315	315	850	600	140	750	500	400	1000	65	630	600	360	605	492	345	130	250	80	140	160	22	36	85	148	39	1550
TPA400	400	950	720	170	850	620	500	1200	75	720	720	425	690	540	410	165	300	100	180	200	28	45	108	190	48	2850
TPA500	500	1180	900	200	1040	760	630	1530	90	850	840	495	845	680	488	165	350	110	220	240	32	50	117	231	56	4700



PW 系列平面二次包络环面蜗杆减速器

PW series planar double-enveloping worm gearing reducer

(引用标准 GB/T16444-1996 Reference standard GB/T16444-1996)

一、型式与基本参数 Type and basic datas

1、型式 Type

a) PWU 型——蜗杆在蜗轮之下，见图 1、图 2；

PWU type——worm below worm wheel, see drawing 1, drawing 2;

b) PWO 型——蜗杆在蜗轮之上，见图 3、图 4；

PWO type——worm on worm wheel, see drawing 3, drawing 4;

c) PWS 型——蜗杆在蜗轮之侧，见图 5。

PWS type——worm beside worm wheel, see drawing 5.

2、基本参数 Basic datas

2.1 减速器的中心距 a 应符合表 1 的规定

表 1 Table 1

The centre distance a of reducer should be in accordance with stipulation in table 1.

中心距 α Centre distance α																		
第一系列 No.1 series	80	100	125	—	160	—	200	—	250	—	315	—	400	—	500	—	630	—
第二系列 No.2 series	—	—	—	140	—	180	—	225	—	280	—	355	—	450	—	560	—	710

注：优先选用第一系列 Note: No.1 series is superior.

注：优先选用第一系列 Note: No.1 series is superior.

2.2 减速器的速比 i 应符合表 2 的规定

表 2 Table 2

The transmission ratio i of reducer should be in accordance with stipulation in table 2.

速 比 i Transmission ratio i																
第一系列 No.1 series	10	12.5	—	16	—	20	—	25	—	31.5	—	40	—	50	—	63
第二系列 No.2 series	—	—	14	—	18	—	22.4	—	28	—	35.5	—	45	—	56	—

注：优先选用第一系列 Note: No.1 series is superior.

3、型号与标记示例 Type and symbol example

3.1 型号 Type

PW U 200 20 I F GB/T16444-1996

标准号 Standard number

冷却方式 (风扇冷却 "F", 自然冷却不标注)

Cooling wise (cooling with fan "F", no means cooling without fan)

装配形式 Installing form

公称传动比 Nominal transmission ratio

中心距, mm Centre distance

蜗杆位置, "U" 为下置, "O" 为上置, "S" 为侧置

Worm position U: worm below worm wheel, O: worm on worm wheel, S: worm beside worm wheel

平面二次包络环面蜗杆减速器

Planar double-enveloping worm gearing reducer

3.2 标记示例 Symbol example

中心距 400mm, 公称传动比 20, 第一种装配, 蜗杆下置的平面二次包络环面蜗杆减速器, 自然冷却。Centre distance of 400mm, nominal transmission ratio of 20, the first installing, wormunder worm wheel, cooling without fan, planar double-enveloping worm gearing reducer.

减速器 Reducer PWU400-20- I GB/T16444-1996

4、减速器的外形与结构尺寸 Shape and structure dimension of reducer

4.1 PWU 型减速器的外形与结构尺寸见图 1、图 2, 表 3、表 4;

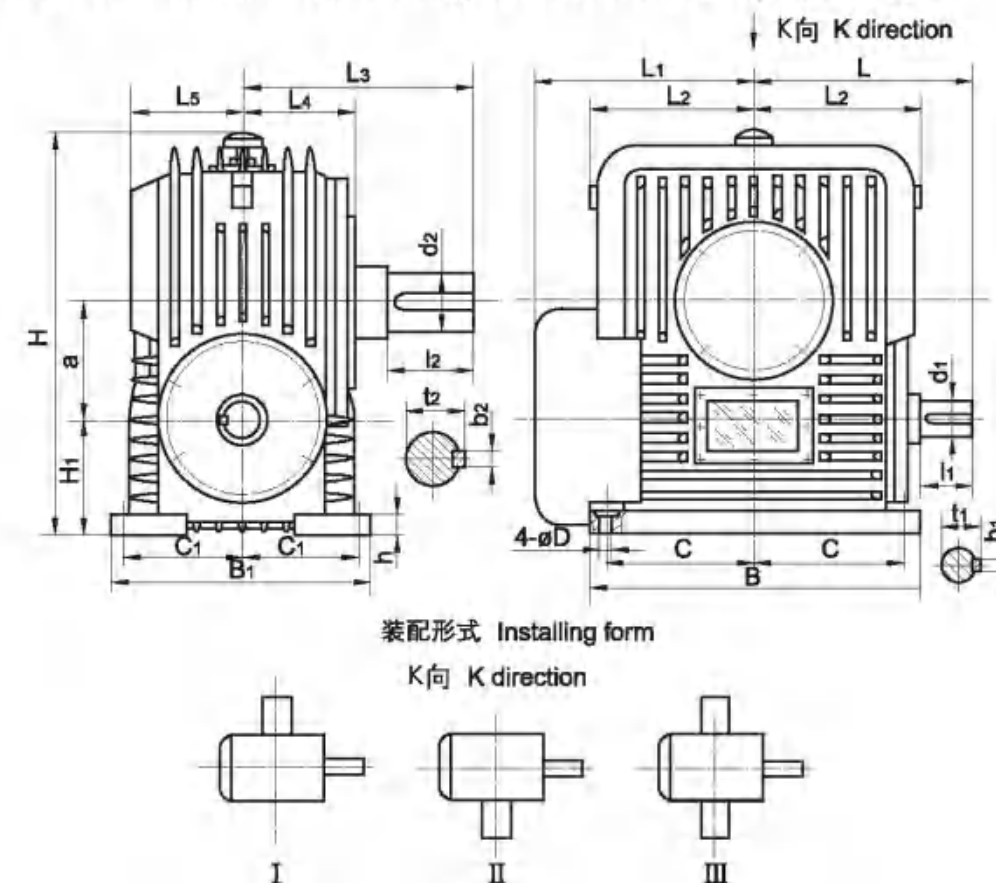
Shape and structure dimension of PWU type reducer see drawing 1, drawing 2, table 3, table 4;

4.2 PWO 型减速器的外形与结构尺寸见图 3、图 4, 表 5、表 6;

Shape and structure dimension of PWO type reducer see drawing 3, drawing 4, table 5, table 6;

4.3 PWS 型减速器的外形与结构尺寸见图 5、图 7。

Shape and structure dimension of PWS type reducer see drawing 5, drawing 7.



装配形式 Installing form

K向 K direction

I II III

图 1 Drawing 1

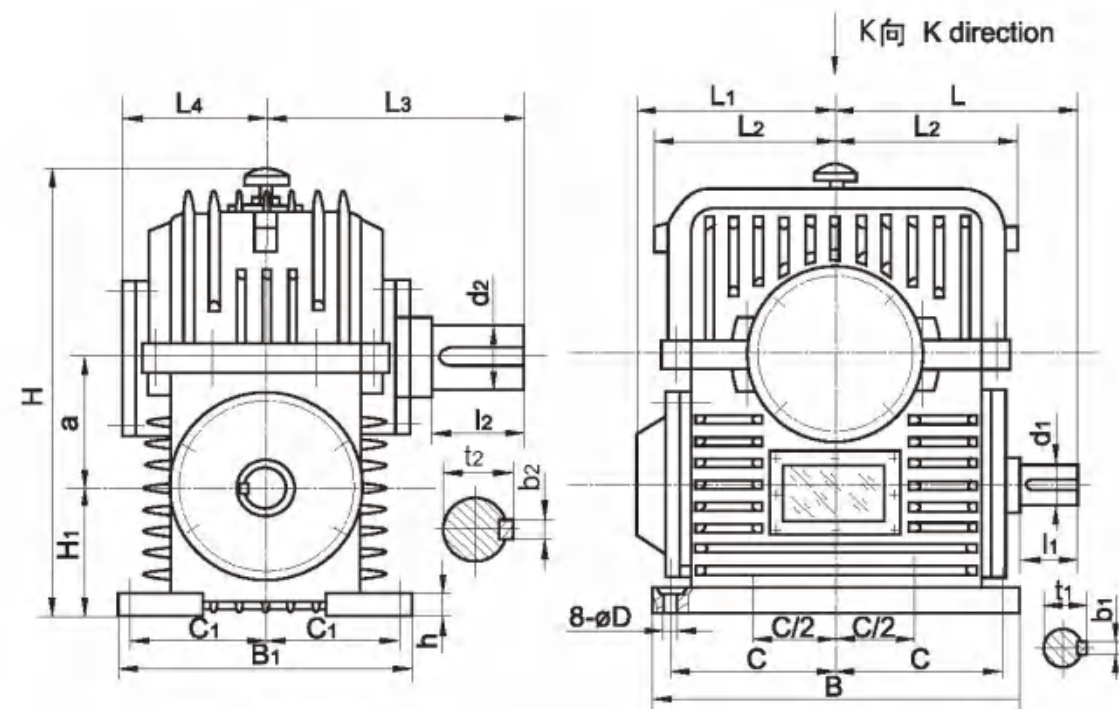
表 3 PWU 型减速器的外形与结构尺寸 (整体式)

Table 3 Shape and structure dimension of PWU type reducer (mono-box)

a	H ₁	B	B ₁	C	C ₁	D	H	L	L ₁	L ₂	L ₃	L ₄	L ₅	d ₁	b ₁	t ₁	l ₁	d ₂	b ₂	t ₂	l ₂	h
80	100	250	190	112	80	14	315	160	160	125	180	100	90	25	8	28	42	45	14	48.5	82	30
100	112	300	236	130	100	16	355	200	200	160	212	125	118	32	10	35	58	55	16	59	82	35
125	125	355	280	160	125	18	450	236	236	190	250	150	140	38	10	41	58	65	18	69	105	38
140	140	400	315	180	140	20	500	265	265	212	280	160	160	42	12	45	82	70	20	74.5	105	40
160	160	450	355	200	160	21	560	300	300	236	315	190	180	48	14	51.5	82	80	22	85	130	42
180	180	500	400	225	180	22	630	335	335	265	355	212	200	56	16	60	82	90	25	95	130	45
200	200	560	450	250	200	24	710	355	355	300	400	236	224	60	18	64	105	100	28	106	165	50
225	225	630	500	280	225	26	800	400	400	315	450	265	250	65	18	69	105	110	28	116	165	53
250	250	670	540	300	250	28	850	450	450	355	500	280	280	70	20	74.5	105	125	32	132	165	56
280	280	800	610	355	280	30	950	475	475	400	560	315	315	85	22	90	130	140	36	148	200	60
315	315	900	720	375	315	32	1060	560	560	450	630	355	355	90	25	95	130	150	36	158	200	67
355	355	1000	765	425	355	35	1250	670	670	500	710	400	365	100	28	106	165	170	40	179	240	75

注：中心距 125~355 减速器箱体结构为剖分式

note: the divisioned type boxbody are adopted when the center distance is between 125~355mm.



装配形式 Installing form

K向 K direction

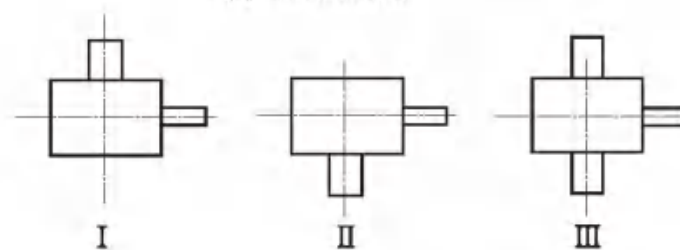
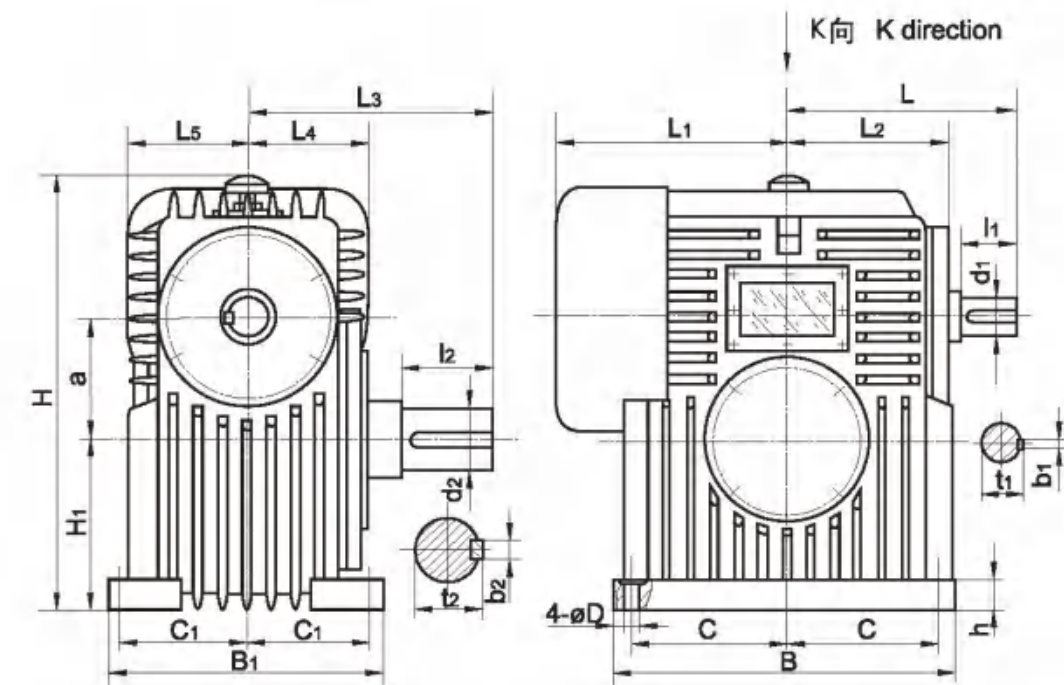


图2 Drawing 2

表4 PWU型减速器的外形与结构尺寸(剖分式)

Table 4 Shape and structure dimension of PWU type reducer (sub-box)

a	H ₁	B	B ₁	C	C ₁	D	H	L	L ₁	L ₂	L ₃	L ₄	L ₅	d ₁	b ₁	t ₁	t ₂	b ₂	t ₂	L ₂	h
400	355	900	800	400	355	35	1250	600	600	450	630	375	110	28	116	165	180	45	190	240	55
450	400	1000	900	450	400	39	1400	670	670	500	710	425	125	32	132	165	200	45	210	280	60
500	450	1120	1000	500	450	42	1600	750	750	560	800	475	130	32	137	200	220	50	231	280	65
560	500	1250	1120	560	500	45	1800	850	850	630	900	530	150	36	158	200	250	56	262	330	72
630	560	1400	1250	630	560	48	2000	950	950	710	1000	600	170	40	179	240	280	63	292	380	80
710	630	1600	1400	710	630	52	2240	1060	1060	800	1250	670	190	45	200	280	320	70	334	380	88



装配形式 Installing form

K向 K direction

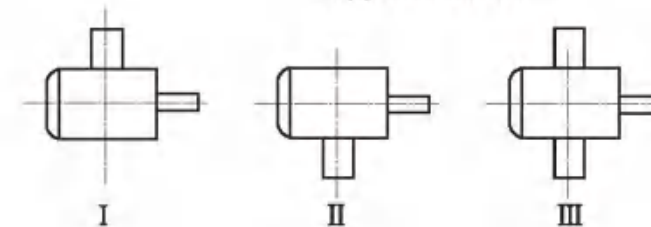


图3 Drawing 3

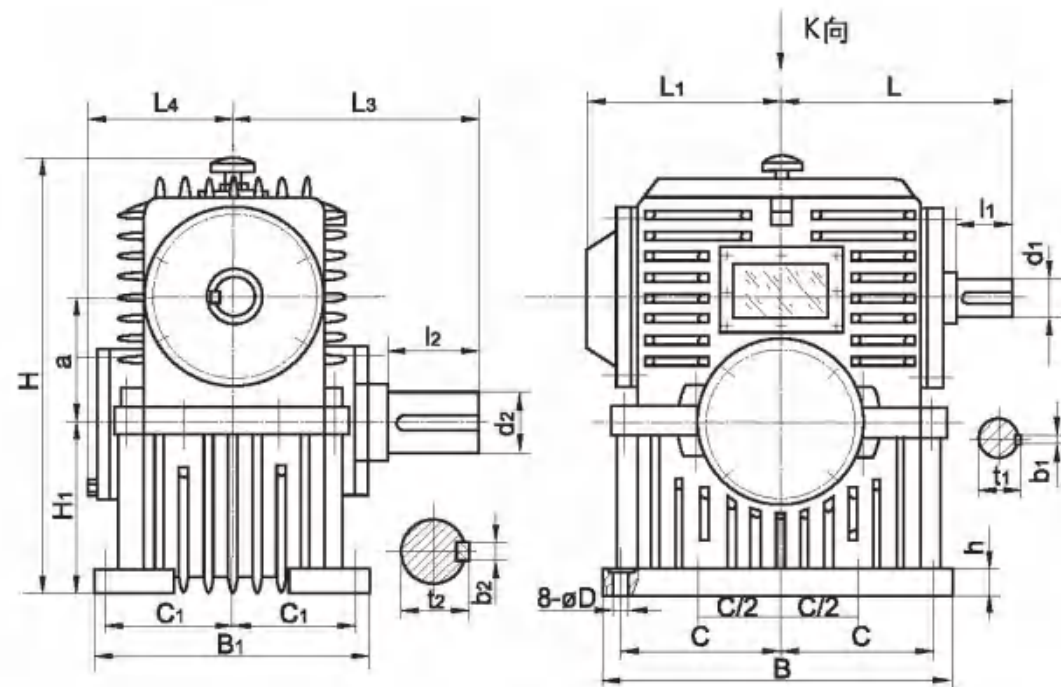
表5 PWO型减速器的外形与结构尺寸(整体式)

Table 5 Shape and structure dimension of PWO type reducer (mono-box)

a	H ₁	B	B ₁	C	C ₁	D	H	L	L ₁	L ₂	L ₃	L ₄	L ₅	d ₁	b ₁	t ₁	t ₂	d ₂	b ₂	t ₂	L ₂	h
80	125	250	190	112	80	14	300	160	160	125	180	100	90	25	8	28	42	45	14	48.5	82	30
100	160	300	236	130	100	16	375	200	200	160	212	125	118	32	10	35	58	55	16	59	82	35
125	180	355	280	160	125	18	425	236	236	190	250	150	140	38	10	41	58	65	18	69	105	38
140	200	400	315	180	140	20	475	265	265	212	280	160	160	42	12	45	82	70	20	74.5	105	40
160	215	450	355	200	160	21	530	300	300	236	315	190	180	48	14	51.5	82	80	22	85	130	42
180	250	500	400	225	180	22	600	335	335	265	355	212	200	56	16	60	82	90	25	95	130	45
200	280	560	450	250	200	24	670	355	355	300	400	236	224	60	18	64	105	100	28	106	165	50
225	315	630	500	280	225	26	750	400	400	315	450	265	250	65	18	69	105	110	28	116	165	53
250	355	670	540	300	250	28	850	450	450	355	500	280	280	70	20	74.5	105	125	32	132	165	57
280	400	800	610	355	280	30	900	475	475	400	560	315	315	85	22	90	130	140	36	148	200	60
315	450	900	720	375	315	32	1000	560	560	450	630	355	355	90	25	95	130	150	36	158	200	67
355	500	1000	765	425	355	35	1180	670	670	500	710	400	400	100	28	106	165	170	40	179	240	75

注: 中心距 125~355 减速器箱体结构为剖分式

note: the divided type boxbody are adopted when the center distance is between 125~355mm.



装配形式 Installing form

K向 K direction

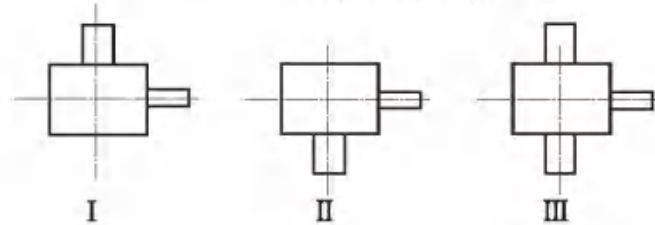
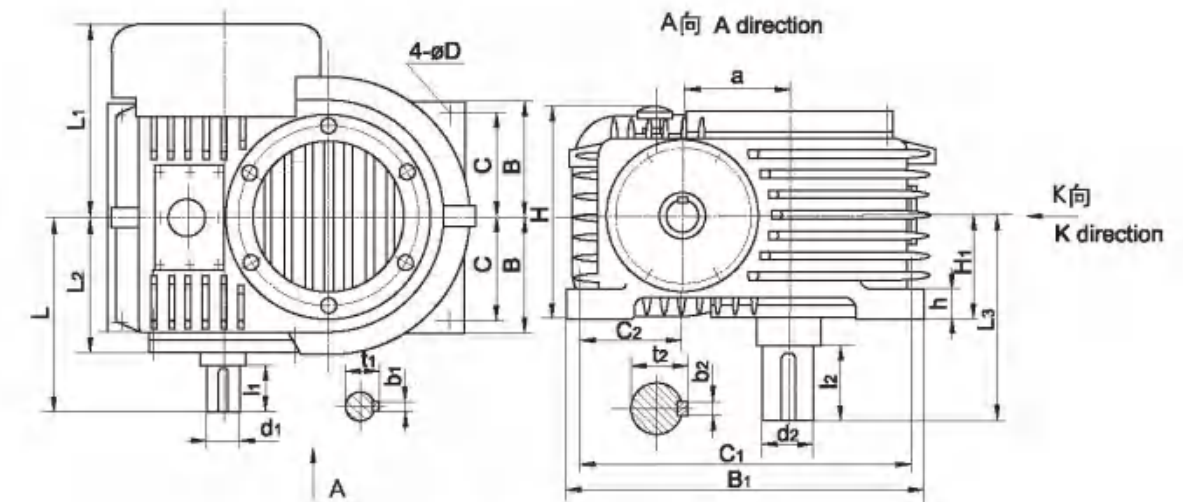


图4 Drawing 4

表6 PWO型减速器的外形与结构尺寸 (剖分式)

Table 6 Shape and structure dimension of PWO type reducer (sub-box)

a	H ₁	B	B ₁	C	C ₁	D	H	L	L ₁	L ₂	L ₃	L ₄	d ₁	b ₁	t ₁	l ₁	d ₂	b ₂	t ₂	l ₂	h
400	500	900	800	400	355	35	1250	600	600	630	375	110	28	116	165	180	45	190	240	55	
450	560	1000	900	450	400	39	1400	670	670	710	425	125	32	132	165	200	45	210	280	60	
500	630	1120	1000	500	450	42	1600	750	750	800	475	130	32	137	200	220	50	231	280	65	
560	710	1250	1120	560	500	45	1800	850	850	900	530	150	36	158	200	250	56	262	330	72	
630	800	1400	1250	630	560	48	2000	950	950	1000	600	170	40	179	240	280	63	292	380	80	
710	900	1600	1400	710	630	52	2240	1060	1060	1250	670	190	45	200	280	320	70	334	380	88	



装配形式 (K向)
Installing form (K direction)

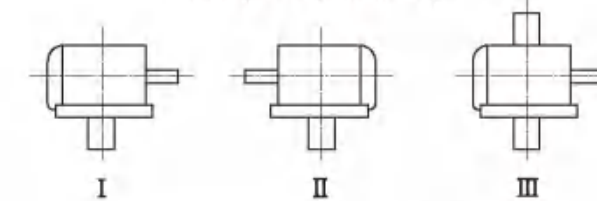


图5 Drawing 5

表7 PWS型减速器的外形与结构尺寸 (整体式)

Table 7 Shape and structure dimension of PWS type reducer

a	H ₁	B	B ₁	C	C ₁	C ₂	D	H	L	L ₁	L ₂	L ₃	d ₁	b ₁	t ₁	l ₁	d ₂	b ₂	t ₂	l ₂	h
80	95	100	315	80	265	80	14	200	160	118	118	170	25	8	28	42	45	14	48.5	82	30
100	125	125	355	100	315	100	16	236	200	140	140	212	32	10	35	58	55	16	59	82	35
125	140	140	400	118	355	118	18	280	236	170	170	250	38	10	41	58	65	18	69	105	38
140	160	160	450	132	400	132	20	300	265	190	190	280	42	12	45	82	70	20	74.5	105	40
160	180	180	500	150	450	150	21	335	300	212	212	315	48	14	51.5	82	80	22	85	130	42
180	200	200	560	170	500	160	22	375	335	236	236	355	56	16	60	82	90	25	95	130	45
200	224	224	630	190	560	170	24	425	355	265	265	400	60	18	64	105	100	28	106	165	48
225	250	250	710	212	630	190	26	475	400	300	300	425	65	18	69	105	110	28	116	165	50
250	280	280	800	245	710	200	28	530	450	355	355	475	70	20	74.5	105	125	32	132	165	52
280	315	315	900	265	800	224	30	600	500	375	375	530	85	22	90	130	140	36	148	200	55
315	355	355	1000	300	900	250	32	670	560	425	425	560	90	25	95	130	150	36	158	200	58
355	400	400	1120	335	1000	265	35	750	600	450	450	670	100	28	106	165	170	40	179	240	62
400	450	450	1250	375	1120	315	35	850	670	500	500	710	110	28	116	165	180	45	190	240	65
450	500	500	1400	425	1250	355	39	950	750	560	560	800	125	32	132	165	200	45	210	280	70

a	H ₁	B	B ₁	C	C ₁	C ₂	D	H	L	L ₁	L ₂	L ₃	d ₁	b ₁	t ₁	l ₁	d ₂	b ₂	t ₂	l ₂	h
500	560	560	1600	475	1400	400	42	1060	800	600	600	900	130	32	137	200	220	50	231	280	75
560	630	630	1800	530	1600	450	45	1180	900	670	670	1000	150	36	158	200	250	56	262	330	78
630	710	710	2000	600	1800	500	48	1320	1000	750	750	1100	170	40	179	240	280	63	292	380	82
710	800	800	2240	670	2000	560	52	1500	1120	850	850	1250	190	45	200	280	320	70	334	380	88

注: 中心距 125~710 减速器箱体结构为剖分式

note: the divided type boxbody are adopted when the center distance is between 125~710mm.

HW 系列直廓环面蜗杆减速器

HW series enveloping worm with straight line generatrix reducer
(引用标准 reference standard GB/T9148-1988)

一、型式与基本参数 Type and basic datas

1、型式 Type

a) HWB 型——蜗杆在蜗轮之下，见图 1、图 2；

HWB type —— worm below worm wheel, see drawing 1, drawing 2;

b) HWT 型——蜗杆在蜗轮之上，见图 3、图 4；

HWT type —— worm on worm wheel, see drawing 3, drawing 4.

2、基本参数 Basic datas

2.1 减速器的中心距 a 应符合表 1 的规定。

The centre distance a of reducer should be in accordance with stipulation in table 1.

表 1 Table 1

中 心 距 Centre distance a										
100	125	160	200	250	280	315	355	400	450	500

2.2 减速器的速比 i 应符合表 2 的规定。

The transmission ratio i of reducer should be in accordance with stipulation in table 2.

表 2 Table 2

中 心 距 Centre distance α																
第一系列 No.1 series	10	12.5	—	16	—	20	—	25	—	31.5	—	40	—	50	—	63
第二系列 No.2 series	—	—	14	—	18	—	22.4	—	28	—	35.5	—	45	—	56	—

注：优先选用第一系列 Note: No.1 series is superior

3、型号与标记示例 Type and symbol example

3.1 型号 Type



3.2 标记示例 Symbol example

中心距 125mm, 公称传动比 20, 第一种装配, 蜗杆下置的直廓环面蜗杆减速器, 自然冷却。

Centre distance of 125mm, nominal transmission ratio of 20, the first installing, worm below worm wheel, cooling without fan. Enveloping worm with straight line generatrix reducer.

减速器 Reducer HWB125-20- I GB/T9148-1988

4、减速器的外形与结构尺寸

Shape and structure dimension of reducer

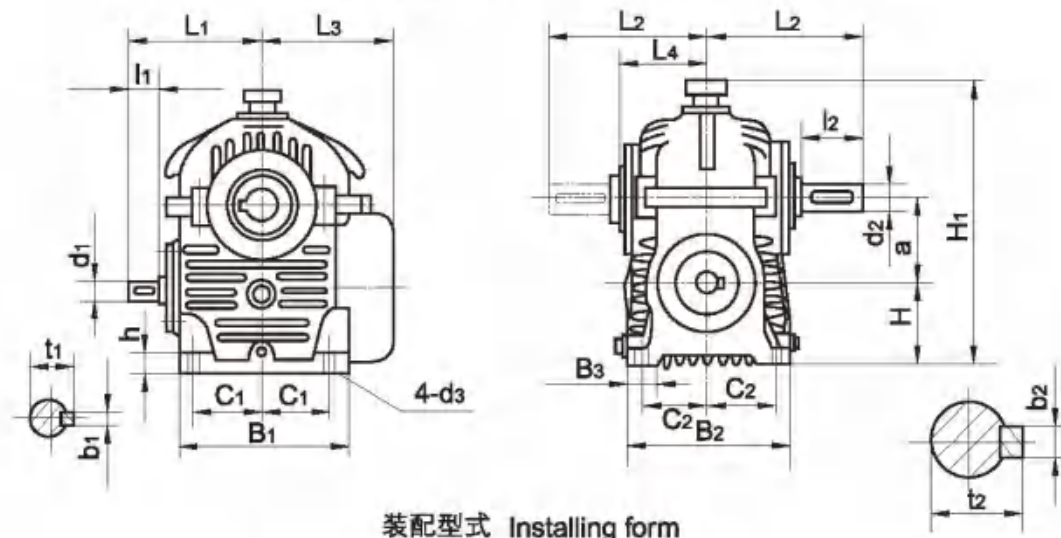
4.1 HWB 型减速器的外形与结构尺寸见图 1、表 3:

Shape and structure dimension of HWB type reducer see drawing 1, table 3;

4.2 HWT 型减速器的外形与结构尺寸见图 2、表 4。

Shape and structure dimension of HWT type reducer see drawing 2, table 4.

HWB 型减速器 HWB type reducer



装配型式 Installing form

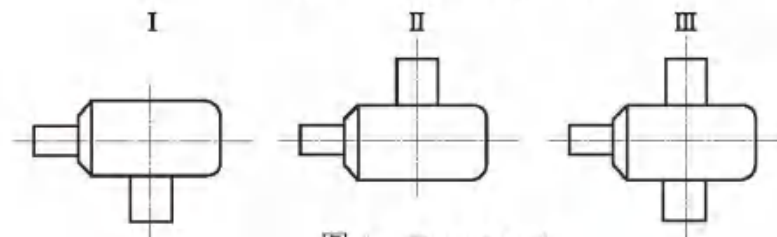
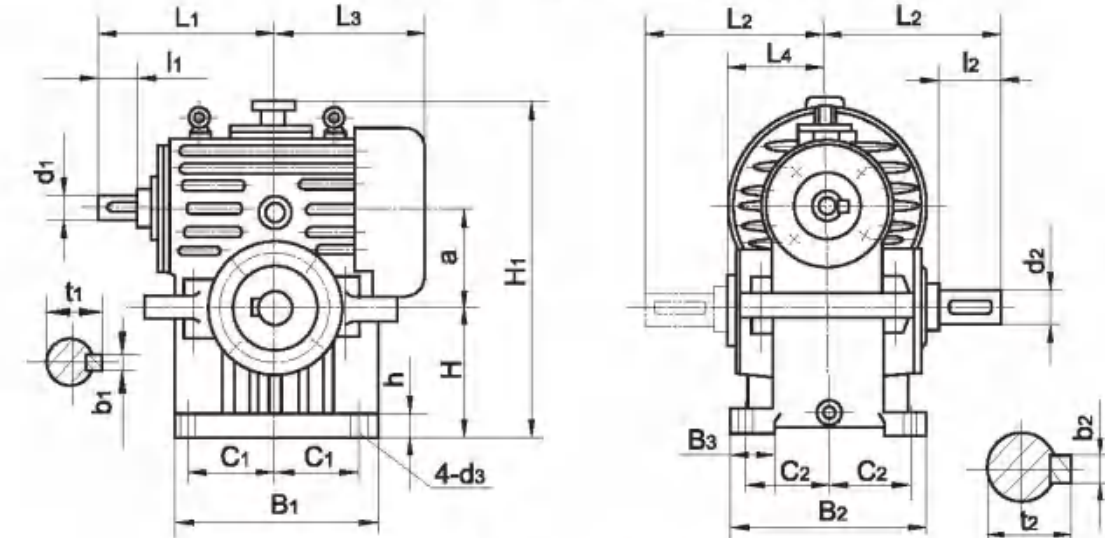


图 1 Drawing 1

表 3 Table 3 mm

型号 Type	a	B ₁	B ₂	B ₃	C ₁	C ₂	H	d ₁	l ₁	b ₁	t ₁	L ₁
HWB100	100	250	220	50	100	90	100	28js6	60	8	31	220
HWB125	125	280	260	60	115	105	125	35k6	80	10	38	260
HWB160	160	380	310	70	155	130	160	45k6	110	14	48.5	340
HWB200	200	450	360	80	185	150	180	55m6	110	16	59	380
HWB250	250	540	430	90	225	180	200	65m6	140	18	69	460
HWB280	280	640	500	110	270	210	225	75m6	140	20	79.5	530
HWB315	315	700	530	120	280	225	250	80m6	170	22	85	590
HWB355	355	750	560	130	300	245	280	85m6	170	22	90	610
HWB400	400	840	620	140	315	260	315	95m6	170	25	100	660
HWB450	450	930	700	150	355	300	355	100m6	210	28	106	740
HWB500	500	1020	760	170	400	320	400	110m6	210	28	116	790
型号 Type	d ₂	l ₂	b ₂	t ₂	L ₂	L ₃	L ₄	H ₁	h	d ₃	油量 L Oil volume	重量 kg Weight
HWB100	50k6	82	14	53.5	220	220	120	373	25	16	3	70
HWB125	60m6	82	18	64	240	260	142	445	30	20	4	132
HWB160	75m6	105	20	79.5	310	320	177	560	35	24	8	170
HWB200	90m6	130	25	95	350	380	192	655	40	24	13	280
HWB250	110m6	165	28	116	430	440	230	800	45	28	21	475
HWB280	120m6	165	32	127	470	530	255	910	50	35	27	725
HWB315	130m6	200	32	137	500	555	260	963	55	35	35	1030
HWB355	140m6	200	36	148	530	590	300	1082	60	35	48	1590
HWB400	150m6	200	36	158	560	655	310	1230	70	42	60	2140
HWB450	170m6	240	40	179	640	705	360	1375	75	42	85	2510
HWB500	180m6	240	45	190	670	775	390	1510	80	42	110	3370

HWT 型减速器 HWB type reducer



装配型式 Installing form

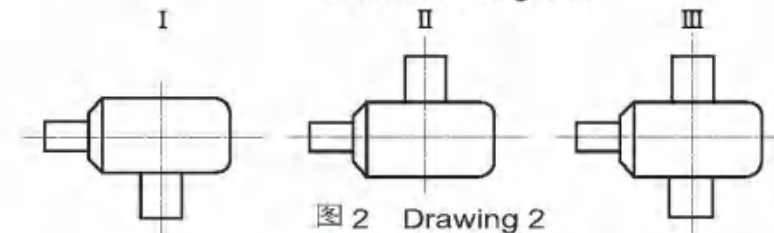


图 2 Drawing 2

表 4 Table 4 mm

型号 Type	a	B ₁	B ₂	B ₃	C ₁	C ₂	H	d ₁	l ₁	b ₁	t ₁	L ₁
HWT100	100	250	220	50	100	90	140	28js6	60	8	31	220
HWT125	125	280	260	60	115	105	160	35k6	80	10	38	260
HWT160	160	380	310	70	155	130	200	45k6	110	14	48.5	340
HWT200	200	450	360	80	185	150	250	55m6	110	16	59	380
HWT250	250	540	430	90	225	180	280	65m6	140	18	69	460
HWT280	280	640	500	110	270	210	315	75m6	140	20	79.5	530
HWT315	315	700	530	120	280	225	355	80m6	170	22	85	590
HWT355	355	750	560	130	300	245	400	85m6	170	22	90	610
HWT400	400	840	620	160	315	260	450	95m6	170	25	100	660
HWT450	450	930	700	190	355	300	500	100m6	210	28	106	740
HWT500	500	1020	760	200	400	320	560	110m6	210	28	116	790
型号 Type	d ₂	l ₂	b ₂	t ₂	L ₂	L ₃	L ₄	H ₁	h	d ₃	油量 L Oil volume	重量 kg Weight
HWT100	50k6	82	14	53.5	220	220	120	374	25	16	7	69
HWT125	60m6	82	18	64	240	260	142	430	30	20	9	129
HWT160	75m6	105	20	79.5	310	320	177	530	35	24	18	175
HWT200	90m6	130	25	95	350	380	192	640	40	24	38	290
HWT250	110m6	165	28	116	430	440	230	765	45	28	55	490
HWT280	120m6	165	32	127	470	530	255	855	50	35	71	750
HWT315	130m6	200	32	137	500	555	260	930	55	35	95	1030
HWT355	140m6	200	36	148	530	590	300	1040	60	35	126	1640
HWT400	150m6	200	36	158	560	655	310	1225	70	42	170	2170
HWT450	170m6	240	40	179	640	705	360	1345	75	42	220	2690
HWT500	180m6	240	45	190	670	775	380	1490	80	42	275	3410

KW 系列锥面包络圆柱蜗杆减速器

KW series milled helicoids worm reducer

(引用标准 reference standard JB/T5559-1991)

一、型式与基本参数 Type and basic datas

1、型式 Type

a) KWU 型——蜗杆在蜗轮之下，见图 1、图 2；

KWU type —— worm below worm wheel, see drawing 1, drawing 2;

b) KWO 型——蜗杆在蜗轮之上，见图 3、图 4；

KWO type —— worm on worm wheel, see drawing 3, drawing 4;

a) KWS 型——蜗杆在蜗轮之侧，见图 5、图 6；

KWS type —— worm beside worm wheel, see drawing 5, drawing 6;

b) KWSB 型——蜗杆在蜗轮之侧，见图 7。

KWSB type —— worm beside worm wheel, see drawing 7.

2、基本参数 Basic datas

2.1 减速器的中心距 a 应符合表 1 的规定。

The centre distance a of reducer should be in accordance with stipulation in table 1.

表 1 Table 1

中 心 距 Centre distance α											
32	40	50	63	80	100	125	160	180	200	225	250

2.2 减速器的速比 i 应符合表 2 的规定。

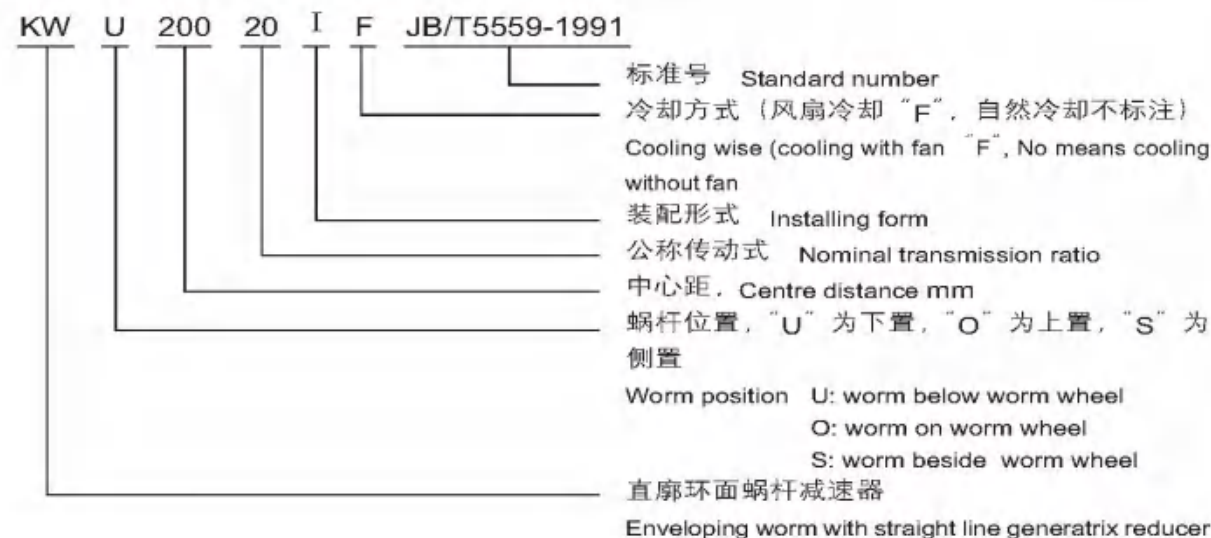
The transmission ratio i of reducer should be in accordance with stipulation in table 2.

表 2 Table 2

中 心 距 Centre distance α									
7.5	10	12.5	15	20	25	30	40	50	60

3、型号与标记示例 Type and symbol example

3.1 型号 Type



3.2 标记示例 Symbol example

中心距 100mm, 公称传动比 20, 第一种装配, 蜗杆下置的锥面包络圆柱蜗杆减速器, 自然冷却。

Centre distance of 100mm, nominal transmission ratio of 20, the first installing, worm below worm wheel, cooling without fan. Milled helicoids worm reducer.

减速器 KWU100-20- I JB/T5559-1991

Reducer KWU100-20- I JB/T5559-1991

4、减速器的外形与结构尺寸

Shape and structure dimension of reducer

4.1 KWU 型减速器的外形与结构尺寸见图 1、图 2、表 3、表 4；

Shape and structure dimension of KWU type reducer see drawing 1, drawing 2, table 3, table 4;

4.2 KWO 型减速器的外形与结构尺寸见图 3、图 4、表 5、表 6；

Shape and structure dimension of KWO type reducer see drawing 3, drawing 4, table 5, table 6;

4.3 KWS 型减速器的外形与结构尺寸见图 5、图 6、表 7、表 8；

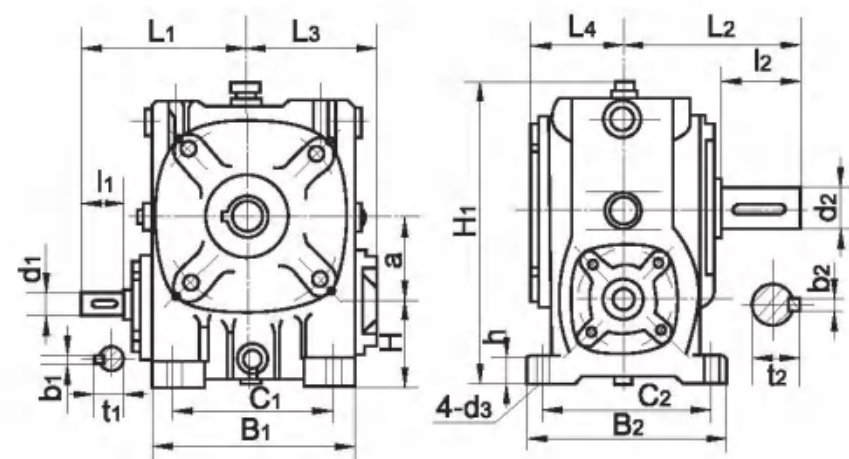
Shape and structure dimension of KWS type reducer see drawing 5, drawing 6, table 7, table 8;

4.4 KWSB 型减速器的外形与结构尺寸见图 7、表 9。

Shape and structure dimension of KWSB type reducer see drawing 7, table 9.

表 3 Table 3

尺寸 size	型号 type	KWU32	KWU40	KWU50	KWU63	KWU80	KWU100
a		32	40	50	63	80	100
B ₁		97	110	130	146	175	210
B ₂		88	98	120	140	170	200
C ₁		75	85	100	115	140	170
C ₂		75	82	100	120	145	170
h		10	12	15	16	20	24
H		36	45	48	60	71	80
H ₁		124	156	182	223	270	324
d ₃		M5	M6	M8	M10	M12	M12
d ₁		12j6	14j6	16j6	18j6	22j6	24j6
l ₁		25	25	28	28	36	36
b ₁		4	5	5	6	6	8
t ₁		13.5	16	18	20.5	24.5	27
L ₁		78	84	98	118	146	165
d ₂		16j6	20j6	22j6	30j6	38k6	40k6
l ₂		28	36	36	58	58	82
b ₂		5	6	8	8	10	12
t ₂		18	22.5	24.5	33	41	43
L ₂		80	95	105	136	158	190
L ₃					86	105	123
L ₄		43	49	57	65	84	95
重量 kg Weight		3.5	7	9	16	28	43



装配型式 Installing form

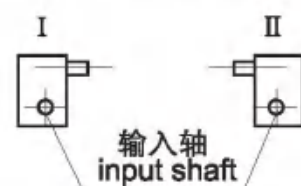
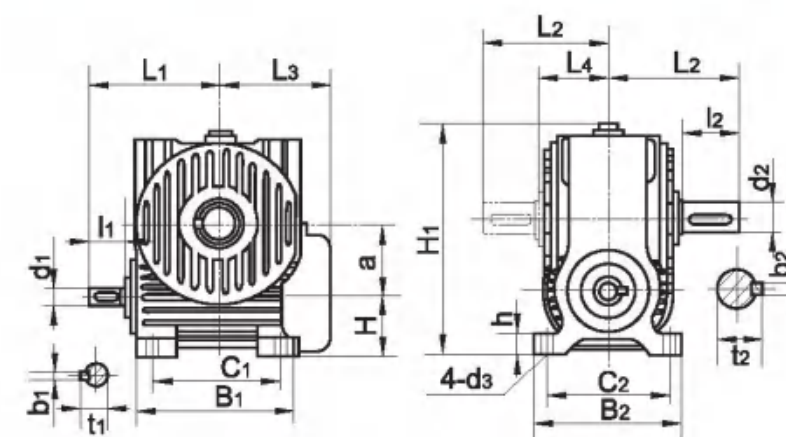


图 1 Drawing 1

表 4 Table 4

尺寸 size	型号 type	KWU125	KWU160	KWU180	KWU200	KWU225	KWU250
a		125	160	180	200	225	250
B ₁		270	325	368	410	450	500
B ₂		245	295	325	350	380	415
C ₁		220	270	290	315	350	435
C ₂		210	255	280	295	325	355
h		32	40	45	50	55	65
H		112	140	160	170	190	200
H ₁		418	514	578	623	690	765
d ₃		M16	M16	M20	M20	M24	M24
d ₁		32k6	42k6	45k6	48k6	48k6	55m6
l ₁		58	82	82	82	82	82
b ₁		10	12	14	14	14	16
t ₁		35	45	48.5	51.5	51.5	59
L ₁		218	276	300	324	342	374
d ₂		55m6	65m6	75m6	80m6	90m6	100m6
l ₂		82	105	105	130	130	165
b ₂		16	18	20	22	25	28
t ₂		59	69	79.5	85	95	106
L ₂		215	266	280	321	337	390
L ₃		202	242	267	299	320	343
L ₄		125	157	167	185	198	219
重量 kg Weight		70	130	180	247	301	406



装配型式 (F-带风扇)
Installing form (F - with fan)

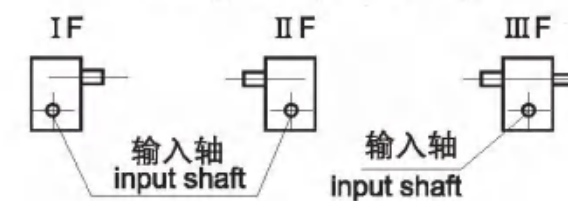


图 2 Drawing 2

表 5 Table 5

尺寸 size	型号 type	KWO32	KWO40	KWO50	KWO63	KWO80	KWO100
a		32	40	50	63	80	100
B ₁		97	110	130	146	175	210
B ₂		88	98	120	140	170	200
C ₁		75	85	100	115	140	170
C ₂		75	82	100	120	145	170
h		10	12	15	16	20	24
H		90	112	132	160	200	250
H ₁		126	156	189	221	270	339
d ₃		M5	M6	M8	M10	M12	M12
d ₁		12j6	14j6	16j6	18j6	22j6	24j6
l ₁		25	25	28	28	36	36
b ₁		4	5	5	6	6	8
t ₁		13.5	16	18	20.5	24.5	27
L ₁		78	84	98	118	146	165
d ₂		16j6	20j6	22j6	30j6	38k6	40k6
l ₂		28	36	36	58	58	82
b ₂		5	6	8	8	10	12
t ₂		18	22.5	24.5	33	41	43
L ₂		80	95	105	136	158	190
L ₃					86	105	123
L ₄		43	49	57	65	84	95
重量 kg Weight		3.8	7.5	10	17	29.5	47

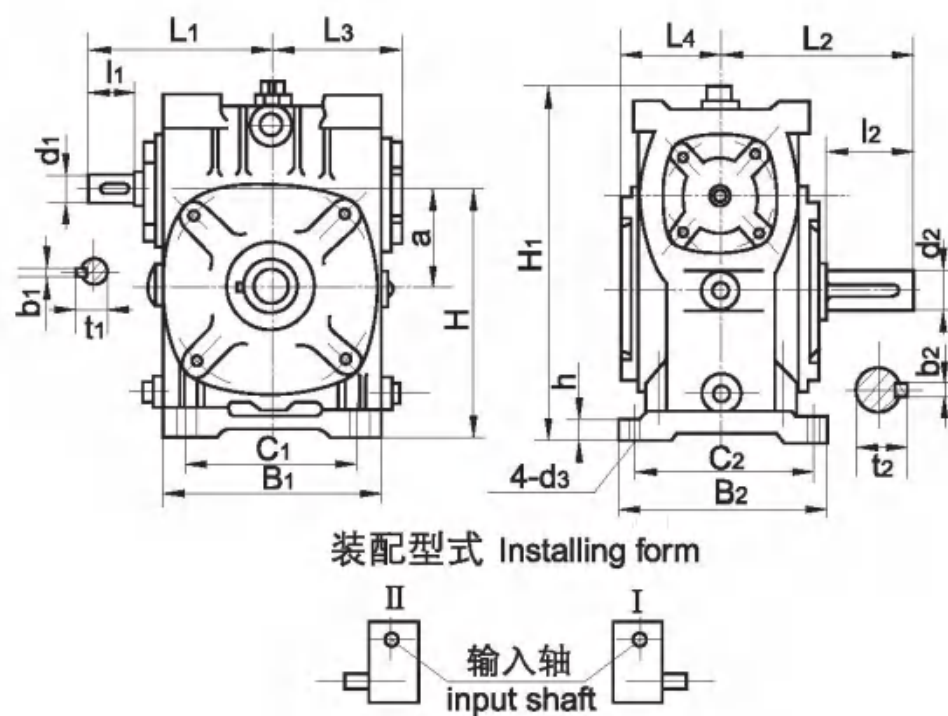


图 3 Drawing 3

表 6 Table 6

尺寸 size	型号 type	KWO125	KWO160	KWO180	KWO200	KWO225	KWO250
a		125	160	180	200	225	250
B ₁		270	325	368	410	450	500
B ₂		245	295	325	325	380	415
C ₁		220	270	290	315	350	435
C ₂		210	255	280	295	325	355
h		32	40	45	45	55	65
H		315	385	430	475	530	600
H ₁		427	535	590	645	720	800
d ₃		M16	M16	M20	M20	M24	M24
d ₁		32k6	42k6	45k6	48k6	48k6	55m6
l ₁		58	82	82	82	82	82
b ₁		10	12	14	14	14	16
t ₁		35	45	48.5	51.5	51.5	59
L ₁		218	276	300	324	342	374
d ₂		55m6	65m6	75m6	80m6	90m6	100m6
l ₂		82	105	105	130	130	165
b ₂		16	18	20	22	25	28
t ₂		59	69	79.5	85	95	106
L ₂		215	266	280	321	337	390
L ₃		202	242	267	299	320	343
L ₄		125	155	167	185	198	219
重量 kg Weight		75	138	192	264	330	450

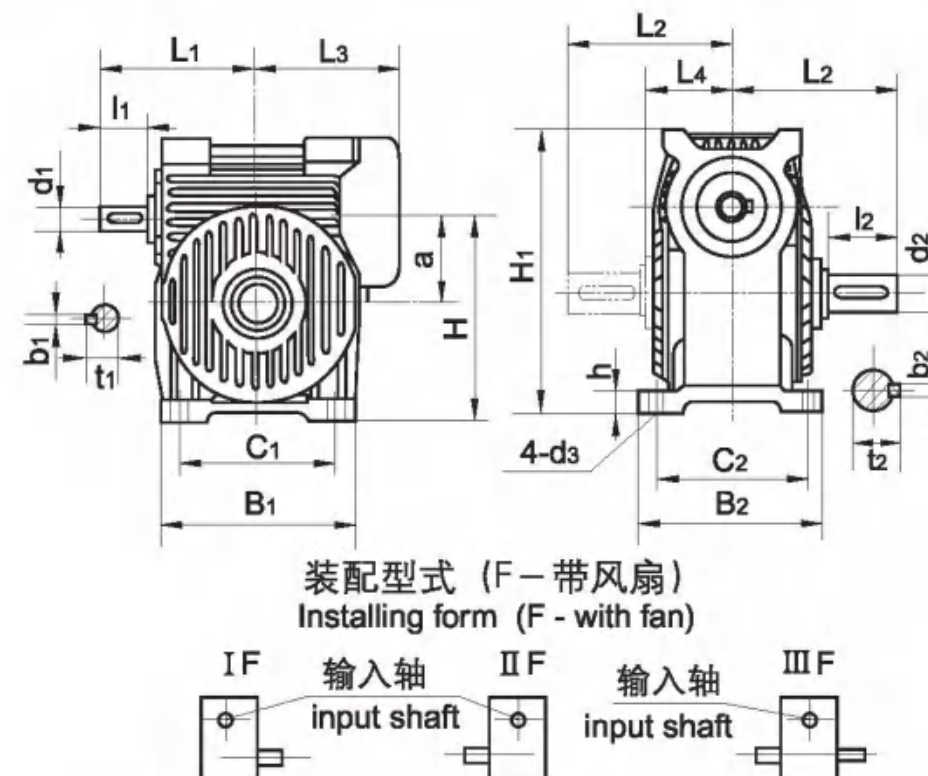
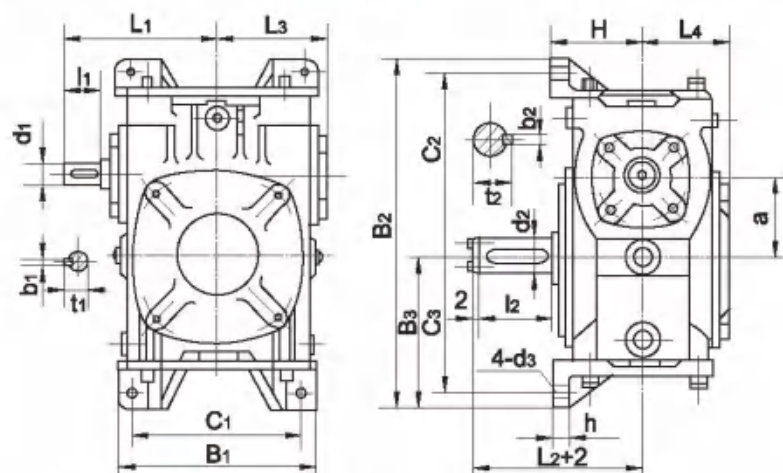


图 4 Drawing 4

表 7 Table 7

尺寸 size	型号 type	KWS32	KWS40	KWS50	KWS63	KWS80	KWS100
a		32	40	50	63	80	100
B ₁		105	120	140	160	195	230
B ₂		157	193	225	269	331	384
B ₃		66	84	87	111	140	164
C ₁		85	95	120	136	160	190
C ₂		81	101	118	146	176	205
C ₃		56	76	87	99	125	149
d ₁		12j6	14j6	16j6	18j6	22j6	24j6
l ₁		25	25	28	28	36	36
b ₁		4	5	5	6	6	8
t ₁		13.5	16	18	20.5	24.5	27
L ₁		78	84	98	118	146	165
d ₂		16j6	20j6	22j6	30j6	38k6	40k6
l ₂		28	36	36	58	58	82
b ₂		5	6	8	8	10	12
t ₂		18	22.5	24.5	33	41	43
L ₂		80	95	105	128	158	190
L ₃					86	105	123
L ₄		44	50	58	65	85	96
h		10	12	15	16	20	24
H		56	63	71	75	100	112
d ₃		M5	M6	M8	M10	M12	M12
重量 kg Weight		4	8	11	19	32	54



装配型式 Installing form

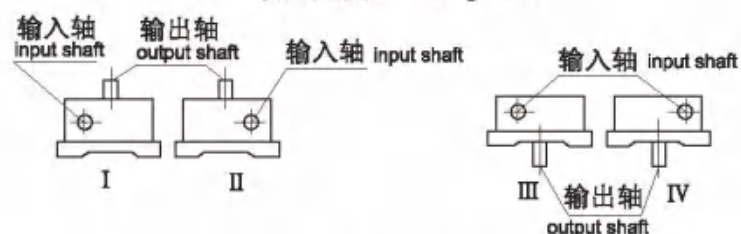
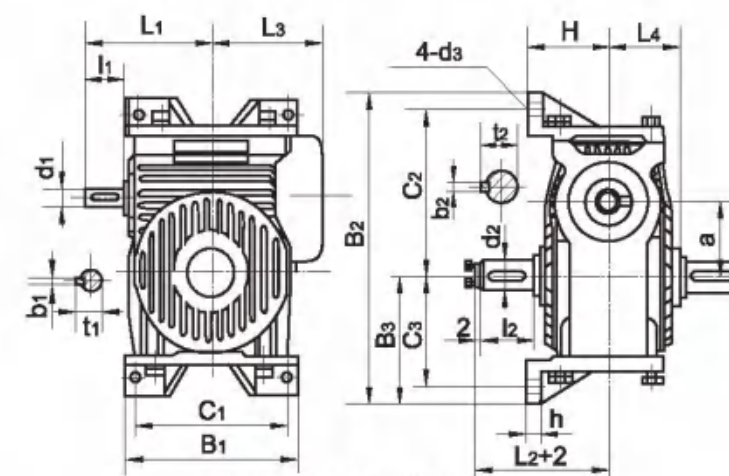


图 5 Drawing 5

表 8 Table 8

尺寸 size	型号 type	KWS125	KWS160	KWS180	KWS200	KWS225	KWS250
a		125	160	180	200	225	250
B ₁		290	350	390	430	470	525
B ₂		501	605	685	739	815	895
B ₃		211	245	275	300	325	365
C ₁		245	300	330	370	380	430
C ₂		272	340	385	420	465	510
C ₃		193	225	250	275	300	345
d ₁		32k6	42k6	45k6	48k6	48k6	55m6
l ₁		58	82	82	82	82	82
b ₁		10	12	14	14	14	16
t ₁		35	45	48.5	51.5	51.5	59
L ₁		218	276	300	324	342	374
d ₂		55m6	65m6	75m6	80m6	90m6	100m6
l ₂		82	105	105	130	130	165
b ₂		16	18	20	22	25	28
t ₂		59	69	79.5	85	95	106
L ₂		215	266	280	321	337	390
L ₃		202	242	267	299	320	343
L ₄		125	155	167	185	198	219
h		32	40	45	50	55	65
H		140	180	190	200	225	250
d ₃		M16	M16	M20	M20	M24	M24
重量 kg Weight		82	150	210	278	365	480



装配型式 (F-带风扇)
Installing form (F - with fan)

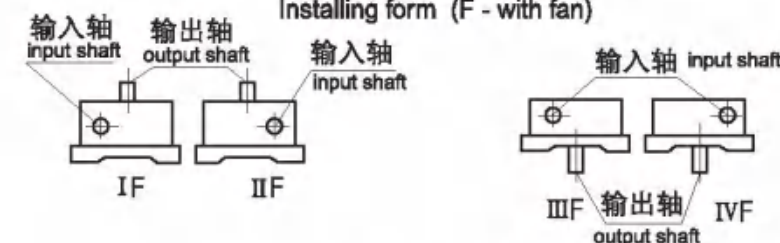


图 6 Drawing 6

KWSB 锥面包络圆柱蜗杆减速器是在 KWS 型基础上的改进型产品，直接用大法兰安装，除法兰尺寸外，其余均与 KWS 型尺寸相一致，用户可直接按 KWS 型选用。

KWSB series milled helicoids worm reducer is improved on the basic of KWS type. It is installed with big flange. Except flange dimension, other is the same as KWS, user can select KWS type directly.



装配型式 Installing form

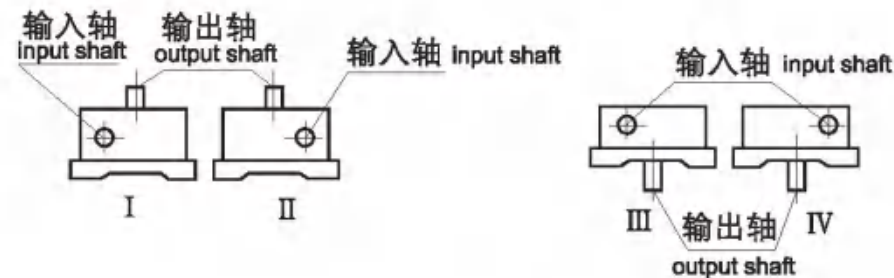


图 7 Drawing 7

表 9 Table 9

型号 尺寸 type size	KWSB 32	KWSB 40	KWSB 50	KWSB 63	KWSB 80	KWSB 100	KWSB 125	KWSB 160	KWSB 180	KWSB 200	KWSB 225	KWSB 250
D	172	180	205	240	275	320	400	490	530	580	660	705
D ₀	150	155	180	210	240	285	355	455	480	530	605	640
D ₁	115H8	130H8	150H8	170H8	200H8	245H8	300H8	394H8	425H8	475H8	525H8	580H8
L ₄	80	95	105	128	158	190	215	266	280	321	337	390
H ₀	65	75	85	100	125	140	160	195	210	230	250	270
h ₁	10	12	15	15	15	16	20	25	28	30	30	32
d ₃	7	8	10	12	14	14	18.5	18.5	22	22	27	27
T	5	5	5	5	5	5	6	6	6	6	6	6
l ₂	28	36	36	58	58	82	82	105	105	130	130	165
L ₁	78	84	98	118	146	165	218	276	300	324	342	374

注：其余尺寸请查阅 KWS 型产品样本。

Other dimension can look up KWS catalogue.

所有平面包络减速器的润滑 Reducer lubrication

- 1、减速器一般采用油池润滑，当蜗杆计算圆滑动速度 $v_s > 10\text{m/s}$ 时，采用强制润滑。
- 2、减速器用润滑油粘度指数(VI)应大于 100。
- 3、减速器采用合成蜗轮蜗杆油。
- 4、减速器润滑油油品按表 8 规定。允许采用润滑性能相当或更高的油品。

1. Oil pool lubrication is normally used for reducer. If sliding velocity of reference circle of worm at throat $V_s > 10\text{m/s}$, forced lubrication is used.
2. Reducer lubrication viscosity index $VI > 100$.
3. Synthetic worm & worm wheel oil is used for reducer.
4. Oil brand should be in accordance with table 8, the same or good performance is permitted.

表 8 Table 8

输入转速 Input rotate speed r/min	中心距 α mm Centre distance α										
	80	100	125	160	200	250	315	400	500	630	
				140	180	225	280	355	450	560	710
1500											
1000											
750											
500											

320蜗轮蜗杆油¹⁾
320 worm & worm wheel oil

460蜗轮蜗杆油
460 worm & worm wheel oil

680蜗轮蜗杆油
680 worm & worm wheel oil

注：1) 建议采用强制润滑。 Note: Forced lubrication must be suggested.

- 5、减速器轴承采用飞溅润滑，也可用脂润滑。

5. Splash lubrication or fat lubrication should be used for bearing of reducer.

所有平面包络减速器的承载能力及传动效率

Carrying capacity and transmission efficiency of reducer

- 1、减速器的额定输入功率 $P_1(\text{kW})$ 和额定输出转矩 $T_2(\text{N} \cdot \text{m})$ 见表 9。

1. Nominal input power $P_1(\text{kW})$ and nominal output torque $T_2(\text{N} \cdot \text{m})$ of reducer see table 9.

公称 传动比 Nominal Transmission ratio	输入 转速 Input rotate speed n ₁ /r/min	功率 转矩 Pow torque	中心距 mm Centric distance																		
			60	100	125	140	160	180	200	225	250	280	315	355	400	450	500	560	630	710	
			额定输入功率 Nominal input power P ₁ , kW / 额定输出转矩 Nominal output torque T ₂ N · m																		
10	1500	P ₁	6.71	11.5	19.7	25.9	35.7	47.5	61.2	81.4	105	138	183	245	261	347					
		T ₂	384	666	1 141	1 516	2 093	2 811	3 626	4 870	6 280	8 343	11 087	14 795	15 787	20 979					
	1000	P ₁	6.20	10.6	18.2	23.9	33.0	43.9	56.6	75.2	97.0	127	169	226	241	320	413	543	722	963	
		T ₂	533	923	1 581	2 102	2 901	3 897	5 025	6 749	8 703	11 563	15 366	20 505	21 881	29 076	37 495	49 291	65 499	87 408	
	750	P ₁	5.22	8.94	15.3	20.1	27.8	36.9	47.6	63.3	81.6	107	143	190	203	270	348	457	608	811	
		T ₂	591	1 019	1 755	2 333	3 220	4 326	5 579	7 494	9 664	12 842	17 064	22 772	24 300	32 290	41 640	54 740	72 740	97 071	
500	P ₁	4.20	7.20	12.3	16.2	22.4	29.7	38.3	50.9	65.7	86.3	115	153	163	217	280	368	489	652		
	T ₂	697	1 202	2 071	2 754	3 801	5 107	6 586	8 849	11 412	15 167	20 145	26 896	28 700	38 137	49 181	64 653	85 913	114 649		
12.5	1500	P ₁	5.88	10.1	17.3	22.7	31.3	41.7	53.7	71.4	92.0	121	161	215	229	304	392				
		T ₂	417	722	1 237	1 645	2 270	3 066	3 954	5 311	6 849	9 100	12 092	16 137	17 220	22 882	29 508				
	1000	P ₁	5.26	9.00	15.4	20.3	28.0	37.2	48.0	63.8	82.2	108	144	192	205	272	351	461	612	817	
		T ₂	558	968	1 658	2 204	3 042	4 109	5 298	7 117	9 178	12 194	16 204	21 624	23 074	30 661	39 540	51 980	69 072	92 176	
	750	P ₁	4.31	7.39	12.7	16.7	23.0	30.5	39.4	52.3	67.5	88.7	118	157	168	223	288	378	503	671	
		T ₂	604	1 041	1 794	2 386	3 293	4 448	5 737	7 665	9 884	13 135	17 454	23 292	24 854	33 027	42 591	55 993	74 401	99 287	
500	P ₁	3.29	5.65	9.67	12.7	17.6	23.3	30.1	40.0	51.5	67.8	90.0	120	128	170	220	289	384	512		
	T ₂	676	1 166	2 009	2 672	3 688	4 956	6 392	8 589	11 076	14 722	19 563	25 819	27 857	37 018	47 737	62 755	83 390	111 283		
14	1500	P ₁	5.45	9.34	16.0	21.0	29.0	38.6	49.8	66.1	85.3	112	149	199	212	282	364	478			
		T ₂	430	745	1 277	1 688	2 330	3 165	4 082	5 483	7 070	9 395	12 484	16 660	17 777	23 623	30 463	40 047			
	1000	P ₁	4.90	8.40	14.4	18.9	26.1	34.7	44.8	59.5	76.7	101	134	179	191	254	327	430	571	762	
		T ₂	580	1 005	1 723	2 277	3 143	4 269	5 506	7 396	9 537	12									

公稱 傳動比 Nominal Transmission ratio i	輸入 轉速 Input rotate speed n ₁ r/min	功率 P ₁ kW torque	中心距 mm Centre distance																		
			80	100	125	140	160	180	200	225	250	280	315	355	400	450	500	560	630	710	
16	1500	P ₁	4.98	8.54	14.6	19.2	26.5	35.3	45.5	60.4	77.9	102	136	182	194	258	332	437			
		T ₂	446	774	1326	1763	2433	3233	4169	5663	7303	9706	12897	17211	18365	24441	31470	41372			
	1000	P ₁	4.51	7.73	13.2	17.4	24.0	31.9	41.2	54.7	70.6	92.8	123	165	176	233	301	395	525	701	
		T ₂	606	1051	1801	2394	3305	4391	5663	7692	9920	13183	17517	23377	24945	33147	42746	56194	74604	99648	
	750	P ₁	3.65	6.25	10.7	14.1	19.4	25.8	33.3	44.3	57.1	75.0	99.7	133	142	189	243	320	425	567	
		T ₂	643	1108	1920	2553	3524	4735	6106	8114	10464	14062	18685	24935	26608	35357	45595	59940	79650	106292	
	500	P ₁	2.62	4.84	8.29	10.9	15.0	20.0	25.8	34.3	44.2	58.1	77.2	103	110	146	188	248	329	439	
		T ₂	725	1250	2154	2865	3954	5316	6855	9214	11881	15797	20991	28013	29892	39721	52223	67338	89480	119410	
	18	1500	P ₁	4.59	7.86	13.5	17.7	24.4	32.5	41.9	55.7	71.8	94.4	125	167	179	237	306	402		
			T ₂	460	793	1359	1817	2508	3351	4321	5742	7405	9951	13223	17646	18829	25021	32266	42417		
1000		P ₁	3.92	6.72	11.5	15.1	20.9	27.8	35.8	47.6	61.4	80.7	107	143	153	203	262	344	457	610	
		T ₂	587	1017	1742	2316	3197	4296	5540	7362	9493	12757	16952	22623	24140	32078	41367	54381	72263	96434	
750		P ₁	3.29	5.65	9.67	12.7	17.6	23.3	30.1	40.0	51.5	67.8	90.0	120	128	170	220	289	384	512	
		T ₂	646	1113	1929	2565	3540	4785	6170	8246	10633	13978	18574	24787	26743	35537	45827	60245	80055	106832	
500		P ₁	2.51	4.30	7.37	9.69	13.4	17.8	22.9	30.5	39.3	51.6	68.6	91.6	97.7	130	167	220	292	390	
		T ₂	716	1235	2128	2831	3908	5254	6776	9109	11746	15620	20756	27698	29556	39275	50647	66582	88475	118068	
20		1500	P ₁	4.20	7.19	12.3	16.2	22.4	29.7	38.3	50.9	65.7	86.3	115	153	163	217	280	368		
			T ₂	462	797	1365	1815	2505	3386	4367	5835	7524	9882	13144	17541	18925	25148	32431	42634		
	1000	P ₁	3.61	6.18	10.6	13.9	19.2	25.5	32.9	43.8	56.5	74.2	98.6	132	140	187	241	316	420	561	
		T ₂	593	1021	1761	2341	3231	4367	5632	7525	9704	12757	16952	22623	24408	32434	41826	54985	73066	97505	
	750	P ₁	2.98	5.11	8.75	11.5	15.9</														

续表 9 Table 9

公称 传动比 Nominal ratio i	输入 转速 Input speed n ₁ /r/min	功率 转矩 Pow torque	中心距 mm Centre distance																	
			额定输入功率 P ₁ , kW / 额定输出转矩 T ₂ , N · m																	
			80	100	125	140	160	180	200	225	250	280	315	355	400	450	500	560	630	710
22.4	1500	P ₁	3.84	6.59	11.3	14.8	20.5	27.2	35.1	46.6	60.1	79.1	105	140	150	199	256	337		
		T ₂	496	808	1384	1841	2541	3435	4429	5919	7633	10147	13483	17993	19200	25514	32902	43253		
	1000	P ₁	3.29	5.65	9.67	12.7	17.6	23.3	30.1	40.0	51.5	67.8	90.0	120	128	170	220	289	384	512
		T ₂	599	1039	1780	2367	3267	4416	5695	7610	9813	13046	17336	23134	24686	32803	42302	55611	73897	98614
	750	P ₁	2.75	4.70	8.06	10.6	14.6	19.4	25.1	33.3	43.0	56.5	75.0	100	107	142	183	241	320	427
25		T ₂	654	1134	1943	2584	3567	4851	6256	8360	10781	14334	19048	25419	27124	36043	46480	61103	81195	108353
	500	P ₁	2.12	3.63	6.22	8.18	11.3	15.0	19.3	25.7	33.1	43.6	57.9	77.2	82.4	110	141	186	247	329
		T ₂	729	1258	2155	2868	3959	5325	6867	9234	11908	15935	21174	28257	30857	41004	52878	69513	92371	123268
	1500	P ₁	3.45	5.91	10.1	13.3	18.4	24.4	31.5	41.9	54.0	71.0	94.3	126	134	178	230	303		
		T ₂	467	810	1387	1845	2546	3423	4414	5898	7606	10056	13363	17832	19028	25285	32607	42866		
28	1000	P ₁	2.94	5.04	8.64	11.4	15.7	20.8	26.9	35.7	46.0	60.5	80.4	107	114	152	196	258	343	457
		T ₂	590	1023	1773	2358	3255	4376	5643	7541	9724	12856	17083	22797	24326	32325	41685	54800	72819	97176
	750	P ₁	2.51	4.30	7.37	9.69	13.4	17.8	22.9	30.5	39.3	51.6	68.6	91.6	97.7	130	167	220	292	390
		T ₂	663	1143	1971	2622	3619	4865	6274	8434	10876	14463	19218	25646	27367	36365	46896	61650	81921	109323
	500	P ₁	1.88	3.23	5.53	7.27	10.0	13.3	17.2	22.8	29.5	38.7	51.5	68.7	73.3	97.4	126	165	219	293
		T ₂	710	1225	2112	2811	3880	5187	6689	9052	14091	15716	20883	27869	29738	39516	50959	66991	89019	118795
	1500	P ₁	3.10	5.31	9.10	12.0	16.5	21.9	28.3	37.6	48.7	63.7	84.7	113	121	160	207	272		
		T ₂	453	786	1354	1791	2472	3324	4287	5763	7432	9940	13209	17627	18810	24995	32232	42373		
	1000	P ₁	2.71	4.64	7.95	10.4	14.4	19.2	24.7	32.8	42.3	55.7	74.0	98.7	105	140	180	237	315	421
		T ₂	593	1023	1764	2346	3239	4355	5616	7550	9737	13023	17306	23094	24643	32746	42229	55514	73768	98443
	750	P ₁	2.27	3.90	6.68	8.78	12.1	16.1	20.8	27.6	35.6	46.8	62.2	83.0	88.5	118	152	199	265	354
		T ₂	657	1133	1953	2589	3587	4823	6220	8364	10786	14346	19063	25439	27146	36072	46517	61152	81260	108441
	500	P ₁	1.80	3.09	5.30	6.96	9.61	12.8	16.5	21.9	28.2	37.1	49.3	65.8	70.2	93.3	120	158	210	280
		T ₂	743	1281	2196	2905	4010	5397	6959	9365	12077	16174	21492	28681	30604	40668	52444	68943	91613	122257

续表 9 Table 9

公称 传动比 Nominal ratio i	输入 转速 Input rotate speed n ₁ /r/min	功率 转矩 Pow torque	中心距 mm Centre distance												额定输入功率 P ₁ , kW / 额定输出转矩 T ₂ , N · m											
			80	100	125	140	160	180	200	225	250	280	315	355	400	450	500	560	630	710						
31.5	1500	P ₁	2.78	4.77	8.18	10.7	14.8	19.7	25.4	33.8	43.6	57.3	76.1	102	108	144	186	244								
		T ₂	447	770	1 328	1 768	2 440	3 282	4 232	5 691	7 339	9 763	12 974	17 313	18 475	24 550	31 658	41 618								
	1000	P ₁	2.43	4.17	7.14	9.39	13.0	17.2	22.2	29.5	38.0	50.0	66.5	88.7	94.6	126	162	213	283	378						
		T ₂	585	1 009	1 740	2 315	3 196	4 299	5 543	7 455	9 614	12 789	16 994	22 678	24 199	32 156	41 468	54 514	72 440	96 670						
	750	P ₁	1.80	3.09	5.30	6.96	9.61	12.8	16.5	21.9	28.2	37.1	49.3	65.8	70.2	93.3	120	158	210	280						
35.5	1500	P ₁	1.57	2.69	4.61	6.06	8.36	11.1	14.3	19.0	24.5	32.3	42.9	57.2	61.1	81.1	105	138	183	244						
		T ₂	708	1 221	2 106	2 787	3 847	5 146	6 636	8 932	11 519	15 337	20 380	27 196	29 021	38 563	49 730	65 376	86 873	115 930						
	1000	P ₁	2.43	4.17	7.14	9.39	13.0	17.2	22.2	29.5	38.0	50.0	66.5	88.7	94.6	126	162	213								
		T ₂	431	744	1 283	1 697	2 343	3 152	4 065	5 468	7 051	9 439	12 543	16 738	17 861	23 734	30 606	40 235								
	750	P ₁	2.20	3.76	6.45	8.48	11.7	15.6	20.0	26.6	34.4	45.2	60.0	80.1	85.5	114	146	193	256	341						
40	1500	P ₁	1.88	3.23	5.53	7.27	10.0	13.3	17.2	22.8	29.5	38.7	51.5	68.7	73.3	97.4	126	165	219	293						
		T ₂	655	1 130	1 949	2 595	3 582	4 820	6 216	8 363	10 784	14 352	19 072	25 451	27 158	36 089	46 539	61 180	81 298	108 490						
	1000	P ₁	1.49	2.55	4.38	5.75	7.94	10.6	13.6	18.1	23.3	30.6	40.7	54.4	58.0	77.1	99.4	131	174	232						
		T ₂	738	1 273	2 196	2 906	4 011	5 402	6 966	9 318	12 016	16 108	21 405	28 565	30 481	40 503	52 232	68 665	91 243	121 762						
	750	P ₁	2.27	3.90	6.68	8.78	12.1	16.1	20.8	27.6	35.6	46.8	62.2	83.0	88.5	118	152	199	265							
40	1500	P ₁	1.88	3.23	5.53	7.27	10.0	13.3	17.2	22.8	29.5	38.7	51.5	68.7	73.3	97.4	126	165	219	293						
		T ₂	547	943	1 626	2 165	2 989	4 022	5 187	6 980	9 001	11 981	15 920	21 246	22 671	30 125	38 849	51 071	67 864	90 564						
	1000	P ₁	1.65	2.82	4.84	6.36	8.78	11.7	15.0	20.0	25.8	33.9	45.0	60.1	64.1	85.2	110	144	192	256						
		T ₂	629	1 085	1 872	2 494	3 442	4 633	5 975	8 041	10 370	13 805	18 345	24 481	26 123	34 712	44 764	58 847	78 198	104 354						
	750	P ₁	1.22	2.08	3.57	4.69	6.48	8.61	11.1	14.8	19.0	25.0	33.2	44.3	47.3	62.9	81.1	107	142	189						
40	1500	P ₁	1.65	2.82	4.84	6.36	8.78	11.7	15.0	20.0	25.8	33.9	45.0	60.1	64.1	85.2	110	144	192	256						
		T ₂	629	1 085	1 872	2 494	3 442	4 633	5 975	8 041	10 370	13 805	18 345	24 481	26 123	34 712	44 764	58 847	78 198	104 354						
40	1500	P ₁	1.22	2.08	3.57	4.69	6.48	8.61	11.1	14.8	19.0	25.0	33.2	44.3	47.3	62.9	81.1	107	142	189						
		T ₂	659	1 138	1 964	2 617	3 613	4 867	6 276	8 452	10 900	14 520	19 295	25 748	27 475	36 510	47 082	61 895	82 247	109 758						

续表 9 Table 9

公称 传动比 Nominal transmission ratio i	输入 转速 Input rotate speed n ₁ r/min	功率 转矩 Pow torque	中心距 mm Centres distance																	
			80	100	125	140	160	180	200	225	250	280	315	355	400	450	500	560	630	710
			额定输入功率 P ₁ , kW / 额定输出转矩 T ₂ N · m																	
45	1500	P ₁	2.04	3.49	5.99	7.87	10.9	14.4	18.6	24.7	31.9	41.9	55.7	74.4	79.4	105	136	179	238	
		T ₂	435	751	1304	1737	2397	3227	4161	5600	7222	9614	12776	17049	18193	24175	31175	40983	54459	
	1000	P ₁	1.76	3.02	5.18	6.81	9.40	12.5	16.1	21.4	27.6	36.3	48.2	64.4	68.7	91.3	118	155	206	274
		T ₂	565	975	1693	2293	3112	4189	5401	7270	9375	12480	16584	22131	23615	31381	40468	53199	70692	94338
	750	P ₁	1.57	2.69	4.61	6.06	8.36	11.1	14.3	19.0	24.5	32.3	42.9	57.2	61.1	81.1	105	138	183	244
		T ₂	661	1140	1966	2602	3592	4837	6238	8343	10759	14237	18918	25246	26939	35797	46163	60686	80641	107615
	500	P ₁	1.29	2.22	3.80	5.00	6.90	9.16	11.8	15.7	20.2	26.6	35.4	47.2	50.4	66.9	86.3	113	151	201
		T ₂	773	1334	2303	3069	4238	5712	7364	9852	12705	17046	22651	30227	32255	42861	55272	72661	96554	128849
	1500	P ₁	1.84	3.16	5.41	7.12	9.82	13.1	16.8	22.4	28.8	37.9	50.4	67.2	71.7	95.3	123	162	215	
		T ₂	428	744	1275	1699	2345	3157	4072	5482	7069	9414	12510	16694	17814	23671	30525	40129	53324	
50	1000	P ₁	1.61	2.76	4.72	6.21	8.57	11.4	14.7	19.5	25.2	33.1	43.9	58.6	62.6	83.2	107	141	187	250
		T ₂	560	974	1668	2223	3068	4132	5328	7173	9250	12318	16369	21844	23309	30974	39943	52509	69776	93115
	750	P ₁	1.33	2.28	3.92	5.15	7.10	9.44	12.2	16.2	20.9	27.4	36.4	48.6	51.9	69.0	88.9	117	155	207
		T ₂	611	1055	1820	2425	3347	4508	5814	7828	10095	13446	17867	23843	25442	33808	43598	57315	76161	101636
	500	P ₁	1.02	1.74	2.99	3.94	5.43	7.22	9.31	12.4	16.0	21.0	27.9	37.2	39.7	52.7	68.0	89.4	119	159
		T ₂	662	1143	1973	2631	3632	4895	6313	8507	10970	14622	19430	25929	27668	36766	47412	62328	82823	110526
	1500	P ₁	1.69	2.89	4.95	6.51	8.99	11.9	15.4	20.5	26.4	34.7	46.1	61.5	65.6	87.2	112	148	196	
		T ₂	430	747	1280	1706	2355	3172	4090	5471	7150	9523	12654	16887	18019	23944	30878	40592	53940	
	1000	P ₁	1.45	2.49	4.26	5.60	7.73	10.3	13.2	17.6	22.7	29.8	39.7	52.9	56.5	75.0	96.8	127	169	226
		T ₂	555	964	1652	2202	3039	4094	5279	7062	9228	12291	16332	21795	23257	30905	39854	52393	69620	92907
56	750	P ₁	1.33	2.28	3.92	5.14	7.10	9.44	12.2	16.2	20.9	27.4	36.4	48.6	51.9	69.0	88.9	117	155	207
		T ₂	670	1157	1996	2661	3673	4948	6381	8595	11083	14766	19621	24184	27940	37128	47879	62942	83639	111615
	500	P ₁	1.10	1.88	3.22	4.24	5.85	7.78	10.0	13.3	17.2	22.6	30.0	40.1	42.7	56.8	73.2	96.3	128	171
		T ₂	787	1359	2345	3106	4287	5780	7453	10118	13048	17274	22954	30631	32686	43434	56011	73633	97845	130572

续表 9 Table 9

公称 传动比 Nominal transmission ratio i	输入 转速 Input rotate speed n1 /r/min	功率 转矩 Pow torque	中心距 mm Centres distance																	
			80	100	125	140	160	180	200	225	250	280	315	355	400	450	500	560	630	710
			额定输入功率 P ₁ , kW / 额定输出转矩 T ₂ N · m																	
63	1500	P ₁	1.49	2.55	4.38	5.75	7.94	10.6	13.6	18.1	23.3	30.7	40.7	54.4	58.0	77.1	99.4	131	174	
		T ₂	418	727	1 246	1 661	2 293	3 090	3 984	5 367	6 921	9 221	12 254	16 352	17 449	23 187	29 901	39 308	52 234	
	1000	P ₁	1.33	2.28	3.92	5.15	7.10	9.44	12.2	16.2	20.9	27.4	36.4	48.6	51.9	69.0	88.9	117	155	207
		T ₂	562	976	1 673	2 230	3 078	4 147	5 347	7 203	9 289	12 376	16 446	21 946	23 419	31 119	40 130	52 756	70 103	93 551
	750	P ₁	1.22	2.08	3.57	4.69	6.48	8.61	11.1	14.8	19.0	25.0	33.2	44.3	47.3	62.9	81.1	107	142	189
		T ₂	673	1 162	2 005	2 673	3 690	4 972	6 412	8 638	11 279	14 845	19 726	26 324	28 090	37 327	48 135	63 279	84 087	112 213
	500	P ₁	0.82	1.41	2.42	3.18	4.39	5.83	7.52	9.99	12.9	16.9	22.5	30.0	32.1	42.6	54.9	72.2	96.0	128
		T ₂	644	1 112	1 921	2 563	3 538	4 771	6 153	8 297	10 699	14 269	18 961	25 303	27 000	35 879	46 268	60 824	80 825	107 859

2、减速器输出轴轴端许用径向力 F_r 见图 6 和表 10。

2. Allowed radial load F_r in extended output shaft end of reducer see drawing 6 and table 10.

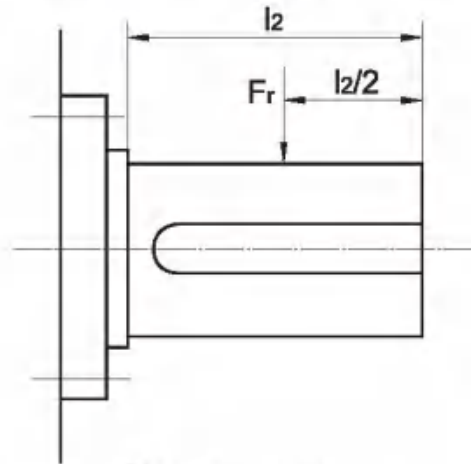


图 6 Drawing 6

表 10 Table 10

中心距 mm Centre distance	80	100	125	140	160	180	200	225	250
许用径向力 N Allowed radial load	2 250	3 500	5 000	6 500	9 000	11 000	14 000	17 000	21 700
中心距 mm Centre distance	280	315	355	400	450	500	560	630	710
许用径向力 N Allowed radial load	27 000	31 000	35 000	40 000	43 000	46 000	49 000	52 000	56 000

3、减速器的传动效率 η 见表 11。 Reducer transmission efficiency η see table 11.

表 11 Table 11

公称 传动比 Nominal transmission ratio i	输入转速 Input rotate speed n1 r/min	中心距 mm Centre distance									
		80	100	125	140	160	180	200	225	250	280~710
		传动效率η Transmission efficiency η, %									
10	1500	90	91	91	92	92	93	93	94	94	95
	1000	90	91	91	92	92	93	93	94	94	95
	750	89	89.5	90	91	91	92	92	93	93	94
	500	87	87.5	88	89	89	90	90	91	91	92
12.5	1500	89	90	90	91	91	92.5	92.5	93.5	93.5	94.5
	1000	89	90	90	91	91	92.5	92.5	93.5	93.5	94.5
	750	88	88.5	89	90	90	91.5	91.5	92	92	93
	500	86	86.5	87	88	88	89	89	90	90	91
14	1500	88.5	89.5	89.5	91	91	92	92	93	93	94
	1000	88.5	89.5	89.5	91	91	92	92	93	93	94
	750	87	88	88.5	89.5	89.5	91	91	91.5	91.5	92.5
	500	85	86	86.5	87.5	87.5	88	88	89	89	90

续表 11 Table 11

公称 传动比 Nominal transmission ratio i	输入转速 Input rotate speed n1 r/min	中心距 mm Centre distance									
		80	100	125	140	160	180	200	225	250	280~710
		传动效率η Transmission efficiency η, %									
16	1500	88	89	89	90	90	91	91	92	92	93
	1000	88	89	89	90	90	91	91	92	92	93
	750	86.5	87	88	89	89	90	90	91	91	92
	500	84	84.5	85	86	86	87	87	88	88	89
18	1500	87.5	88	88	89.5	89.5	90	90	91	91	92
	1000	87	88	88	89	89	90	90	91	91	92
	750	85.5	86	87	88	88	89.5	89.5	90	90	91
	500	83	83.5	84	85	85	86	86	87	87	88
20	1500	86.5	87	87	88	88	89.5	89.5	90	90	91
	1000	86	86.5	87	88	88	89.5	89.5	90	90	91
	750	84.5	85	86	87	87	89	89	89.5	89.5	90
	500	82	82.5	83	84	84	85	85	86	86	87
22.4	1500	85.5	86	86	87	87	88.5	88.5	89	89	90
	1000	85	86	86	87	87	88.5	88.5	89	89	90
	750	83.5	84.5	84.5	85.5	85.5	87.5	87.5	88	88	89
	500	80.5	81	81	82	82	83	83	84	84	85.5
25	1500	85	86	86	87	87	88	88	88.5	88.5	89
	1000	84	85	86	87	87	88	88	88.5	88.5	89
	750	83	83.5	84	85	85	86	86	87	87	88
	500	79	79.5	80	81	81	81.5	81.5	83	84	85
28	1500	82.5	83	83.5	84	84	85	85	86	86	87.5
	1000	82	82.5	83	84	84	85	85	86	86	87.5
	750	81	81.5	82	83	83	84	84	85	85	86
	500	77	77.5	77.5	78	78	79	79	80	80	81.5
31.5	1500	80	80.5	81	82	82	83	83	84	84	85
	1000	80	80.5	81	82	82	83	83	84	84	85
	750	79	79.5	80	81	81	82	82	83	83	84
	500	75	75.5	76	76.5	76.5	77	77	78	78	79
35.5	1500	78.5	79	79.5	80	80	81	81	82	82	83.5
	1000	78.5	79	79.5	80	80	81	81	82	82	83.5
	750	77	77.5	78	79	79	80	80	81	81	82
	500	73	73.5	74	74.5	74.5	75.5	75.5	76	76	77.5

续表 11

公称 传动比 Nominal transmission ratio i	输入转速 Input rotate speed n1 r/min	中心距 mm Centre distance									
		80	100	125	140	160	180	200	225	250	280~710
		传动效率η Transmission efficiency η, %									
40	1500	76	76.5	77	78	78	79	79	80	80	81
	1000	76	76.5	77	78	78	79	79	80	80	81
	750	75	75.5	76	77	77	78	78	79	79	80
	500	71	71.5	72	73	73	74	74	75	75	76
45	1500	74.5	75	76	77	77	78	78	79	79	80
	1000	74.5	75	76	77	77	78	78	79	79	80
	750	73.5	74	74.5	75	75	76	76	76.5	76.5	77
	500	69.5	70	70.5	71.5	71.5	72.5	72.5	73	73	74.5
50	1500	73	74	74	75	75	76	76	77	77	78
	1000	73	74	74	75	75	76	76	77	77	78
	750	72	72.5	73	74	74	75	75	76	76	77
	500	68	68.5	69	70	70	71	71	72	72	73
56	1500	71.5	72.5	72.5	73.5	73.5	74.5	74.5	75	76	77
	1000	71.5	72.5	72.5	73.5	73.5	74.5	74.5	75	76	77
	750	70.5	71	71.5	72.5	72.5	73.5	73.5	74.5	74.5	75.5
	500	67	67.5	68	68.5	68.5	69.5	69.5	71	71	71.5
63	1500	70	71	71	72	72	73	73	74	74	75
	1000	70	71	71	72	72	73	73	74	74	75
	750	69	69.5	70	71	71	72	72	73	73	74
	500	65	65.5	66	67	67	68	68	69	69	70

减速器的选用方法 Reducer selection method (参考件)

A1、减速器的选用条件 Selection condition

选用减速器应知原动机、工作机类型及载荷性质，每日平均运转时间，启动频率和环境温度。

Prime mover type, working machine type and load character, operating duration per day, Start frequency and ambient temperature should be show for selecting reducer.

A2、减速器的选用方法 Selection method

A2.1 表9中的额定输入功率 P_1 及额定输出转矩 T_2 适用于减速器工作载荷平稳，每日工作8h，每小时启动次数不大于10次，启动转矩为额定转矩的2.5倍，小时负荷率 $J_c=100\%$ ，环境温度为 20°C 。

其他工作状态的减速器的额定输入功率 P_1 及额定输出转矩 T_2 可按表9选取，用工作状况系数（见表A1～表A5）进行修正。

A2.2 计算输入功率 P_1 或计算输出转矩 T_2

$$\text{机械功率 } P_1 \geq P_{1W} K_A K_1 K_5$$

$$\text{或 } T_2 \geq T_{2W} K_A K_1 K_5$$

$$\text{热功率 } P_1 \geq P_{1W} K_2 K_3 K_4$$

$$\text{或 } T_2 \geq T_{2W} K_2 K_3 K_4$$

式中： P_{1W} ——减速器实际输入功率，kW；

T_{2W} ——减速器实际输出转矩，N·m；

K_A ——使用系数，见表A1；

K_1 ——启动频率系数，见表A2；

K_2 ——小时负荷率系数，见表A3；

K_3 ——环境温度系数，见表A4；

K_4 ——冷却方式系数，见表A5。

K_5 ——减速器安全系数，见表A6。

A2.3 在下列间歇工作中可不校验输入热功率

a. 在1h内多次启动并且运转时间总和不超过20min的场合。

b. 在一个工作周期内运转时间不超过40min并且间隔2h以上启动一次的场合。

A2.4 实际输入功率超过许用输入热功率，则须采用强制冷却措施或选用更大规格的减速器。

A2.1 Nominal input power P_1 and nominal output torque T_2 in table 9 is used for below. uniform load, operating 8hours per day, start times per hour is less than 10, start torque is 2.5 times of nominal torque, duty ratio per hour $J_c=100\%$, ambient temperature is 20°C .

Nominal input power P_1 and nominal output torque T_2 of reducer in other working condition can be selected from table 9. conforming with service factor (see table A1-A5).

A2.2 calculated input power P_1 or calculated output torque T_2

$$\text{mechanical power } P_1 \geq P_{1W} K_A K_1 K_5$$

$$\text{or } T_2 \geq T_{2W} K_A K_1 K_5$$

$$\text{thermal power } P_1 \geq P_{1W} K_2 K_3 K_4$$

$$\text{or } T_2 \geq T_{2W} K_2 K_3 K_4$$

where, P_{1W} — actual input power of reducer ,kW;
 T_{2W} — actual input torque of reducer ,Nm;
 K_A — service factor, see table A1;
 K_1 — start frequency factor, see table A2;
 K_2 — factor of duty ratio per hour, see table A3;
 K_3 — ambient temperature factor, see table A4;
 K_4 — heat radiating factor ,see table A5;
 K_5 — Safety factor ,see table A6;

A2.3 In below intermittent working , input thermal power should not be checked.

a. If condition of the reducer frequently starts up within on hour, operating duration is less than 20 minutes.

b. Operating duration is less than 40 minutes and frequently starts up again after stopped for more than 2hours.

A2.4 if actual input power is more than allowed input power ,cooling method or select much big mode reducer should be use.

表 A1 Table A1

原动机 Prime mover	载荷性质 (工作机特性) Load characteristics	每日工作时间 n Operating duration per day				
		<0.5	>0.5~1	>1~2	>2~10	>10
		K _A				
电动机、汽轮机燃气轮机 (起动转矩小, 偶尔作用) Electric motor, steam turbine	均匀 Uniform load	0.6	0.7	0.9	1	1.2
	轻度冲击 Light shock load	0.8	0.9	1.0	1.2	1.3
	中等冲击 Moderate shock load	0.9	1.0	1.2	1.3	1.5
	强烈冲击 Heavy shock load	1.1	1.2	1.3	1.5	1.75
汽轮机、燃气轮机、液 动机或电动机(起动转 矩大, 经常作用)	均匀 Uniform load	0.7	0.8	1	1.1	1.3
	轻度冲击 Light shock load	0.9	1	1.1	1.3	1.4
	中等冲击 Moderate shock load	1	1.1	1.3	1.4	1.6
	强烈冲击 Heavy shock load	1.1	1.3	1.4	1.6	1.9
多缸内燃机 Many crockes gas engine	均匀 Uniform load	0.8	0.9	1.1	1.3	1.4
	轻度冲击 Light shock load	1.0	1.1	1.3	1.4	1.5
	中等冲击 Moderate shock load	1.1	1.3	1.4	1.5	1.8
	强烈冲击 Heavy shock load	1.3	1.4	1.5	1.8	2
单缸内燃机 Single crock gas engine	均匀 Uniform load	0.9	1.1	1.3	1.4	1.6
	轻度冲击 Light shock load	1.1	1.3	1.4	1.6	1.8
	中等冲击 Moderate shock load	1.3	1.4	1.6	1.8	2
	强烈冲击 Heavy shock load	1.4	1.6	1.8	2	2.3或更大

注: 工作机工作情况举例

Note: Operating condition example of working machine

均匀载荷: 发电机、均匀装料的带式或板式输送机, 螺旋输送机, 轻型卷扬机, 包装机械, 机床进给装置, 通风
机, 轻型离心机, 离心泵, 稀液料和密度均匀物料搅拌机和混合机, 按最大剪切力矩设计和冲压机。
轻度冲击: 不均匀装料的带式或板式输送机, 机床主传动装置, 重型卷扬机, 起重机旋转机构, 工矿通风, 重
型离心机, 离心泵, 粘性液料及密度不均匀物料搅拌机和混合机, 多缸缸柱塞泵, 给料泵, 挤压机,
压延机, 回转窑, 铸、铝带材、线材、型材轧机。
中等冲击: 橡胶挤压机, 经常起动的橡胶和塑料混合机, 轻型球磨机, 木材加工机械, 钢坯初轧机, 单缸活塞泵。
强烈冲击: 铲斗链传动, 筛传动装置, 单斗挖土机, 重型球磨机, 橡胶混炼机, 冶金机械, 重型给料泵, 旋转式
钻探设备, 压砖机, 除鳞机, 冷轧机, 压块机。

Uniform load

Electrical machine, belt or apron transporter by uniformly load, screw transporter, light winch, pack machine, machine tool mobile unit, flow fan, light centrifugal machine and pump, washiness and symmetrical goods agitators and mixer.

Light shock load

Belt or apron transporter by uniformly load, machine tool prime drive unit, heavy winch, rotary unit of cranes, industrial & mine flow fan, heavy centrifugal machine and pump, viscous liquid and not symmetrical goods agitators and mixer. Multicylinder reciprocating, extruder, flattener, rotary kiln, metal mill.

Moderate shock load

Rubber extruder, start continually rubber and plastics mixes, light ball mills, timber working machines, binet rolling mills, single um piston pumps.

Heavy shock load

Cutter heads chain transfers, screen driving gear, heavy ball mills, rubber refiners, metallurgy machine, heavy feeder pumps, screw drill to explore the equipments, brick presses, descaling machines, cold rolling mills, presses.

表 A2 Table A2

每小时启动次数 Start times per hour	<10	>10~60	>60~400
启动频率系数 Start frequency factor K_1	1	1.1	1.2

表 A3 Table A3

小时负荷率 Duty ratio perhour J_c %	100	80	60	40	20
小时负荷率系数 Factor of duty ratio perhour K_2	1	0.95	0.88	0.77	0.6

注: 1) $J_c = \frac{1h \text{ 内负荷作用时间(min)}}{60} \times 100\%$
 2) $J_c < 20\%$ 时按 $J_c=20\%$ 计

Note: 1) $J_c = \frac{\text{Time of load in 1 hour (min)}}{60} \times 100\%$
 2) If $J_c < 20\%$, make $J_c=20\%$

表 A4 Table A4

环境温度 $^{\circ}\text{C}$ Ambient temperature	0~10	>10~20	>20~30	>30~40	>40~50
环境温度系数 Ambient temperature factor K_3	0.89	1	1.14	1.33	1.6

表 A5 Table A5

冷却方式 Cooling method	减速器 中心距 a mm	蜗杆转速 Worm rotate speed n_1 r/min			
		1 500	1 000	750	500
		冷却方式系数 Cooling method factor K_4			
自然冷却 (无风扇) Cooling without fan	80	1	1	1	1
	100~225	1.37	1.59	1.59	1.33
	250~710	1.51	1.85	1.89	1.78
风扇冷却 Cooling with fan	80~710	1			

表 A6 Table A6

减速器安全系数				Safety factor			
K ₅				K ₅			
重要性 与安全 要求	一般设备, 减速器失效 仅引起单机 停产且易更 换备件	重要设备, 减速器失效 引起机组、 生产线或全 厂停产	高度安全 要求减速 器失效引 起设备、 人身事故	Importance and safety request	ordinary equipment, malfunction only cause accident of single- machine and easily replaced.	Important equipment, malfunction cause the accident of assembling production-line or whole factory	Safety request highly, malfunction cause the accident of equipment unit, and personal injury.
K ₅	1.3~1.7	1.5~2.0	1.7~2.5	K ₅	1.3~1.7	1.5~2.0	1.7~2.5

A3、选用示例

例：某重型卷扬机用平面二次包络环面蜗杆减速器（带风扇），电动机功率 $P_{1W}=15\text{kW}$ ，减速器输入转速 $n_1=1000\text{r/min}$ ，传动比 $i=40$ ，每日工作 8h，每小时启动 15 次，每次工作 3min，环境温度 30°C 。

选用计算：由表 A₁ 查得 $K_A=1.3$ ，由表 A₂ 查得 $K_1=1.1$ ，由 $J_C=\frac{3 \times 15}{60} \times 100\%=75\%$ ，由表 A₃ 得 $K_2=0.93$ ，由表 A₄ 查得 $K_3=1.14$ ，由表 A₅ 查得 $K_4=1$ ，由表 A₆ 查得 $K_5=1.3$ ，计算输入功率：

$$\text{机械功率 } P_1 \geq P_{1W} K_A K_1 K_5 \\ = 15 \times 1.3 \times 1.1 \times 1.3 = 27.885\text{kW}$$

$$\text{热功率 } P_1 \geq P_{1W} K_2 K_3 K_4 \\ = 15 \times 0.93 \times 1.14 \times 1 = 15.9\text{kW}$$

查表 9 选择减速器中心距 $a=250\text{mm}$ ， $n_1=1000\text{r/min}$ ， $i=40$ ，额定输入功率 $P_1=29.5\text{kW}$ ，可用。

Selection example

Special-purpose Planar double-enveloping worm gearing reducer with fan for heavy winch, motor power $P_{1W}=15\text{kW}$, input rotate speed $n_1=1000\text{r/min}$, transmission ratio $i=40$, operating 8hours per day, start 15 times per hour, operating 3 min per time, ambient temperature 30°C .

Selection calculated: look up table A₁ to get $K_A=1.3$, look up table A₂ to get $K_1=1.1$, $J_C=\frac{3 \times 15}{60}$, from table A₃, $K_2=0.93$, from table A₄, $K_3=1.14$, from table A₅, $K_4=1$, calculating input power:

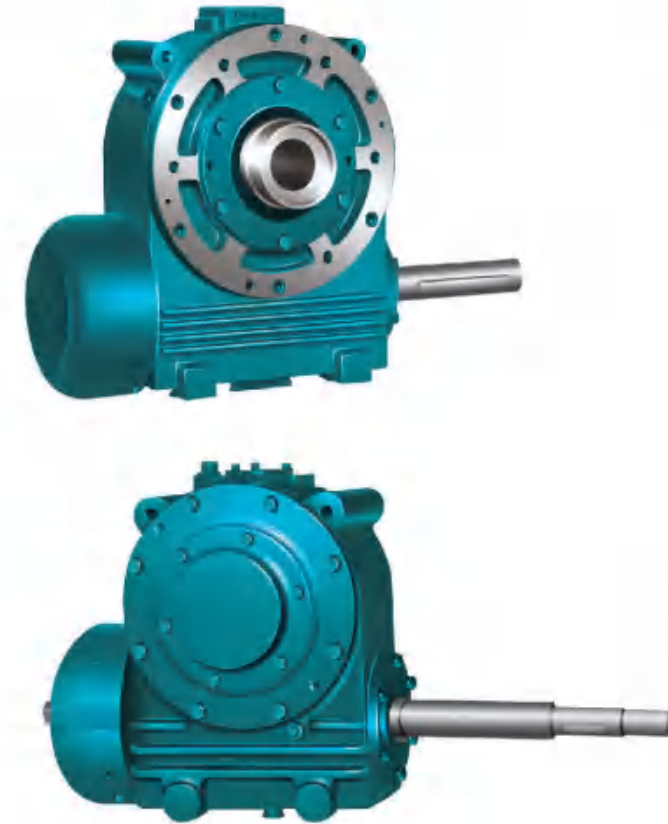
$$\text{mechanical power } P_1 \geq P_{1W} K_A K_1 K_5 \\ = 15 \times 1.3 \times 1.1 \times 1.3 = 27.885\text{kW}$$

$$\text{thermal power } P_1 \geq P_{1W} K_2 K_3 K_4 \\ = 15 \times 0.93 \times 1.14 \times 1 = 15.9\text{kW}$$

selecting reducer from table 9, centre distance $a=250\text{mm}$, $n_1=1000\text{r/min}$, $i=40$, nominal input power $P_1=29.5\text{kW}$, it conforms with the requirements.

干粉压机专用减速器

Special-purpose reducers for dried powder press



用途

广泛应用于粉末冶金，陶瓷材料，磁性材料等制品的自动干压成型机构。

产品特点

工作可靠，压制力大，结构紧凑，外观精美，噪音低，效率高。

Application

They are widely used for the forming mechanism of dried powder automatic press in power metallurgy, ceramics and magnetic material, etc.

Features

It makes features of reliable work, large pressing force, compact dimensions, good looking and lower noise as well as higher efficiency, etc.

规格 Specification

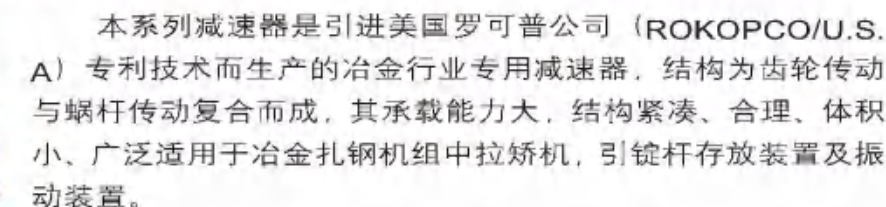
型号 Type	中心距 mm Centre distance	传动比 Transmission ratio	输入功率 Input power kW	输入转速 Input speed r/min	传动效率 Transmission efficiency (%)	允许工作油温 Allowed working oil temperature (°C)
18TU125	125	10	3	750	92	10-100
10TU200	200	12	15	750	91	10-100

注意事项 Hints for users

- 必须使用 N320 蜗轮油或 Mobil SHC 634 合成齿轮油。
- 尺寸及规格如有变更，恕不另行通知。
- It is required to use N320 worm wheel oil or Mobil SHC 634 synthetic gear oil for lubricating the reducers.
- The dimensions and specifications are subject to change without notice.



RD series special-purpose reducer for Continuous casting plant



This series of decelerators, professional in metallurgy, are produced by importing patented technology of ROKOPCO/U.S.A to be used especially in metallurgy. It has large loading capacity, complete and reasonable dimension and small volume, which can be widely used in pulling-straightening machines of metallurgy rolling mill, and vibration gride ingot-bar.

采用轴装式结构,易于同工作机械相联,箱体采用树脂砂铸造,结构紧凑,外形美观传动比可随用户要求而变:

Shaft assembly structure is used for easy connection with service mechanism; cabinet is cast with resin-bonded-sand to achieve compact structure and good appearance, drive ratio can be changed to meet customer's requirement.

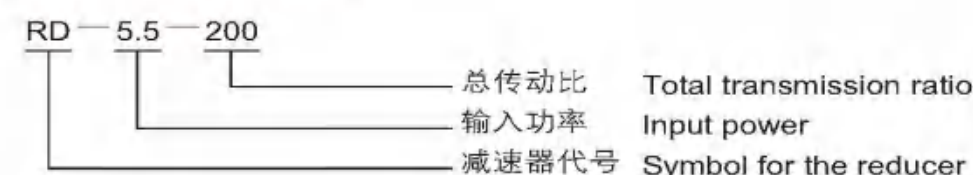
型 号 Model	中心距 center distance (mm)	传动比 Ratio	输入功率 Input power (kW)	输入转速 Input speed (rpm)	传动效率 Transmission efficiently(%)	允许工作油温 Allowed working temperature(°C)	用途 Application
RD-11-7.5	125	7.5	11	1750	90	10-100	①*
RD-11-10	125	10	11	1750	90	10-100	①
RD-11-12.5	125	12.5	11	1750	89	10-100	①
RD-4-240	180	240	4	1500	63	10-100	②*
RD-5.5-200	200	200	5.5	1500	66	10-100	③*
RD-5.5-280	200	280	5.5	1500	60	10-100	③

* 1 振动装置 Vibration devices

2 引锭杆存放装置 Storage devices for guidein got-bar

3 拉矫机 Pulling-straightening machines

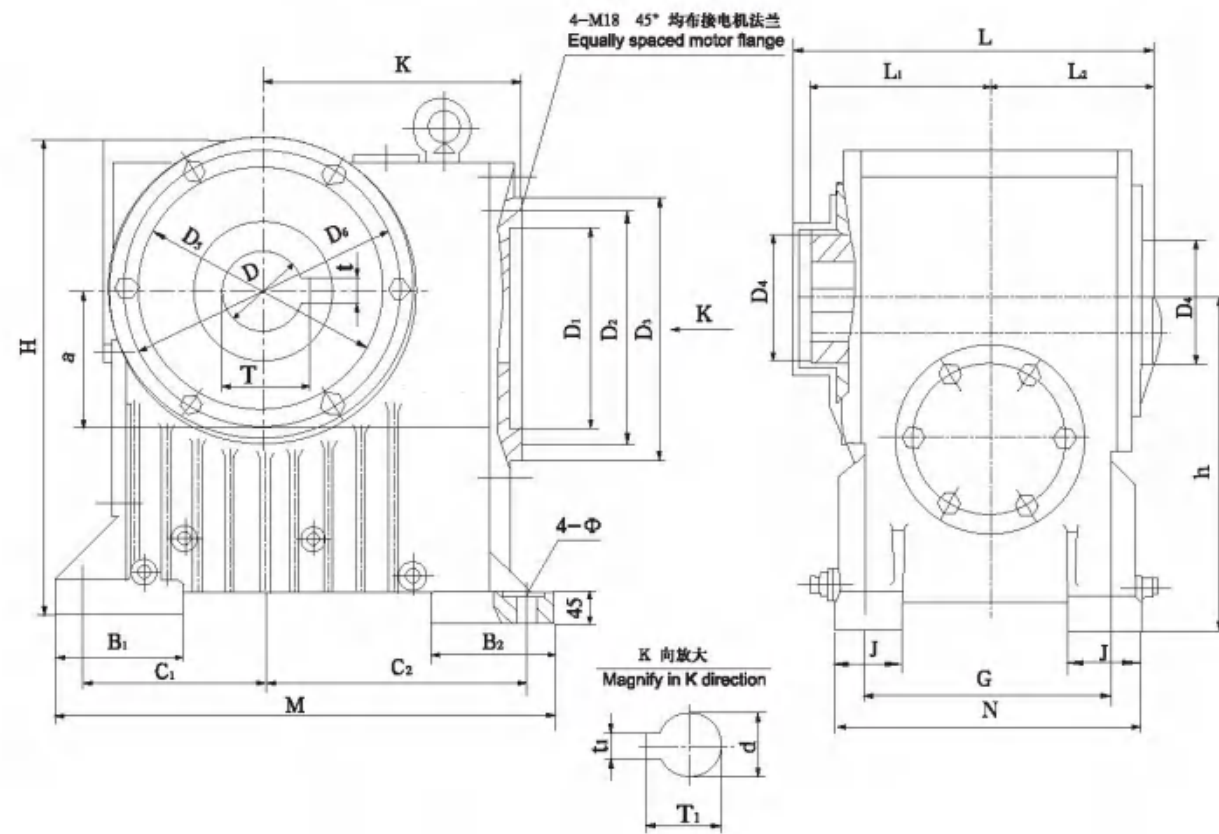
型号说明 Symbol explanation



注: 1. 必须使用 N320 蜗轮油或 Mobil SHC634 合成齿轮油。

2.尺寸及规格如有变更,恕不另行通知。

Note: 1.It is required to use N320.worm gear oil or Mobil SHC 634 synthetic gear oil for lubricating the reducers.
2.The dimensions and specifications are subjected without notice.



RD 系列减速器外形及安装尺寸

Contour assembling dimension of RD series decelerator

尺寸Size 型号Type	a	B1	B2	C1	C2	M	J	G	N	H	h	K	L	L1
RD-11 ^{-7.5} / ₋₁₀ / _{-12.5}	125	115	190	175	255	480	68	230	280	495	300	243	340	150
RD-4-240	180	162	150	225	325	620	85	300	375	612.5	420	318	453	220
RD-5.5 ⁻²⁰⁰ / ₋₂₈₀	200	80	80	145	305	500	80	340	390	636	440	373	484	210

尺寸Size 型号Type	L2	D1	D2	D3	D4	D5	D6	D	T	t	d	T1	t1	φ
RD-11 ^{-7.5} / ₋₁₀ / _{-12.5}	150	φ280	φ315	/	φ125	/	/	φ90	95.4	25	φ32	35.3	10	φ20
RD-4-240	200	φ260	φ300	φ340	φ160	/	/	φ100	106.4	28	φ28	31.3	8	φ24
RD-5.5 ⁻²⁰⁰ / ₋₂₈₀	210	φ280	φ315	φ355	φ160	φ315	370	φ100	106.4	28	φ32	35.3	10	φ20

注: RD-5.5-200 根据用户要求安装冷却水管。

Note: The cooling coils are assembled RD-5.5-200 on the request of customers.

本厂拥有对本说明书的解释权。若有疑问请与本厂技术部门联系。一般每年一版。选用时请以最新版本为准。

The manufacturer has the right to interpret this instruction book, and any questions may refer to our technical department.

This instruction book is updated every year, so the latest edition should be identified for reference.

