



NGW

行星齿轮减速器
PLANETARY GEAR REDUCER


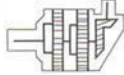
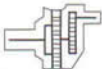
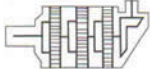
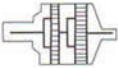
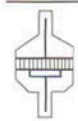
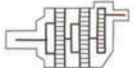
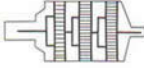



杭州市恒力传动件有限公司
HANGZHOU EVER-POWER TRANSMISSION CO., LTD.

Manufacturer of : reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears

一、规格、型号、传动型式、传动比及输出扭矩见表 1

Specification, models, transmitting type, transmitting ratio and output torque are as shown in table 1.

表 1 Table 1

规格 Size	传动型式 Transmitting type	输出扭矩 T(kN · m) Output torque	规格 Size	传动型式 Transmitting type	输出扭矩 T(kN · m) Output torque
200 ~560 ~2000	EAD  EAF $i = 4 \sim 9$	1.4~80 ~2796	250 ~560	EBSD  EBSF $i = 56 \sim 250$	4.7~80.4
200 ~560 ~1600	EAZD  EAZF $i = 10 \sim 18$	1.7~42.2 ~938.8	315 ~560	EBSD  ECSF $i = 450 \sim 1120$	12.6~80.5
250 ~560 ~2000	EBD  EBF $i = 20 \sim 50$	5.3~83.54 ~2973	200 ~560	EAL  $i = 4 \sim 9$	1.4~80
250 ~560 ~1600	EBZD  EBZF $i = 56 \sim 125$	4.7~80.4 ~1632			
315 ~560 ~2000	ECD  ECF $i = 112 \sim 400$	12.3~83.7 ~2987	250 ~560	EBL  $i = 20 \sim 50$	2~99
315 ~560 ~2000	ECZD  ECZF $i = 450 \sim 1120$	12.6~80.5 ~2522			
200 ~560	EASD  EASF $i = 10 \sim 28$	1.7~42.2			

※者为母标准的派生系列标准

Items marked ※ are the derived series standards of the basic standard

二、主要特点

1. 重量轻、体积小。在相同条件下比硬齿面渐开线圆柱齿轮减速器重量减轻 1/2 以上，体积缩小 1/2~1/3。
2. 传动效率高：单级行星减速器 $\eta = 0.98$
两级行星减速器 $\eta = 0.96$
三级行星减速器 $\eta = 0.94$
3. 传动功率范围大，可由小于 1 千瓦到上万千瓦，且功率越大优点越突出，经济效益越高。
4. 装配型式多样，可多而安装，适用性广。在符合给定制造条件下，运转平稳、噪音小。
5. 采用了优质低碳合金钢渗碳淬火，外齿轮为 6 级精度，内齿轮为 7 级精度，承载能力水平赶上了当代先进工业国家同类产品水平。使用寿命一般均在十年以上。

Main characteristics

Its weight is light and size is small. In the same conditions, this kind of construction is lighter than the cylindrical gear reducer with hardened teeth surface over one half, its size is reduced about 1/2~1/3.

High transmitting efficiency.

for single stage $\eta = 0.98$

for two stage $\eta = 0.96$

for tri-stage $\eta = 0.94$

The range of transmitted power is broad and it can be changed from less than one kW to tenthousand kW. The larger the power is, the more notable is its advantage, and the more sizable is its economic benefit.

This kind of reducer has various assembling types. It can be installed in multi-surfaces. Its suitability is extensive. In the given manufacturing conditions, they will run steadily and with low noise.

Gears are made of high-grade low carbon alloyed steel with carburizing and quenching. The precision of external gear is grade 6 and internal gear grade 7. Their load carrying ability comes up to the level of same kind of products manufactured advanced industrial countries in the present era. Their normal service life is more than ten years.

三、适用条件

EGW 型行星齿轮减速器标准包括 EAD、EAZD、EBD、EBZD、ECD、ECZD、EAF、EBF、ECF、EAFZ、EBZF、ECZF 十二个系列及派生标准 EASD、EASF、EBS D、EBSF、ECSD、ECSF、EAL、EBL 八个系列设计。

主要适用于冶金、矿山、运输、建材、轻工、能源、交通等行业。

高速轴转速按其规格：

200~800 者不大于 1500r/min

900~1120 者不大于 1000r/min

1250~1600 者不大于 750r/min

1800~2000 者不大于 600r/min

齿轮的圆周速度不大于 15~20m/s，工作环境温度为 -40~+45℃，低于 0℃时，启动前润滑油应予热至 0℃以上。可正反双向运转。

Application

The standard of NGW type planetary gear reducer includes twelve series EAD, EAZD, EBD, EBZD, ECD, ECZD, EAF, EBF, ECF, EAFZ, EBZF, ECZF they are: and eight derived series standards, they are: EASD, EASF, EBS D, EBSF, ECSD, ECSF, EAL, EBL.

They are suitable for the fields of metallurgy, mine transportation, constructing meteucl light industry, energy source and traffic, etc.

Grade of the rotating speed of high speed shaft according to size.

- 2 Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears

200~800 > 1500r/min

900~1120 > 1000r/min

1250~1600 > 750r/min

1800~1600 > 600r/min

The circumferential speed of gear is not more than 15~20m/sec the temperature in working environment is -40~+45℃. If the temperature is below 0℃, the lubricating oil must be preheated over 0℃ before starting. The rotation of gear is reversible.

四、代号与标记方法

减速器的代号包括：型号、级别、连结型式、规格、传动比、装配型式、标准号。其标记符号：

Signs and Marks

The signs consists of: model, stage, connection type, size, transmitting ratio, assembling type, standard code.

The marks as follows:

E —— EGW 型 (EGW type)

A —— 一级行星齿轮减速器 (Single stage planetary gear reducer)

B —— 二级行星齿轮减速器 (Two-stage planetary gear reducer)

C —— 三级行星齿轮减速器 (Three-stage planetary gear reducer)

Z —— 定轴圆“柱”齿轮 (Cylindrical gear with fixed axis)

S —— 螺旋“伞”齿轮 (Helixi-conical gear)

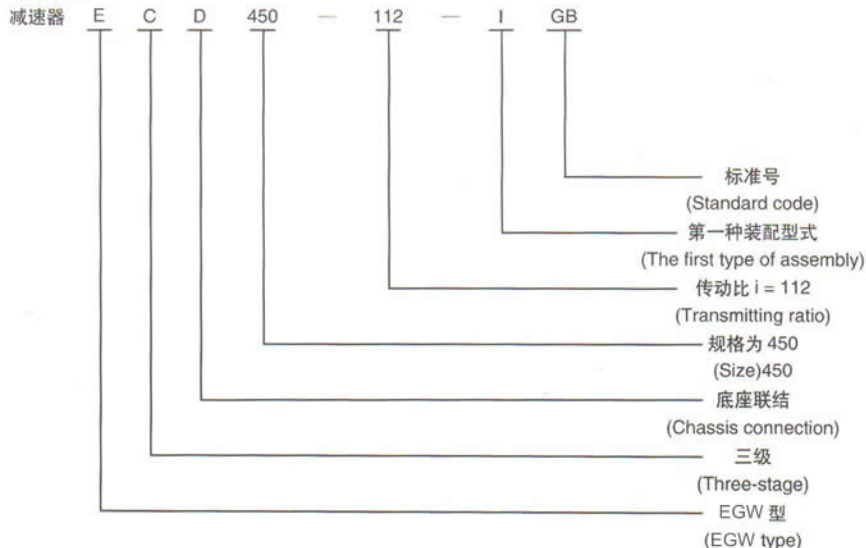
D —— “底”座联结 (Chassis connection)

F —— “法”兰联结 (Flange connection)

L —— “立”式行星减速器 (Vertical type planetary reducer)

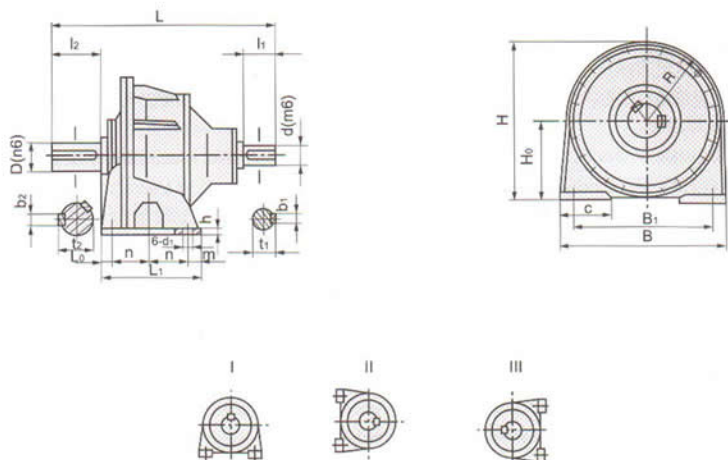
标记示例:

example:



五、外形及安装尺寸

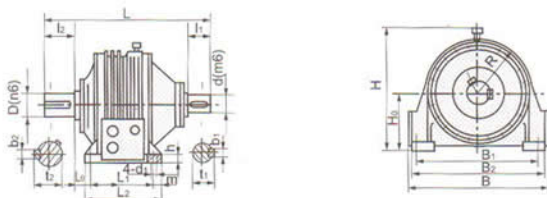
Outlook and assembling size



EAD 型齿轮箱外形及安装尺寸(200-560)mm

Outlook and assembling size(200-560)mm of EAD type gear case

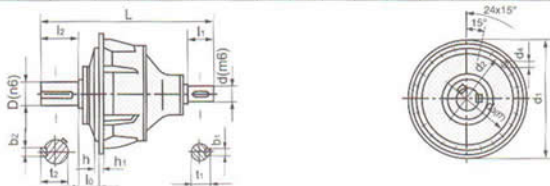
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			L	B	H	H ₀	R	d	D	l ₁	l ₂	t ₁	b ₁	t ₂	b ₂	L ₁	L ₂	n	m	h	B ₁	C	d ₁						
1	200	4-5.6 6.3-9	540 540	355	345	180	165	50 40	60	82 82	105	53.5 43	14 12	64	18	230	25	90	25	18	280	90	18	85	2				
2	224	4-5.6 6.3-9	610 610	400	385	200	185	55 45	70	82 82	105	59 48.5	16 14	74.5	20	240	30	95	25	20	310	105	20	120	3				
3	250	4-5.6 6.3-9	680 657	450	436	225	215	60 50	80	105 82	130	64 53.5	18 14	85	22	290	30	120	25	20	360	120	20	160	4				
		4-5.6 6.3-9	750 727	500	465	236	230	65 55	100	105 82	165	69 59	18 16	106	28	300	35	120	30	23	410	130	22	230	6				
5	315	4-5.6 6.3-9	800 800	560	525	265	360	75 60	120	105 105	165	79.5 64	20 18	127	32	320	35	130	30	25	470	140	22	360	8				
		4-5.6 6.3-9	895 875	630	590	300	290	85 65	140	130 105	200	90 69	22 18	148	36	380	38	155	35	28	520	170	26	420	10				
7	400	4-5.6 6.3-9	979 954	710	660	335	325	95 75	150	130 105	200	100 79.5	25 20	158	36	400	51	165	35	35	600	210	26	572	14				
		4-5.6 6.3-9	1135 1100	800	745	375	370	110 80	170	165 130	240	116 85	28 22	179	40	460	60	180	50	35	670	220	33	755	20				
9	500	4-5.6 6.3-9	1250 1215	900	835	425	410	120 90	200	165 130	280	127 95	32 25	210	45	500	80	200	50	40	770	240	33	1095	26				
		4-5.6 6.3-9	1355 1320	1020	950	480	470	130 100	220	205 165	280	137 106	32 28	231	50	580	78.5	230	60	40	880	300	38	1510	34				



EAD 型齿轮箱外形及安装尺寸(630-1000)mm

Outlook and assembling size(630-1000)mm of EAD type gear case

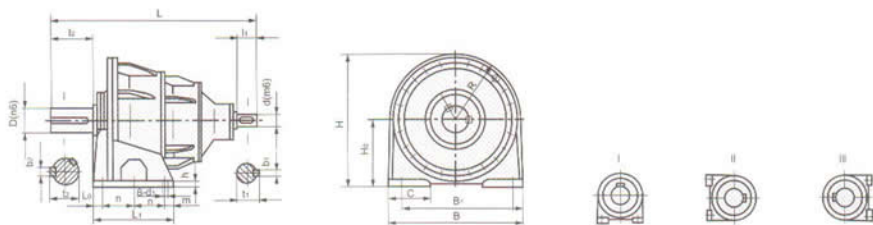
规格 代号 Type	规格 specification	公称 传动比 nominal transmission ratio	外形及中心高 Outlook and center height					轴伸尺寸 axle extension size										地脚尺寸 lower margin size										重量 weight (kg)	润滑油 容积 (l)
			L	B	H	H ₀	R	d	D	l ₁	l ₂	l ₃	b ₁	l ₄	b ₂	L ₁	L ₂	L ₃	m	h	B ₂	B ₁	d ₁						
11	630	4-5.6 6.3-9	1560 1530	1260	1095	500	485	140 110	240 200	200 165	330 148	36 116	36 28	252	56	740	118	560	90	80	1200	1040	75	2050	140				
12	710	4-5.6	1750	1360	1215	560	545	160	240	240	330	169	40	272	56	810	130	630	90	80	1320	1140	75	3000	180				
		6.3-9	1710					130	260	200	300	137	32																
13	800	4-5.6	1880	1560	1335	630	625	180	240	280	380	190	45	292	63	870	163	670	100	100	1500	1300	80	4550	220				
		6.3-9	1840					140	200	200	340	148	36																
14	900	4-5.6	2240	1750	1510	710	690	200	280	340	450	210	45	355	80	940	164	740	100	100	1680	1480	80	4900	350				
		6.3-9	2200					160	340	240	400	169	40																
15	1000	4-5.6	2310	1900	1680	800	770	220	280	360	450	231	50	375	80	1140	160	900	120	120	1840	1600	101	6700	500				
		6.3-9	2270					180	240	240	400	190	45																



EAF 型齿轮箱外形及安装尺寸(200-560)mm

Outlook and assembling size(200-560)mm of EAF type gear case

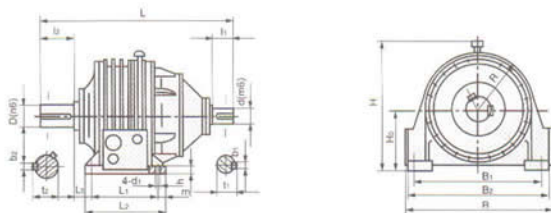
规格 代号 Type	规格 specification	公称 传动比 nominal transmission ratio	尺寸 size		轴伸尺寸 axle extension size								法兰尺寸 flange size					重量 weight (kg)	润滑油 容积 lubricating oil (l)
			L	d ₁	d	D	l ₁	l ₂	l ₃	b ₁	l ₄	b ₂	d ₂	d ₃	d ₄	l ₅	h/h ₁		
1	200	4-5.6 6.3-9	540 540	325 40	50 60	82 82	105	53.5 43	14 12	64	18	300	275	13.5	70	6/15	70	2	
2	224	4-5.6 6.3-9	610 610	365 55	70 45	82 82	105	59 48.5	16 14	74.5	20	335	300	13.5	76	6/15	100	3	
3	250	4-5.6 6.3-9	680 657	410 60	80 50	105 82	130	64 53.5	18 14	85	22	370	340	17.5	85	8/20	130	4	
4	280	4-5.6 6.3-9	750 727	460 65	100 82	105 82	165	69 59	18 16	106	28	420	385	17.5	95	8/20	145	6	
5	315	4-5.6 6.3-9	800 800	520 75	120 60	105 105	165	79.5 64	20 16	127	32	470	435	17.5	113	8/20	260	8	
6	355	4-5.6 6.3-9	895 875	585 85	140 65	130 105	200	90 69	22 18	148	36	525	485	22	120	8/25	335	10	
7	400	4-5.6 6.3-9	979 954	650 95	150 75	130 105	200	100 79.5	25 20	158	36	590	545	22	125	8/25	462	14	
8	450	4-5.6 6.3-9	1135 1100	740 110	170 80	165 130	240	116 85	28 22	179	40	670	615	26	138	8/30	620	20	
9	500	4-5.6 6.3-9	1250 1215	820 120	200 90	165 130	280	127 95	32 25	210	45	755	680	26	160	8/30	948	26	
10	560	4-5.6 6.3-9	1355 1320	940 130	220 100	200 165	280	137 106	32 28	231	50	860	785	33	173.3	10/38	1280	34	



EBD 型齿轮箱外形及安装尺寸(250-560)mm

Outlook and assembling size(250-560)mm of EBD type gear case

规格 代号 Type	规格 speci- fication	公称 传动比 nominal transmission ratio	外形及中心高 Outlook and center height					轴伸尺寸 axle extension size										地脚尺寸 lower margin size										重量 weight (kg)	润滑油 油量 (l)
			L	B	H	H ₀	R	d	D	l ₁	l ₂	l ₃	b ₁	t ₁	b ₂	L ₁	L ₂	n	m	h	B ₁	C	d ₁						
1	250	20-50	715	460	435	225	215	30	80	58	130	33	8	85	22	290	30	120	25	20	360	120	20	210	8				
2	280	20-50	760	500	465	235	230	35	100	58	165	38	10	106	28	300	35	120	30	23	410	130	22	270	10				
3	315	20-50	820	560	525	265	260	40	120	82	165	43	12	127	32	320	35	130	30	25	470	140	22	360	14				
4	355	20-50	900	630	590	300	290	50	140	82	200	53.5	14	148	36	380	38	155	35	28	520	170	26	468	20				
5	400	20-50	993	710	660	335	325	60	150	105	200	64	18	158	36	400	51	165	35	35	600	210	26	624	28				
6	450	20-50	1125	800	745	375	370	65	170	105	240	69	18	179	40	460	60	180	50	35	670	220	33	830	38				
7	500	20-50	1252	900	835	425	410	75	200	105	280	79.5	20	210	45	500	80	200	50	40	770	240	33	1250	45				
8	560	20-50	1340	1020	950	480	470	80	220	130	280	85	22	231	50	580	78.5	230	60	40	880	300	38	1700	60				

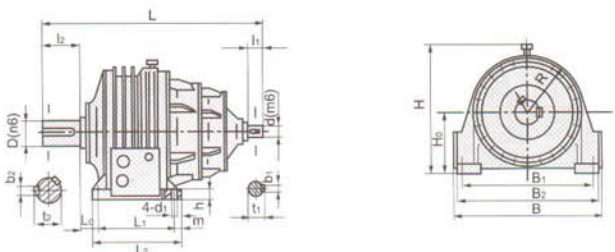


EBD 型齿轮箱外形及安装尺寸(630-1000)mm

Outlook and assembling size(630-1000)mm of EBD type gear case

规格 代号 Type	规格 speci- fication	公称 传动比 nominal transmission ratio	外形及中心高 Outlook and center height					轴伸尺寸 axle extension size										地脚尺寸 lower margin size										重量 (kg)	润滑油 量 (l)
			L	B	H	H ₀	R	d	D	l ₁	l ₂	l ₃	b ₁	t ₁	b ₂	L ₁	L ₂	L ₃	m	h	B ₁	B ₂	d ₁						
9	630	20-50	1580	1260	1095	500	485	90	240	130	330	95	25	252	56	740	118	560	90	80	1200	1040	75	2000	100				
10	710	20-50	1685	1360	1215	560	545	110	260	165	330	116	28	272	56	810	130	630	90	80	1320	1140	75	3700	240				
11	800	20-50	1955	1560	1335	630	625	120	280	165	380	127	32	292	63	870	163	670	100	100	1500	1300	80	5000	300				
12	900	20-50	2260	1750	1510	710	690	130	340	200	450	137	32	365	80	940	194	740	100	100	1680	1480	80	5600	450				
13	1000	20-50	2330	1900	1680	800	770	140	360	200	450	148	36	375	80	1140	166	900	120	120	1840	1600	101	8100	620				

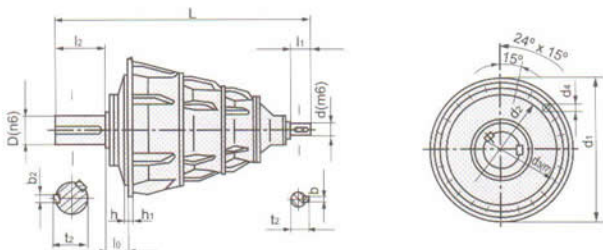
6 Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears



ECD 型齿轮箱外形及安装尺寸(630-1000)mm

ECD type gear case. Outlook and assembling size(630-1000)mm

规格 代号 Type	规格 speci- fication	公称传 动比 i nominal	外形及中心高 Outlook and center height					轴伸尺寸 axle extension size										地脚尺寸 lower margin size						重量 weight (kg)	润滑油 容量 (L) (liters)
			L	B	H	H _c	R	d	D	l ₁	l ₂	t ₁	b ₁	t ₂	b ₂	L _c	L ₁	L ₂	m	h	B ₁	B ₂	d		
7	630	112~400	1650	1260	1095	500	485	60	240	105	330	64	18	252	56	740	118	560	90	80	1200	1040	75	2540	240
8	710	112~400	1775	1360	1215	560	545	65	260	105	330	69	18	272	56	810	130	630	90	80	1320	1140	75	4100	300
9	800	112~400	2090	1560	1335	630	625	65	280	105	380	69	18	292	63	870	163	670	100	100	1500	1300	80	5106	450
10	900	112~400	2340	1750	1510	710	690	70	340	105	450	74.5	20	355	80	940	194	740	100	100	1680	1480	80	7800	620
11	1000	112~400	2475	1900	1680	800	770	75	360	105	450	79.5	20	375	80	1140	150	900	120	120	1840	1600	101	10500	800

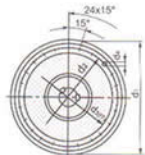
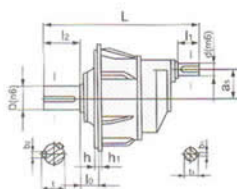


ECF 型齿轮箱外形及安装尺寸(315-560)mm

ECF type gear case. Outlook and assembling size(315-560)mm

规格 代号 Type	规格 speci- fication	公称传 动比 i nominal	尺寸 size		轴伸尺寸 axle extension size										法兰尺寸 flange size					重量 weight (kg)	润滑油 容量 volume lubricating oil (l)
			L	d ₁	d	D	l ₁	l ₂	t ₁	b ₁	t ₂	b ₂	d ₃	d ₂	d ₄	l ₀	h/h ₁				
1	315	112~400	850	520	25	120	42	165	28	8	127	32	470	435	17.5	113	8/20	335	18		
2	355	112~400	960	585	28	140	42	200	31	8	148	36	525	485	22	120	8/25	450	24		
3	400	112~400	1023	650	30	150	58	200	33	8	158	36	590	545	22	125	8/25	530	36		
4	450	112~400	1147	740	40	170	82	240	43	12	179	40	670	615	26	138	8/30	780	45		
5	500	112~400	1300	820	45	200	82	280	48.5	14	210	45	755	680	26	160	8/30	1155	55		
6	560	112~400	1420	940	50	220	82	280	53.5	14	231	50	860	785	33	173.5	10/38	1520	720		

8 Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears



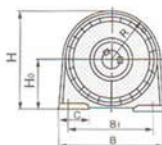
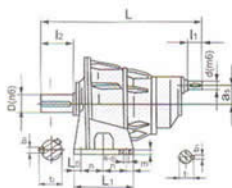
装配型式
installing form



EAZF 型齿轮箱外形及安装尺寸(200-560)mm

EAZF type gear case. Outlook and assembling size(200-560)mm

规格 代号 Type	规格 speci- cation	公称传 动比 i nominal	尺寸 size			轴伸尺寸 axle extension size										法兰尺寸 flange size					重量 weight (kg)	润滑油 量 volume of lubricating oil (l)
			L	d ₁	a ₁	d	D	l ₁	l ₂	l ₃	b ₁	l ₄	b ₂	d ₂	d ₃	d ₄	l ₅	h				
1	200	10-18	520	325	82	30	60	58	105	34	8	64	18	300	275	13.5	70	<div><div>h</div><div>h₁</div><div>6</div><div>15</div></div>	95	3		
2	224	10-18	580	365	91	32	70	58	105	35	10	74.5	20	335	300	13.5	76	<div><div>h</div><div>h₁</div><div>6</div><div>15</div></div>	125	4		
3	250	10-18	650	410	100	38	80	58	130	41	10	85	22	375	340	17.5	85	<div><div>h</div><div>h₁</div><div>6</div><div>20</div></div>	160	6		
4	280	10-18	720	460	109	42	100	82	165	45	12	106	28	420	385	17.5	95	<div><div>h</div><div>h₁</div><div>6</div><div>20</div></div>	225	8		
5	315	10-18	760	520	127	50	120	82	165	53.5	14	127	32	470	435	17.5	113	<div><div>h</div><div>h₁</div><div>6</div><div>20</div></div>	290	10		
6	355	10-18	840	585	145	55	140	82	200	59	16	148	36	525	485	22	120	<div><div>h</div><div>h₁</div><div>6</div><div>25</div></div>	385	14		
7	400	10-18	923	650	164	60	150	105	200	64	18	158	36	590	545	22	125	<div><div>h</div><div>h₁</div><div>6</div><div>25</div></div>	494	20		
8	450	10-18	1015	740	182	70	170	105	240	74.5	20	179	40	670	615	26	138	<div><div>h</div><div>h₁</div><div>6</div><div>30</div></div>	730	24		
9	500	10-18	1147	820	200	80	200	130	280	85	22	210	45	755	680	26	160	<div><div>h</div><div>h₁</div><div>6</div><div>30</div></div>	1053	32		
10	560	10-18	1220	940	218	85	220	130	280	90	22	231	50	860	785	33	173.5	<div><div>h</div><div>h₁</div><div>6</div><div>30</div></div>	1326	42		



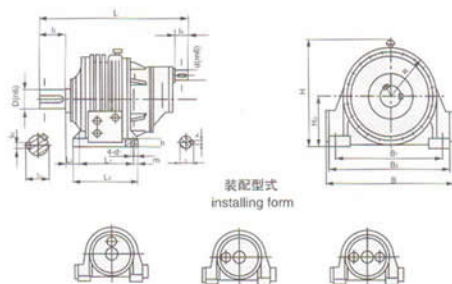
装配型式
installing form



EBZD 型齿轮箱外形及安装尺寸(250-560)mm

EBZD type gear case. Outlook and assembling size(250-560)mm

规格 代号	规格 speci- cation	公称传 动比 i nominal	外形及中心高 Outlook and center height				轴伸尺寸 axe extension size										地脚尺寸 lower margie size										重量 weight (kg)	润滑油 量 oil 量 (l)
			L	B	H	H ₀	d	D	l ₁	l ₂	l ₃	b ₁	l ₄	b ₂	L ₁	L ₂	n	m	h	B ₁	C	d ₁						
1	250	56-125	590	450	415	225	215	28	80	42	130	31	8	85	22	270	30	110	25	20	360	120	20	240	10			
2	280	56-125	670	500	465	236	230	30	100	42	165	33	8	106	28	300	35	120	30	23	410	130	22	295	14			
3	315	56-125	770	560	525	264	260	32	120	58	165	35	10	127	32	320	35	130	30	25	470	140	22	400	18			
4	355	56-125	835	630	590	300	294	35	140	59	200	38	10	148	36	380	38	155	35	28	520	170	26	525	24			
5	400	56-125	1003	710	660	335	325	40	150	82	200	43	12	158	36	400	51	165	35	35	600	210	26	650	36			
6	450	56-125	1122	800	745	375	370	45	170	82	240	48.5	14	179	40	460	60	180	50	35	670	220	33	920	45			
7	500	56-125	1232	900	835	425	410	50	200	82	280	53.5	14	210	45	500	80	200	50	40	770	240	33	1350	55			
8	560	56-125	1327	1020	950	480	470	55	220	82	280	59	16	231	50	580	78.5	230	60	40	880	300	38	1720	72			

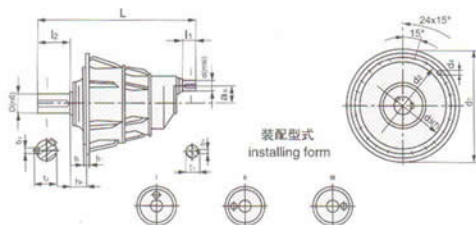


装配型式
installing form

EBZD 型齿轮箱外形及安装尺寸(630-1000)mm

EBZD type gear case. Outlook and assembling size(630-1000)mm

规格 代号 Type	规格 specification	公称传 动比 i nominal	外形及中心高 Outlook and center height					轴伸尺寸 axle extension size								地脚尺寸 lower margin size								重量 weight (kg)	润滑油量 oil volume (l)
			L	B	H	H ₁	R	d	D	f ₁	l ₁	b ₁	t ₁	b ₂	t ₂	L ₁	L ₂	L ₃	m	h	B ₁	B ₂	d ₁		
9	630	56-125	1562	1260	1095	500	485 200	60	240	105	330	64	18	252	56	740	118	560	90	80	1200	1040	75	2400	240
10	710	56-125	1650	1360	1215	560	545 218	70	260	105	330	74.5	20	272	56	810	130	650	90	80	1320	1140	75	4000	300
11	800	56-125	1955	1560	1335	630	625 260	80	280	130	380	85	22	292	63	870	163	670	100	100	1500	1300	80	5850	450
12	900	56-125	2146	1750	1510	710	690 290	90	340	130	450	95	25	355	80	940	194	740	100	100	1680	1480	80	6000	620
13	1000	56-125	2384	1900	1680	800	770 334	100	360	165	450	106	28	375	80	1140	185	900	120	120	1840	1600	101	9050	800



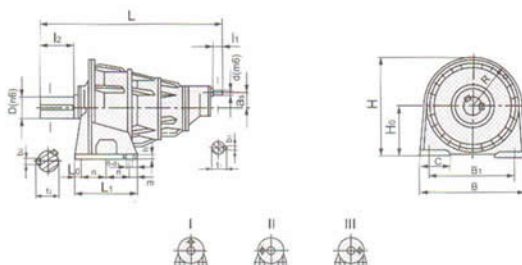
装配型式
installing form

EBZF 型齿轮箱外形及安装尺寸(250-560)mm

EBZF type gear case. Outlook and assembling size(250-560)mm

规格 代号 Type	规格 specification	公称传 动比 i nominal	尺寸 size			轴伸尺寸 axle extension size								法兰尺寸 flange size					重量 weight (kg)	润滑油量 oil volume (l)
			L	d	a	d	D	f ₁	l ₁	b ₁	t ₁	b ₂	t ₂	d ₁	d ₂	d ₃	l ₁	h		
1	250	56-125	580	410	82	28	80	42	130	31	8	85	22	375	340	17.5	85	8	210	10
2	280	56-125	670	460	91	30	100	42	155	33	8	106	28	420	385	17.5	95	8	250	14
3	315	56-125	770	520	100	32	120	58	165	35	10	127	32	470	435	17.5	113	8	350	18
4	355	56-125	835	585	109	35	140	58	200	38	10	148	36	525	485	22	120	8	460	24
5	400	56-125	1003	650	127	40	150	82	200	43	12	158	36	590	545	22	125	8	540	36
6	450	56-125	1122	740	145	45	170	82	240	48.5	14	179	40	670	615	26	138	8	785	45
7	500	56-125	1232	820	164	50	200	82	280	53.5	14	210	45	755	680	26	160	8	1200	55
8	560	56-125	1327	940	182	55	220	82	280	59	16	231	50	860	785	33	173.5	8	1500	72

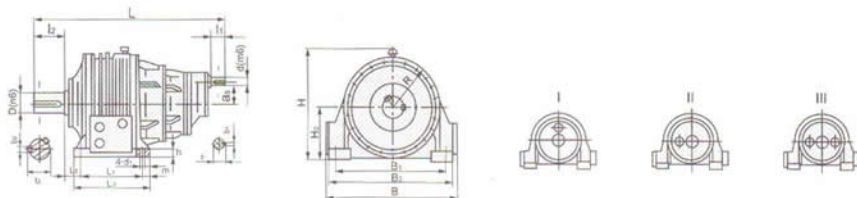
Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears



ECZD 型齿轮箱外形及安装尺寸(315-560)mm

ECZD type gear case.Outlook and assembling size(315-560)mm

规格 代号 Type	规格 speci- cation	公称传 动比 i nominal	外形及中心高 Outlook and center height					轴伸尺寸 axle extension size										地脚尺寸 lower margin size										重量 weight (kg)	润滑油 容量 lubricant capacity (L)
			L	B	H	H ₀	R	d	D	l ₁	l ₂	l ₃	b ₁	t ₁	b ₂	L ₁	L ₂	L ₃	m	h	B ₁	B ₂	B ₃	d ₁					
							260 82 290 91 330 100 370 109 410 127 470 142																						
1	315	450-1250	845	580	525	265	260	20	120	36	165	22.5	6	127	32	320	35	130	30	25	470	140	22	430	20	430	20		
2	355	450-1250	974	630	590	300	290	22	140	36	200	24.5	6	148	36	380	38	155	35	28	520	170	26	540	26	540	26		
3	400	450-1250	1054	710	680	335	330	28	150	42	200	31	8	158	36	400	51	165	35	35	600	210	28	700	40	700	40		
4	450	450-1250	1175	800	745	375	370	35	170	58	240	38	10	179	40	460	60	180	50	35	670	220	33	950	50	950	50		
5	500	450-1250	1350	900	835	425	410	40	200	82	280	43	12	210	45	500	80	200	50	40	770	240	33	1330	65	1330	65		
6	560	450-1250	1440	1020	950	486	470	45	220	82	280	48.5	14	231	50	580	78.5	230	60	40	880	300	38	1750	80	1750	80		

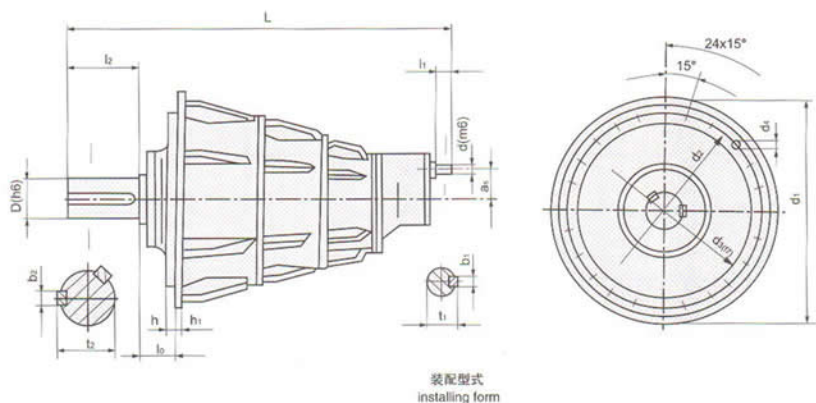


ECZD 型齿轮箱外形及安装尺寸(630-1000)mm

ECZD type gear case.Outlook and assembling size(630-1000)mm

规格 代号 Type	规格 speci- cation	公称传 动比 nominal	外形及中心高 Outlook and center height					轴伸尺寸 axle extension size										地脚尺寸 lower margin size										重量 (kg)	润滑油 容量 (L)
			L	B	H	H ₀	R	d	D	l ₁	l ₂	l ₃	b ₁	t ₁	b ₂	L ₁	L ₂	L ₃	m	h	B ₁	B ₂	d ₁						
7	630	450-1250	1670	1260	1095	500	$\frac{485}{162}$	50	240	82	330	53.5	14	252	56	740	118	560	90	80	1200	1040	75	2650	280				
8	710	450-1250	1800	1360	1215	560	$\frac{545}{200}$	55	260	82	330	59	16	272	56	810	130	630	90	80	1320	1140	75	4300	340				
9	800	450-1250	2070	1560	1335	630	$\frac{625}{118}$	60	280	105	380	64	18	292	63	870	163	670	100	100	1500	1300	80	5400	495				
10	900	450-1250	2345	1750	1510	710	$\frac{690}{270}$	70	340	105	450	74.5	20	355	80	940	194	740	100	100	1680	1480	80	8500	700				
11	1000	450-1250	2570	1900	1680	800	$\frac{770}{260}$	80	360	130	450	85	22	375	80	1140	185	900	120	120	1840	1600	101	12000	900				

12 Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears



ECZF 型齿轮箱外形及安装尺寸(315-560)mm
ECZF type gear case. Outlook and assembling size(315-560)mm

规格 代号 Type	规格 speci- cation	公称传 动比 i nominal	尺寸 size		轴伸尺寸 axle extension size								法兰尺寸 flange size						重量 weight (kg)	润滑 油量 volume of lubricating oil (l)
			L	d ₁	a ₁	d	D	l ₁	l ₂	t ₁	b ₁	l ₃	b ₂	d ₁	d ₂	d ₃	l ₄	h		
1	315	450-1250	845	520	82	20	120	36	165	22.5	6	127	32	470	435	17.5	113	h h ₁	380	20
2	355	450-1250	974	585	91	22	140	36	200	24.5	6	148	36	525	485	22	120	h h ₁	475	26
3	400	450-1250	1054	650	100	28	150	42	200	31	8	158	36	590	545	22	125	h h ₁	590	40
4	450	450-1250	1175	740	109	35	170	58	240	38	10	179	40	670	615	26	138	h h ₁	820	50
5	500	450-1250	1350	820	127	40	200	82	280	43	12	210	45	755	680	26	160	h h ₁	1230	65
6	560	450-1250	1440	940	145	45	220	82	280	48.5	14	231	50	860	785	33	173.5	h h ₁	1520	80

Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, 13 speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears

五、额定功率

Rated power

EAD、EAF 型齿轮箱额定功率
Rated power of EAD,EAF type gear cases

规格 specification	功率 power 转速 r/min	传动比 transmission ratio	4	4.5	5	5.6	6.3	7.1	8	9
			额定功率 P ₁ (kw)rated power P ₁ (kw)							
200	600		54.5	45.0	34.2	28.4	23.3	16.1	13.9	10.0
	750		68.0	56.4	43.1	35.7	29.2	20.1	17.5	12.5
	1000		86.2	73.0	55.9	47.9	39.2	27.0	23.4	16.9
	1500		132.7	111.1	84.8	70.3	57.6	39.7	34.4	25.6
224	600		89.0	78.5	61.9	47.4	35.5	24.3	21.0	15.0
	750		109.8	95.6	77.8	59.5	44.6	30.5	26.4	19.8
	1000		144.5	125.7	101.1	77.4	59.9	40.9	35.4	25.3
	1500		218.0	193.3	153.3	117.3	87.9	60.1	52.0	37.1
250	600		105.8	95.1	76.3	58.7	46.3	31.8	27.7	19.9
	750		131.7	114.6	92.9	73.7	58.1	40.0	34.7	24.9
	1000		174.5	153.1	124.7	95.8	75.5	53.8	46.6	33.5
	1500		258.6	233.6	189.0	145.3	114.4	78.8	68.5	49.2
280	600		168.7	139.8	106.2	87.6	68.1	46.4	40.1	28.4
	750		212.0	170.1	129.2	110.1	85.6	58.3	50.4	35.7
	1000		284.9	228.6	173.7	143.2	111.3	75.8	67.6	48.0
	1500		414.4	346.7	263.4	217.2	168.6	114.9	99.3	70.5
315	600		226.6	187.3	147.1	121.9	96.3	67.5	59.1	38.2
	750		281.4	235.5	179.0	148.4	117.1	84.9	74.3	45.9
	1000		389.9	316.4	240.6	199.4	157.3	110.4	96.7	61.6
	1500		552.6	460.1	364.8	302.5	238.3	167.4	146.7	90.4
355	600		351.2	284.4	217.0	179.1	140.5	95.9	82.9	59.1
	750		437.1	357.5	272.7	225.3	171.1	120.6	104.2	74.2
	1000		578.6	480.4	366.5	310.4	229.8	156.8	135.6	96.5
	1500		855.8	698.4	532.9	440.4	348.2	237.7	205.7	146.4
400	600		432.5	367.3	280.1	232.3	190.4	135.4	117.6	84.4
	750		538.0	461.8	352.3	292.1	239.2	164.8	143.1	106.2
	1000		711.6	620.5	473.3	392.6	321.3	221.4	192.2	138.2
	1500		1067.5	901.4	688.1	571.1	467.1	335.7	291.6	209.6
450	600		702.5	621.2	506.6	387.6	290.5	198.6	17.6	126.7
	750		872.7	772.9	636.9	487.3	365.1	249.7	216.1	154.1
	1000		1152.1	1022.8	855.4	654.7	790.4	335.4	290.4	207.2
	1500		1694.4	1511.1	1242.1	951.7	712.5	487.8	440.3	314.3
500	600		831.2	749.3	624.5	480.2	378.3	260.6	226.2	167.8
	750		1032.0	931.7	785.1	603.8	475.4	327.5	284.4	204.4
	1000		1360.8	1231.5	1011.4	811.1	638.6	440.1	382.2	274.6
	1500		1997.4	1815.7	1530.0	1178.4	927.3	639.7	556.5	416.6
560	600		1296.6	1113.6	847.8	700.2	545.2	372.3	322.0	229.4
	750		1609.2	1400.0	1065.9	880.5	685.4	468.0	404.8	288.4
	1000		2120.4	1802.9	1373.3	1134.9	920.2	628.6	543.9	385.0
	1500		3107.6	2724.0	2077.4	1718.4	1335.6	913.6	790.7	564.0
630	600		1675.8	1476.7	1172.1	972.9	732.1	540.9	474.2	293.5
	750		2077.6	1834.0	1473.5	1223.4	907.1	680.0	596.1	369.2
	1000		2732.9	2419.5	1897.7	1576.4	1192.2	913.1	800.7	496.1
	1500		3991.9	3554.1	2867.5	2385.0	1738.6	1325.5	1163.2	721.8
710	600		2686.1	2362.3	1832.8	1514.2	1148.8	784.2	678.3	483.0
	750		3326.6	2895.8	2210.0	1826.5	1443.8	985.8	852.8	607.4
	1000		4368.0	3865.8	2965.6	2452.4	1858.6	1270.0	1145.6	816.3
	1500		6358.9	5670.1	4475.5	3706.4	2806.1	1921.5	1663.9	1187.1
800	600		3280.8	2893.9	2366.9	1963.5	1543.6	1107.2	961.6	691.0
	750		4058.6	3588.7	2853.4	2368.1	1908.7	1391.9	1209.0	869.1
	1000		5319.9	4722.1	3827.0	3178.2	2500.1	1792.7	1557.6	1120.3
	1500		-	6902.4	5673.6	4797.8	3622.4	2709.6	2356.2	1693.3
900	600		5284.6	4703.5	4101.3	3139.8	2412.4	1677.3	1452.3	1036.4
	750		6522.4	5822.2	5131.6	3945.1	2953.9	2022.4	1825.8	1303.4
	1000		8517.6	7639.1	6713.5	5289.4	3892.7	2713.9	2351.3	1680.0
	1500		-	-	9705.3	7834.7	5615.6	4097.3	3553.1	2543.7
1000	600		6217.3	5640.7	4888.3	3890.1	2941.6	2200.4	1911.2	1373.9
	750		7664.2	6973.6	6033.3	4886.3	3827.0	2652.8	2304.6	1727.7
	1000		9989.0	9131.3	7878.9	6530.2	4728.7	3542.9	3092.7	2226.4
	1500		-	-	-	9434.4	6791.7	5365.2	4668.2	3368.3

14 Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears

EBD、EBF 型齿轮箱额定功率
Rated power of EBD,EBF type gear cases

规格 specification	功率 Power 转速 r/min	传动比 transmission ratio	20	22.4	25	28	31.5	35.5	40	45	50
			额定功率 P1(kw)rated power P1(kw)								
250	600		20.5	18.9	13.9	11.4	11.4	10.2	7.6	7.6	7.6
	750		25.6	23.7	17.3	14.2	14.2	12.8	9.6	9.6	9.4
	1000		34.1	31.5	23.0	18.9	18.9	17.2	12.9	12.9	12.2
	1500		51.1	47.2	34.1	28.2	28.2	25.3	19.5	19.5	17.6
280	600		35.0	30.9	22.8	18.6	18.6	16.3	12.1	12.1	11.5
	750		43.7	38.6	28.4	23.2	23.2	20.5	15.3	15.3	14.1
	1000		58.3	51.5	37.7	31.1	31.1	27.5	20.4	20.4	18.2
	1500		85.6	75.4	56.0	45.9	45.9	40.4	30.3	30.3	26.2
315	600		45.7	38.9	28.1	23.2	23.2	20.9	15.6	15.6	15.6
	750		57.1	48.5	35.1	28.9	28.9	26.2	19.6	19.6	19.5
	1000		76.0	64.3	46.4	38.4	38.4	35.2	26.3	26.3	25.3
	1500		113.8	95.5	68.8	56.9	56.9	51.7	38.5	38.5	35.1
355	600		68.3	60.5	41.9	34.5	34.5	30.5	22.6	22.6	22.6
	750		85.3	76.0	52.3	43.1	43.1	38.2	28.3	28.3	28.3
	1000		113.6	98.8	69.3	56.5	56.5	51.4	38.1	38.1	38.1
	1500		170.0	150.0	102.8	85.0	85.0	75.4	56.0	56.0	53.2
400	600		84.3	77.8	52.7	43.8	43.8	41.3	28.2	28.2	28.2
	750		105.3	97.2	65.5	54.6	54.6	51.5	35.4	35.4	35.4
	1000		140.2	129.4	86.7	72.4	72.4	68.4	47.6	47.6	47.6
	1500		209.6	193.6	165.6	128.3	107.3	101.4	82.6	69.8	65.8
450	600		137.1	124.1	86.4	69.8	69.8	63.1	46.9	46.9	46.9
	750		171.1	156.0	105.3	86.9	86.9	79.3	52.8	52.8	52.8
	1000		228.4	208.6	139.4	115.2	115.2	103.1	76.6	76.6	76.6
	1500		341.7	304.9	205.8	170.6	170.6	156.4	116.3	116.3	115.0
500	600		163.1	150.5	110.2	91.0	91.0	85.5	64.5	64.5	62.5
	750		203.5	187.9	137.0	113.2	113.0	105.0	81.0	81.0	78.2
	1000		270.8	250.0	181.1	149.8	149.8	141.0	105.4	105.4	98.6
	1500		404.2	373.5	266.9	221.5	221.5	208.5	159.8	159.8	142.3
560	600		265.4	234.3	180.7	149.3	149.3	137.9	102.5	102.5	94.4
	750		331.3	292.5	224.6	185.7	185.7	167.8	124.6	124.6	115.4
	1000		440.6	389.3	296.5	245.5	245.5	225.5	167.5	167.5	143.7
	1500		657.7	581.4	436.0	362.2	362.2	341.1	254.1	251.9	207.4
630	600		330.4	305.0	272.9	235.8	235.8	193.7	172.3	150.5	129.1
	750		412.4	380.7	340.6	294.5	294.5	241.9	215.3	185.8	153.8
	1000		548.3	506.4	463.2	391.9	391.9	322.0	286.7	241.0	199.4
	1500		818.1	755.8	676.8	585.6	585.6	481.7	428.9	348.0	288.0
710	600		531.5	490.7	410.3	342.8	342.8	314.9	230.6	230.2	194.3
	750		663.2	612.4	508.2	425.1	452.1	393.2	289.9	277.2	228.3
	1000		881.6	814.2	667.2	559.5	559.5	523.5	389.5	359.6	296.1
	1500		1314.3	1214.4	971.8	818.3	818.3	773.8	566.6	519.2	427.6
800	600		651.6	601.6	538.3	465.4	407.0	381.7	339.6	297.1	253.3
	750		812.3	750.6	671.8	580.9	508.2	476.6	324.2	371.0	309.9
	1000		1080.0	997.6	893.2	772.6	676.3	634.4	564.7	486.2	402.0
	1500		1609.1	1487.0	1332.2	1153.3	1010.7	948.2	844.4	702.3	580.7
900	600		1057.9	976.9	844.9	700.0	665.8	624.4	527.4	493.9	405.1
	750		1318.9	1218.2	1044.3	866.3	831.1	779.5	663.2	616.5	505.8
	1000		1751.1	1617.9	1366.8	1137.7	1105.5	1037.0	854.9	820.2	669.9
	1500		2604.7	2406.0	1977.4	1655.0	1650.7	1548.9	1295.0	1224.7	968.0
1000	600		1301.8	1150.2	1033.1	893.4	802.0	752.2	669.5	583.8	481.1
	750		1622.4	1434.0	1288.4	1114.6	1001.0	938.9	835.8	728.7	600.5
	1000		2152.8	1903.9	1711.3	1481.1	1331.1	1248.8	1111.9	696.1	798.8
	1500		3198.2	2831.6	2547.2	2206.9	1986.4	1864.1	1560.7	1446.4	1192.7

Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears

ECD、ECF 型齿轮箱额定功率
Rated power of ECD,ECF type gear cases

规格 specification	功率 power 转速 r/min	传动比 transmission ratio	112	125	140	160	180	200	224	250	280	315	355	400
			额定功率 P1(kw)/rated power P1(kw)											
315	600		8.1	7.2	6.3	4.8	4.1	3.9	3.2	3.2	2.9	2.7	2.5	2.2
	750		10.1	9.0	7.9	6.0	5.1	4.8	3.9	3.9	3.7	3.3	3.2	2.7
	1000		13.5	12.0	10.7	7.9	6.8	6.4	5.3	5.3	5.0	4.5	4.2	3.6
	1500		20.3	18.1	15.9	11.9	10.3	9.6	7.9	7.9	7.3	6.5	6.3	5.5
355	600		12.0	10.8	10.0	7.1	6.2	5.7	4.7	4.7	4.5	3.9	3.9	3.4
	750		15.1	13.6	12.4	8.9	7.7	7.2	5.9	5.9	5.6	5.0	5.0	4.2
	1000		20.1	18.1	16.6	11.9	10.2	9.6	7.9	7.9	7.3	6.6	6.6	5.6
	1500		30.1	27.1	24.5	17.8	15.4	14.4	11.9	11.9	10.5	9.5	9.5	8.5
400	600		14.9	13.4	12.3	9.0	7.8	7.3	6.0	6.0	5.6	5.1	5.0	4.2
	750		18.7	16.7	15.4	11.2	9.6	9.0	7.5	7.5	7.1	6.3	6.2	5.3
	1000		24.9	22.3	20.5	14.9	12.9	12.1	10.1	10.1	9.5	8.5	8.3	7.1
	1500		37.3	33.4	30.8	22.4	19.3	19.1	15.1	15.1	14.2	12.6	12.4	10.7
450	600		24.4	21.8	20.1	14.5	12.4	11.7	9.6	9.6	9.0	8.0	8.0	6.7
	750		30.5	27.2	25.2	18.1	15.6	14.7	12.0	12.0	11.3	10.1	10.1	8.4
	1000		40.7	36.3	33.5	24.1	20.8	19.5	16.0	16.0	15.1	13.4	13.4	11.2
	1500		61.0	54.5	50.4	36.1	31.1	29.2	23.8	23.8	21.8	19.7	19.7	16.8
500	600		28.9	26.0	23.9	18.9	16.5	15.5	12.8	12.8	12.0	10.0	9.2	7.6
	750		36.2	32.4	30.0	23.7	20.6	19.4	15.9	15.9	15.0	12.4	11.5	9.5
	1000		48.2	43.3	39.9	31.5	27.5	25.9	21.3	21.3	20.0	16.6	15.4	12.7
	1500		74.4	64.9	59.9	51.8	45.0	42.3	35.6	31.8	29.0	24.9	21.8	19.1
560	600		47.2	42.2	37.2	31.1	26.9	25.2	20.7	20.4	19.1	17.0	14.8	12.7
	750		58.9	52.7	46.5	38.9	33.5	31.5	25.9	25.5	23.8	21.2	18.6	15.9
	1000		78.6	70.3	62.0	51.7	44.7	41.9	34.5	34.0	31.8	28.3	24.8	21.3
	1500		117.8	105.4	93.0	77.4	66.8	62.8	51.6	50.9	45.8	51.2	37.2	31.9
630	600		58.6	52.6	48.5	43.4	37.4	34.1	30.3	26.6	24.9	22.1	19.3	16.5
	750		73.2	66.2	60.6	54.2	46.8	43.9	37.9	33.2	31.1	27.7	24.2	20.7
	1000		97.6	87.6	80.8	72.3	62.4	58.5	50.5	44.2	41.4	36.8	32.3	27.6
	1500		146.2	131.3	121.2	108.3	93.6	87.8	75.8	66.3	62.2	55.3	48.3	41.4
710	600		94.3	84.6	78.1	70.0	60.5	56.7	48.1	43.0	40.4	36.0	31.6	27.1
	750		117.9	105.8	97.6	87.5	75.6	70.8	60.6	53.8	50.6	45.0	39.5	33.9
	1000		157.1	141.1	130.1	116.7	100.8	94.5	79.9	71.6	67.4	60.0	52.7	45.2
	1500		235.5	211.3	195.0	174.9	151.1	141.6	119.5	107.5	101.1	90.0	78.9	67.7
800	600		116.1	103.8	95.8	85.7	74.0	69.4	60.0	52.3	49.1	43.6	38.2	32.8
	750		145.1	129.7	119.8	107.1	92.5	86.7	74.9	64.4	61.3	54.5	47.7	40.9
	1000		193.4	173.0	159.6	142.9	123.3	115.6	99.9	87.2	81.8	72.7	63.7	54.6
	1500		289.8	259.2	239.2	214.0	184.8	173.4	149.7	130.9	122.7	109.1	95.5	81.9
900	600		188.9	169.4	156.3	139.7	121.7	114.5	98.9	87.0	81.6	68.0	60.4	49.5
	750		236.0	211.6	195.3	174.6	151.2	143.1	123.6	108.8	102.0	84.9	75.5	61.9
	1000		314.5	281.9	260.2	232.7	202.7	190.8	164.8	145.0	135.9	113.2	100.7	82.6
	1500		470.9	422.3	389.9	348.7	303.7	285.9	247.0	217.3	203.7	169.7	150.9	123.8
1000	600		232.8	208.1	183.6	164.9	142.4	133.5	115.3	103.3	96.9	86.2	75.2	61.9
	750		290.7	260.1	229.5	206.6	177.9	166.8	144.1	129.2	121.1	107.7	94.0	77.4
	1000		387.4	346.5	305.9	274.5	237.1	222.3	192.1	172.2	161.5	143.6	125.3	103.2
	1500		580.1	519.0	458.1	411.2	355.3	333.2	287.9	258.1	242.0	215.3	187.9	154.7

EAZD、EAFZ 型齿轮箱额定功率
Rated power of EAZD,EAFZ type gear cases

规格 specification	功率 power 转速 r/min	传动比 transmission ratio	10	11.2	12.5	14	16	18
			额定功率 P ₁ (kw)/rated power P ₁ (kw)					
200	600		14.1	13.4	12.5	10.9	9.9	7.9
	750		15.0	15.0	14.3	11.9	10.7	8.5
	1000		19.4	19.4	18.1	15.0	13.6	10.7
	1500		28.5	28.5	26.3	21.9	19.7	15.6
224	600		19.5	19.5	18.1	15.2	13.7	10.9
	750		21.1	21.1	19.5	16.3	15.2	12.0
	1000		27.5	27.5	25.3	21.0	19.1	15.2
	1500		40.4	40.4	37.2	30.9	27.9	22.1
250	600		25.3	25.3	24.2	20.4	18.5	14.7
	750		32.0	32.0	26.5	22.1	19.9	16.4
	1000		37.4	37.4	34.5	28.7	25.9	20.7
	1500		52.9	52.9	50.8	42.3	38.1	30.2
280	600		33.5	33.5	31.0	27.0	24.4	19.6
	750		38.5	38.5	35.4	29.6	26.7	21.3
	1000		50.2	50.2	26.5	38.7	34.9	22.7
	1500		71.4	71.4	65.8	57.1	51.5	40.8
315	600		50.9	50.9	47.1	39.8	36.2	30.1
	750		60.0	60.0	55.3	46.2	41.8	33.4
	1000		79.1	79.1	73.0	60.9	54.9	43.7
	1500		112.3	112.3	103.5	86.3	78.0	64.7
355	600		76.6	76.6	71.6	59.8	54.5	43.5
	750		89.8	89.8	82.8	69.3	62.7	50.0
	1000		118.6	118.6	109.4	91.3	82.6	65.8
	1500		168.4	168.4	155.5	129.9	117.4	93.6
440	600		113.4	113.4	105.2	88.6	80.4	64.4
	750		134.4	134.4	124.1	103.8	94.0	75.0
	1000		170.7	170.7	157.5	137.3	124.2	99.1
	1500		251.6	251.6	232.3	195.5	176.9	141.2
450	600		159.4	159.4	147.6	123.5	111.9	89.5
	750		118.4	118.4	173.9	145.4	131.5	105.5
	1000		239.3	239.3	220.9	184.7	167.1	138.9
	1500		352.9	352.9	325.9	272.8	264.9	198.2
500	600		214.7	214.7	198.6	166.2	150.5	120.3
	750		244.8	244.8	235.6	196.9	178.1	142.1
	1000		323.0	323.0	299.5	250.4	226.5	180.7
	1500		478.1	478.1	442.0	370.0	334.9	267.4
560	600		321.1	321.1	265.0	221.5	200.5	160.0
	750		328.4	328.4	303.1	263.8	238.5	190.0
	1000		484.5	484.5	400.0	335.6	303.4	241.9
	1500		641.4	641.4	592.5	496.0	448.8	359.0
630	600		470.7	470.7	435.0	380.2	344.5	276.0
	750		579.8	574.9	535.5	449.4	406.9	339.4
	1000		774.1	772.3	715.1	598.9	542.3	435.2
	1500		1137.8	1137.8	1051.8	896.6	812.4	649.8
710	600		681.2	681.2	629.8	528.5	499.5	400.8
	750		846.7	846.7	782.1	654.9	594.5	476.1
	1000		1131.1	1131.1	1045.0	875.5	793.1	635.2
	1500		1662.0	1662.0	1536.7	1289.2	1168.6	925.4
800	600		947.2	922.8	863.3	742.1	673.5	541.7
	750		1196.1	1160.1	1085.3	927.4	840.6	674.3
	1000		1598.3	1558.8	1458.2	1240.4	1124.2	902.4
	1500					1824.2	1655.4	1330.2
900	600		1320.3	1320.3	1226.4	1038.9	946.5	762.7
	750		1701.1	1710.1	1572.1	1318.0	1194.3	957.0
	1000		2238.3	2238.3	2069.6	1765.3	1600.2	1283.1
	1500							1810.5
1000	600		1728.3	1728.3	1618.0	1392.4	1274.4	1034.5
	750		2323.9	2323.9	2148.1	1801.0	1631.8	1307.0
	1000		3060.2	3060.2	2829.3	2373.2	2186.4	1752.3
	1500							

EBZD、EBZF 型齿轮箱额定功率
Rated power of EBZD,EBZF type gear cases

规格 specification	功率 power 转速 r/min	传动比 transmission ratio	56	63	71	80	90	100	112	125
			额定功率 P1(kw/rated power P1(kw))							
250	600		5.8	5.5	5.5	4.8	4.5	3.9	3.4	2.8
	750		7.2	6.7	6.7	6.0	5.5	5.0	4.3	3.2
	1000		9.6	9.0	9.0	7.9	7.3	6.4	5.7	4.3
	1500		14.6	13.6	13.6	11.9	11.0	9.7	8.4	6.2
280	600		9.5	8.9	8.9	7.8	7.3	6.3	5.6	4.1
	750		11.5	10.7	10.7	9.7	9.0	7.9	6.8	5.1
	1000		15.4	14.4	14.4	12.5	11.7	10.2	8.8	6.8
	1500		23.3	21.8	21.8	19.0	17.6	15.5	13.4	9.9
315	600		11.7	10.9	10.9	9.7	9.0	8.1	7.1	5.3
	750		14.7	13.7	13.7	11.9	11.1	10.2	8.8	6.5
	1000		19.7	18.4	18.4	16.0	14.9	13.1	11.3	8.8
	1500		29.5	27.7	27.7	24.2	22.6	19.9	17.7	12.8
355	600		17.0	16.9	15.9	14.5	13.5	11.9	10.3	7.7
	750		21.4	20.0	20.0	17.5	16.3	14.3	12.8	9.5
	1000		28.7	26.9	26.9	23.4	21.8	19.2	16.4	12.2
	1500		43.5	40.7	40.7	35.4	32.9	29.0	24.9	18.5
400	600		22.5	21.1	21.1	18.4	17.2	16.2	14.0	9.6
	750		28.1	26.4	26.4	23.0	21.5	20.3	17.4	11.9
	1000		37.4	35.1	35.1	30.6	28.6	27.0	23.2	15.3
	1500		55.8	52.3	52.3	45.8	42.7	43.2	34.6	23.1
450	600		35.3	33.1	33.1	28.8	26.9	23.6	21.5	15.9
	750		44.4	41.5	41.5	36.2	33.6	29.6	25.5	18.9
	1000		59.5	55.7	55.7	48.5	45.1	39.7	34.1	25.4
	1500		88.8	83.8	83.8	72.9	68.0	60.1	51.6	38.4
500	600		46.9	43.9	43.9	38.4	35.8	32.3	28.2	21.9
	750		58.4	54.4	54.4	47.9	44.7	40.5	34.8	26.0
	1000		77.6	72.8	72.8	63.8	59.4	54.3	46.6	34.9
	1500		115.6	108.5	108.5	95.0	88.6	82.2	70.6	52.7
560	600		75.5	72.2	71.4	62.3	58.0	51.5	45.1	33.4
	750		96.0	90.1	89.1	77.8	72.5	64.7	55.5	41.3
	1000		127.5	119.6	118.8	103.7	96.7	86.7	74.6	55.4
	1500		189.9	178.1	178.0	155.5	144.9	131.4	112.8	83.8
630	600		113.3	106.1	102.9	81.1	75.6	70.8	61.1	54.4
	750		141.5	132.6	116.1	101.4	94.5	88.6	76.4	67.9
	1000		188.5	176.8	154.7	135.1	125.9	118.0	101.8	90.6
	1500		282.2	264.6	231.7	202.5	188.7	176.9	152.5	135.7
710	600		177.9	166.8	150.5	131.4	122.4	115.3	99.3	77.6
	750		221.5	207.8	188.1	164.3	153.0	144.0	124.1	95.8
	1000		293.4	278.4	205.5	218.9	204.0	192.0	165.4	128.6
	1500		434.6	408.3	375.2	328.0	305.5	287.7	248.0	194.8
800	600		223.7	209.6	183.2	160.0	149.1	139.8	120.5	107.2
	750		279.3	261.8	228.9	200.0	186.3	174.7	150.6	133.9
	1000		372.1	348.8	304.9	266.4	248.2	232.8	200.6	178.5
	1500		556.9	522.1	456.7	399.1	371.9	348.8	300.7	267.5
900	600		363.6	340.8	299.8	261.9	244.1	228.9	197.2	175.5
	750		453.6	425.6	374.5	327.3	304.9	286.0	246.5	219.0
	1000		600.1	563.5	499.0	435.9	406.3	381.0	348.5	292.2
	1500		833.2	746.8	652.8	608.4	570.6	527.9	462.0	431.2
1000	600		429.9	402.9	361.4	315.7	294.2	275.9	237.8	211.5
	750		536.8	503.2	451.4	394.4	367.5	344.6	297.1	264.3
	1000		714.6	670.0	601.2	525.3	489.6	459.1	395.8	352.2
	1500					786.4	733.0	687.4	592.8	527.5

18 Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears

ECZD、ECZF 型齿轮箱额定功率
Rated power of ECZD, ECZF type gear cases

规格 specification	功率 power 转速 r/min	传动比 transmission ratio	355	400	450	500	560	630	710	800	900	1000	1120	1250
			额定功率 P ₁ (kw)/rated power P ₁ (kw)											
315	600		2.8	1.8	1.6	1.5	1.2	1.2	1.1	1.1	1.0	0.8	0.8	0.6
	700		3.5	2.9	2.0	1.9	1.6	1.6	1.4	1.3	1.1	1.0	1.0	0.8
	1000		4.7	3.1	2.7	2.5	2.1	2.1	1.9	1.8	1.6	1.4	1.3	1.1
	1500		7.2	4.6	4.0	3.8	3.1	3.1	2.9	2.7	2.4	2.1	2.0	1.7
355	600		4.5	2.8	2.4	2.2	1.8	1.8	1.7	1.6	1.4	1.2	1.2	1.1
	750		5.6	3.4	3.0	2.8	2.3	2.3	2.2	2.0	1.7	1.5	1.5	1.3
	1000		7.4	4.6	4.0	3.8	3.1	3.1	2.9	2.7	2.4	2.1	2.1	1.7
	1500		11.2	6.9	6.0	5.6	4.6	4.6	4.4	4.0	3.6	3.1	3.1	2.7
400	600		5.5	3.4	3.0	2.8	2.3	2.3	2.2	2.1	1.8	1.6	1.6	1.3
	750		6.9	4.3	3.8	3.5	2.9	2.9	2.8	2.6	2.2	2.0	1.9	1.7
	1000		9.2	5.8	5.1	4.7	3.9	3.9	3.7	3.4	3.0	2.6	2.6	2.2
	1500		13.8	8.7	7.6	7.1	5.9	5.9	5.6	5.1	4.6	3.9	3.9	3.4
450	600		9.0	5.6	4.9	4.5	3.8	3.8	3.5	3.3	2.9	2.5	2.5	2.2
	750		11.3	7.0	6.1	5.7	4.7	4.7	4.4	4.1	3.6	3.1	3.1	2.6
	1000		15.1	9.3	8.1	7.6	6.2	6.2	5.9	5.5	4.9	4.2	4.2	3.5
	1500		22.6	14.0	12.3	11.5	9.5	9.5	8.9	8.3	7.3	6.3	6.3	5.2
500	600		10.7	7.4	6.4	6.1	5.0	5.0	4.7	4.4	3.6	3.1	2.9	2.4
	750		13.4	9.2	8.1	7.6	6.2	6.2	5.8	5.5	4.5	3.9	3.6	2.9
	1000		17.9	12.4	10.7	10.2	8.4	8.4	7.9	7.3	6.1	5.2	4.8	3.9
	1500		26.9	18.5	16.2	15.3	12.5	12.5	11.8	10.9	9.1	7.9	7.3	6.6
560	600		16.7	12.0	10.5	9.9	8.1	7.9	7.4	6.9	6.2	5.3	4.7	4.1
	750		20.9	15.1	13.1	12.4	10.2	10.0	9.3	8.7	7.7	6.7	5.8	5.0
	1000		27.8	20.1	17.5	16.4	13.6	13.3	12.4	11.6	10.3	8.9	7.8	6.7
	1500		41.8	30.1	26.3	24.7	20.4	19.9	18.7	17.4	15.5	13.4	11.7	10.0
630	600		21.8	16.8	14.7	13.7	11.9	10.4	9.7	9.0	8.0	6.9	6.1	5.3
	750		27.2	21.0	18.3	17.2	14.8	13.0	12.2	11.3	10.1	8.7	7.6	6.5
	1000		36.3	28.0	24.4	22.9	19.8	17.3	16.3	15.1	13.5	11.6	10.2	8.7
	1500		54.4	52.0	36.8	34.4	29.7	26.0	24.3	22.7	20.2	17.4	15.2	13.0
710	600		35.1	27.2	23.7	22.2	18.9	16.9	15.8	14.7	13.1	11.3	10.0	8.7
	750		43.8	34.0	29.6	27.7	23.6	21.0	19.8	18.5	16.4	14.1	12.4	10.7
	1000		58.4	45.3	39.5	37.0	31.5	28.1	26.4	24.6	21.9	18.8	16.5	14.1
	1500		87.7	67.9	59.3	55.5	47.1	42.1	39.6	36.9	32.8	28.3	24.9	21.3
800	600		43.0	33.2	29.0	27.2	23.5	20.5	19.2	17.9	15.9	13.7	12.1	10.6
	750		53.8	41.5	36.2	34.0	29.4	25.6	24.0	22.4	19.9	17.1	15.0	12.9
	1000		71.7	55.4	48.4	45.3	39.1	34.2	32.1	29.9	26.6	22.9	20.0	17.1
	1500		107.6	83.1	72.5	68.0	58.8	51.3	48.1	44.8	39.9	34.4	30.0	25.8
900	600		70.2	54.6	47.7	44.9	38.8	34.1	32.0	29.8	24.8	21.4	19.3	16.1
	750		87.7	68.3	59.6	56.1	48.5	42.6	40.0	37.3	31.0	26.7	23.8	19.5
	1000		117.0	91.1	79.5	74.8	64.6	56.8	53.3	49.7	41.3	35.7	31.7	26.6
	1500		175.4	136.5	119.3	112.3	97.0	85.3	79.9	74.5	62.0	53.4	47.6	39.0
1000	600		82.5	64.0	55.9	52.4	45.3	40.5	37.9	35.4	31.5	27.2	23.8	20.0
	750		103.1	79.9	69.8	65.5	56.6	50.7	47.5	44.2	39.4	33.9	29.6	24.3
	1000		137.5	106.5	93.1	87.2	75.3	67.5	63.4	59.0	52.5	45.3	39.5	32.5
	1500		206.2	159.8	139.6	130.9	113.1	101.4	95.0	88.5	78.7	67.9	59.2	48.7

Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears

七、热功率表

Table of heat power

表2 EAD、EAF 减速器热功率 P_{G1}, P_{G2} Table 2 Heat power of the reducer EAD, EAF P_{G1}, P_{G2} mm

散热冷却条件 Heat sinking and cooling conditions		规格 Specification																	
没有冷却措施 Without cooling	环境条件 Ambient conditions	200	224	250	280	315	355	400	450	500	560	630	710	800	900	1000	1100	1250	1400
		P_{G1} kW																	
	小空间、小厂房 Small confined space	6	9	12	17	24	30	37	49	61	73	90	111	145	182	237	285	375	453
	较大空间或厂房 Large workshops	9	13	18	26	36	45	55	74	92	110	135	166	217	273	356	425	563	679
	户外露天 In the open-air	12.5	15	25	37	51	64	78	104	150	155	190	254	506	585	502	599	794	957
稀油站循环油润滑 With circulating oil lubrication		P_{G2} 按 P_{G1} 工况条件, 稀油站的流量和容积来确定 P_{G2} is defined according to the flow rate and volume of the oil lubricating station, the working condition P_{G1} .																	

表3 EBD、EBF 减速器热功率 P_{G1}, P_{G2} Table 3 Heat power of the reducer EBD, EBF P_{G1}, P_{G2} mm

散热冷却条件 Heat sinking and cooling conditions		规格 Specification																	
没有冷却措施 Without cooling	环境条件 Ambient conditions	250	280	315	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400	1600	1800
		P_{G1} kW																	
	小空间、小厂房 Small confined space	8	11	16	20	24.5	33	41	49	60	71	93	117	153	182	242	292	393	526
	较大空间或厂房 Large workshops	12	17	24	30	36.5	49	61	73.5	90	107	140	176	230	274	363	438	590	790
	户外露天 In the open-air	17	24	34	42	52	69	87	104	128	152	199	249	326	389	515	622	838	1121
稀油站循环油润滑 With circulating oil lubrication		P_{G2} 按 P_{G1} 工况条件, 稀油站的流量和容积来确定 P_{G2} is defined according to the flow rate and volume of the oil lubricating station, the working condition P_{G1} .																	

表4 ECD、ECF 减速器热功率 P_{G1}, P_{G2} Table 4 Heat power of the reducer ECD, ECF P_{G1}, P_{G2} mm

散热冷却条件 Heat sinking and cooling conditions		规格 Specification																	
没有冷却措施 Without cooling	环境条件 Ambient conditions	315	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400	1600	1800	2000	
		P_{G1} kW																	
却措施 cooling	小空间、小厂房 Small confined space	11	13.5	16.5	22	27	32.5	43	47	62	78	110	131	189	211	290	403	541	
	较大空间或厂房 Large workshops	16	20	24.3	33	41	49	64	71	93	117	164	196	279	392	421	585	785	
	户外露天 In the open-air	22.5	28	34	46.5	58	69	90	100	131	175	231	276	323	439	594	625	1107	
稀油站循环油润滑 With circulating oil lubrication		P_{G2} 按 P_{G1} 工况条件、稀油站的流量和容积来确定 P_{G2} is defined according to the flow rate and volume of the oil lubricating station, the working condition P_{G1} .																	

Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears

表 5 EAZD、EAFZ 减速器热功率 P_{G1}, P_{G2} Table 5 Heat power of the reducer EAZD, EAFZ P_{G1}, P_{G2} mm

散热冷却条件		Heat sinking and cooling conditions		规格 Specification																		
没有冷 却措施 Without cooling	环境条件	Ambient conditions	200	224	250	280	315	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400	1600	
			P_{G1} kW																			
	小空间、小厂房	Small confined space	6	8	11	16	23	28	35	47	58	69	85	104	136	171	223	267	353	425	573	
	较大空间或厂房	Large workshops	8.5	12	17	24	34	42	52	70	87	103	127	156	204	257	335	400	529	628	860	
	户外露天	In the open-air	12	17	24	34	48	59	73	98.7	123	145	179	220	288	362	472	564	746	899	1212	
	稀油站循环油润滑 With circulating oil lubrication		P_{G2} 按 P_{G1} 工况条件、稀油站的流量和容积来确定 P_{G2} is defined according to the flow rate and volume of the oil lubricating station, the working condition P_{G1} .																			

表 6 EBZD、EBZF 减速器热功率 P_{G1}, P_{G2} Table 6 Heat power of the reducer ECD, ECF P_{G1}, P_{G2} mm

散热冷却条件		Heat sinking and cooling conditions		规格 Specification															
没有冷 却措施 Without cooling	环境条件	Ambient conditions	250	280	315	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400	1600
	小空间、小厂房	Small confined space	P_{G1} kW																
	较大空间或厂房	Large workshops	7.3	11	15	19	23	30	38	45	56	66	87	109	143	170	225	271	356
	户外露天	In the open-air	11	16	22	28	34	45	57	68	84	99	130	164	214	255	337	407	549
			15.5	23	31	39.5	48	63.5	80	96	118	140	183	231	302	359	475	574	774
	稀油站循环油润滑 With circulating oil lubrication		P_{G2} 按 P_{G1} 工况条件、稀油站的流量和容积来确定 P_{G2} is defined according to the flow rate and volume of the oil lubricating station, the working condition P_{G1} .																

表 7 ECZD、ECZF 减速器热功率 P_{G1}, P_{G2} Table 7 Heat power of the reducer ECZD, ECZF P_{G1}, P_{G2} mm

散热冷却条件		Heat sinking and cooling conditions		规格 Specification															
没有冷 却措施 Without cooling	环境条件	Ambient conditions	315	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400	1600	1800	2000
	小空间、小厂房	Small confined space	P_{G1} kW																
	较大空间或厂房	Large workshops	10	12.5	15.8	21	27	32	42	46	61	77	107	128	175	195	265	367	492
	户外露天	In the open-air	15	18.8	23.8	32	40	48	63	69.5	91	115	161	192	262	293	395	550	738
			21	26	33	45	56	67	88	97	127	161	225	269	367	410	553	770	1033
	稀油站循环油润滑 With circulating oil lubrication		P_{G2} 按 P_{G1} 工况条件、稀油站的流量和容积来确定 P_{G2} is defined according to the flow rate and volume of the oil lubricating station, the working condition P_{G1} .																

Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears

八、减速器选用方法

本标准减速器的承载能力受机械强度和热平衡许用功率两方面的限制,因此减速器的选用必须通过两个功率表。

首先按减速器机械强度许用输入功率 P_1 选用,如果减速器的实用输入转速与承载能力表中的四档(1500、1000、750、600)转速之某一档转速相对误差不超过4%,可按该档转速下的公称功率选用相当规格的减速器。如果转速相对误差超过4%,则应按实际转速折算减速器的公称功率选用,然后校核减速器热平衡许用功率,如入出轴承受轴向载荷(除扭矩外),应校核轴伸安全系数。

1. 按减速器机械强度限制的承载能力 P_1 选定

减速器公称输入功率 P_1 是在减速器由电动机驱动,每日10小时平稳连续工况下,小时启动次数不超过5次时计算决定。当不同原动机驱动,不同载荷(减速器传递功率 P_2)和性质时,应考虑工况系数 K_A 和安全系数 S_A 并满足下列公式:

$$P_{2m} = P_2 K_A S_A < P_1$$

式中 K_A ——工况系数见表8; S_A ——安全系数见表9

2. 按减速器在给定条件下(油池润滑,环境温度20℃,最高油温90℃,小时负荷持续率为100%)热平衡时的临界功率(即热平衡功率) P_{G1} 选定。应考虑环境温度系数 f_1 (见表10),小时负荷持续率系数 f_2 (见表11),公称功率利用系数 f_3 (见表12),并满足下列计算公式:

$$P_{21} = P_2 f_1 f_2 f_3 < P_{G1}$$

3. 当 $P_{21} > P_{G1}$ 时,应采用油冷却器或稀油站集中循环润滑。采用油冷却器通常是把减速器本体容积作为注油油箱,通过冷却器的油再由油泵注入减速器,以实现油温平衡。当采用稀油站循环润滑时,在保证进出口油温差的条件下,达到油温平衡。这两种冷却方法油温平衡时的热功率称之 P_{G2} ,其值应与 P_{21} 。

4. 本标准行星齿轮减速器的最大许用尖峰负荷(短时过载或启动状态)为许用额定负荷能力的2倍。当按上述方法所选减速器,其实际尖峰负荷超过许用值时,可按1/2的实际尖峰负荷(即 $P/2$ 或 $T/2$)另行选择。

5. 本标准行星齿轮减速器入出轴承受之径向负荷见表14,当超过表中规定值时请向我们提出咨询。

6. 本标准行星齿轮减速器转动惯量 J 见表15。

Selection

The load—carrying capacity for this kind of reducer is limited by the mechanical strength and the thermal rating.

First of the all selecting the reducer according to the permittend input power P_1 defined by the mechanical strength. If the reletive deviation of the practical input rotating speed and one of four speed grades (1500、1000、750、600) stipulated in the table of load—carrying capacity does not exceed 4%, selecting the reducer according to the nominal power for the rotating speed of that grade; conversely, if the raletue deviation exceeds 4%, selecting the reducer according to the nominal power calculated form the practical rotating speed. Then, checking the permitted power by the thermal balance. If the radial load carried by the input shaft and output shaft (excluding torque), the safety coefficient of the shaft ends should be checked.

1. Selecting according to load carrying capacity P_1 confined by mechanical strength.

Nominal input power P_1 is calculated under the follwing conditions: reducer driven by motor, 10h/day steadily running and the time of starting less than 5 times /h. When the reducer is driven by different engine, the load (transmitting power P_2) and character are different. Taking into account the working conditions factor K_A and satfy coefficient S_A , the following formula must be fulfilled:

$$P_{2m} = P_2 K_A S_A < P_1$$

Where K_A ——fator of working condition see table 8

S_A ——Safety coefficient see table 9

Manufacturer of: reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears

2. Under the given conditions (oil pot lubrication, ambient temperature 20℃, maximum temperature 90℃, hour load continuity 100%) selecting it according to the critical power P_{G1} at thermal balance meanwhile, taking into account the ambient temperature coefficient f_1 (see table 10), the hour load continuity coefficient f_2 (see table 11), the nominal power usage coefficient f_3 (see table 12), and the following formula must be fulfilled, Power calculated according to thermal balance.

$$P_{21} = P_{G1} f_1 f_2 f_3 < P_{G1}$$

3. When $P_{21} > P_{G1}$, an oil cooler or a centralized oil lubrication station must be adopted. Usually we consider the capacity of reducer body as an oil tank, The oil will be injected by pump into reducer often being cooled by the in order to make thermal balance.

When using oil circular lubrication the thermal balance should be reached under the condition of guaranteeing the temperature difference of inlet oil.

With former two cooling methods, heat power at oil temperature keep constant is called P_{G2} , and it is value must be larger than P_{21} .

4. The maximum allowed peak load of the planetary gear reducer (short time preload state or in starting) is twice of the rated load-carrying capacity. If the peak load of the reducer selected with above mentioned method, is over the allowed value, selecting again according to the half peak load (i.e., $P_1/2$ or $T/2$).

5. The radial load carried by the input and output shafts of the planetary gear reducer as shown in table 14, Being given out in the future. In case of exceeding the specified value, please consult with us.

6. The rotating inertias of planetary gear reducers of this standard are shown in table 15.

表 8 Table 8

原动机 Prime mover	每日工作小时 Daily service in hours	轻微冲击(均匀)载荷 Light shock load	中等冲击载荷 Middle shock load	强冲击载荷 Heavy shock load
电动机 motor	~3	0.8	1	1.5
汽轮机 Turbines	> 3 ~10	1	1.25	1.75
水力机 Hydraulic motors	> 10	1.25	1.5	2
4-6 缸的活塞发动机	~3	1	1.25	1.75
Piston engines 4-6cyl.	> 3 ~10	1.25	1.5	2
	> 10	1.5	1.75	2
1-3 缸的活塞发动机	~3	1.25	1.5	2
Piston engines 1-3cyl.	> 3 ~10	1.5	1.75	2.25
	> 10	1.75	2	2.5

注: 表中工作机械载荷分类见表 13

Note: The load classification of working machines, see table 13

表 9 Table 9

重要性与安全要求 Safety requirement and importance.	一般设备, 减速机失效仅引起单机停产且易更换备件 For the common equipment. If the unit device is damaged caused by the reducer lost it's function, spare parts ex-changing is convenient.	重要设备, 减速机失效引起机组、生产线或全厂停产 For the key equipment, the units, production line, or the whole factory, stopped operation caused by the reducer lost it's function.	高安全度要求, 减速机失效引起设备、人身事故 High safety requirement; the equipment damaged or the personal injury caused by the reducer lost it's function.
S_0	1.1~1.3	1.3~1.5	1.5~1.7

表 10 Table 10

冷却条件 Without cooling	t_1	环境温度 t_2 °C Ambient temperature				
		10	20	30	40	50
		冷却条件 Cooling condition				
		0.89	1	1.14	1.33	1.6

表 11 Table 11

小时负荷率 % Hour load ratio %	100	80	60	40	20
负荷系数 f_2 Coefficient of load f_2	1	0.94	0.86	0.74	0.56

表 12 Table 12

型 号 Model	20%	30%	40%	50%	60%	70%	80%	90%	100%
$f_2 (P_2/P_1 \times 100\%)$									
EAD EAF	1.9	1.45	1.3	1.25	1.2	1.15	1.1	1	1
EAZD EAZF	2.5	1.65	1.4	1.3	1.2	1.15	1.1	1	1
EBD EBF	2	1.5	1.3	1.2	1.1	1.1	1.05	1	1
EBZD EBZF	2.35	1.7	1.4	1.2	1.1	1.1	1.05	1	1
ECD ECF	2.1	1.55	1.3	1.15	1.1	1.05	1	1	1
ECZD ECZF	2.27	1.54	1.33	1.2	1.13	1.07	1	1	1

注: P_1 —— 公称功率, 见表 14~19 页

P_2 —— 实际负载功率

Note: P_1 —— nominal power, see page 14~19

P_2 —— practical load power.

表 13 工作机械载荷分类

Table 13 Load classification of working machine

风机类		Blowers, Ventilators	
风机(轴向和径向)	U	Blowers(axial and radial)	U
冷却塔风扇	M	Cooling tower fans	M
引风机	M	Induced draught fans	M
螺旋活塞式风机	M	Botary piston blowers	M
涡轮式风机	U	Turbo blowers	U
建筑机械类		Building machinery	
混凝土搅拌机	M	Concrete mixers	M
卷扬机	M	Hoists	M
路面建筑机械	M	Road construction machinery	M
化工类		Chemical industry	
搅拌机(液体)	U	Agitators(liquid material)	U
搅拌机(半液体)	M	Agitators(semi-liquid material)	M
离心机(重型)	M	Centrifuges(heavy)	M
离心机(轻型)	U	Centrifuges(light)	U
冷却滚筒 **	M	Cooling drums **	M
干燥滚筒 **	M	Drying drums **	M
搅拌机	M	Mixers	M
压缩机类		Compressors	
活塞式压缩机	H	Piston compressors	H
涡轮式压缩机	M	Turbo compressors	M
传送运输机类		Conveyors	
平板输送机	M	Apron conveyors	M
平衡块升降梯	M	Ballast elevators	M
槽式输送机	M	Band pocket conveyors	M
带式输送机(大件)	M	Belt conveyors(bulk material)	M
带式输送机(碎料)	H	Belt conveyors(piece goods)	H
筒式面粉输送机	U	Bucket conveyors for flour	U
链式输送机	M	Chain conveyors	M
环式输送机	M	Circular conveyors	M
货物升降机	M	Goods lifts	M
卷扬机 **	H	Hoists **	H
倾斜卷扬机 **	H	Inclined Hoists **	H
连杆式输送机	M	Link conveyors	M
载人升降机	M	Passengers lifts	M
螺旋式输送机	M	Screw conveyors	M
钢带式输送机	M	Steel belt conveyors	M
连式槽型输送机(铁轨)	M	Trough chain conveyors	M
绞车运输	M	Winches hauling	M
起重机械类		Cranes	
转臂式起重传动齿轮装置	M	Derricking jib gear	M
卷扬机齿轮传动装置	U	Hoist gear	U
吊杆起落齿轮传动装置	U	Luffing gear	U
转向齿轮传动装置	M	Slewing gear	M
行走齿轮传动装置	H	Travelling gear	H
挖泥机类		Dredgers	
筒式输送机	H	Bucket conveyors	H
筒式转向轮	H	Bucket wheels	H
挖泥头	H	Cutter heads	H
机动绞车	M	Winches	M
泵	M	Pumps	M
转向齿轮传动装置	M	Slewing gear	M
行走齿轮传动装置(履带)	H	Travelling gear(caterpillar)	H
行走齿轮传动装置(铁轨)	M	Travelling gear(rails)	M
食品工业机械类		Food Industry Machinery	
灌注及装箱机器	U	Bottling and container filling machines	U
甘蔗压榨机 **	M	Cane crushers **	M

Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears

甘蔗切断机 **	M	Cane knives **	M
搅拌机	M	Kneading machines	M
煮食物吊桶	M	Mash tubs	M
包装机	U	Packaging machines	U
糖甜菜切断机	M	Sugar beet cutters	M
糖甜菜清洗机	M	Sugar beet washing machines	M
发动机及转换器		Generators, Transformers	
频率转换器	H	Frequency transformers	H
发电机	H	Generators	H
焊接发电机	H	Welding generators	H
洗衣机类		Laundries	
滚筒	M	Tumblers	M
洗衣机	M	Washing machines	M
金属滚轧机类		Metal rolling mills	
钢坯剪断机 **	H	Billet shears **	H
链式输送机 **	M	Chain transfers **	M
冷轧机 **	H	Cold rolling mills **	H
连铸成套设备 **	H	Continuous casting plant **	H
冷床 **	M	Cooling beds **	M
剪料机头 **	H	Cropping shears **	H
交叉转弯输送机 **	M	Cross transfers **	M
除锈机 **	H	Descaling machines **	H
重型和中型板轧机 **	H	Heavy and medium plate mills **	H
棒坯初轧机 **	H	Ingot and blooming mills **	H
棒坯转运机械 **	H	Ingot handling machinery **	H
推床 **	H	Ingot pushers **	H
剪板机 **	H	Manipulators **	H
板料摆动升降台 **	M	Plate shears **	M
轧辊调整装置	M	Plate tilters	M
辊式矫直机 **	M	Roller adjustment drives **	M
轧钢机辊道(重型) **	H	Roller straighteners **	H
轧钢机辊道(轻型) **	M	Roller tables(Heavy) **	M
薄板轧机 **	H	Roller tables(Light) **	H
修整剪切机 **	M	Sheet mills **	M
焊管机	H	Trimming shears	H
焊接机(带材和线材)	M	Welding machines(strip and wire)	M
线材拉拔机	M	Wire drawing benches	M
金属加工机床类		Metal working machines	
动力轴	U	Countershafts, line shafts	U
锻造机	M	Forging presses	H
锻锤 **	M	Hammers **	H
机床及辅助装置	U	Machine tools, Auxiliary drives	U
机床及主要传动装置	M	Machine tools, main drives	M
金属刨床	H	Metal planing machines	H
板料校直机床	H	Plate straightening machines	H
冲床	H	Presses	H
冲压机床	H	Punch presses	H
剪床	M	Shears	M
薄板弯曲机床	M	Sheet metal bending machines	M
石油工业机械类		Oil industry	
输油管油泵 **	M	Pipe line pumps **	M
转子钻井设备	H	Rotary drilling equipment	H
制纸机类		Paper machines	
压光机 **	H	Calenders **	H
多层纸板机 **	H	Corches **	H
干燥滚筒 **	H	Drying cylinders **	H
上光滚筒 **	H	Glazing cylinders **	H
碎浆机 **	H	Pulpers **	H
纸浆磨碎机 **	H	Pulp grinders **	H
吸水滚 **	H	Suction rolls **	H

26 Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears

吸水滚压机 **	H	Suction presses **	H
潜纸滚压机 **	H	Wet presses **	H
威罗机		Willows	
泵类		Pumps	
离心泵(稀液体)	U	Centrifugal pumps(light liquid)	U
离心泵(半液体)	M	Centrifugal pumps(semi-liquid)	M
活塞泵	H	Piston pumps	H
柱塞泵 **	H	Plunger pumps **	H
压力泵 **	H	Pressure pumps **	H
塑料工业类		Plastic industry machinery	
压光机 **	M	Galenders **	M
挤压机 **	M	Crushers **	M
螺压出机 **	M	Extruders **	M
混合机 **	M	Mixers **	M
橡胶机械类		Rubber machinery	
压光机 **	M	Calenders **	M
挤压机 **	H	Extruders **	H
混合搅拌机 **	M	Mixers **	M
捏合机 **	H	Pugmills **	H
滚压机 **	H	Rolling mills **	H
石料、瓷土加工机床类		Stone and clay working machines	
球磨机 **	H	Ball mills **	H
挤压粉碎机 **	H	Beater mills **	H
破碎机	H	Breakers	H
压转机	H	Brick presses	H
锤粉粉碎机 **	H	Hammer mills **	H
转炉 **	H	Rotary ovens **	H
筒形磨机 **	H	Tube milles **	H
纺织机床类		Textil machines	
送料机	M	Batchers	M
织布机	M	Looms	M
印染机床	M	Printing and dyeing machines	M
精制桶	M	Tanning vats	M
威罗机	M	Willows	M
水处理类		Water treatment	
鼓风机 **	M	Aerators **	M
螺杆泵	M	Serew pumps	M
木材加工机床		Wood working machines	
剥皮机	H	Barkers	H
刨床	M	Planing machines	M
锯床 **	H	Saw frames **	H
木材加工机床	U	Wood working machines	U

Manufacturer of : reducers, worm reducers, worm gearboxes, planetary gearboxes, speed reducers, variators, helical gear, spiral bevel gears, agricultural gearboxes, tractor gears, truck gears

表 14 输出(入)轴轴伸中点处额定轻向负荷 Fr Table 14 Rating radial load at centre of shaft end of output (input) shaft Fr.

输出轴	规格	Size	200	224	250	280	315	355	400	450	500	560	630	710	800	900	1000	
			n=375	n=250	n=224	n=200	n=180	n=160	n=140	n=125	n=112	n=100	n=90	n=80	n=71	n=63	n=56	
Output shaft	Output shaft	n=375 n=250 n=224 n=200 n=180 n=160 n=140 n=125 n=112 n=100 n=90 n=80 n=71 n=63 n=56	3.40	4.54	4.56	6.17	7.68	10.06	12.18	12.41	16.78	22.71	21.74	23.99	27.46	28.25	35.30	44.88
			3.89	5.19	5.22	7.06	8.97	11.52	13.95	14.21	19.21	25.99	24.89	27.46	41.02	42.20	52.73	67.04
Single stage input shaft	Single stage input shaft	n=1500 n=1000 n=750 n=600	0.31	3.77	7.79	10.55	13.14	17.21	20.83	21.22	28.69	38.95	37.17	41.02	42.20	74.95	93.63	119.05
			0.51	3.77	13.83	16.73	23.33	30.55	37.00	37.68	50.95	68.95	66.01	72.85	74.95	93.63	119.05	185.05
Two-stage input shaft	Two-stage input shaft	n=1500 n=1000 n=750 n=600	1.15	1.24	1.46	1.64	2.33	2.49	2.58	3.20	4.21	3.92	5.47	6.94	7.45	9.72	10.85	12.42
			1.31	1.42	1.68	1.87	2.67	2.85	2.95	3.67	4.82	4.49	6.26	7.94	8.52	11.12	12.42	14.73
Tri-stage input shaft	Tri-stage input shaft	n=1500 n=1000 n=750 n=600	1.44	1.57	1.85	2.06	2.94	3.14	3.25	4.03	5.31	4.94	6.89	8.74	9.38	12.24	13.67	14.73
			1.56	1.69	1.99	2.22	3.16	3.39	3.50	4.35	5.72	5.33	7.42	9.42	10.11	13.19	14.73	16.06
Four-stage input shaft	Four-stage input shaft	n=1500 n=1000 n=750 n=600	0.77	0.77	0.74	0.97	1.16	1.40	1.52	1.99	2.33	2.95	3.16	3.62	4.84	6.44	8.08	9.58
			0.88	0.88	0.84	1.11	1.33	1.60	1.74	2.28	2.67	3.38	3.72	3.98	5.33	7.09	8.89	10.85
Five-stage input shaft	Five-stage input shaft	n=1500 n=1000 n=750 n=600	0.97	0.97	0.93	1.22	1.47	1.77	1.92	2.51	2.93	3.72	4.01	4.29	5.74	7.63	9.58	11.52
			1.04	1.00	1.00	1.31	1.58	1.90	2.07	2.71	3.16	4.01	4.29	5.74	7.63	9.58	11.52	13.19
Six-stage input shaft	Six-stage input shaft	n=1500 n=1000 n=750 n=600	0.62	0.74	0.71	0.64	0.81	0.73	1.21	1.63	1.68	2.56	2.71	3.99	4.73	5.21	6.44	7.06
			0.71	0.84	0.81	0.73	0.81	0.81	1.33	1.79	1.85	2.82	2.98	4.39	5.21	6.44	7.06	7.68
Seven-stage input shaft	Seven-stage input shaft	n=1500 n=1000 n=750 n=600	0.78	0.93	0.89	0.81	0.96	0.87	1.43	1.93	1.99	3.03	3.21	4.73	5.61	6.44	7.06	7.68
			0.85	1.00	0.96	0.87	1.00	0.96	1.43	1.93	1.99	3.03	3.21	4.73	5.61	6.44	7.06	7.68

注: 1. 输入轴转速高于系列转速之间时, 许用径向载荷用插值法求值。

2. 输出轴转速高于系列转速之间时, 许用径向载荷用插值法求值。

3. 1000 以上规格请咨询。

Note: 1. When the reduction speed of input shaft lies between the value shown in the table, allowable radial load may be calculated by insert method.

2. When the revolution speed of output shaft lies between the value shown in table, allowable radial load may be calculated by insert method. When the revolution speed is less than the minimum value shown in the table, we may calculate it according to the minimum value in the table.

3. Size of that over 1000, please consult with us.

表 15 减速机的转动惯量 J Table 15 Rotating Inertia of reducer kg.m²

级别 Stage	单级 Single		两级 Two stage		三级 Tri-stage	
规格 Size	传动比 Speed ratio	转动惯量 Rotating inertia	传动比 Speed ratio	转动惯量 Rotating inertia	传动比 Speed ratio	转动惯量 Rotating inertia
200	4-5.6	0.013224				
	6.3-18	0.007548				
244	4-5.6	0.024825				
	6.3-18	0.012240				
250	4-5.6	0.037378	20-28	0.004927		
	6.3-18	0.018998	31.5-100	0.002753		
280	4-5.6	0.061210	20-28	0.010022		
	6.3-18	0.033414	31.5-100	0.004946		
315	4-5.6	0.104110	20-28	0.016646	112-224	0.002550
	6.3-18	0.055761	31.5-100	0.007424	250-400	0.001465
335	4-5.6	0.192154	20-28	0.040089	112-224	0.004614
	6.3-18	0.095216	31.5-100	0.014971	250-400	0.002498
400	4-5.6	0.298974	20-28	0.041047	112-224	0.007253
	6.3-18	0.153631	31.5-100	0.022885	250-400	0.003817
450	4-5.6	0.646881	20-28	0.040089	112-224	0.013817
	6.3-18	0.301086	31.5-100	0.081529	250-400	0.007282
500	4-5.6	0.949272	20-28	0.138955	112-224	0.027136
	6.3-18	0.446309	31.5-100	0.076323	250-400	0.015584
560	4-5.6	1.580679	20-28	0.259689	112-224	0.042689
	6.3-18	0.756075	31.5-100	0.121763	250-400	0.022764
630	4-5.6	2.816039	20-28	0.563856	112-224	0.135882
	6.3-18	1.393833	31.5-100	0.270145	250-400	0.069515
710	4-5.6	5.262844	20-28	1.048691	112-224	0.229828
	6.3-18	2.550051	31.5-100	0.530819	250-400	0.121677
800	4-5.6	8.412482	20-28	1.858382	112-224	0.410741
	6.3-18	4.046297	31.5-100	0.872866	250-400	0.209991
900	4-5.6	16.227509	20-28	2.860380	112-224	0.658180
	6.3-18	7.008379	31.5-100	1.452061	250-400	0.351744
1000	4-5.6	25.823976	20-28	6.891248	112-224	1.437411
	6.3-18	11.940972	31.5-100	3.071139	250-400	0.730204

注: 1. 表中为减速机输入轴上的转动惯量, 减速机输出轴上的转动惯量按下式进行计算: $J_2 = i^2 \cdot J_1 \cdot \eta^2$

2. 1000 以上规格请另咨询, ECZD 型减速器的转动惯量可参考三级传动选取。

Note: 1. Rotating inertias written in the table are of input shaft of reducers, the output shaft's inertia may be calculated with following formula:

$$J_2 = i^2 \cdot J_1 \cdot \eta^2$$

2. Size of that over 1000, please consult with us. Inertia of reducer type ECZD may be counted as trisage reducer.

选用举例

例：由电动机、减速器、驱动一台重型钢带式输送机，电动功率 $P=55\text{kW}$ 、转速 $n_1=1500\text{r/min}$ 、钢带机转速 $n_2=1.5\text{r/min}$ 公称传动比 $i=n_1/n_2=1500/1.5=1000$ ，每天 24 小时连续运转，小时负荷利用率 100%，环境温度约 50°C ，输入输出轴端无径向负荷，安装大厂房内，油池润滑，底座联接，试选行星减速器的型号规格。

解：1. 按机械强度计算选用，按表 12 查知重型钢带机为中等冲击载荷查表 8 得 $K_A=1.5$ ，查表 9 得 $S_A=1.4$ 。

则 $P_{2m}=P_2 K_A S_A=55 \times 1.5 \times 1.4=115.5\text{kW}$ 。

当 $i=1000$ ， $n_1=1500\text{r/min}$ 查表 知 ECZD1400， $P_1=142.8\text{kW} > 115.5\text{kW}$ 。

2. 由于环境温度较高，应验算热平衡时介功率 $P_{G1} > P_{G2}$ 按已知条件查表 9-11，得 $f_1=1.6$ ， $f_2=1$ ， $P_1/P_2=0.352$ ， $f_3=1.435$ 。

$P_{2t}=P_2 f_1 f_2 f_3=55 \times 1.6 \times 1 \times 1.435=126.28\text{kW}$ ，查表 7 得 $P_{G1}=295\text{kW} > 126.28\text{kW}$ 。

工作状态的热功率小与减速器热平衡功率，因此无需增加冷却措施。

结论：选 ECZD1400， $i=1000$ 是合适的，轴端无径向负荷，轴伸安全系数不必校核。

Example

A heavy load steel belt conveyor driven by electric motor and reducer, motor power $=55\text{kW}$, $n_1=1500\text{r/min}$, rotating speed of conveyor $n_2=1.5\text{r/min}$, the nominal transmitting ratio $i=n_1/n_2=1500/1.5=1000$, running 24h/day, hour load utilization ambient temperature 50°C , without the radial load at the ends of input and output shaft , installed in a large workshop, oil pot lubrication, base frame connection, selecting the size of planetary gear reducer solution:

1. Selecting according to the mechanical strength:

In table 12, we find that heavy belt conveyor is a middle shock load machine, in table 8, $K_A=1.5$, and in table 9 $S_A=1.8$.

Then, $P_{2m}=P_2 K_A S_A=55 \times 1.5 \times 1.8=148.5\text{kW}$.

When $i=1000$ ， $n_1=1500\text{r/min}$ ，from table , we find ECZD1120， $P_1=156.1\text{kW} > 148.5\text{kW}$.

2. Because of the ambient temperature is rather high, we have to check the critical power P_{G1} at thermal balancing, $P_{G1} > P_{G2}$, from given conditions and table 9 ~ 11, we find $f_1=1.6$ ， $f_2=1$ ， $P_1/P_2=0.352$ ， $f_3=1.435$ 。

$P_{2t}=P_2 f_1 f_2 f_3=55 \times 1.6 \times 1 \times 1.435=126.28\text{kW}$

The heat power in working conditions is less than thermal balancing power of the reducer, thus there needs no addition of measures.

Conclion: ECAD1400, $i=1000$ is suitable. If there is no radial load at the ends of the shaft, it is not necessary to check the safety coefficient of the shaft ends.

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