

ZJY系列轴装式齿轮减速机

ZJY Series Shaft Mounted Gear Reducer

一、概述 Brief

ZJY 系列轴装式减速机采用直接悬挂在配套主机动力输入轴上的安装方式，省略了两者间的联接附件和减速机安装平台，适用于斗式提升机、皮带输送机、刮板输送机等设备的机械传动，也可与其他有此安装要求的主机配套。

产品按 JB/T9050.1-1999 标准制造。主要传动零件采用优质合金钢材质。齿轮经渗碳淬火磨齿工艺加工，精度为(GB10095.1-2001)6 级。产品体积小，承载能力高，寿命长，噪音低，效率高。与 ZJ 系列轴装和减速机比较，相同的输出扭矩，ZJY 重量只有 ZJ 的 30% 左右，因而对配套主机的机架刚性要求大大下降，传动平衡。

产品除可双向运转外，可以根据用户需要配置逆止装置，实现单向制动。

Series ZJY shaft assembly decelerator is mounted directly in a way of hanging on the dynamic input shaft of matching master machine, which dispenses with the connecting accessory and decelerator erection platform. It is applicable for the mechanical drive of bucket elevator, belt conveyor, and flight conveyor, as well as matching with other similar master machine.

The product is manufactured according to JB/T9050.1-1999 standard, and main drive components are made of quality alloy steels. Gear wheel is processed with carburizing and quenching and grinding teeth with precision of Class (GB10095.1-2001)6 The product is compact size with high carrying capacity, long service life, low noise, and high efficiency. ZJY has the same output torque as that of ZJ shaft assemblage decelerator. ZJY weights only 30% weight of ZJ, therefore, the rigidity required for the master machine frame is significantly decreased, and ZJY drives stable.

Not only can this product be operated double direction, but also it can be equipped with antirunback device to achieve oneway braking.

二、减速器的型号与标记 Type and symbol of decelerator

全系列减速机以低速级中心距（mm）为单位，共有 106、125、150、180、212、250、300 七种规格。每一规格的传动比有 10、11.2、12.5、14、16、18、20、22.4、25 九种。

减速器的标记代号中包括型号、低速级中心距、公称传动比和旋向。

The unit for the complete series decelerator is low-speed class center distance (mm), in total 7 specs of 106,125,150,180,212,250,and 300 each specs has 9 drive ratios of 10,

11.2,12.5,14,16,18,20,22.4,and 25.

Decelerator earmark is composed of type, low-speed class center distance,nominal drive ratio and direction of rotation.

标记示例 Example of earmark

轴装式减速器 Shaft assembly edcelerator

ZJY 106 - 20 - L(N.S)

两向旋转 （带逆止器时，**N** 逆时针旋转、**S** 顺时针旋转；旋转方向：是指面对输出轴端）

Anticlockwise rotation (Output shaft rotation direction code ,N means twoway, S means clockwise)

公称传动比 $i=20$

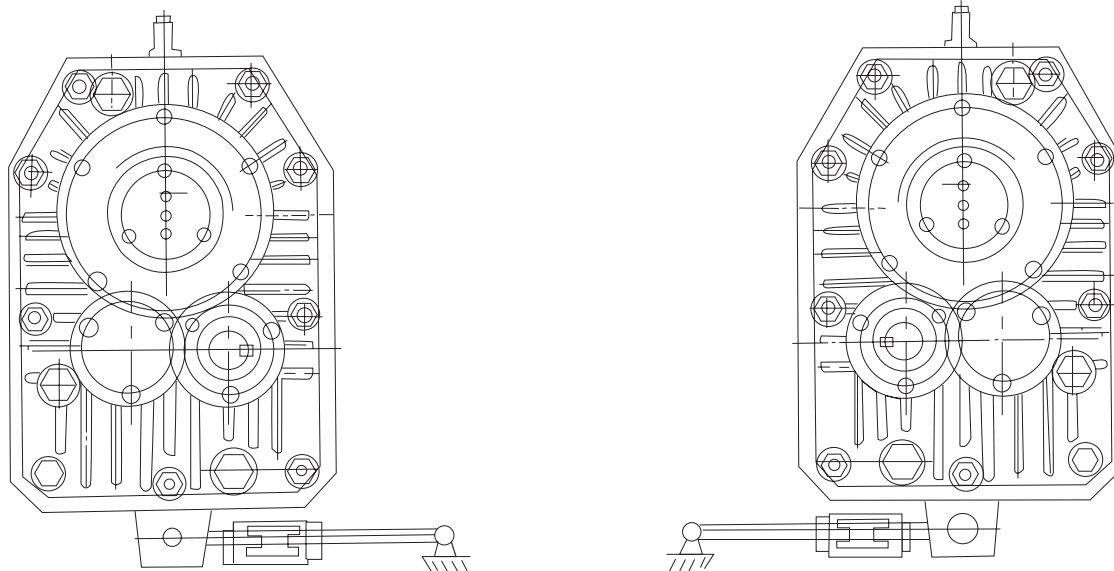
Nominal drive ratio $i=20$

低速级中心距 106mm

Low-speed class center distance 106mm

硬齿面轴装式减速器

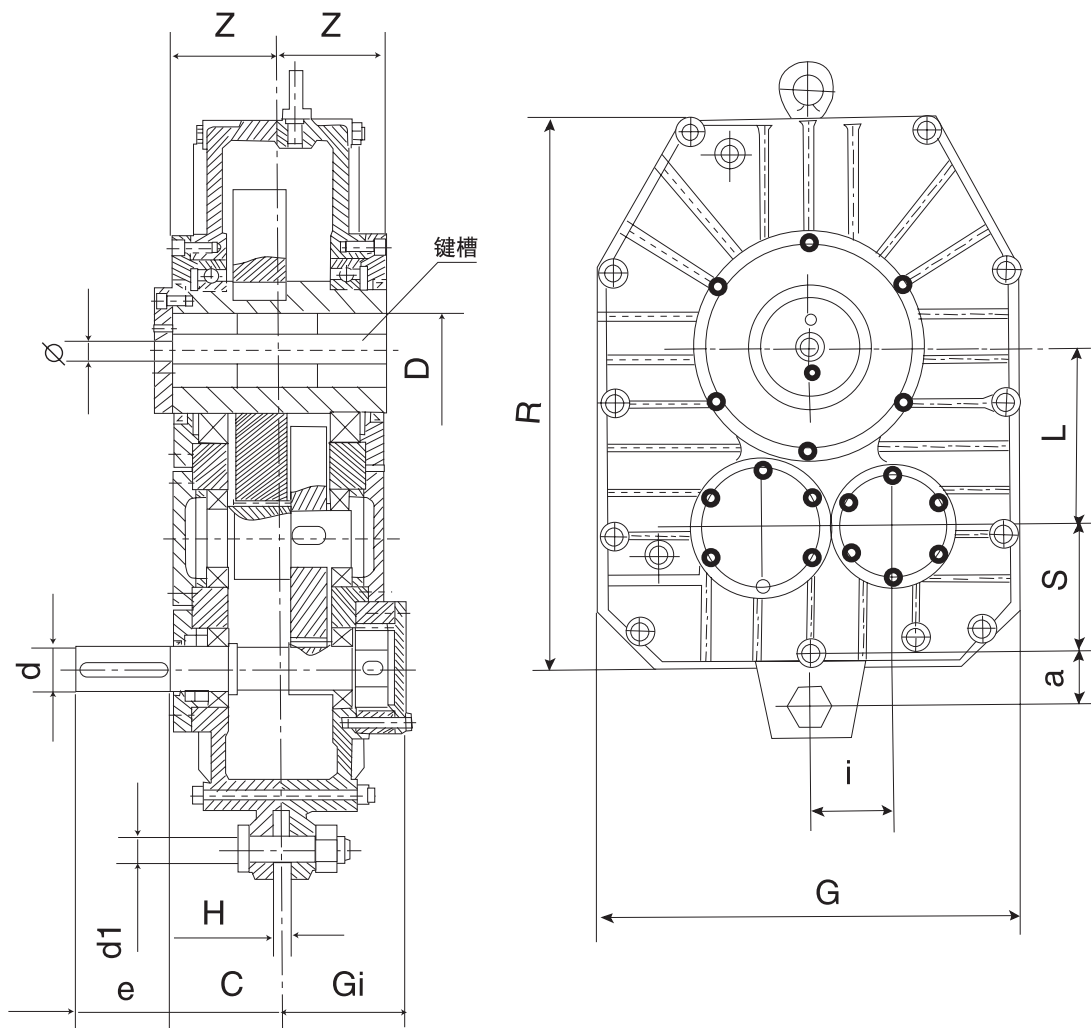
Hard teeth surface shaft assembly decelerator



图一： 减速器旋向和防扭拉杆安装位置示意图

Figure 1 decelerator rotoation direction and skefch map of anti-twise pullrod installaction position.

三、减速器的外形尺寸 contour size of decelerator



机型 Type	Z	ϕ	D	d	d1	H	e	c	Gi	R	L	G	S	a	i
ZJY106	67	13	45	24	14	16	50	83	88	315	103.0	240	80	40	50
ZJY125	76	13	55	28	20	16	60	78	100	378	120.0	270	102	48	55
ZJY150	85	13	60	38	20	20	80	98	110	445	144.3	330	105	53	65
ZJY180	100	17	70	42	25	24	110	117	133	539	174.3	396	145	65	80
ZJY212	120	22	85	48	25	30	110	121	156	625	204.7	477	160	70	95
ZJY250	150	26	100	55	28	30	110	165	164.5	740	241.4	570	195	70	125
ZJY300	164	32	120	65	28	36	140	182	185	840	288.6	660	210	75	130

注：入轴和空心轴配键按 GB/T1096-2003 选用

Note: The key of input shaft and hollow shaft is according to GB/T1096-2003

四、减速器的承载能力 Decelerator carrying capacity

额定输出扭矩 Rated output torque

规格 Specs	106	125	150	180	212	250	300
扭矩(N.m) Torque(N.m)	750	1250	2120	3550	6000	10000	14720
重量(kg) Weight(kg)	27	40	67	110	173	250	380

公称输入功率 P_1 Nominal input power P_1

公称传动比 i Nominal drive ratio i	公称转速 Nominal speed r/min		规 格 Specs						
	输入 n_1 Input n_1	输出 n_2 Output n_2	106	125	150	180	212	250	300
			公称输入功率kW Nominal input power P_A kW						
10	1500	150	12	19	33	56	92	157	225
	1000	100	8.2	13	22	38	62	105	150
	750	75	6.2	9.8	17	29	47	79	113
11.2	1500	134	11	17	30	51	83	137	206
	1000	89	7.4	11	20	34	56	92	138
	750	67	5.6	8.5	15	26	42	69	104
12.5	1500	120	9.7	15	27	46	76	125	179
	1000	80	6.5	10	18	31	51	83	119
	750	60	4.9	7.6	14	23	39	63	90
14	1500	107	8.2	14	24	39	65	107	162
	1000	71	5.5	9.4	16	26	43	71	108
	750	54	4.1	7.1	12	20	33	54	82
16	1500	94	7.3	12	21	35	58	98	148
	1000	62	4.9	8.5	14	24	39	64	98
	750	47	3.7	6.1	11	18	30	48	74
18	1500	83	6.4	11	18	31	51	86	131
	1000	56	4.3	7.3	12	21	34	58	88
	750	42	3.3	5.5	9.0	16	26	44	66
20	1500	75	6.0	10	17	27	45	77	117
	1000	50	4.0	6.7	11	18	30	52	78
	750	38	3.1	5.1	8.6	14	23	39	59
22.4	1500	67	5.2	8.7	15	25	42	72	103
	1000	44	3.5	5.9	10	17	28	48	69
	750	33	2.6	4.4	7.5	13	21	36	52
25	1500	60	4.6	7.6	14	22	37	63	90
	1000	40	3.1	5.1	9.4	15	25	42	60
	750	30	2.3	3.8	7.1	11	19	32	46

五、减速器的选用 Decelerator selection

1.减速器的选用 Decelerator selection

(1)查“减速器载荷分类”表，确定载荷类型。

Identify load type from table of “Decelerator load classification”.

减速器的载荷分类表 Decelerator Load Classification

化工类	Chemical industry				
搅拌机（液体）	Blender(fluid)	U	载人升降机	Elevator for people	M
搅拌机（半体）	Blender(semi-fluid)	M	螺旋式输送机	Spiral conveyor	M
离心机（重型）	Centrifuger(heavy-duty)	M	钢带式输送机	Steel belt conveyor	M
离心机（轻型）	Centrifuger(light-duty)	U	链式槽型输送机	Chain groove conveyor	M
冷却滚筒	Cooling roller	M	铰车运输	Hoisting winch transport	M
干燥滚筒	Drying roller	M	洗衣机类	Washing machine type	
			滚筒	Roller	M
传送运输机类	Transfer conveyor type	M	洗衣机	Washing machine	M
平板输送机	Flat conveyor	M	制纸机类	Paper machine type	
平衡块升降机	Balance lump elevator	M	压光机	Plating press	H
槽式输送机	Groove conveyor	M	多层纸板机	Multi-layer blard machine	H
带式输送机（大件）	Belt conveyor(article with big size)	H	干燥滚筒	Drying roller	H
带式输送机（块状物）	Belt conveyor(lumpy article)	U	上光滚筒	Glazing roller	H
筒式面粉输送机	Cylinder flour conveyor	M	搅浆机	Pulp blender	H
斗式提升机	Buket elevator	M	纸浆擦碎机	Paper pulper	H
货物升降机	Cargo elevator	M	吸水滚	Water absorbing roller	H
卷扬机	Hoister	H	吸水 滚压机	Water absirbing roller press	H
倾斜卷扬机	Slant hoister	H	潮纸滚压机	Wet paper roller press	H
连杆式输送机	Connecting bar conveyor	M	威罗机	Box willow	H

注：U 为均匀载荷；M 为中等冲击载荷；H 为强冲击载荷。

Note:U for unifom load, M for middle impact load, H for heavy impact load.

(2)确定工况系数 $K_{A.}$

Identify work status factor $K_{A.}$

减速器的工况系数 $K_{A.}$ Decelerator Word status factor K_A

原动机 Prime mover	每日工作时间 Work time perday	K_A		
	小时 Hour	轻微冲击 Slight impact 均匀载荷 Uniform load	中等冲击 Middle impact 载荷 load	强冲击 Heavy impact 载荷 load
电动机 Electromotor 汽轮机 Steam turbine 水力机 Water motor	≤ 10	1	1.25	1.75
	> 10	1.25	1.5	2

(3)确定安全系数 K_s Identify safety factor K_s

因减速器失效 所造成的后果 Aftereffect caused by decelerator failure	一般损失 单台主机停产、 主要设备不能运行等 General loss single master machine stops production,main equipment fails to operate	严重损失 整条生产线停产设备损坏等 Serious loss whole production stops production and equipment failure	重大损失 人身伤亡、电厂停电、钢包 停浇起 吊装置失灵等 Significant loss personnel injuries, power plant ouearmarkes, molten steel container stops moulding
K_s	1.3~1.5	1.6~1.8	1.8~2

(4)1.按 $P_{2M}=P_2 \cdot K_A \cdot K_s \leq P_1$, 确定减速器规格。

P_{2M} — 计算功率

P_2 — 传递功率

P_1 — 公称输入功率，当减速器输入功率不是 1500.1000.750r/min 时，可按最近表列转速的一档，折算 P_2

According to $P_{2M}=P_2 \cdot K_A \cdot K_s \leq P_1$,determine the specs of decelerator.

P_{2M} — calculating power;

P_2 — transmitting power

P_1 — nominal input power, If decelerator input power is not 1500.1000. or 750r/min, nominal input power is converted according to the latest rotate speed listed in the table.

2.例 For example:

有一斗式提升机，用电动机通过三角带驱动减速器传动；减速器输入转速为 1100r/min 输出转速为 55r/min, 传递功率 $P_2=2\text{kw}$, 每日工作超过 10 小时，减速器损坏会引起主要设备不能运行，应选用何减速器？

For a bucket elevator, motor is used to drive decelerator transmission through triangle belt. Decelerator input rotate speed is 1100r/min, output rotate speed is 55r/min, transmission power is $P_2=2\text{kw}$, work time per day is more than 10 hours, and decelerator failure would result in main equipment non-operable. How to select decelerator?

解 Solution:

(1)、查表，斗提机属中等冲击；查表 $K_s=1.5$, 查表 $K_s=1.4$

Check with table, bucket elevator is of middle impact; check with table, $K_s=1.5$ is found, check, $K_s=1.4$ is found.

(2)、 $P_2=2 \times \frac{1000}{1100} = 1.82\text{kW}$

(3)、 $P_{2M}=1.82 \times 1.5 \times 1.4=3.82\text{kW}$

(4)、 $i=1100/55=20$

查表，知 ZJY106; $i=20$ 1000r/min 时 $P=4\text{kW}$ $P_{2M}=3.82 < 4\text{kW}$,

Check with table, identify ZJX106-20 can be selected

所以可选用 ZJY106; $i=20$ Therefore, ZJY106-20 can be selected

3.按输入转速选用逆止器 Select holdback according to input rotate speed

本系列产品配置有常接触和非常接触两种逆止器。常接触逆止器的许用最高输入转速见表。

This series product is equipped with frequent contact and non-frequent contact holdbacks. Maximum allowable input rotate speed for frequent contact holdback is shown in table.

常接触逆止器许用转速及许用逆止扭矩

Allowed rotate speed and allowable holdback torque for frequent contact holdback.

减速器规格 Specs of decelerator	ZJY106	ZJY125	ZJY150	ZJY180	ZJY212	ZJY250	ZJY300
许用转速r/min Allowable rotate speed	1430	1250	1050	910	690	625	500
许用逆止扭矩N.m Allowable holdback torque	80	135	180	385	550	745	1460

附：防扭杆规格（一般由用户自行购置）Specs of anti-twist bar (usually bought by user)

防扭杆可外购“开式索具螺旋扣”00型（沪产 Q/JB43-66）

Type 00 “Open rigging turnbuckle” (made in Shanghai Q/JB43-66) may be purchased for anti-twist bar.

减速器规格 Specs of decelerator	螺旋扣号码 Turnbuckle number	调节长度L(mm) Adjustable length L(mm)
ZJY106	0.4	310~416
ZJY125.150	0.8	380~582
ZJY180.212.250.300	1.7	540~860