

展望未来 Team Spirit

企业简介 Company Profile

江苏吴克传动科技股份有限公司（原江阴克威齿轮箱制造有限公司）位于江阴市璜土镇澄常工业开发区。公司距离沪宁高速公路常州龙虎塘出口江阴方向1.5公里处，与常州新北区接壤，距京沪高铁常州北站八分钟车程，地理位置十分优越。

公司拥有从德国引进的NILES成型磨齿机，日本引进的OKUMA卧式加工中心，齿轮检测中心和三坐标测量仪等一大批国内外先进设备和检测仪器，通过了ISO9001:2008, ISO14001:2004环境管理体系、OHSAS18001:1999职业健康安全管理体系三大管理体系的集合认证，并获得：“江苏省高新技术企业”、“重合同守信用单位”、“中国公认名牌”、“江苏省质量信用产品”，并多次获得当地“年度优秀民营企业”的称号。

公司以生产“吴克”牌系列减速机为主要产品，具有非标减速机从研发、设计、制造的全套技术力量和先进的测试手段。“吴克”系列产品品种规格齐全，已拥有BX系列摆线针轮减速机；ZDY、ZLY、ZSY、ZFY系列硬齿面圆柱齿轮减速机；ZLYJ、ZSYJ系列塑料挤出机专用硬齿面减速机；DBY、DCY系列硬齿面圆锥圆柱齿轮减速机；WR系列斜齿轮减速机；WS系列斜齿轮蜗杆减速机；WK系列弧齿锥齿轮减速机；WF系列平行轴斜齿轮减速机；WHV系列通用齿轮箱；MBY及JDX系列边缘传动磨齿减速机；KWC系列紧凑型通用减速器；KW斜齿轮和锥齿轮——斜齿轮减速机等十几个系列上百个品种的减速机，产品采用了系列化、模块化的设计理念，具有广泛的适用性。

产品主要用于：橡胶塑料、冶金、建材、石油、煤炭、矿山、电工等领域。公司坚持以客户为导向，交货周期短，供货价格合理，售后服务周到。

江苏吴克传动科技股份有限公司竭诚欢迎国内外客户莅临指导，合作共赢，共创美好未来！

企业荣誉



质量第一，信誉第一，服务第一

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ZLYJ系列单螺杆挤出机齿轮箱

ZLYJ Series Gearboxes for Single Screw Extruder

一、概述 General Survey

ZLYJ 系列单螺杆挤出机齿轮箱是我公司引进世界上最先进的硬齿面技术研制的挤出机专用齿轮箱。十年来，广泛配套于高中档塑料、橡胶、化纤挤出机，出口国外，行销国内，在业内有较高的知名度。该系列齿轮箱具有如下特点：

1. 整机外形美观大方，立卧两用，适应多种安装要求。
2. 齿轮参数、箱体结构经计算机优化设计；齿轮采用优质低碳合金钢，经渗碳、淬火、磨齿、齿部精度6级，齿面硬度在54~62HRC之间；齿轮副运转平稳，噪声低，传动效率高。
3. 安装接口的径跳、端跳精度达到国际水平，可十分方便地和机筒螺杆联接。
4. 输出轴的支承结构独树一帜，可有效地延长所用轴承的寿命。
5. 轴承、油封、润滑油泵等标准件均选用国内知名厂家的优质产品，也可以按用户需要，选用进口产品。

ZLYJ Series Gearboxes for Single Screw Extruder are a kind of special gearboxes researched and developed by importind the most advanced technology of the hard teeth-surface in the world. For recent ten years, they are widely used in top and middle grade plastic, rubber and chemical fiber extruders, sell well in the country and are exported abroad. With a higher reputation in the industry, it has features as follows:

1. The whole machine looks beautiful and liberal, and can be used both vertically and horizontally. It can suit multiple requirement of assembling.
2. The gear data and box structure are optimally designed by the computer. The gears are made of top grade low carbon alloy steel with Grade 6 precision of teeth after carbon penetrating, quench and teeth grinding. The hardness of the teeth surface is 54 - 62 HRC. The gear pair has stable running, low noisy and has high driving efficiency.
3. The assembling connector has the precision of radial run-out and end face run-out at international level, and can be easily connected with screw rod of the machine barrel.
4. The bearing structure of the output shaft has a unique style, which can effectively prolong service life of the bearings.
5. All standard parts such as bearing, oil seal, lubricant oil pump etc. are all top quality products selected from domestic famous manufacturers. They can be also selected from imported products as per requirement of customer.

二、适用范围 Applicable Range

1. 本系列产品可用于螺杆直径30~250mm单螺杆挤出机的减速传动。
 2. 齿轮箱的输入转速一般不大于1500r/min。
 3. 传动比在6.3~20之间，优先选用表中所列传动比，也可按用户需要调整传动比。
 4. 工作环境温度为-10℃~45℃。环境温度低于0℃时，启动前润滑油应预热。
1. This series product can be used in reducing driving of single screw rod extruder with the screw rod diameter of 30 - 250mm.
 2. The input speed of the gearbox is normally not larger than 1500 rpm.
 3. The driving ratio is between 6.3 and 20, and that in the table can be selected preferentially. The driving ratio can be also adjusted as per requirement of customer.
 4. The temperature in work environment is -10℃ - 45℃ . When temperature is lower than 0℃ , the lubricant oil should be preheated before starting.

三、齿轮箱的型号及标志 Model and Mark of the Gearboxes

齿轮箱的代号中，包括型号、输出级中心距、公称传动比、装配型式以及输出轴工作旋向。

The code of the gearboxes includes model, central distance of output stage, nominal driving ratio, assembly style and the rotation direction of the output shaft.

标记示例：Sample of the Code:

ZLYJ S 280 - 11.2 - I - R

工作旋向：面对输出轴端顺时针为R（可省略）
Rotation direction: counterclockwise means R (omitted)

面对输出轴端逆时针为L（必须注明）
when facing the end of output shaft

装配型式：参见图1有I~VI六种选择
Assembly style: see Figure 1 for six choices (I -VI)

公称传动比：按表2中所注传动比选择
Nominal driving ratio: select from Tables 2

输出级中心距：280mm
Central distance of output stage: 280 mm

S：附加盘状冷却水管
S: Attached coiled cooling water pipe

L：使用列管式油冷却器
L: Pipe style oil cooler is used

产品型号：ZLYJ
Code of Product: ZLYJ

四、齿轮箱的承载能力见表2

Bearing Ability of Gearboxes see Table 2

ZLYJ 系列齿轮箱的承载能力见表2。
The bearing ability of ZLYJ series gearboxes, see Table 2.



五、齿轮箱的外形及安装型式 Outline and Assembly Style of Gearboxes

ZLYJ 系列齿轮箱的外形、安装尺寸见图 1、表 1。

The outline and assembly sizes of ZLYJ series gearboxes, see Figure 1, Table 1.

六、齿轮箱的润滑与冷却 Lubrication and Cooling of Gearboxes

1. 齿轮和轴承的润滑根据需要采用浸油润滑、飞溅润滑或强制润滑。ZLYJ200 及以上规格配轴端泵；ZLYJ315 及以上规格可以选配电机油泵。

2. 所有规格产品均可以附加盘状冷却水管；ZLYJ200 及以上规格可以选配列管式油冷却器。

3. 如需附加循环油润滑装置或采用特殊冷却方式，请与我公司联系。

1. The lubrication of the gears and the bearings can be selected from oil immersion lubrication, splash lubrication or forced lubrication. For models ZLYJ200 and upward, shaft-end pump can be equipped; for models ZLYJ315 and upward, the motor oil pump can be selected.

2. All sizes of products can be equipped with coiled cooling water pipes; for models ZLYJ200 and upward, the pipestyle oil cooler can be selected.

3. If added circulation oil lubrication device or special cooling style is needed, please contact with our company.

七、齿轮箱的选用 Selection of the Gearboxes

1. 校核传递功率。ZLYJ 系列表列输入功率和输出扭矩已考虑工况系数，可直接按表 2 选用，表列输出扭矩是主要选型依据。如果表中所列的公称传动比不能满足要求，请与我公司联系。

2. 校核热功率。ZLYJ 系列按表 2 及附注选用。

3. 校核安装联接尺寸。如果您所需要的尺寸与表中所列的不同，请与我公司联系。

4. 校核轴伸径向力。如输入轴采用皮带轮等引起附加径向力的联接方式时，须确认输入轴伸中点处径向力是否小于 $125\sqrt{T_1}$ ， T_1 为输入扭矩。如不够，请与我公司联系。

1. Verify transmitted power. For ZLYJ series gearboxes, the behavior coefficient has been considered in the input powers and the output torques in the Table, therefore it can be selected directly from Table 2. The output torque in the table is also the main basis to make selection. If the normal driving ratio in the table couldn't meet the requirement, please contact with our company.

2. Verify thermal power. For ZLYJ serial reducers, make selection as per the notes on the Table 2.

3. Verify assembly and connection sizes. If the size you need is different from those in the table, please contact our company.

4. Verify radial force of shaft extension. If the input shaft adopts connection style with pulley which can cause added radial force, it should confirm that the radial force at the middle of the input shaft extension if it is less than $125\sqrt{T_1}$, here T_1 means the input torque. If it is not enough, please contact with our company.

八、安装使用和维护 Assembling, Application and Maintenance

1. 起吊齿轮箱时，应使用吊环螺钉。

2. 齿轮箱运输、存放时应注意防潮。到货后如半年内不安装，应对外露的加工面重新涂防锈油。

3. 齿轮箱安装的底座要平整，并有足够的强度和刚性，在地脚螺栓均匀紧固的情况下，应保证插入输出轴中的螺杆能无卡滞地均匀回转。联轴器的安装误差应不超过其允许的偏差值，以免引起附加力，缩短轴承寿命。



4. 齿轮箱在交货前均经过严格的试运转检验，各项指标符合要求，交货后可以直接投入使用。使用前应注入中极压齿轮油 N220 至油标上限(采用循环油润滑用 N150)。如齿轮箱附带列管式油冷却器则须在加油后，空车运转一段时间后，再次加油至油标上限。

5. 带有电机油泵的齿轮箱，在加载前，应先开启电机油泵，空车运转一段时间，以利各润滑点的充分润滑。

6. 齿轮箱在首次运行 300 小时后换油，以后每运行 3000~4000 小时换油一次，每次换油的间隔时间最长不应超过 18 个月。换油时应先清洗箱体、滤油器、空气滤清器、放油螺塞。

1. When lifting the gearbox, the ring screw should be used.

2. Take care to prevent moisture when the gearbox is in transportation or storage. If do not assemble in half a year after it is arrived, the exposure surface should be coated with antirust oil.

3. The base to assemble the gearbox should be plain with enough strength and rigidity. Under circumstance the anchor bolts are evenly tightened, it should ensure that the screw rod inserted into the output shaft should be rotated freely without blockage. The assembling error of the coupler should do not excess its allowed tolerance so as to avoid from added force and to prolong the life of the bearings.

4. The gearbox should pass through strict test running inspection before they are delivered. Only all index are in according to the requirement, can they be put into use directly after delivery. Before application, it should be filled with mid-extreme pressure gear oil N220 up to the upper limit of the oil mark (N150 if circulation pump lubrication is used). If the reducer has pipe style oil cooler, then run the reducer under no-load for a short period of time after oil is filled, then fill oil again up to the upper limit of the oil mark.

5. For the gearbox with motor oil pump, before adding load, it should switch on the oil pump of the motor to run the gearbox under no-load for a short period of time so as to facilitate full lubrication of all lubricant points.

6. Replace oil when the gearbox is initially running for 300 hours, and change oil once for every 3000 - 4000 running hours thereafter. The maximum interval between oil replacements should be no longer than 18 months. When replacing, first clean box body, oil filter, air filter and oil discharge screw plug.

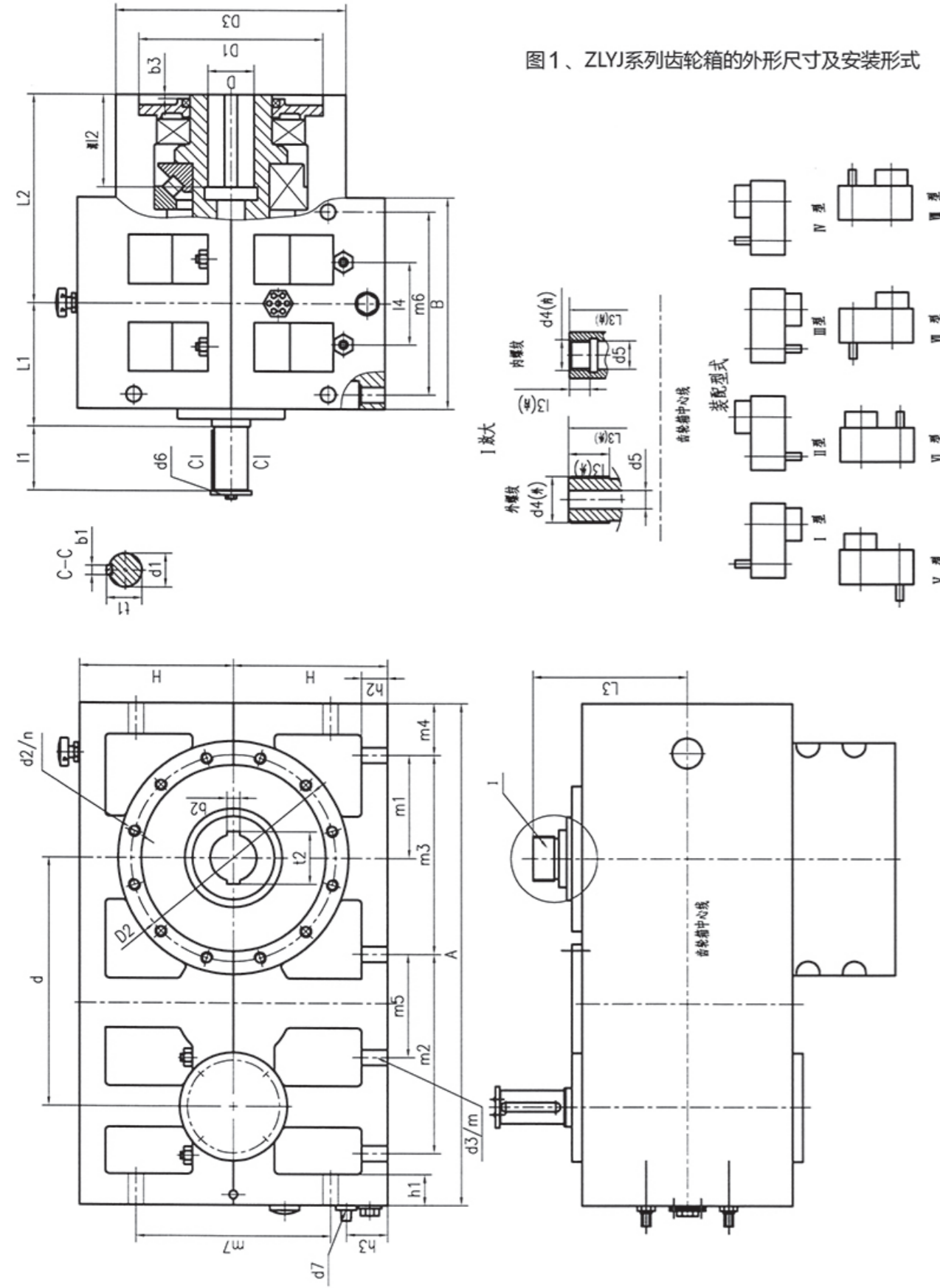


图1、ZLYJ系列齿轮箱的外形尺寸及安装形式

ZLYJ系列安装尺寸

型号	A	q	B	b1	b2(F9)	b3	D(F8)	D1(H7)	D2	D3	d1(m6)	d2/n	d3/m	d4	d5	d6	d7	H	h1
ZLYJ112	426	184	170	8	8	8	25	160	185	210	28	M10/6	14/4	M16	18	M8	ZG1/2-	130	18
ZLYJ133	478	218	215	8	10	8	38	180	205	230	28	M12/8	16/6	M18	20	M8	ZG1/2-	140	20
ZLYJ146	560	256	250	10	14	8	45	200	230	260	32	M12/8	16/6	M18	20	M8	ZG1/2-	160	24
ZLYJ173	576	285	256	10	2-14	8	50	230	260	300	38	M16/8	18/6	M20	25	M10	ZG1/2-	170	24
ZLYJ180	645	320	298	12	2-14	8	50	230	260	320	40	M16/8	18/6	M20	25	M10	ZG1/2-	180	25
ZLYJ200	750	340	340	14	2-18	8	60	270	300	350	45	M16/12	18/6	M20	25	M10	ZG1/2-	240	36
ZLYJ225	800	385	360	16	2-20	8	70	330	370	420	55	M20/12	26/6	M25	30	M12	ZG1/2-	250	38
ZLYJ250	930	430	380	18	2-22	8	80	330	370	420	60	M20/12	26/6	M25	30	M12	ZG1/2-	280	45
ZLYJ280	970	480	410	18	2-25	8	90	360	400	450	65	M24/12	30/6	M25	30	M12	ZG1/2-	300	45
ZLYJ315	1160	539	450	20	2-28	8	100	365	405	450	75	M24/12	30/6	M25	30	M12	ZG1/2-	350	50
ZLYJ330	1160	575	450	22	2-28	10	110	400	450	500	85	M24/12	30/6	M25	30	M12	ZG1/2-	350	50
ZLYJ375	1280	625	466	22	2-28	10	110	400	450	500	85	M24/12	32/8	M25	30	M12	ZG1/2-	400	55
ZLYJ420	1420	695	550	25	2-32	10	120	500	580	660	95	M30/12	32/8	M25	30	M12	ZG1/2-	460	60
ZLYJ450	1550	765	600	28	2-36	15	140	500	610	700	100	M30/12	32/8	M25	30	M12	ZG1/2-	500	60
ZLYJ500	1700	855	640	28	2-40	15	160	580	680	780	110	M36/12	40/8	M25	30	M12	ZG1/2-	540	70
ZLYJ560	1860	960	640	32	2-40	20	160	620	720	805	120	M36/12	48/8	M25	30	M12	ZG1/2-	580	70
ZLYJ630	2000	1070	770	32	2-45	20	180	650	720	805	120	M36/12	48/8	M25	30	M12	ZG1/2-	630	80

表1 Table1

型号	h2	h3	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	m1	m2	m3	m4	m5	m6	m7	t1	t2
ZLYJ112	18	--	106	203	125	60	52	35	--	96	--	326	50	--	136	170	31	28.3							
ZLYJ133	20	38	125	205	137	60	80	40	60	104	185	185	61	--	180	184	31	41.3							
ZLYJ146	22	45	148	245	167	70	120	36	70	118	190	235	72	--	210	210	35	48.8							
ZLYJ173	22	40	148	250	167	80	140	30	85	113.5	220	220	68	--	225	214	41	57.6							
ZLYJ180	25	40	168	290	171	90	150	30	100	140	135	390	60	--	250	214	44	57.6							
ZLYJ200	32	40	200	330	250	80	170	50	120	150	275	275	100	--	290	310	48.5	68.8							
ZLYJ225	34	55	205	355	265	110	170	50	130	165	310	310	90	--	315	330	59	79.8							
ZLYJ250	45	50	220	380	285	110	180	50	160	205	360	360	105	--	330	340	64	90.8							
ZLYJ280	45	50	240	405	300	125	180	50	160	200	385	385	100	--	355	380	69	100.8							
ZLYJ315	50	55	275	440	323	140	200	60	160	260	450	450	130	--	390	460	79.5	112.8							
ZLYJ330	50	55	260	445	350	170	220	60	160	225	450	450	130	--	390	425	90	122.8							
ZLYJ375	55	55	265	445	355	170	255	60	160	250	475	500	165	265	400	500	90	122.8							
ZLYJ420	60	60	310	535	370	170	270	60	200	305	580	540	150	328	480	600	100	134.8							
ZLYJ450	60	60	350	600	425	170	270	60	200	300	600	190	300	520	600	106	156.8								
ZLYJ500	70	60	370	650	430	170	270	60	200	345	670	190	360	550	760	116	178.8								
ZLYJ560	70	60	370	670	435	180	300	60	200	390	750	180	390	550	800	127	178.8								
ZLYJ630	80	80	430	760	520	180	300	60	300	400	850	200	450	670	840	127	200.8								

ZLYJ系列承载能力

表2 Table2

型号 Model	ZLYJ																
规格 规格	△ 112 -8	△ 133 -8	△ 146 -10	△ 173 -10	△ 180 -10	△ 200 -12.5	△ 225 -12.5	△ 250 -16	※ 280 -16	※ 315 -16	※ 330 -16	※ 375 -16	※ 420 -16	※ 450 -20	※ 500 -20	※ 560 -20	※ 630 -20
	公称输入功率 (KW) $n_{入} = 1500r/min$ Nominal Input Power(kw)Input $n = 1500r/min$																
一般可靠 Normally Reliable	15	22	30.8	39	45	55	82.5	75	125	171	210	260	330	330	450	600	825
高可靠 Highly Reliable	10	15	20.5	30.8	36	45	67	60	100	136	168	207	265	265	360	500	688
	许用输出扭矩 (N.m) Allowed Output Torque (N.m)																
一般可靠 Normally Reliable	764	1121	1962	2484	2865	4379	6568	7643	12732	17427	21392	26497	33616	42180	57300	76400	105050
高可靠 Highly Reliable	510	764	1305	1962	2292	3583	5334	6112	10186	13855	17115	21096	26995	33745	45840	63667	87605
	许用输出轴向推力 (KN) Allowed Axial Thrust of Output Shaft (KN)																
轴向推力 Axial Thrust	35	39	54	110	130	155	180	192	250	287	350	390	430	540	756	830	880
	推荐配置 Recommendation of Configuration																
螺杆直径(mm) Diameter of Screw Rod(mm)	35	45 50	55	65	62	75	90	100	105 110	120	130 150	150 160	165	170	180	190	200
输入功率 Input Power (KW)	5.5	8	12	18.5	22	30	45	45	64	85	106	132	170	212	288	400	550
$n_{入}$ n_{Inpot}	800	800	900	900	1000	1000	1000	1120	960	960	960	960	960	1200	1200	1200	1200
$n_{出}$ n_{Out}	100	100	90	90	100	80	80	70	60	60	60	60	60	60	60	60	60

注: Notes:

- △ - 带冷却, ※ - 带冷却和强制油循环。112、133、146、173 按高可靠预选
用时不需带冷却。
- 表列输入功率和输出扭矩已考虑工况系数, 可直接选用。
- 表列输出扭矩是主要选型依据。传动比可按用户需要调整。
ZLYJ 的 i 为 6.3-20; ZSYJ 的 i 为 22.4-100。
- 当取轴承负荷系数 $f_d = 1.5$ 时, 按表列许用轴向推力和输出轴给定转速计算,
推力轴承的理论计算寿命, 除 133、146 两型为 1.2 万小时左右, 其余各型
皆在 2.5 万小时左右。
- 以下几种情况、应对齿轮箱的冷却设计参数校核:
 - ◎ 5.1 按高可靠数据选用, 但输出转速超过表 (2) $n_{出}$ 时 (即加大了输入功率)。
 - ◎ 5.2 按一般可靠选用, 输入功率加大时。
 - ◎ 5.3 当内冷却方式散热面积不足时, 采用带油泵的外置式油冷却器。采用冷却器需
在订货时另外说明。
- 用户按表列数据作初步选型。在订货时, 我厂将对每一例选型作详细校核,
以提高选用的可靠性。

- △ - with cooling, ※ - with cooling and forced oil circulation. For 112, 133, 146 and 173, when making highly reliable pre-selection, no cooling is needed.
- The behavior coefficient has been considered for the input power and the output torque listed in the table, therefore they can be selected directly.
- The output torque listed in the table is the main basis to make selection. The driving ratio can be adjusted as per the requirement of customer.
ZLYJ has i between 6.3 to 20; ZSYJ has i between 22.4 to 100.
- When taking the axial load coefficient $f_d = 1.5$, calculate the theoretical life of the thrust bearings according to the axial thrust and the given speed of the output shaft listed in the table. Except sizes of 133 and 146 which have a service life about 12 thousand hours, all other sizes have a service life about 25 thousand hours.
- Make verification upon the design of cooling data of the rgearboxes in following cases:
 - ◎ 5.1 When making highly reliable selection but the output speed exceeds $n_{出}$ in Table (2) (i.e. the input power is increased);
 - ◎ 5.2 When making normally reliable selection but the input power is increased;
 - ◎ 5.3 In case the radiation area is not sufficient for the internal cooling style, the external oil cooler with the oil pump can be selected and mentioned additionally when making the order.
- Customer can make pre-selection according to data listed in the table, and we'll make detailed verification for each case so as to rise up the reliability of the selection.

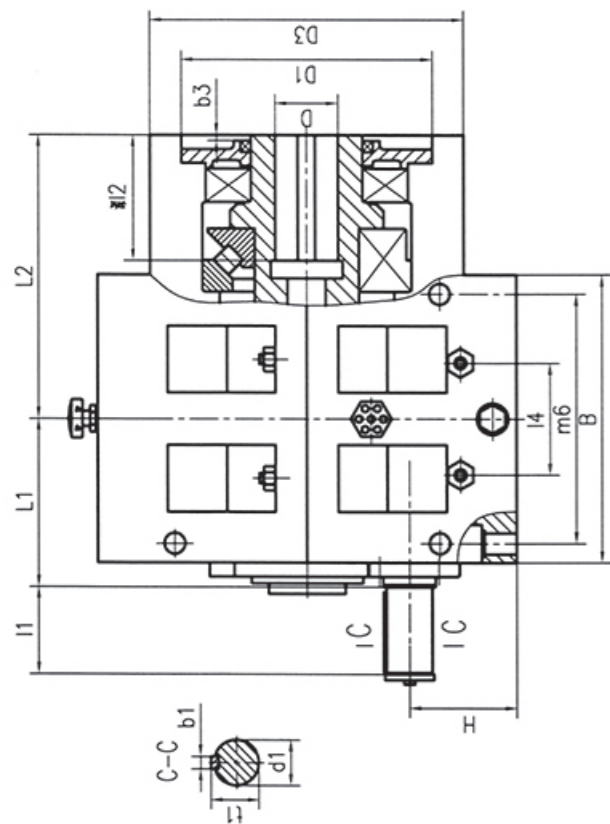
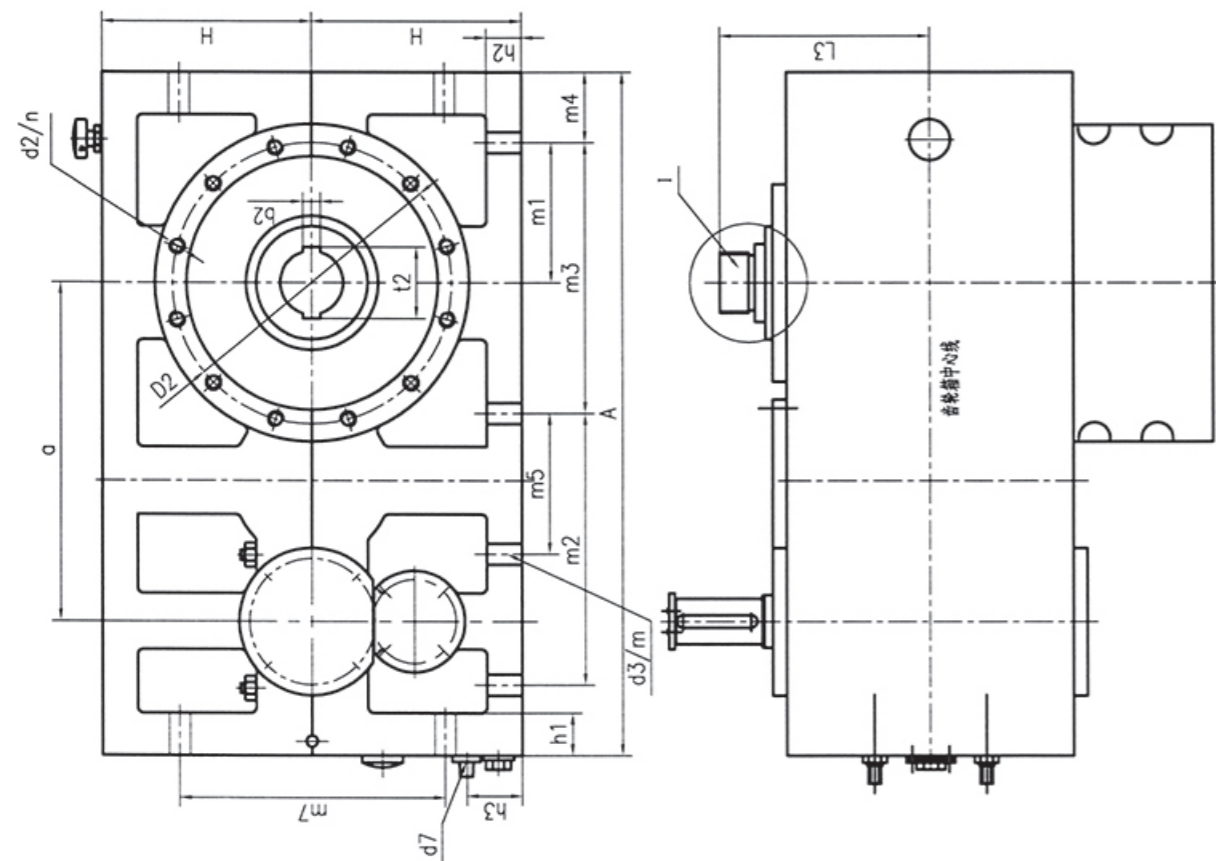
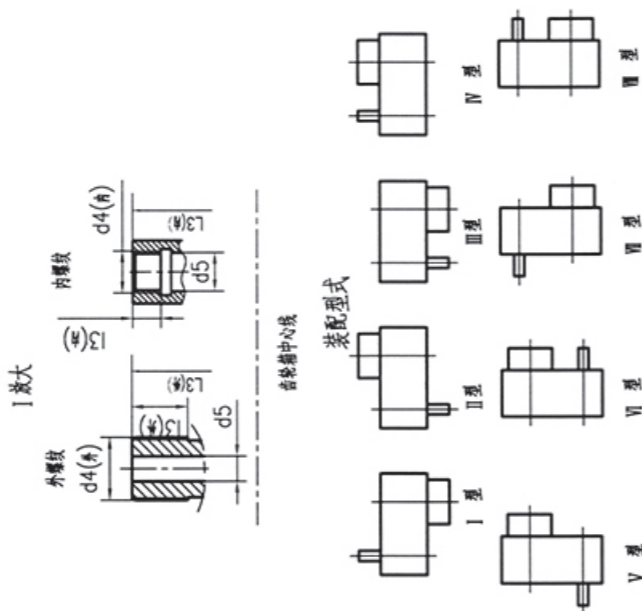


图2、ZSYJ系列齿轮箱的外形尺寸及安装形式



ZSYJ系列安装尺寸

表3 Table3

型号	A	a	B	b1	b2(F9)	b3	D(F8)	D1(H7)	D2	D3	d1(m6)	d2/n	d3/m	d4	d5	d6	d7	H	H'
ZSYJ225	800	385	360	12	2-20	8	70	330	370	420	42	M20/12	26/6	M85x4	55	2-M12	ZG1/2-	250	138
ZSYJ250	930	430	380	14	2-22	8	80	330	370	420	48	M20/12	26/6	M85x4	55	2-M12	ZG1/2-	280	140
ZSYJ280	970	480	410	16	2-25	8	90	360	400	450	55	M24/12	30/6	M85x4	55	2-M12	ZG1/2-	300	154
ZSYJ315	1160	539	450	18	2-28	8	100	365	405	450	60	M24/12	30/6	M85x4	55	2-M12	ZG1/2-	350	190
ZSYJ330	1160	575	450	18	2-28	10	110	400	450	500	65	M24/12	30/6	M85x4	55	2-M12	ZG1/2-	350	170
ZSYJ375	1280	625	466	20	2-28	10	110	400	450	500	75	M24/12	32/8	M90x4	60	2-M12	ZG1/2-	400	220
ZSYJ420	1420	695	550	22	2-32	10	120	500	580	660	85	M30/12	32/8	M90x4	60	2-M16	ZG1/2-	460	260
ZSYJ450	1550	765	600	22	2-36	15	140	500	610	700	85	M30/12	32/8	M90x4	60	2-M16	ZG1/2-	500	276
ZSYJ500	1700	855	640	25	2-40	15	160	580	680	780	90	M36/12	40/8	M90x4	60	2-M16	ZG1/2-	540	290
ZSYJ560	1860	960	640	25	2-40	20	160	620	720	805	95	M36/12	48/8	M90x4	60	2-M16	ZG1/2-	580	300
ZSYJ630	2000	1070	770	28	2-45	20	180	650	720	805	110	M36/12	48/8	M90x4	60	2-M16	ZG1/2-	630	315

型号	h1	h2	h3	L1	L2	L3	l1	l2	l3	l4	m1	m2	m3	m4	m5	m6	m7	t1	t2
ZSYJ225	38	34	55	205	355	265	110	170	50	130	165	310	310	90	---	315	330	45	79.8
ZSYJ250	45	45	50	220	380	285	110	180	50	160	205	360	360	105	---	330	340	51.5	90.8
ZSYJ280	50	45	50	240	405	300	125	180	50	160	200	385	385	100	---	355	380	59	100.8
ZSYJ315	55	50	55	275	440	323	140	200	60	160	260	450	450	130	---	390	460	64	112.8
ZSYJ330	60	60	55	260	445	350	170	220	60	160	225	450	450	130	---	390	425	69	122.8
ZSYJ375	60	55	55	265	445	355	170	255	60	160	250	475	500	165	265	400	500	79.5	122.8
ZSYJ420	60	60	60	310	535	370	170	270	60	200	305	580	540	150	328	480	600	90	134.8
ZSYJ450	60	60	60	350	600	425	170	270	60	200	300	600	600	190	300	520	600	90	156.8
ZSYJ500	70	70	60	370	650	430	170	270	60	200	345	670	660	190	360	550	760	95	178.8
ZSYJ560	70	70	60	370	670	435	180	300	60	200	390	750	760	180	390	550	800	100	178.8
ZSYJ630	80	80	80	430	760	520	180	300	60	300	400	850	800	200	450	670	840	116	200.8

ZSYJ系列承载能力

表4 Table4

型号 Model	ZSYJ										
规格 Sizes	△ 225	△ 250	※ 280	※ 315	※ 330	※ 375	※ 420	※ 450	※ 500	※ 560	※ 630
	许用输出扭矩 (N.m) Allowed Output Torque (N.m)										
一般可靠 Normally Reliable	6568	7643	12732	17427	21392	26497	33616	42180	57300	76400	105050
高可靠 Highly Reliable	5334	6112	10186	13855	17115	21096	26995	33745	45840	63667	87605
	许用输出轴轴向推力 (KN) Allowed Axial Thrust of Output Shaft (KN)										
轴向推力 Axial Thrust	180	192	250	287	350	390	430	540	756	830	880

注：ZSYJ 系列的选用和使用参照 ZLYJ 系列。
Notes: The selection and use of ZSYJ series can be referred to that of ZLYJ series.

SZ 系列锥形双螺杆挤出机齿轮箱

SZ Series Gearboxes for Conical Twin-Screw Extruder

一、概述 General Survey

SZ 系列锥形双螺杆挤出机齿轮箱是与锥形双螺杆塑料挤出机配套的专用传动装置。该齿轮箱由减速箱与分配箱两部分组成，可将电机动力经减速增扭后，输出至分配箱，再通过分配箱一对 1:1 传动比的小锥角螺旋齿轮，驱动双出轴（两轴夹角与两螺杆夹角相同），带动螺杆以异向外旋的方式运转。

SZ series gearboxes for conical twin-screw extruder are special driving units matched with conical twin-screw rod extruder. It consists of two parts, namely, the reduction box and the distribution box. After reducing speed and increasing torque of the motor, it outputs the motive power to the distribution box, then drives the double output shafts (the included angle is the same with that of twin-screw rods) via a pair of small conical spiral gears with driving ratio of 1:1, thus to drive screw rods to rotate outward with different direction.

二、产品特点 Features of Product

- 2.1 齿轮箱齿轮采用渐开线圆柱齿轮，其参数、结构经过计算机优化设计。
- 2.2 齿轮箱齿轮材料采用优质高强度低碳合金钢，经渗碳、淬火处理，采用磨齿工艺，齿面硬度高。承载能力大，噪音小，运转平稳，传动效率高。
- 2.3 分配箱箱体材料为球铁，齿轮为高强度齿轮，内部布有蛇形冷却水管。
- 2.4 齿轮箱输入最高转速一般不大于 1500r/min。
- 2.5 工作环境温度 -10~+40℃，当环境温度低于 0℃时，启动前润滑油应加热到 +10℃。

- 2.1 There are involute cylindrical gears in the gearbox, which data and structure are optimally designed by the computer.
- 2.2 The gears are made of top-quality high-strength low carbon alloy steel after carbon penetrating, quench and teeth grinding. It has high hardness on teeth surface, large bearing ability, small noise, smooth operation and high driving efficiency.
- 2.3 The material of the distribution box is nodular graphite casting iron and the gears have high-strength ground teeth, in which snake-shaped cooling water pipes are distributed.
- 2.4 The maximum input speed of the gearbox is normally not larger than 1500 rpm.
- 2.5 The temperature in work environment is -10℃ - 45℃. When temperature is lower than 0℃, the lubricant oil should be preheated to +10℃ before starting.

三、主要技术性能（见表 5） Main Technical Features (see Table 5)

表 5 Table 5

规格 Sizes	SZ45	SZ50	SZ55	SZ65	SZ80	SZ92
输入转速 r/min Input Speed r/min	1500					
输出转速 r/min Output Speed r/min	44.8	37.8	37.5	38.23	38.7	37.06
输入功率 kW Input Power kW	18.5	22	30	37	55	110
单轴输出扭矩 N.m Output Torque of Single Shaft N.m	1972	2779	3820	4518	6786	13130
分配轴夹角 Included Angle of Distribution Shafts	2° 40'	2° 58' 12"	2° 36' 14"	2° 11' 16"	2° 0' 18"	1° 52' 3.64"

四、齿轮箱外形及安装联接尺寸（见图 3、表 6）

Outline and Assembling and Connection Sizes of Gearbox (see Figure 3 and Table 6)

五、订货须知 Points for Order Placing

- 5.1 齿轮箱所用润滑油牌号 N220~N320 中极压齿轮油。
- 5.2 齿轮箱及分配箱采用循环水冷却，冷却水温度不高于 30℃。
- 5.3 两箱体应安装于同高度的平面上，分配箱的长轴外花键插入齿轮箱输出轴花键孔时，在地脚螺母松开的情况下，检查两箱体底面与安装平面间间隙，必要时作适当调整，保证齿轮箱输出轴与分配箱长轴同轴。安装完毕后，手动检查，要求各部件间转动灵活，无卡滞现象。
- 5.4 螺杆与分配箱输出花键轴同轴度直接影响分配箱齿轮及轴承寿命的长短，安装时应拆下花键套用百分表检查花键轴的径跳，用塞尺检查螺杆与分配箱花键轴端面间接触是否良好，消除误差。
- 5.5 在运转过程中，如出现局部轴承部位过热，或有异常噪声，应停机检查，排除故障后方可运行。

- 5.1 The brand of lubricant oil used in the gearbox is N220 - N320 mid-extreme pressure gear oil.
- 5.2 The reduction box and distribution box are cooled by water circulation and the temperature of cooled water should be not higher than 30℃ .
- 5.3 Both boxes should be mounted on the plains with same height. When the outer spline of the long shaft in the distribution box is inserted in the spline hole of the output shaft of the reduction box, in case the anchor bolts are loosened, check the clearance between the bottoms of both boxes and the mounting plain, and make adjustment if necessary to ensure the output shaft of the reduction box to be coaxial with the long shaft of the distribution box. manually check if all parts are running flexibly without blockage.
- 5.4 The coaxiality of the screw rod and the output spline of the distribution box shall affect service life of gears and bearings in the distribution box. When assembling, remove the spline sleeve to check its radial run-out by the micrometer gauge, and check by the feeler if contact between the screw rod and the end surface of the spline of the distribution box is good and to remove error.
- 5.5 During the course of operation, if overheat occurs on partial bearings or abnormal noise occurs, stop the machine and make check, and run the machine again only when troubles are removed.

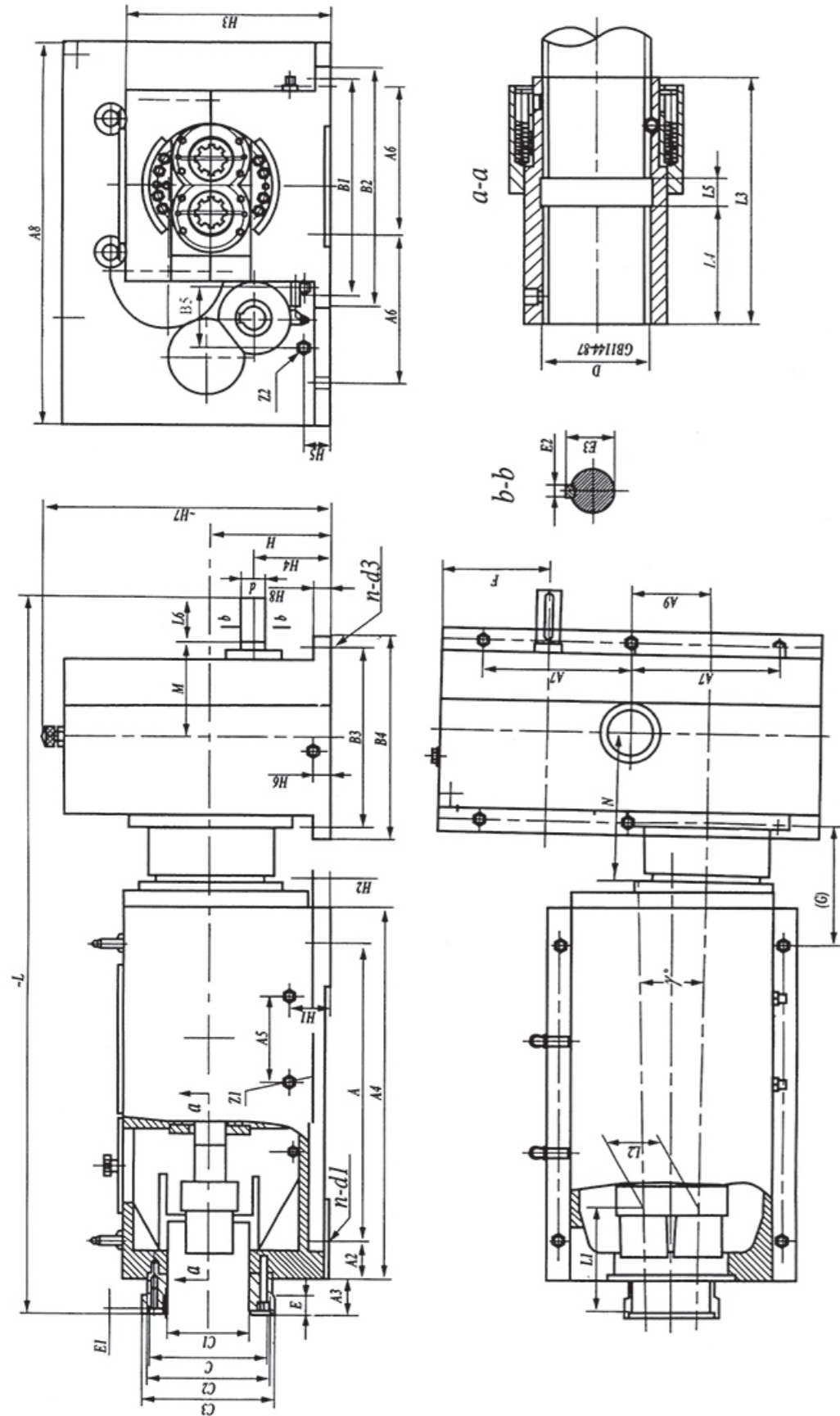


图3、SZ系列齿轮箱外形及安装连接尺寸

表6 Table6

型号 Model	A	A2	A3	A4	H	E	E1	C(H7)	C1	C2	C3	A5
SZ45	500	100	75	765	240	40	10	φ 270	150	φ 270	φ 290	150
SZ50	580	70	75	722	240	40	10	φ 210	150	φ 270	φ 290	160
SZ55	660	100	75	860	250	40	10	φ 230	160	φ 290	φ 318	160
SZ65	770	80	75	910	250	40	10	φ 253	170	φ 260	φ 280	180
SZ80	800	120	85	1070	280	40	10	φ 302	170	φ 300	φ 340	180
SZ92	950	200	125	1350	360	50	15	φ 372	180	φ 370	φ 412	250

型号 Model	H1	Z1	Z2	H2	H3	B1	B2	n-d1	L	L1	L2	D
SZ45	60	ZG1/2"	30	390	335	330	380	4-φ 22	1388	135	90.51	8-48X42X8
SZ50	80	ZG1/2"	35	390	440	490	490	4-φ 22	1370	102.09	98.77	8-54X46X9
SZ55	80	ZG1/2"	35	430	410	460	460	4-φ 22	1560	190	108.535	8-60X52X10
SZ65	85	ZG1/2"	40	430	550	590	590	4-φ 22	1610	205	115.371	8-65X56X10
SZ80	100	ZG1/2"	45	465	605	655	655	4-φ 22	1900	243	137.54	8-72X62X12
SZ92	150	ZG1/2"	60	620	650	720	720	4-φ 30	2402	275	164.117	10-98X92X14

型号 Model	L3	L4	L5	A6	A7	A8	A9	n-d3	d(k6)	M	H4
SZ45	133	60	15	255	255	558	95	4-φ 22	φ 32	162	180
SZ50	112	40	15	280	280	705	105	6-φ 22	φ 38	175	180
SZ55	138			300	300	720	100	6-φ 22	φ 42	180	200
SZ65	150	70	15	350	350	850	170	6-φ 22	φ 55	185	225
SZ80	200	95	15	335	335	835	140	6-φ 26	φ 55	210	250
SZ92	230	105	20			980	180	6-φ 24	φ 60	245	160

型号 Model	L6	E2	E3	B3	B4	B5	H5	H6	H7	H8	F	(G)	N	r
SZ45	58	10	35	173	305			30	534	30	190	315	202	2°40'
SZ50	80	10	41	360	430	125	60	28	652	30	197.5	204	202	2°58'12"
SZ55	82	12	45	350	400	150	70	32	720	35	200	228	240	2°36'14"
SZ65	90	16	59	380	450	140	75	37	720	30	324	216	252	2°11'16"
SZ80	110	16	59	435	525	140	65	30	808	40	249.5	350	310.5	2°00'18"
SZ92	105	18	64	400	450	160	70	42	820	40	250	575	362.5	1°52'3.64"

SZL 系列立式锥形双螺杆挤出机齿轮箱

SZL Series Gearboxes for Vertical Conical Twin-Screw Extruder

一、概述 General Survey

SZL 系列立式锥形双螺杆挤出机齿轮箱是与锥形双螺杆塑料挤出机配套的专用传动装置。该齿轮箱由减速箱与分配箱两部分组成，可将电机动力经减速增扭后，输出至分配箱，再通过分配箱一对 1:1 传动比的小锥角螺旋齿轮，驱动双出轴（两轴夹角与两螺杆夹角相同），带动螺杆以异向外旋的方式运转。

SZL series gearboxes for vertical conical twin-screw extruder are special driving units matched with conical twin-screw rod extruder. It consists of two parts, namely, the reduction box and the distribution box. After reducing speed and increasing torque of the motor, it outputs the motive power to the distribution box, then drives the double output shafts (the included angle is the same with that of twin-screw rods) via a pair of small conical spiral gears with driving ratio of 1:1, thus to drive screw rods to rotate outward with different direction.

二、产品特点 Features of Product

- 2.1 齿轮箱齿轮采用渐开线圆柱齿轮，其参数、结构经过计算机优化设计。
- 2.2 齿轮箱齿轮材料采用优质高强度低碳合金钢，经渗碳、淬火处理，采用磨齿工艺，齿面硬度高。承载能力大，噪音小，运转平稳，传动效率高。
- 2.3 分配箱箱体材料为球铁，齿轮为高强度齿轮，内部布有蛇形冷却水管。
- 2.4 齿轮箱输入最高转速一般不大于 1500r/min。
- 2.5 工作环境温度 -10~+40℃，当环境温度低于 0℃时，启动前润滑油应加热到 +10℃。

- 2.1 There are involute cylindrical gears in the gearbox, which data and structure are optimally designed by the computer.
- 2.2 The gears are made of top-quality high-strength low carbon alloy steel after carbon penetrating, quench and teeth grinding. It has high hardness on teeth surface, large bearing ability, small noise, smooth operation and high driving efficiency.
- 2.3 The material of the distribution box is nodular graphite casting iron and the gears have high-strength ground teeth, in which snake-shaped cooling water pipes are distributed.
- 2.4 The maximum input speed of the gearbox is normally not larger than 1500 rpm.
- 2.5 The temperature in work environment is -10℃ - 45℃. When temperature is lower than 0℃, the lubricant oil should be preheated to +10℃ before starting.

三、主要技术性能（见表 7） Main Technical Features (see Table 7)

表 7 Table 7

规格 Sizes	SZL55	SZL65	
参数 Data			
输入转速 r/min Input Speed r/min	1500	1500	
输出转速 r/min Output Speed r/min	37.5	39.1	
输入功率 kW Input Power kW	30	37	
单轴输出扭矩 N.m Output Torque of Single Shaft N.m	3820	4518	
分配轴夹角 Included Angle of Distribution Shafts	2° 36' 14"	2° 11' 16"	

四、齿轮箱外形及安装联接尺寸（见图 4、表 8）

Outline and Assembling and Connection Sizes of Gearbox (see Figure 4 and Table 8)

五、订货须知 Points for Order Placing

- 5.1 齿轮箱所用润滑油牌号 N220~N320 中极压齿轮油。
- 5.2 齿轮箱及分配箱采用循环水冷却，冷却水温度不高于 30℃。
- 5.3 两箱体应安装于同高度的平面上，分配箱的长轴外花键插入齿轮箱输出轴花键孔时，在地脚螺母松开的前提下，检查两箱体底面与安装平面间间隙，必要时作适当调整，保证齿轮箱输出轴与分配箱长轴同轴。安装完毕后，手动检查，要求各部件间转动灵活，无卡滞现象。
- 5.4 螺杆与分配箱输出花键轴同轴度直接影响分配箱齿轮及轴承寿命的长短，安装时应拆下花键套用百分表检查花键轴的径跳，用塞尺检查螺杆与分配箱花键轴端面间接触是否良好，消除误差。
- 5.5 在运转过程中，如出现局部轴承部位过热，或有异常噪声，应停机检查，排除故障后方可运行。

- 5.1 The brand of lubricant oil used in the gearbox is N220 - N320 mid-extreme pressure gear oil.
- 5.2 The reduction box and distribution box are cooled by water circulation and the temperature of cooled water should be not higher than 30℃ .
- 5.3 Both boxes should be mounted on the plains with same height. When the outer spline of the long shaft in the distribution box is inserted in the spline hole of the output shaft of the reduction box, in case the anchor bolts are loosened, check the clearance between the bottoms of both boxes and the mounting plain, and make adjustment if necessary to ensure the output shaft of the reduction box to be coaxial with the long shaft of the distribution box. manually check if all parts are running flexibly without blockage.
- 5.4 The coaxiality of the screw rod and the output spline of the distribution box shall affect service life of gears and bearings in the distribution box. When assembling, remove the spline sleeve to check its radial run-out by the micrometer gauge, and check by the feeler if contact between the screw rod and the end surface of the spline of the distribution box is good and to remove error.
- 5.5 During the course of operation, if overheat occurs on partial bearings or abnormal noise occurs, stop the machine and make check, and run the machine again only when troubles are removed.

图4、SZL系列齿轮箱外形及安装连接尺寸

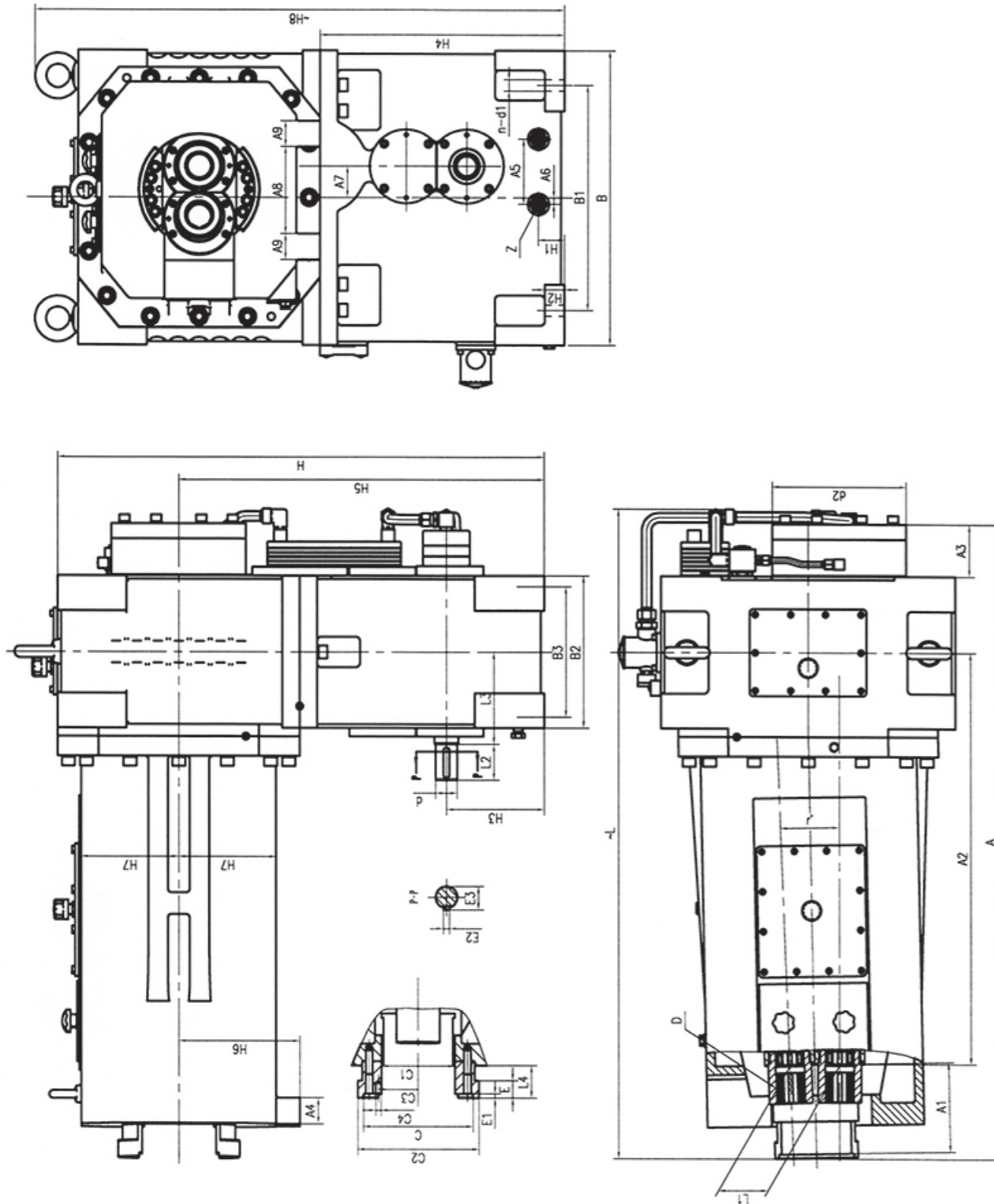


表8 Table8

型号	A	B	H	A1	A2	A3	A4	A5	A6	A7	A8
SZL55	1370	626	1042	190	910	92	60	150	35	71	170
SZL65	1420	680	1125	205	945	120	60	150	15	72.017	200
型号	A9	H1	H2	H3	H4	H5	H6	H7	H8	B1	B2
SZL55	60	56	40	200	522	782	260	210	1150	490	334
SZL65	60	60	45	225	565	845	280	225	1230	520	350
型号	B3	C	C1	C2	C3	C4	D	d	n-d1	d2	E
SZL55	280	φ230h7	160	φ318	95	φ16	6-60×54×14	φ4.2h6	4-φ22	φ260	40
SZL65	300	φ253h7	170	φ280	92	φ12	8-65×56×10	φ50h7	4-φ26	φ310	40
型号	E1	E2	E3	L	L1	L2	L3	L4	r	Z	
SZL55	10	12	45	1444	108.535	82	190	75	2°36' 14"	2-ZG1/2	
SZL65	10	14	53.5	1494	115.371	82	213	75	2°11' 16"	2-ZG1/2	

PSY异向平行双螺杆挤出机齿轮箱

PSY Series Gearboxes for Counterrotating Parallel Twin Screw Extruder

一、概述 General Survey

PSY系列平双齿轮箱是为异向平行双螺杆挤出机设计开发的标准传动部件。其齿轮采用低碳合金钢经渗碳、淬火、磨齿以达到高强度、高精度；输出轴采用特殊合金钢精心制作，以适应大扭矩输出要求；推力轴承采用先进的串联推力圆柱滚子轴承和满装圆柱滚子轴承的组合设计，承载能力大；润滑方式采用浸油和喷油润滑方式，必要时还可根据机组的不同要求配置列管式冷却系统，对润滑油进行冷却。整机外形匀称、结构先进、承载性能优越、运转平稳，是平双机组齿轮箱的理想选择。

PSY series gearboxes are standard driving parts designed and developed for counterrotating parallel twin screw extruder. Its gear is made of low carbon alloy steel after carbon penetrating, quench and teeth grinding so as to reach high strength and precision. The output shaft is finely made of special alloy steel to suit the requirement of large output torque. The thrust bearing group is a combination design adopted advanced tandem thrust cylindrical roller bearing and full complement cylindrical roller bearings which have a larger bearing capacity. The lubrication style are oil immersion and spray lubrication and can be equipped with pipe style cooling system based on different requirement of machine for cooling lubrication oil. The whole machine has well-balanced appearance, advanced structure, superior bearing performance and smooth operation. It is an ideal selection of counterrotating parallel twin screw extruder gearbox.

二、适用范围 Applicable Range

- 1.本系列产品用于异向平行双螺杆机组。
- 2.工作环境温度为一10℃~45℃，环境温度低于0℃时起动前润滑油应预热，热功率不够时须采取冷却措施。
- 3.齿轮箱输入转速n1一般不大于1500rpm。

- 1.This series product is suitable for counterrotating parallel twin screw extruder.
- 2.The temperature in work environment is -10℃~45℃.When temperature is lower than 0℃,the lubricating oil should be preheated before starting.When thermal power is not enough,the cooling measure should be taken.
- 3.The input speed of the gearbox is normally not larger than 1500 rpm.

三、齿轮箱外形尺寸

Outline Dimensions of Gearboxes

表9 Table9

型号 Model	A	B	C	D	H	L	dm6	ll	型号 Model	b1	ll	F	e1	e2	a1	a2	a3
76(90)	2202	660	370	Φ265	1000	76	Φ45	82	76(90)	14	48.5	480	110	25	457	660	330
90(107)	2450	750	415	Φ300	1170	90	Φ50	95	90(107)	14	53.5	525	135	30	370	790	385
92.5(114)	2572	820	430	Φ300	1250	92.5	Φ60	105	92.5(114)	18	64	535	135	35	457	815	410
95(116)	2597	820	460	Φ330	1250	95	Φ60	105	95(116)	18	64	535	135	35	457	815	410
104(120)	2595	820	430	Φ340	1250	104	Φ60	105	104(120)	18	64	590	150	35	475	815	390
110(130)	2725	870	285	Φ350	1320	110	Φ68	120	110(130)	20	72.5	590	130	40	400	950	510

型号 Model	a4	a5	a6	a7	a8	a9	a10	H1	型号 Model	h	h1	m1	m2	m3	m4	c	f
76(90)	735	440	122	565	60	90	130	1146	76(90)	780	180	1285	315	440	610	45	350
90(107)	885	515	125	695	55	110	145	1316	90(107)	900	200	1545	370	480	690	50	400
92.5(114)	890	540	150	710	60	90	130	1396	92.5(114)	985.76	225	1575	390	550	750	50	405
95(116)	890	540	150	710	60	90	130	1355	95(116)	985.76	225	1575	390	550	750	50	405
104(120)	890	540	150	710	80	90	235	1395	104(120)	980	225	1555	390	520	750	50	435
110(130)	865	510	160	865	50	105	175	1466	110(130)	1066.87	250	1815	340	305x2	790	55	450

型号 Model	l1	l2	l3	l4	l5	n-d1	n1-d2	INT
76(90)	300	Φ200	200	292	200	6-Φ26	12-M20	212x2.5m30R
90(107)	350	Φ250	225	330	225	6-Φ32	12-M20	242x2.5m30R
92.5(114)	360	Φ230	227.5	370.5	225	6-Φ32	12-M24	252x2.5m30R
95(116)	360	Φ230	227.5	370.5	225	6-Φ32	12-M24	262x2.5m30R
104(120)	390	Φ254	240	358	240	6-Φ32	12-M24	282x2.5m30R
110(130)	400	Φ391	250	387.5	250	7-Φ32	12-M24	302x2.5m30R

四、齿轮箱承载能力

Bearing Capacity of Gearboxes

表10 Table10

序号 No	型号 Model	输出轴中心距 Central Distance of Output Shaft(mm)	螺杆直径 Screw Dia (mm)	速比 Driving Ratio	输入转速Input Speed (r/min)	输出转速 Output Speed (r/min)	输入功率 Input Power (KW)	最大单轴输出扭矩 Output Torque of Single Shaft (N.M)
1	PSY 76/90	76	90	33.21	1500	45.2	60	6338
2	PSY 90/107	90	107	33.13	1500	45.3	80	8438
3	PSY 92.5/114	92.5	114	32.15	1500	46.7	100	10235
4	PSY 95/116	95	116	33.34	1500	45	100	10612
5	PSY 104/120	104	120	33.27	1500	45.09	110	11650
6	PSY 110/130	110	130	33.16	1500	45.2	150	15838

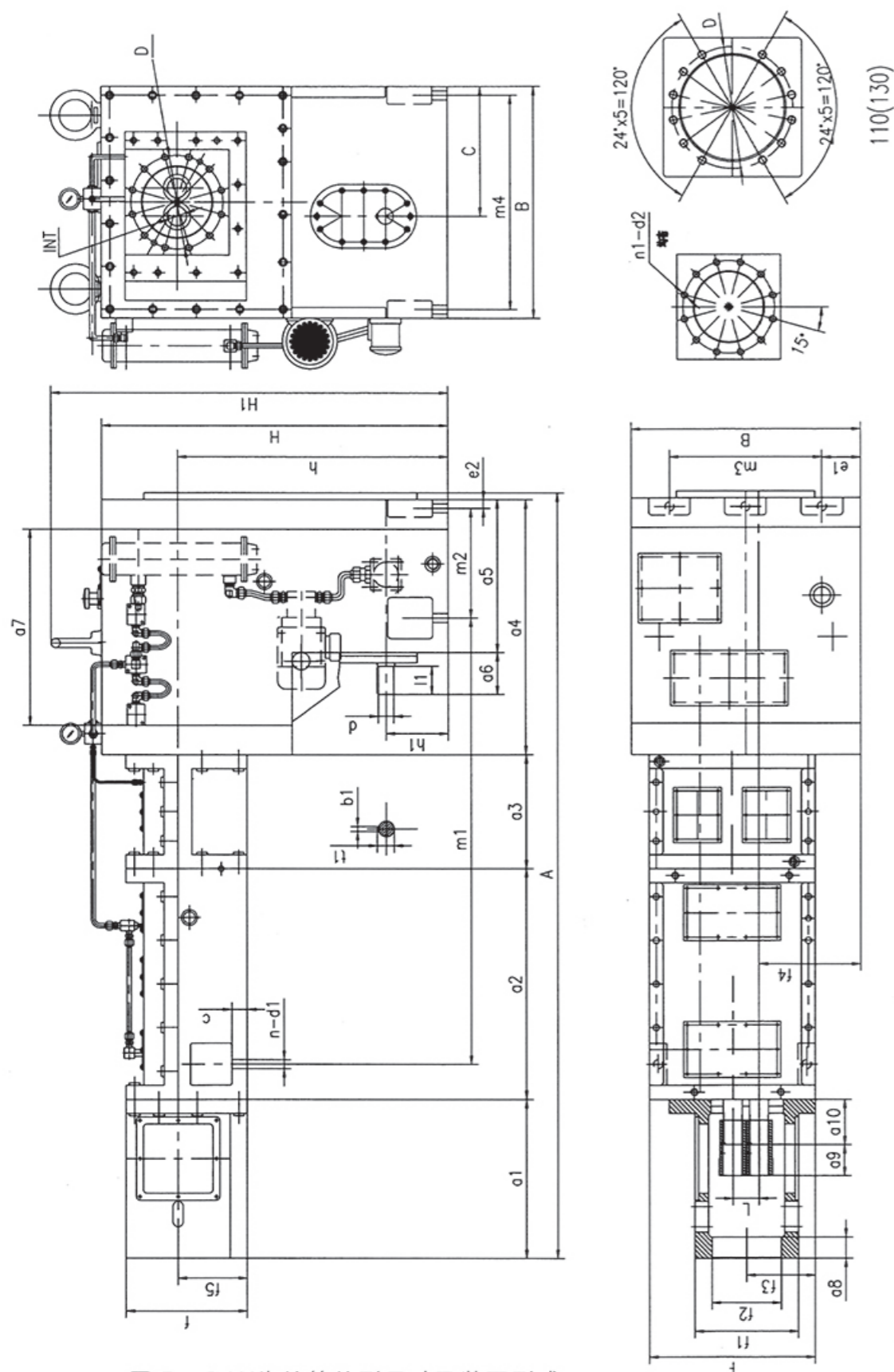


图 5、PSY 齿轮箱外形尺寸及装配形式

TPS 同向平行双螺杆挤出机齿轮箱

TPS Series Gearboxes for Corotating Parallel Twin Screw Extruder

一、概述 General Survey

TPS 系列平双齿轮箱是为同向平行双螺杆挤出机设计开发的标准传动部件。其齿轮采用低碳合金钢经渗碳、淬火、磨齿以达到高强度、高精度；输出轴采用特殊合金钢精心制作，以适应大扭矩输出要求；推力轴承采用先进的串联推力圆柱滚子轴承和满装圆柱滚子轴承的组合设计，承载能力大；润滑方式采用浸油和喷油润滑方式，必要时还可根据机组的不同要求配置列管式冷却系统，对润滑油进行冷却。整机外形匀称、结构先进、承载性能优越、运转平稳，是平双机组齿轮箱的理想选择。

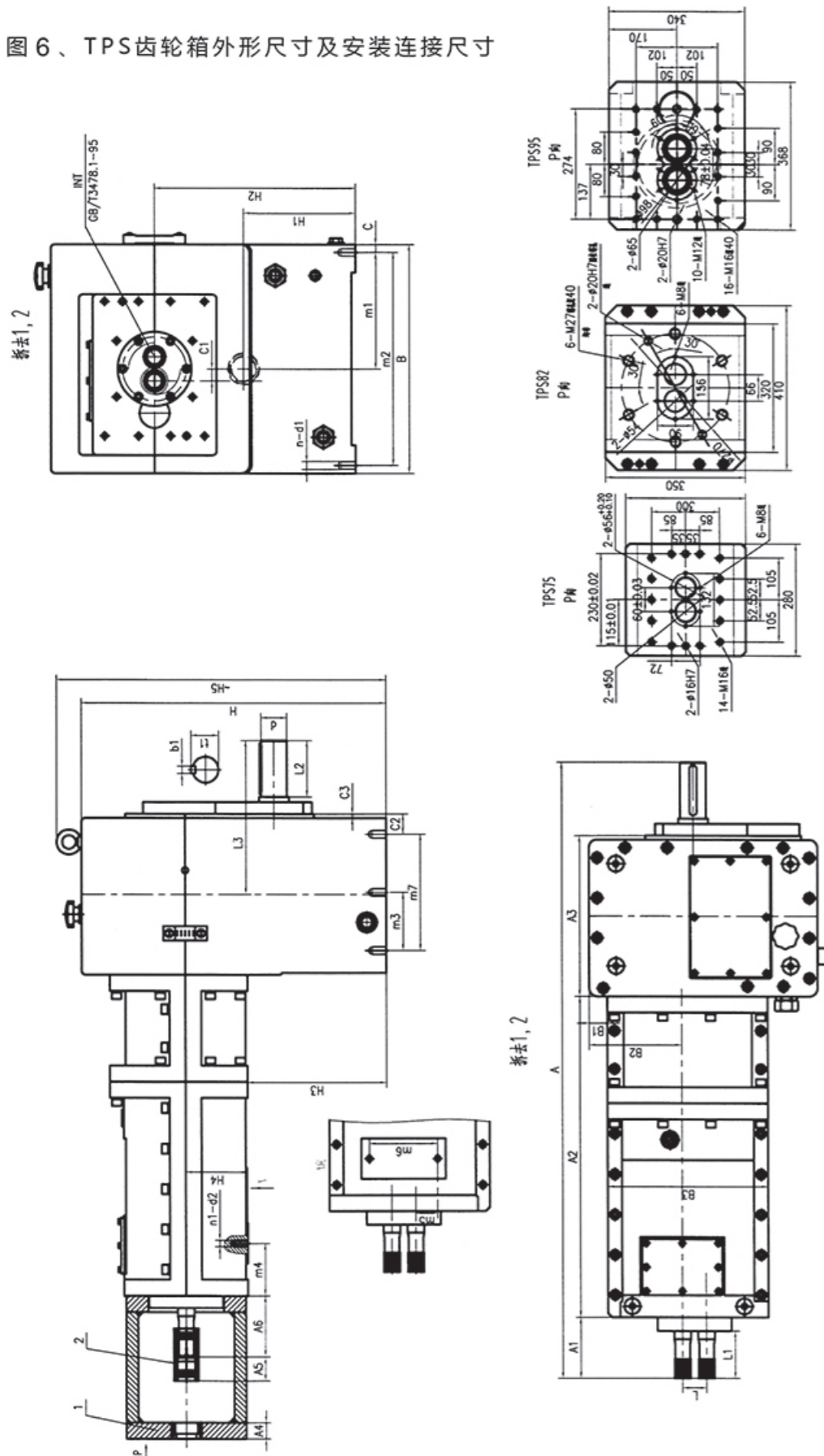
TPS series gearboxes are standard driving parts designed and developed for corotating parallel twin screw extruder. Its gear is made of low carbon alloy steel after carbon penetrating, quench and teeth grinding so as to reach high strength and precision. The output shaft is finely made of special alloy steel to suit the requirement of large output torque. The thrust bearing group is a combination design adopted advanced tandem thrust cylindrical roller bearing and full complement cylindrical roller bearings which have a larger bearing capacity. The lubrication style are oil immersion and spray lubrication and can be equipped with pipe style cooling system based on different requirement of machine for cooling lubrication oil. The whole machine has well-balanced appearance, advanced structure, superior bearing performance and smooth operation. It is an ideal selection of counterrotating parallel twin screw extruder gearbox.

二、适用范围 Applicable Range

1. 本系列产品用于同向平行双螺杆机组。
2. 工作环境温度为 $-10^{\circ}\text{C} \sim 45^{\circ}\text{C}$ ，环境温度低于 0°C 时起动前润滑油应预热，热功率不够时须采取冷却措施。
3. 齿轮箱输入转速 n_1 一般不大于 1500rpm 。

1. This series product is suitable for corotating parallel twin screw extruder.
2. The temperature in work environment is $-10^{\circ}\text{C} \sim 45^{\circ}\text{C}$. When temperature is lower than 0°C , the lubricating oil should be preheated before starting. When thermal power is not enough, the cooling measure should be taken.
3. The input speed of the gearbox is normally not larger than 1500rpm .

图6、TPS齿轮箱外形尺寸及安装连接尺寸



齿轮箱承载能力

表11 Table11

型号	输出轴中心距 (mm)	螺杆直径 (mm)	速比	输入轴转速 (r/min)	输出转速 (r/min)	输入功率 (KW)	最大单轴输出扭矩 (NM)
TPS75	60	75	6	1500	250	130	2400
TPS82	66	82	56	1470	26.3	18.5	3358
TPS95	78	95	6	1500	250	192	3670

齿轮箱外形尺寸

表12 Table12

型号	A	B	H	A1	A2	A3	A4	A5	A6	B1	B2	B3	H1
TPS75	1732	570	763	151.5	795	400	40	88	151.5	45	230	400	280
TPS82	1642	540	925	135	822	420	40	74	135	35	237	440	255
TPS95	2019	610	730.5	145	969	540	40	98	145	146	270.5	410	280

型号	H2	H3	H4	H5	m1	m2	m3	m4	m5	m6	m7	L	L1
TPS75	503	348	155	825	290	530	145	130	54.75	170	290	60	117.5
TPS82	700	475	225	1013	270	400		175	202	470	330	66	98
TPS95	495.5	325.5	170	795	270	560	202.5	89	95	190	405	78	104.5

型号	L2	L3	C	C1	C2	C3	d	t1	b1	n-d1	n1-d2	INT
TPS75	140	378	20	30	50	10	φ65m6	69	18	6-M20	2-M16	26Zx1.5mx45P
TPS82	100	305	70	33	25	10	φ45k6	48.5	14	4-φ26	2-φ26	23Zx2mx30P
TPS95	140	420	25	44.5	50	10	φ70m6	74.5	20	6-M30	2-M20	26Zx2mx30P

SK(XK) 开炼机专用机齿轮箱

SK(XK) Series Gearboxes for Open Mill

一. 概述 General Survey

SK (XK) 系列齿轮箱采用JB/T8853-1999标准设计制造。有一轴动力输入，双轴扭矩输出和双轴动力输入，双轴扭矩输出两种传动方式。可与塑料橡胶开炼机配套使用。

SK(XK) series gearboxes are produced according to the standard JB/T8853-1999. They have two driving styles:

1. Single shaft inputting and two-shaft outputting
2. Two-shaft inputting and two-shaft outputting

They can be used for the plastic and rubber open mills.

二、产品特点 Features of Product

1. 硬齿面、高精度、噪声低、寿命长、效率高。
2. 电机与输出轴同布置、结构紧凑、布局方便。

1. Hard teeth surface, high precision, low noise, long service life and high efficiency.
2. The motor and the output shaft are arranged at the same direction, and it has a compact structure and reasonable placement.

齿轮箱外形尺寸

表13 Table13

型号 Model	a	a1	a2	A	A1	B	H	h	n	d1	C	e1	e2	e3	m6
SK400	400	539	160	1540	1540	490	700	350	8	33	50	115	114	255	无
SK450	450	539	160	1590	1590	490	700	350	8	33	50	141	114	255	无
SK560	560	740	200	1880	2000	640	896	450	10	40	80	120	90	270	300
SK585	585	645	180	1820	1940	620	945	450	8	35	60	120	70	250	350
SK610	610	765	224	2110	2110	690	996	480	10	40	60	125	160	285	300
SK660	660	855	250	2365	2365	670	1016	470	10	40	50	150	200	350	无
SK760	760	960	280	2510	2680	800	1130	560	10	48	70	197	90	372	无
XK450	450	765	224	1820	1926	650	930	450	10	40	60	170	105	328	440
XK560	560	855	250	2070	2178	750	1035	500	10	40	60	175	100	328	500
XK660	660	1080	315	2570	2740	880	1465	710	10	46	80	210	155	450	无
XK665	665	1110	320	2580	2700	880	1330	650	10	46	80	195	155	410	560

型号 Model	d(m6)	b1	l1	l1	L1	D(m6)	b2	l2	l2	L2	m1	m2	m3	m4	m5
SK400	48	14	51.5	110	405	140	36	148	200	495	440	440	无	390	420
SK450	48	14	51.5	110	405	140	36	148	200	495	440	440	无	440	420
SK560	65	18	69	110	480	170	40	179	240	610	330	330	520	520	560
SK585	60	18	64	110	410	170	40	179	240	540	545	475	无	635	540
SK610	75	20	79.5	130	530	170	40	179	240	640	340	340	540	540	610
SK660	75	20	19.5	130	530	170	40	179	240	640	330	400	585	600	610
SK760	105	28	111	165	620	240	56	252	330	800	405	460	700	700	720
XK450	75	20	79.5	130	505	170	40	179	240	620	340	345	500	400	580
XK560	85	22	90	170	585	190	45	200	260	695	380	400	500	510	680
XK660	90	25	95	165	650	240K6	56	252	340	840	450	500	650	600	790
XK665	110	28	116	165	650	260h6	56	272	340	840	420	550	700	600	780

齿轮箱承载能力

表14 Table14

型号 Model	传动比 Speed Ratio		电机输入转速 Motor input speed	电机功率 Motor Power	输出转速 Output speed (rpm)	
	入轴至最近输出轴 Ratio between input shaft and shaft 1	两输出轴间 Ratio between shaft 2 and shaft 3	rpm	KW	内输出轴 Shaft 2	外输出轴 Shaft 3
SK400	40	0.93	740	45	19	20
SK450	43.3	1.10	980	55	23	21
SK560	44.26	1.22	960	90	22	18
SK585	25	1.22	1000	110	40	33
SK610	41.023	1.21	900	110	22	18
SK660	45.39	1.22	990	160	22	18
SK760	49.2	0.862	750	160	15	18
XK450	49.1	1.2	980	110	20	17
XK560	83.38	0.94	990	110	12	13
XK660	58.5	0.92	990	250	17	18
XK665	40.64	1.09	740	250	18	17

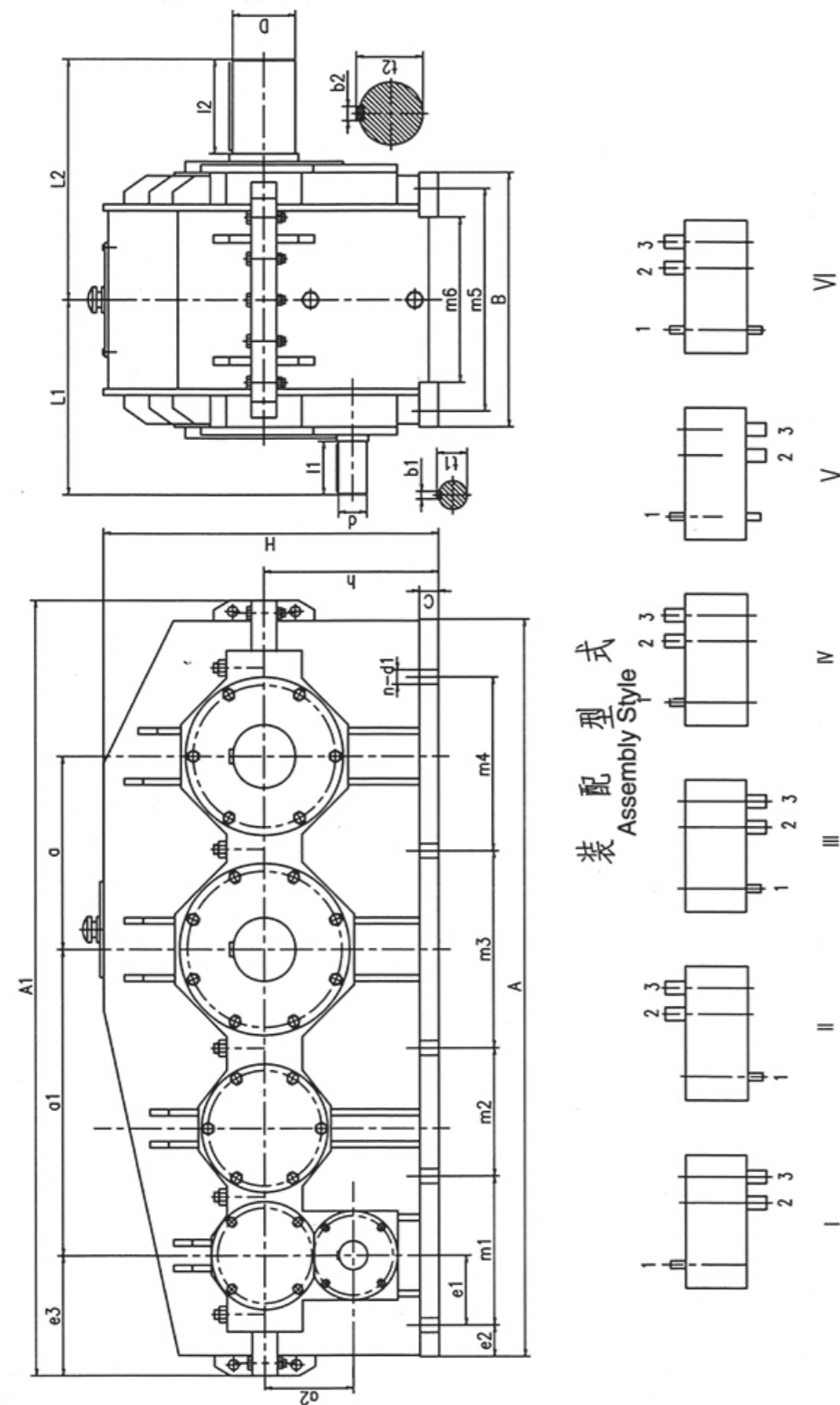


图 7、齿轮箱外型尺寸及装配形式

M 系列密炼机专用齿轮箱

M Series Gearboxes for internal mixer

一、产品特性 Features of Product

密闭式炼胶机简称密炼机，主要用于橡胶的塑炼和混炼。密炼机是一种设有一对特定形状并相对回转的转子、在可调温度和压力的密闭状态下间隙性地对聚合物材料进行塑炼和混炼的机械，主要由密炼室、转子、转子密封装置、加料压料装置、卸料装置、传动装置及机座等部分组成。密炼机是在开炼机的基础上发展起来的一种高强度间隙性的混炼设备。密炼机专用减速机采用JB/T8853-1999标准设计制造，是为密闭式炼胶机（简称密炼机）配套的主齿轮箱，是高精度重载荷硬齿面齿轮箱。

Closed mixing machine is referred to as internal mixer, which it is mainly used for the rubber plastication and mixing. Internal mixer is equipped with a pair of specific shape and relatively revolving rotors for polymer materials intermittent mixing and kneading at a closed status with adjustable temperature and pressure. It is mainly consists of the mixing chamber, rotor, rotor sealing device, material feeding and pressing device, unloading device, transmission device, base components and etc. Internal mixer is high-intensity intermittent mixing equipment developed on the basis of open mill. Internal mixer gearbox uses standard number JB/T8853-1999 to design and manufacture, which it is a high precision and heavy load hardened teeth surface gearbox for the closed mixing machine (Internal mixer).

齿轮箱外形尺寸

表15 Table15

型号 Model	a	a1	a2	A	A1	B	H	h	n	d1	C	e1	e2	e3	m6
M50	360	830	无	1780	1780	750	1110	480	10	40	60	73	165	238	455
MA50	360	830	无	1660	1830	750	1035	480	10	40	60	73	105	263	460
M80	420	765	无	1695	1865	780	964	450	10	32	60	105	70	260	—
M100	420	860	无	1790	1960	780	1144	560	10	32	60	100	75	260	—
M110	435	855	250	1840	1970	780	1220	560	10	40	55	160	90	315	380
M120	420	973	无	2000	2000	890	1170	540	10	28	50	210	35	245	—
MA120	440	960	无	1926	2096	980	1220	630	10	48	60	150	55	290	—
MB120	450	973	无	2050	2050	890	1170	540	10	28	50	210	35	245	—
MLJ100	408	810	无	1750	1750	890	1095	500	12	40	50	70	125	195	—
MLJA100	408	810	无	1750	1880	890	1140	500	12	40	50	70	125	260	510

型号 Model	d(m6)	b1	l1	l1	L1	D(m6)	b2	l2	l2	L2	m1	m2	m3	m4	m5	m6
M50	85	22	90	150	550	170h7	40	179	240	652	300	350	400	400	660	—
MA50	85	22	90	150	550	170h7	40	179	240	652	300	350	400	400	660	—
M80	95k6	25	100	130	540	185k6	45	195	250	680	280	320	480	430	670	—
M100	95k6	25	100	130	540	185k6	45	195	250	680	320	320	530	450	670	—
M110	95	25	100	130	540	185	45	195	250	680	400	400	400	460	670	—
M120	110	32	117	160	725	190	45	200	190	755	395	490	520	525	790(650)	—
MA120	110k6	28	116	165	690	190k6	45	200	280	830	400	505	425	470	840	—
MB120	110	32	117	160	725	190	45	200	190	755	395	490	535	560	790(650)	—
MLJ100	90js6	25	95	180	620	180js6	45	190	240	680	105	395	500	332.5	790	167.5
MLJA100	90	25	95	180	620	180	45	190	240	680	105	395	500	332.5	790	167.5

齿轮箱承载能力

表16 Table16

型号 Model	传动比 Speed Ratio		电机功率 Motor Power Kw	电机输入转速 Motor input rpm	输出转速 Output speed (rpm)	
	入轴至最近输出轴 Ratio between input shaft and shaft1	两输出轴间 Ratio between shaft 2 and shaft 3			内输出轴 Shaft 2	外输出轴 shaft 3
M50	17.57	1.15	200	740	42	37
MA50	15.42	1.15	185	740	48	42
M80	20	1.16	200	950	48	41
M100	21.55	1.16	220	950	44	38
M110	24.5	1.18	220	980	40	34
M120	17.11	1.15	315	745	44	38
MA120	18.82	1.16	250	750	40	34
MB120	14	1.15	280	600	43	37
MLJ100	14.82	1.12	220	750	51	45
MLJA100	17.2	1.12	220	750	44	39

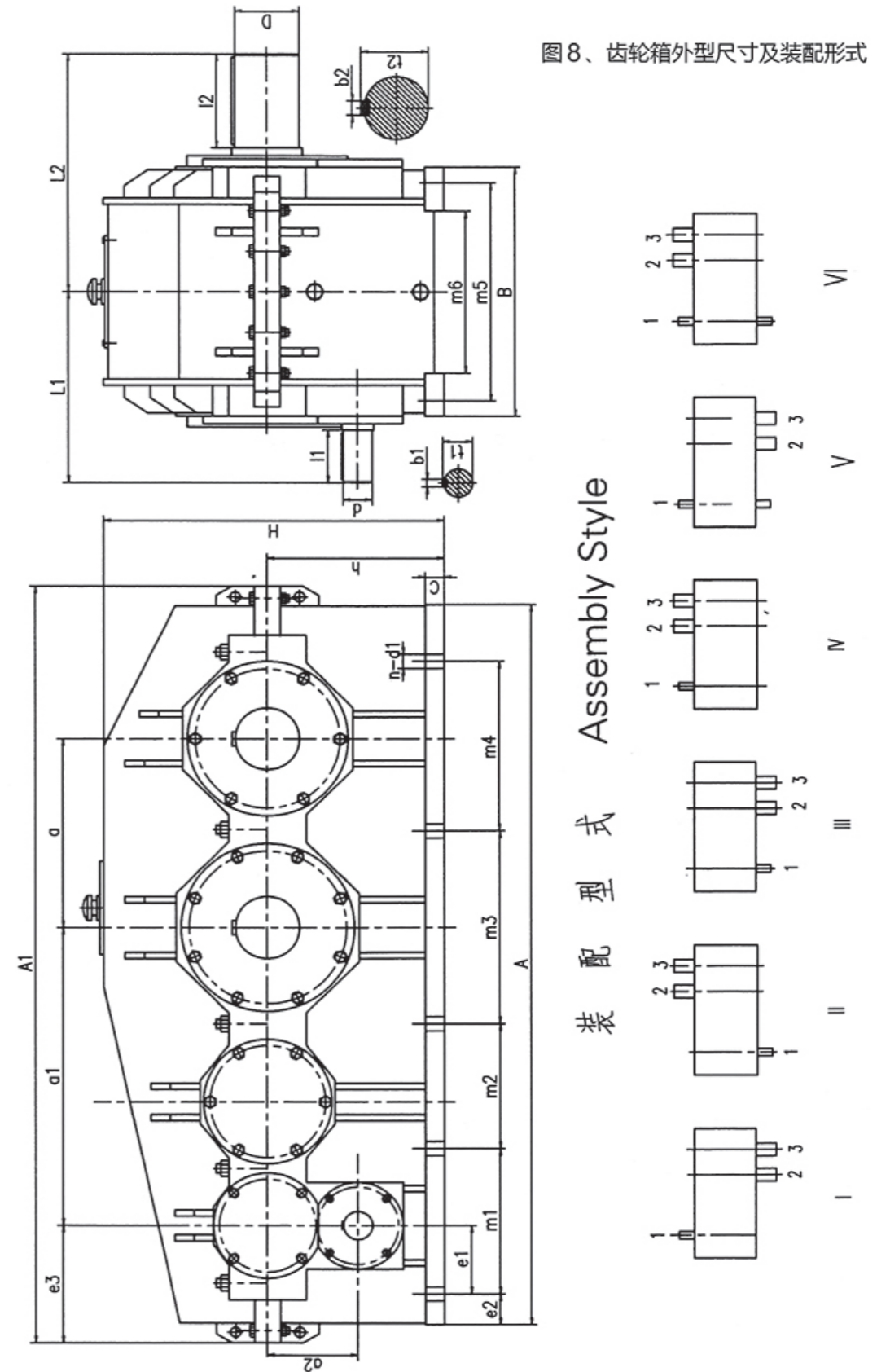


图8、齿轮箱外型尺寸及装配形式

装配型式 Assembly Style

ZSYF 系列压延机专用齿轮箱

ZSYF Series Gearboxes for Calender

一、概述 General Survey

ZSYF 系列压延机专用齿轮箱是与积木式压延机配套的专用齿轮箱。该系列齿轮箱具有如下特点:

1. 整机外形美观, 箱体六面加工, 可方便地多面组合, 满足多辊压延机的各种辊筒的排列方式。
2. 齿轮材料采用优质低碳合金钢, 经渗碳、淬火、磨齿, 齿部精度 6 级, 齿面硬度在 54~62HRC 之间, 承载能力大幅度提高, 体积减小, 噪声低, 传动效率高。
3. 配备电机油泵强制润滑系统, 齿轮啮合部位及轴承的润滑充分、可靠。
4. 轴承、油封、电机油泵等标准件均选用国内知名厂家的优质产品, 也可以按用户需要, 选用进口产品。

ZSYF Series Special Gearboxes for Calender are special ones matched with building-block style calender. They have features as follows:

1. The whole machine looks beautiful. As processed on six surfaces, it can be combined easily from multiple sides thus to meet arrangement style of various kinds of rollers for multi-roller calender.
2. The gear data and box structure are optimally designed by the computer.
3. The gears are made of top quality low carbon alloy steel with Grade 6 precision of teeth after carbon penetrating, quench and teeth grinding. The hardness of the teeth surface is 54 - 62 HRC therefore the bearing ability can be risen up largely. Moreover it has compact volume, small noise and high driving efficiency.
4. Equipped with forced lubrication system of the pump and the motor, the meshed part of teeth and bearings can be completely and reliably lubricated.
5. All standard parts such as bearing, oil seal, oil pump and motor etc, are all standard products selected from domestic famous manufacturers. They can be also selected from imported products as per requirement of customer.

二、适用范围 Applicable Range

1. 齿轮箱的输入转速一般不大于 1500r/min。
2. 表中所列为常用公称传动比, 也可按用户需要调整传动比。
3. 工作环境温度 0°C~35°C。

1. The input speed of the gearboxes is normally not larger than 1500 rpm.
2. The normal nominal driving ratios are listed in the table, however it can be adjusted as per the requirement of customer.
3. The temperature in work environment is 0°C~35°C.

三、齿轮箱的型号及标志 Model and Mark of the Gearboxes

齿轮箱的代号中, 包括型号、输出级中心距、公称传动比以及组合型式。

The code of the gearboxes includes model, central distance of output stage, nominal driving ratio and assembly style.

标记示例: Sample of the Code:



四、齿轮箱的承载能力见表(17)

Bearing Ability of Gearboxes, see Table (17)

表17 Table17

型号 Model	常用传动比 i (公称) Normal Driving Ratio i	输入轴转速 r/min Speed of Input Shaft r/min	输入功率 kW Input Power kW	输出扭矩 N.m Output Torque N.m
160	40	1500	11	2801
200	45	1500	15	4298
215	50	1500	22	7143
225	45	1500	30	8419
250	40	1500	37	9474
300	45	1500	55	15758
315	40	1500	75	18990
355	50	1500	90	28650
400	50	1500	110	35017
450	45	1500	200	57306

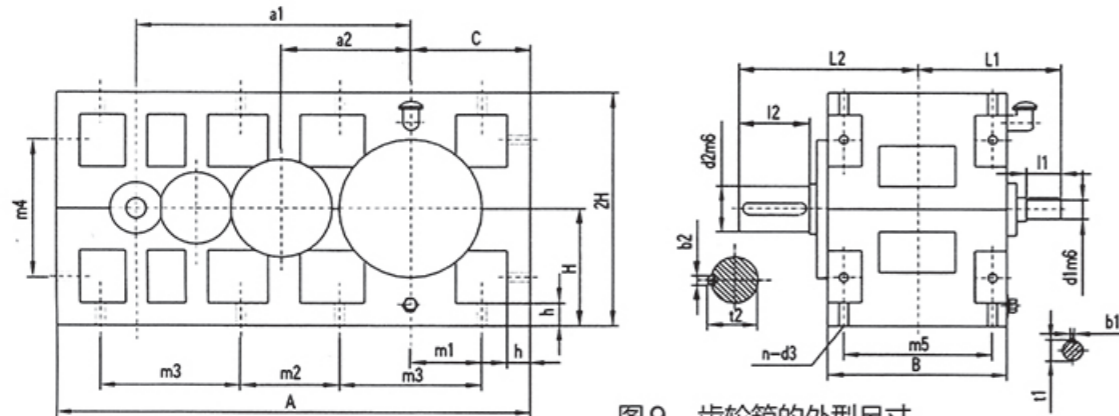


图9、齿轮箱的外型尺寸

表18 Table18

ZSYF	a1	a2	A	B	C	H	h	m1	m2	m3	m4	m5
160	352	160	610	255	160	160	20	90	120	180	180	220
200	440	200	760	300	180	180	25	110	180	220	220	250
215	487	215	830	340	215	215	30	130	180	250	250	280
225	530	225	900	360	225	225	40	120	210	240	240	310
232	504	232	920	450	225	225	40	130	190	260	260	400
250	555	250	1020	390	255	255	50	155	200	310	310	310
300	640	300	1105	420	280	280	50	165	230	330	330	350
315	699	315	1220	440	305	305	50	175	260	350	350	374
355	785	355	1320	465	330	330	50	215	230	430	430	400
400	880	400	1520	540	380	380	50	200	360	400	400	460
450	765	450	1680	600	430	430	55	260	340	520	520	500

ZSYF	d1	L1	l1	b1	t1	d2	L2	l2	b2	t2	n-d3
160	22	200	56	6	24.3	75	290	140	20	79.9	12-φ18
200	32	245	58	10	35	90	310	120	25	95	12-φ18
215	38	258	58	10	41	95	330	130	25	100	12-φ18
225	38	270	58	10	41	110	375	165	28	116	12-φ22
232	38	320	58	10	41	95	375	130	25	100	12-φ22
250	42	310	82	12	45	110	390	165	28	116	12-φ22
300	48	337	82	14	51.5	110	420	165	28	116	12-φ22
315	48	337	82	14	51.5	140	470	200	36	148	12-φ22
355	60	380	105	18	64	170	530	240	40	179	12-φ33
400	60	410	105	18	64	190	560	240	45	200	12-φ39
450	70	435	105	20	74.5	220	620	280	50	231	12-φ42

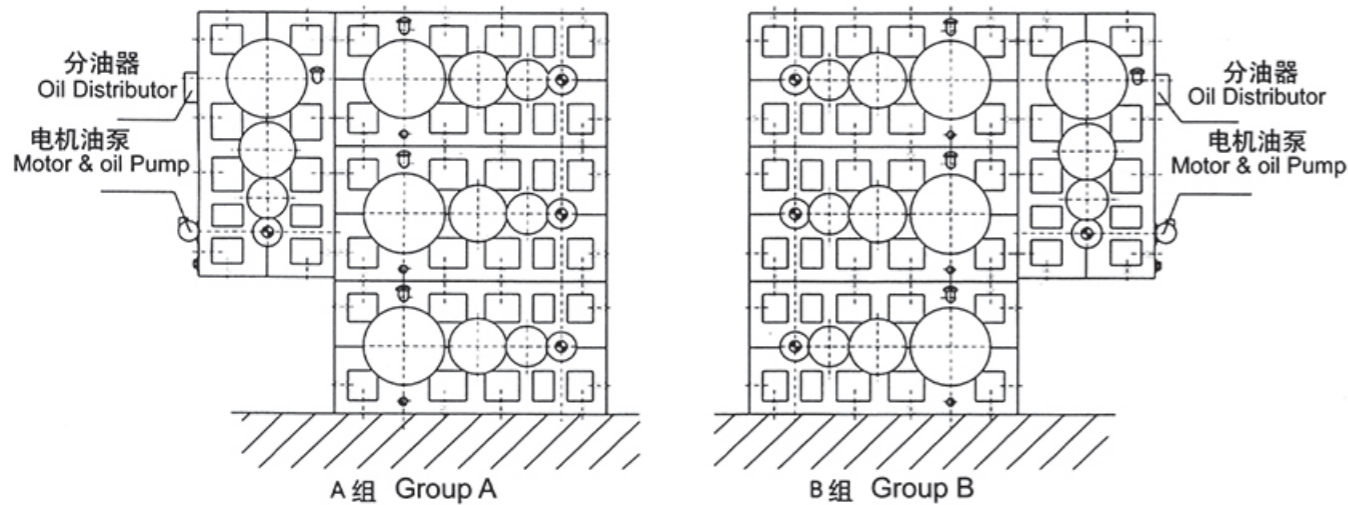


图10、齿轮箱的组合型式

五、齿轮箱的外形及安装型式 Outline and Assembly Style of Gearboxes

齿轮箱的外形、组合型式见图9、图10，规格尺寸见表18。

The outline and assembly style of the reducer, see Figure 9 and Figure10; and sizes can be seen in Table 18.

六、齿轮箱的选用 Selection of Gearboxes

1. 表17中所列齿轮箱的承载能力已经考虑了工况系数，可以直接选用。
 2. 本系列齿轮箱适用于多辊压延机的传动，选用时必须注明齿轮箱的组合型式和数量。
 3. 如果所需要的联接尺寸、传动比、输入轴转速或齿轮箱的组合型式与图表中所列的不同，请与我公司联系。
1. The behavior coefficient has been considered for the bearing ability of reducers listed in Table17, therefore they can be selected directly.
 2. This serial reducer is suitable for driving multi-roller calender. When selecting, you should indicate combined style and quantity of reducers you used.
 3. In case connection sizes, driving ratio, speed of input shaft or combined style of reducer are different with those in the figures and the table, please contact with our company.

七、安装使用和维护 Assembling, Application and Maintenance

1. 起吊齿轮箱时，应使用吊环螺钉。
 2. 齿轮箱运输、存放时应注意防潮。到货后如半年内不安装，应对外露的加工面重新涂防锈油。
 3. 齿轮箱必须刚性固定在坚实的基础面上，所有地脚螺栓须加弹簧垫圈。联轴器的安装误差应不超过其允许的偏差值。
 4. 齿轮箱在交货前均经过严格的试运转检验，各项指标符合要求，交货后可以直接投入使用。使用前应注入中极压齿轮油 N220 或 N150 至油标上限。
 5. 带有电机油泵的齿轮箱，在加载前，应先开启电机油泵，空车运转一段时间，以利各润滑点的充分润滑。
 6. 齿轮箱在首次运行 300 小时后换油，以后每运行 3000~4000 小时换油一次，每次换油的间隔时间最长不应超过 18 个月。换油时应先清洗箱体、滤油器、空气滤清器、放油螺塞。
1. When lifting the reducer, the ring screw should be used.
 2. Take care to prevent moisture when the reducer is in transportation or storage. If do not assemble in half a year after it is arrived, the exposure surface should be coated with antirust oil.
 3. The base to assemble the reducer should be plain with enough strength and rigidity. All anchor bolts should be added with spring washers. The assembling error of the coupler should do not excess its allowed tolerance.
 4. The reducers should pass through strict test running inspection before they are delivered. Only all index are in according to the requirement, can they be put into use directly. Before application, it should be filled with the mid-extreme pressure oil N220 or N150 up to the upper limit of the oil mark.
 5. For the reducer with motor oil pump, before adding load, it should switch on the oil pump of the motor first to run the reducer under no-load for a short period of time so as to facilitate full lubrication of all lubricant points.
 6. Replace oil when the reducer is initially running for 300 hours, and change oil once for every 3000 - 4000 running hours thereafter. The maximum interval between oil replacements should be no longer than 18 months. When replacing, first clean box body, oil filter, air strainer and oil discharge screw plug.

CMJ 系列吹膜机专用单螺杆挤出机齿轮箱

CMJ Series Gearboxes for Single Screw Extruder

一、概述 General Survey

CMJ 系列单螺杆挤出机齿轮箱是我公司引进世界上最先进的硬齿面技术研制的吹膜机专用齿轮箱。十年来，广泛配套于高档薄膜包装用的挤出机，出口国外，行销国内，在业内有较高的知名度。该系列齿轮箱具有如下特点：

1. 整机外形美观大方，立卧两用，适应多种安装要求。
2. 齿轮参数、箱体结构经计算机优化设计；齿轮采用优质低碳合金钢，经渗碳、淬火、磨齿、齿部精度 6 级，齿面硬度在 54~62HRC 之间；齿轮副运转平稳，噪声低，传动效率高。
3. 安装接口的径跳、端跳精度达到国际水平，可十分方便地和机筒螺杆联接。
4. 输出轴的支承结构独树一帜，可有效地延长所用轴承的寿命。
5. 轴承、油封、润滑油泵等标准件均选用国内知名厂家的优质产品，也可以按用户需要，选用进口产品。

CMJ Series Gearboxes for Single Screw Extruder are a kind of special gearboxes researched and developed by importing the most advanced technology of the hard teeth-surface in the world. For recent ten years, they are widely used in top and middle grade plastic, rubber and chemical fiber extruders, sell well in the country and are exported abroad. With a higher reputation in the industry, it has features as follows:

1. The whole machine looks beautiful and liberal, and can be used both vertically and horizontally. It can suit multiple requirement of assembling.
2. The gear data and box structure are optimally designed by the computer. The gears are made of top grade low carbon alloy steel with Grade 6 precision of teeth after carbon penetrating, quench and teeth grinding. The hardness of the teeth surface is 54 - 62 HRC. The gear pair has stable running, low noisy and has high driving efficiency.
3. The assembling connector has the precision of radial run-out and end face run-out at international level, and can be easily connected with screw rod of the machine barrel.
4. The bearing structure of the output shaft has a unique style, which can effectively prolong service life of the bearings.
5. All standard parts such as bearing, oil seal, lubricant oil pump etc. are all top quality products selected from domestic famous manufacturers. They can be also selected from imported products as per requirement of customer.

二、适用范围 Applicable Range

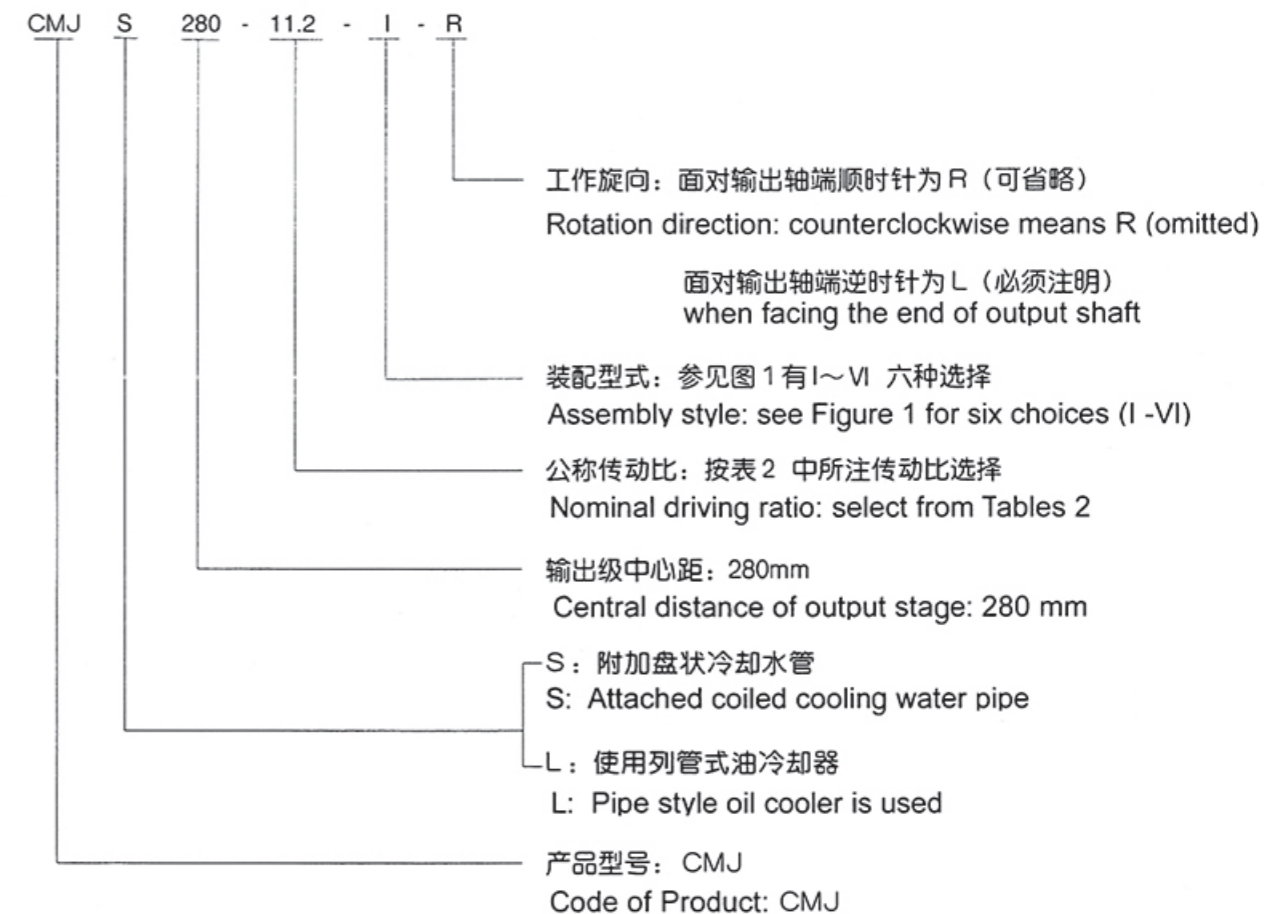
1. 本系列产品可用于螺杆直径 30~250mm 单螺杆挤出机的减速传动。
 2. 齿轮箱的输入转速一般不大于 1500r/min。
 3. 传动比在 6.3~20 之间，优先选用表中所列传动比，也可按用户需要调整传动比。
 4. 工作环境温度为 -10℃~45℃。环境温度低于 0℃时，启动前润滑油应预热。
1. This series product can be used in reducing driving of single screw rod extruder with the screw rod diameter of 30 - 250mm.
 2. The input speed of the gearbox is normally not larger than 1500 rpm.
 3. The driving ratio is between 6.3 and 20, and that in the table can be selected preferentially. The driving ratio can be also adjusted as per requirement of customer.
 4. The temperature in work environment is -10℃ - 45℃. When temperature is lower than 0℃, the lubricant oil should be preheated before starting.

三、齿轮箱的型号及标志 Model and Mark of the Gearboxes

齿轮箱的代号中，包括型号、输出级中心距、公称传动比、装配型式以及输出轴工作旋向。

The code of the gearboxes includes model, central distance of output stage, nominal driving ratio, assembly style and the rotation direction of the output shaft.

标记示例：Sample of the Code:



四、齿轮箱的承载能力见表 20

Bearing Ability of Gearboxes see Table 20

CMJ 系列齿轮箱的承载能力见表 20

The bearing ability of CMJ series gearboxes, see Table 20

五、齿轮箱的外形及安装型式 Outline and Assembly Style of Gearboxes

CMJ 系列齿轮箱的外形、安装尺寸见图11、表19。

The outline and assembly sizes of CMJ series gearboxes, see Figure 11, Table 19.

六、齿轮箱的润滑与冷却 Lubrication and Cooling of Gearboxes

1. 齿轮和轴承的润滑根据需要采用浸油润滑、飞溅润滑或强制润滑。133为自然冷却，146-180e为内冷，200以上为强制冷却。
2. 所有规格产品均可以附加盘状冷却水管；CMJ 200 及以上规格可以选配板式冷却器。
3. 如需附加循环油润滑装置或采用特殊冷却方式，请与我公司联系。
 1. The lubrication of the gears and the bearings can be selected from oil immersion lubrication, splash lubrication or forced lubrication. 133 for natural cooling, 146-180 for internal cooling, 200 and above is mandatory cooling.
 2. All sizes of products can be equipped with coiled cooling water pipes; for models CMJ200 and upward, the pipestyle oil cooler can be selected.
 3. If added circulation oil lubrication device or special cooling style is needed, please contact with our company.

七、齿轮箱的选用 Selection of the Gearboxes

1. 校核传递功率。CMJ 系列表列输入功率和输出扭矩已考虑工况系数，可直接按表20选用，表列输出扭矩是主要选型依据。如果表中所列的公称传动比不能满足要求，请与我公司联系。
2. 校核热功率。CMJ 系列按表20及附注选用。
3. 校核安装联接尺寸。如果您所需要的尺寸与表中所列的不同，请与我公司联系。
4. 校核轴伸径向力。如输入轴采用皮带轮等引起附加径向力的联接方式时，须确认输入轴伸中点处径向力是否小于 $125\sqrt{T_1}$ ， T_1 为输入扭矩。如不够，请与我公司联系。
 1. Verify transmitted power. For CMJ series gearboxes, the behavior coefficient has been considered in the input powers and the output torques in the Table, therefore it can be selected directly from Table 20. The output torque in the table is also the main basis to make selection. If the normal driving ratio in the table couldn't meet the requirement, please contact with our company.
 2. Verify thermal power. For CMJ serial reducers, make selection as per the notes on the Table 20.
 3. Verify assembly and connection sizes. If the size you need is different from those in the table, please contact our company.
 4. Verify radial force of shaft extension. If the input shaft adopts connection style with pulley which can cause added radial force, it should confirm that the radial force at the middle of the input shaft extension if it is less than $125\sqrt{T_1}$, here T_1 means the input torque. If it is not enough, please contact with our company.

八、安装使用和维护 Assembling, Application and Maintenance

1. 起吊齿轮箱时，应使用吊环螺钉。
2. 齿轮箱运输、存放时应注意防潮。到货后如半年内不安装，应对外露的加工面重新涂防锈油。
3. 齿轮箱安装的底座要平整，并有足够的强度和刚性，在地脚螺栓均匀紧固的情况下，应保证插入输出轴中的螺杆能无卡滞地均匀回转。联轴器的安装误差应不超过其允许的偏差值，以免引起附加力，缩短轴承寿命。

4. 齿轮箱在交货前均经过严格的试运转检验，各项指标符合要求，交货后可以直接投入使用。使用前应注入中极压齿轮油 N220 至油标上限（采用循环油润滑用 N150）。如齿轮箱附带列管式油冷却器则须在加油后，空车运转一段时间后，再次加油至油标上限。
5. 带有电机油泵的齿轮箱，在加载前，应先开启电机油泵，空车运转一段时间，以利各润滑点的充分润滑。
6. 齿轮箱在首次运行 300 小时后换油，以后每运行 3000~4000 小时换油一次，每次换油的间隔时间最长不应超过 18 个月。换油时应先清洗箱体、滤油器、空气滤清器、放油螺塞。

1. When lifting the gearbox, the ring screw should be used.
2. Take care to prevent moisture when the gearbox is in transportation or storage. If do not assemble in half a year after it is arrived, the exposure surface should be coated with antirust oil.
3. The base to assemble the gearbox should be plain with enough strength and rigidity. Under circumstance the anchor bolts are evenly tightened, it should ensure that the screw rod inserted into the output shaft should be rotated freely without blockage. The assembling error of the coupler should do not excess its allowed tolerance so as to avoid from added force and to prolong the life of the bearings.
4. The gearbox should pass through strict test running inspection before they are delivered. Only all index are in according to the requirement, can they be put into use directly after delivery. Before application, it should be filled with mid-extreme pressure gear oil N220 up to the upper limit of the oil mark (N150 if circulation pump lubrication is used). If the reducer has pipe style oil cooler, then run the reducer under no-load for a short period of time after oil is filled, then fill oil again up to the upper limit of the oil mark.
5. For the gearbox with motor oil pump, before adding load, it should switch on the oil pump of the motor to run the gearbox under no-load for a short period of time so as to facilitate full lubrication of all lubricant points.
6. Replace oil when the gearbox is initially running for 300 hours, and change oil once for every 3000 - 4000 running hours thereafter. The maximum interval between oil replacements should be no longer than 18 months. When replacing, first clean box body, oil filter, air filter and oil discharge screw plug.

CMJ 系列承载能力

表20 Table20

型号 Model	CMJ								
规格 规格	△ 133 -8	△ 146 -10	△ 173 -10	△ 180 -10	△ 220 -12.5	△ 225 -12.5	△ 250 -16	※ 280 -16	※ 315 -16
	公称输入功率 (KW) $n_{入} = 1500r/min$ Nominal Input Power(kw)Input $n = 1500r/min$								
一般可靠 Normally Reliable	22	30.8	39	45	55	82.5	75	125	171
高可靠 Highly Reliable	15	20.5	30.8	36	45	67	60	100	136
	许用输出扭矩 (N.m) Allowed Output Torque (N.m)								
一般可靠 Normally Reliable	1121	1962	2484	2865	4379	6568	7643	12732	17427
高可靠 Highly Reliable	764	1305	1962	2292	3583	5334	6112	10186	13855
	许用输出轴轴向推力 (KN) Allowed Axial Thrust of Output Shaft (KN)								
轴向推力 Axial Thrust	44	60	130	150	180	186	216	274	314
	推荐配置 Recommendation of Configuration								
螺柱直径 (mm) Diameter of Screw Rod(mm)	45 50	55	65	65	75	90	100	105 110	120
输入功率 Input Power (KW)	8	12	18.5	22	30	45	45	64	85
$n_{入}$ n_{Input}	800	900	900	1000	1000	1000	1120	960	960
$n_{出}$ n_{Out}	100	90	90	100	80	80	70	60	60

注: Notes:

1. 表列输入功率和输出扭矩已考虑工况系数, 可直接选用。
2. 表列输出扭矩是主要选型依据。传动比可按用户需要调整。
的 i 为 6.3-20。
3. 当取轴承负荷系数 $f_d = 1.5$ 时, 按表列许用轴向推力和输出轴给定转速计算, 推力轴承的理论计算寿命, 除 133、146 两型为 1.2 万小时左右, 其余各型皆在 2.5 万小时左右。
4. 以下几种情况、应对齿轮箱的冷却设计参数校核:
 - ◎ 5.1 按高可靠数据选用, 但输出转速超过表 20 $n_{出}$ 时 (即加大了输入功率)。
 - ◎ 5.2 按一般可靠选用, 输入功率加大时。
 - ◎ 5.3 当内冷却方式散热面积不足时, 采用带油泵的外置式油冷却器。采用冷却器需在订货时另外说明。
5. 用户按表列数据作初步选型。在订货时, 我厂将对每一例选型作详细校核, 以提高选用的可靠性。

1. The behavior coefficient has been considered for the input power and the output torque listed in the table, therefore they can be selected directly.
2. The output torque listed in the table is the main basis to make selection. The driving ratio can be adjusted as per the requirement of customer.
CMJ has i between 6.3 to 20
3. When taking the axial load coefficient $f_d = 1.5$, calculate the theoretical life of the thrust bearings according to the axial thrust and the given speed of the output shaft listed in the table. Except sizes of 133 and 146 which have a service life about 12 thousand hours, all other sizes have a service life about 25 thousand hours.
4. Make verification upon the design of cooling data of the rgearboxes in following cases:
 - ◎ 5.1 When making highly reliable selection but the output speed exceeds $n_{出}$ in Table 20 (i.e. the input power is increased);
 - ◎ 5.2 When making normally reliable selection but the input power is increased;
 - ◎ 5.3 In case the radiation area is not sufficient for the internal cooling style, the external oil cooler with the oil pump can be selected and mentioned additionally when making the order.
5. Customer can make pre-selection according to data listed in the table, and we'll make detailed verification for each case so as to rise up the reliability of the selection.