PE 板材挤出生产线使用维护手册 PE Geomembrane Extrusion Production Line Instruction Book

目 录

Catalogue

一、使用和性能 use and function

1.1、使用范围 use scope

该挤出生产线是加工 PE 板材的生产线，本说明书所描述的操作和使用规程只适用于加工 PE 的物料情况。如使用者自行加工其他物料则不在本说明书描述之列，同时本公司不负担由此产生的后果。This extrusion line is used for PE sheet production line,all description for operation and using rule are just suitable for PE material product.if use the material beyond PE material,the company will not have any responsible for the consequence.

1.2、性能 performance

该生产线生产范围，片材厚度 0.8 ～3mm，制品宽度 5000mm，挤出机产量 900-1000kg/h ，最大设计线速度 10m/min。Work scope for this line, thickness of sheet is 0.8 ～ 3mm,width of final product is 5000mm, output for extruder is 900-1000kg/h ,max technical speed is 10m/min.

1.3、PE 挤出生产线工作与储运的环境要求 **PE Extrusion production line working and storing environment**

允许环境空气温度 environment temperature：+5℃～40℃;

储运温度 storage temperature：-20℃～55℃;

相对湿度 relative humidity：至 90%，无凝露 no condensation;

污染等级 pollution class：2 级，不应安装在多粉尘,有腐蚀性气体的场所 a place where with much dust and corrosion air should not install machine ；

海拔高度 height：<1000 m，>1000 m 须降容使用 need to reduce volume，每升高 100 米，负载能力降 1% rise each 100m, load capacity reduce 1%。

1.4、地基 foundation

生产线地基图(见附录 1) production line foundation drawing(reference picture NO. 1)

1.5、电源要求 power requirement

供电系统形式：三相五线制，即 TN-S 系统 （3P/N/PE）

power supply system type:3-phase 5-wires,namely TN-S system(3P/N/PE)

三相电压：380V±10% 单相电压：220V±10%

3-phase gauge:380V±10% single-phase gauge:220V±10%

电源频率 power frequence：50HZ±5%

1.6、进线电缆要求 income cable requirement

要求用户厂房配备设备电源柜，用户厂房配电室至设备电源柜的进线电缆规格：

生产线所配电缆线规格为 user factory need to match with power cabinet, cable model from electrical distribution house to equipment power cabinet, cable model for production line：

1、150 主机调速电缆规格 $3X120mm^2+185mm^2$

150extruder adjustable cable model：$3X120mm^2+185mm^2$

2、辅机线规格 support equipment cable model： $3X70mm^2+50mm^2$

3、本设备占变压器容量约： 1413kVA

This machine occupies transformer volume: 1413kVA

4、电源要有接地保护线，电气控制柜附近要预埋接地电阻 R≤4Ω

Power should be with grounding protection cable,near electrical cabinet should bury the grounding resistance R≤4Ω

1.7、气源要求 air source requirement

气源压力 0.6～0.8MPa，正常工作时耗气量约 $1.5m^3/h$。

Air source pressure 0.6～0.8MPa, when normal work it will cost air $1.5m^3/h$。

1.8、水源要求 water source requirement

生产线工作时总耗水量约 5L /h。水流量 $60m^3/h$，压力 0.3～0.4MPa ,正常水温＜35℃,需配备大水池或冷却塔，总进水管口径 3″，并在进口处安装 3″球阀一个，总出水管口径 4″。When the production is operating,the total cost for water is 5L/h. Water flow rate $60m^3/h$， pressure is 0.3～0.4MPa ，water temperature is less than 35 ℃, matching with the big water pool and cooling tower, input water pipe diameter 3″,and install a valve ball 3″, total output water pipe diameter is 4″.

二、PE 挤出生产线构成及工艺流程 **PE extrusion line structure and technology process**

2.1、生产线构成（生产线总布置见附图 1） **production line structure(whole line layout reference picture NO. 1)**

生产线机械部分主要由以下部分组成，具体如下图所示 production line machinery part form,reference the following drawing：

（1） 挤出主机单元：JWS150/33 挤出机 2 台

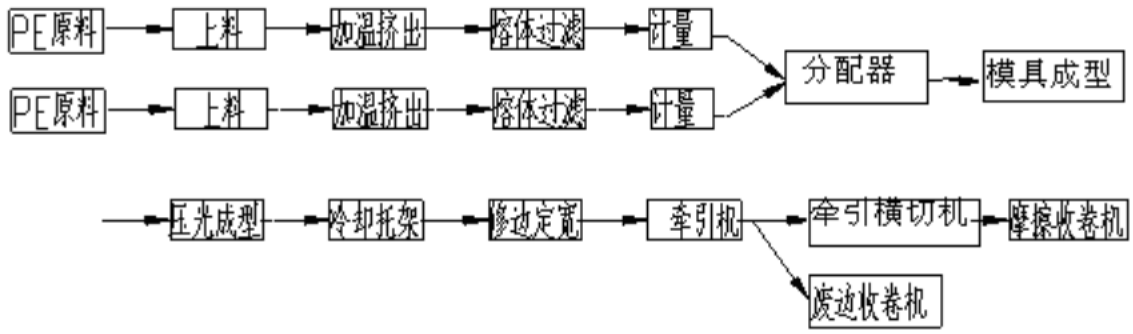
Extrusion unit: extruder JWS150/33 2 sets

（2） 液压换网单元 2 套

Hydraulic screen changing unit	2 sets
（3） 计量单元：	2 台
Melting unit	2 sets
（4） 分配器	1 套
Feedblock	1set
（5） 模具单元	1 套
Die unit	1set
（6） 三辊压光单元	1 台
Three roller calender unit	1set
（7） 水辊温控制器	1 套
Temperature roller controller	1set
（8） 放卷装置	1 套
Unwinder device	1set
（9） 冷却托架	1 套
Cooling bracket	1set
（10） 修边定宽单元	1 套
Trimming and width fixed unit	1set
（11） 牵引机	1 台
Haul-off unit	1set
（12） 横切机	1 台
Crossing cutter	1set
（13） 摩擦收卷	1 台
Friction winder	1set
（14） 上料系统	1 套
Feeding system	1set

（15） 电气控制系统 electrical controlling system

2.2、生产线工艺流程 **production line technology process**



三、生产线各组成单元基本参数及安全操作指导 **basic parameter for production line each unit and direction for safety operation**

3.1、挤出单元基本参数及安全操作指导 **basic parameter for extruder unit and direction for safety operation**

3.1.1、挤出机基本参数 extruder basic parameter

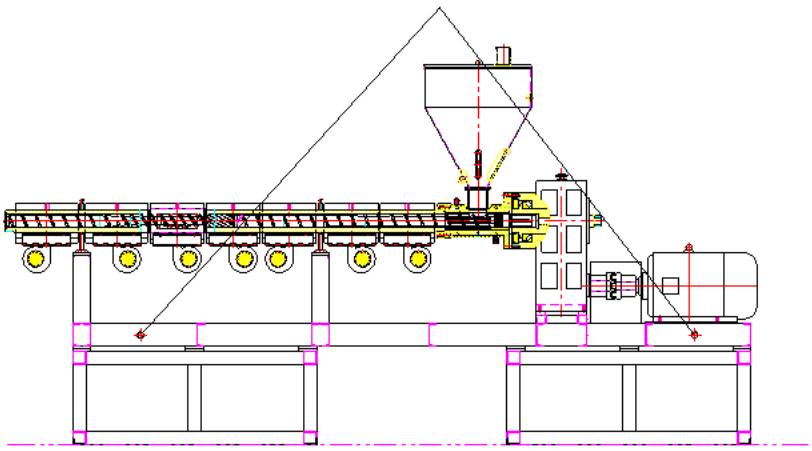
JWS 150/33 挤出机 extruder

螺杆机筒 barrel and screw	
材质 material	38CrMoAlA 双金属 thermometal
渗氮深度 nitration	0.5-0.7mm
螺杆硬度 hardness of screw	HV≥740
机筒硬度 hardness of barrel	HV≥940
长径比 L/D	35：1
产量 capacity	650Kg/h
螺杆直径 diameter of screw	150mm
机筒加热区 barrel heating zone	8 区 zones
总加热功率 heating power	80kw
加热方式 heating type	陶瓷加热 ceramic heating
冷却方式 cooling type	风冷 air cooling
驱动 driving	
电机型号 motor model	直流电机 DC motor
额度电压 voltage rating	380V

调速器 governor	ABB
电机功率 motor power	250kw
减速箱 gearbox	江阴减速箱 Jiangyin Gear box
热处理 heating treatment	渗碳磨齿 nitration and grinding gear
电机与减速箱的连接方式 connection type between gearbox and motor	直连 directly connect

3.1.2、挤出机的吊装 extruder hoisting

挤出机在吊装前，先将有足够强度的圆钢插入机架吊装孔，根据吊装示意图，起吊挤出机。由于挤出机重量分布不平衡会导致搬运过程中的中心偏移，为防止吊索在吊钩中滑动，套在吊钩中的吊索必须在吊钩上再多绕一圈。在吊装过程中,请稳住机器的中心,防止机器在吊装过程中在空中摆动幅度太大,伤及操作者或现场其他相关人员。Before extruder hoisting, (sees attached figure 1and 2)hookon extruder. Due to the extruder weight distribution imbalance will lead to handling process center to prevent sling offset, and in the hook slide, set in the hook on the hook the sling must go round and more circle(reference picture NO.3).In the process of hoisting, to avoid too big swing range and cause some unhappy thing,please keep central of machine steady.



3.1.3、挤出机的就位和安装 extruder takes place and installation

挤出机的就位和安装通常与生产线上其它设备一起进行，就位时必须遵循生产线基础图（由我公司设计部门提供），如附图所示。调整好挤出机之间的相对位置和整个生产线之

间的相对位置，同时调整好挤出机自身的水平位置（料筒口和进料口处的安装表面均可作为测量基准）。之后，将挤出机固定在混凝土平台或钢平台上，以防止产生振动。Extruder installation usually together with other equipment ,both of them must follow line foundation drawing. Adjust good extruders relative position between the whole production line and the relative position meanwhile adjust extruder own level position (material feeding port(input) and mounting surface could be used as measurement datum). After extruder fixed in concrete platform, in order to prevent the vibration generation.

3.1.4、挤出机的维护保养 extruder maintence

1）螺杆的维护保养 screw maintence

当挤出机的挤出产量下降或其它原因影响螺杆正常工作时，就应该对螺杆和机筒进行检查，根据螺杆机筒的磨损情况决定更换螺杆机筒或修复。When output of extruder low down or other reason make screw can not operation normal, under this condition check barrel and screw working situation,according to the result to make the decision to change or repair barrel and screw.

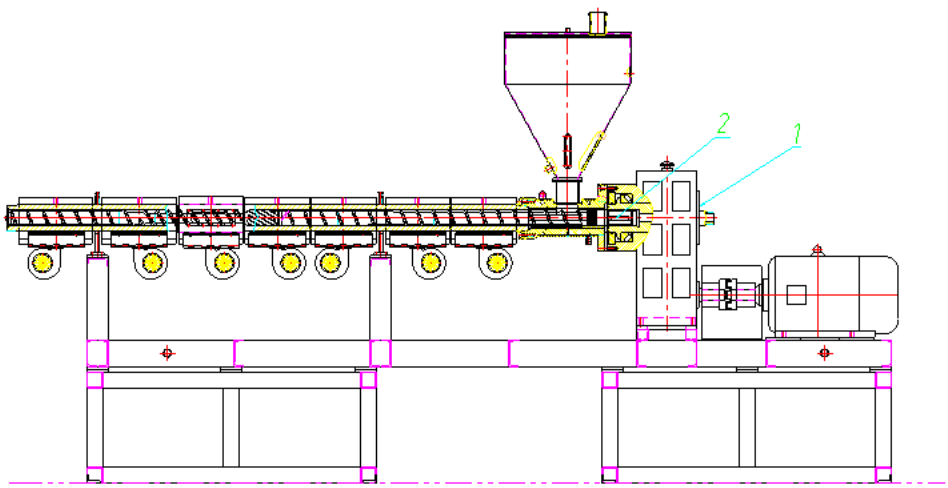
螺杆拆卸、清洗、安装的方法 way for dismounting ,cleaning and installation：

A、螺杆拆卸 dismounting of screw

拆卸螺杆需采用本机配套提供的专用工具，配备这种工具是为了能在挤出机排空之后直接拆卸螺杆，此时，残余熔体尚未凝结，因此螺杆很容易被顶出。如果挤出机已经冷却，顶出螺杆前要接通加热区，并加热到操作温度，然后再次断开电源。顶出前应配套起吊装置，以便在顶出时支承螺杆。Remove the screw must used the specialized tools(provided by the sellers), equipped with the tool is in order to succeed in extruder screw directly after emptying disassemble, at this time, yet, so the residual melt condensation screw easily be ejection. If extruder has cooled, ejector screw before getting through to heating zone and heated to the operating temperature, then again disconnect the power supply. Ejection shall, before the supporting lifting equipments, so in the ejection when supporting screw

拆卸螺杆前，应先将挤出机机筒连接的流道、换网器、计量泵和模具等拆除，以保证螺杆能从机筒拉出。Remove screw before, should first conveying rate of flow, ex-changer device, metering pump and mould etc, ensure that the demolition screw extruder barrel can pull out easyly.

把拆卸专用螺母旋入拆卸专用手柄，顺时针转动心轴，直到把螺杆顶出减速箱输出轴内孔为止。最后，即可拉出螺杆（图中标号 2 所示），放在清洁、柔软的材料上。Remove special nuts under screwed remove special handle, clockwise mandrels, until screw ejection reducer output shaft within hole so far. Finally, can pull out screw(pls see attached 7), put in clean, soft materials.



B、螺杆安装 screw installation

安装前，消洁螺杆表面和机筒内孔，清洗传动轴内孔。然后，套筒内孔涂上薄薄的一层硅油，螺杆轴上涂上一层硅润滑脂。安装前，进料口必须盖上，建议把挤出机加热到操作温度，这样便于安装。Before installation, eliminate screw surface and barrel inner hole , transmission shaft within hole. Then, sleeve inner hole coated with a thin layer of silicon oil, screw shaft coated with silicon grease. Before installation, feeding port must cover, suggested that the extruder heated to the operating temperature, so it is easy to install.

安装时，要将螺杆轴上键与减速箱输出轴的内孔键槽对准，并小心地将螺杆推入机筒，直到螺杆到位为止，或者使用螺杆安装专用工具，将安装芯轴旋入螺杆后端部的螺孔，转动螺母即可装入螺杆。螺杆应一直推到顶住为止，根据尺寸图可检查螺杆是否到位。when installed, will screw shaft keys with output shaft of reducer inner hole, and carefully keyway alignment will screw pushed into a barrel, until the screw in place so far, or using screw installation specialized tools, will be installed spindle screwed screw after termination of screw holes, turn the nut can load screw. Screw should have been pushed to resist date, depending on the size chart can check screw whether put in position.

注意：在安装螺杆过程中，绝不能使用强力，以免损坏键及键槽。键如果太紧，应予以小心修正后再装。Note: when installing screw process, can never using powerful, lest damage button and the keyway. If the key is too tight, should give careful correction.

C、清洗螺杆、机筒 washing barrel and screw

应使用黄铜丝刷，黄铜或铝刮刀，或铜丝团清洗螺杆，避免擦伤螺杆。should use yellow wire brush, brass aluminium or copper regiment scraper, or cleaning screw, avoid bruising screw.

挤出机机筒内孔应在热态清洗，清洗时使用一符合内孔直径的固定在拉杆上的半圆形刮刀，先将刮刀朝上插入机筒，然后将刮刀半圆面朝下，将残余的熔体刮下，必要时此过程重复进行，最后用按直径配制的黄铜刷或铜刷将套筒刷干净。Extrusion machine machine in the cylinder holes should be in one-dimenion thermal cleaning, cleaning with a diameter of fixed accords with within the bars of semicircle scraper, first will scraper up insert barrel, then scraper semicircle face downwards, will the remnants of the melt scratched away, when necessary, the process repeats itself, finally prepared by using diameter or copper brass brush brush will sleeve brush clean.

2）减速箱的维护保养 Gear-box Mantiance

在减速箱安装完毕后，注入N220 中级压齿轮油或其他粘度相似的优质润滑油至油镜中心上部。该油位应在润滑油在箱体内均匀分布后确定，减速箱运转后，油位应经常检查，任何情况下，油位不应低于油镜位置中心下部。首次使用 300-600 小时后，应换油一次。以后每 3000 小时换油一次。更换应在减速器停车，润滑油尚未冷却时排放。箱体应用同品质的油冲洗干净。若油粘度高不易冲洗可先加热。After reducer installation is completed, inject N220 intermediate pressure gear oil or other viscosity similar high-quality lubricant to oil mirror upper center. The oil level should be in lubricant, in the casing evenly distributed determined after running , reducer, oil level should always check, in any case, oil level should be no less than the lower oil mirror position center. First use of 300-600 hours, should replace the oil again. After every 3000 hour change oil again. Replacement should be in reducer, lubricating oil is cooled yet parking emissions. Cabinet with quality of oil applied rinsed clean. If oil viscosity high not easy rinse can be first heating

装有油泵强制润滑的减速箱，在开车的初始阶段，可能会因油的粘度过高，油泵吸油阻力大而造成进油不足，发出过高的噪音。该现象一般在润滑油温度升高后，自然消失。在正常运转中，如出现油泵噪音增高，一般情况可能是油路阻力过大。此时情况请清洗滤清器及其它相关部件。无论那种规格的减速箱，在长期不用或气温过低时启动使用，都应空车运转一段时间，待各轴承处充分润滑后方可加载运转。当环境温度低于 0℃时，需对润滑油预热。当环境温度高于 35℃时，需加强冷却。Equipped with pump forced lubrication gearbox, driving at the initial stage, may be due to oil viscosity is exorbitant, oil pump oil absorption resistance caused by insufficient, JinYou issued high noise. This phenomenon is commonly in lubricant, temperature, disappear naturally. In normal operation, if appear pump, the general situation may be increased noise is too large. Oil-way resistance Now please clean filter and other related parts. By whatever specifications of the gearbox, in long-term need not or temperature is low when use, should start empty car running for a period of time, to each bearing place sufficient

lubrication rear can load operation. When environment temperature below 0 ℃, need to lubricant preheating. When environment temperature above 35 ℃, need to strengthening cooling.

在对减速箱开箱维护、检修后，都必须调换密封件。紧固和安装各零部件时，务必注意各定位孔和平面的清洁以及表面无损伤。箱体合盖时结合面、轴承盖上必须涂上 515 厌氧胶或类似密封材料。On open the reducer maintenance or overhaul, must change the seal. Tighten and installation of various spare parts, must pay attention to each positioning hole cleaning and surface of peace without damage. Cabinet when combined with noodles, laminated cover cover must besmear on bearing pp.961 anaerobic adhesive or similar sealing material.

挤出机减速箱润滑点 Lubricating points

润滑点 lubrication point	润滑剂 lubricant	润滑间隔和说明 lubricating space and instruction
齿轮减速箱 gear reduction box	齿轮油 gear oil N220	油位为油标上限，注油容积约为 20 升，400 小时后首次换油，以后每运行 4000～5000 小时换油一次，至少一年换油一次。每次更换润滑油的间隔不应超过 12 个月。Oil level is the oil standard lamination,injection oil volume is about 20L,400hours later is the first time to exchange oil,later every 4000-5000 hours to change the oil once,to change the oil one time for each year is better, the changing date should not more than 12month. 换油周期建立在油温始终不超过 70℃的基础上，挤出机运转时，通过反复排出少量的油进行换油，每次排油之后注入干净的油直到排出的油是干净的，呈浅色为止。Changing oil cycle depends on the oil temperature should not beyond 70℃, when extruder is operating, by pouring out oil repeatedly to change oil, after pouring out oil the new oil should be injected ,when oil color shows light.it is ok! 当挤出机停止工作时，将油在操作温度时排

		出，并注入清洁的油，在换油时，减速箱壳全应采用与传动润滑相同等级的油清洗。When extruder stops working,pouring out oil in the process of operating,and inject clean oil,when changing oil ,gearbox shell adopt the same level oil to lubricant. 绝对禁止外部杂质进入减速器、油管、油泵、油咀等。进行冲洗并用高压空气吹干。换油后应充入以前同样等级同厂所产的润滑油。The foreigner substance prohibited to come into gearbox equipment,oil tube,oil pump,chain saw and so on. Washing and drying it by high pressure air.after changing oil,inject the same level oil as before. 当外界环境低温时，可用浸没式电加热器或蒸气加热线圈对润滑油加热，必须预热到+10℃。为防止润滑油被碳化，电加热器单位面积上的电功率不应超过 0.7w/cm^2。When outside temperature is lower,the immersion type ecectricity heater or steam heater ring to heat lubricating oil by +10℃. In order to avoid the lubricating oil is carbonizing ,the power of heater should not above 0.7w/cm^2.
机筒联接法兰 barrel connection flange	耐 500℃以上高温二硫化钼润滑脂 resistance higher temperature molybdenum dissulfide more than 500℃ lubricant	紧固螺钉旋入前润滑 lubricating fasten screw before screwing in
螺杆轴		每次安装之前涂上薄薄一层润滑剂 before installation coat a layer of lubricant.
机筒内孔	耐 300℃高温的硅油	每次清洗之后，稍微喷一些润滑油 after each washing ,coating a layer lubricant oil

齿轮减速箱及其密封件和轴承 Gearbox ,seal and bear.

1) 齿轮减速箱在无螺杆的情况下，至少试运转 2 小时。With out screw ,the gearbox must running 2 hour at least.

2) 装拆齿轮减速箱时应注意以下几点 Remove the gearbox must notice follow points ：

1) 每次开箱后，都必须调换密封件 Replace the sealing when opened the Geaxbox.

2) 在紧固和安装各零件时，务必注意所有定位孔和平面的干净和无损伤 fastening and install the parts, be sure to notice all the clean and positioning hole peace no damage

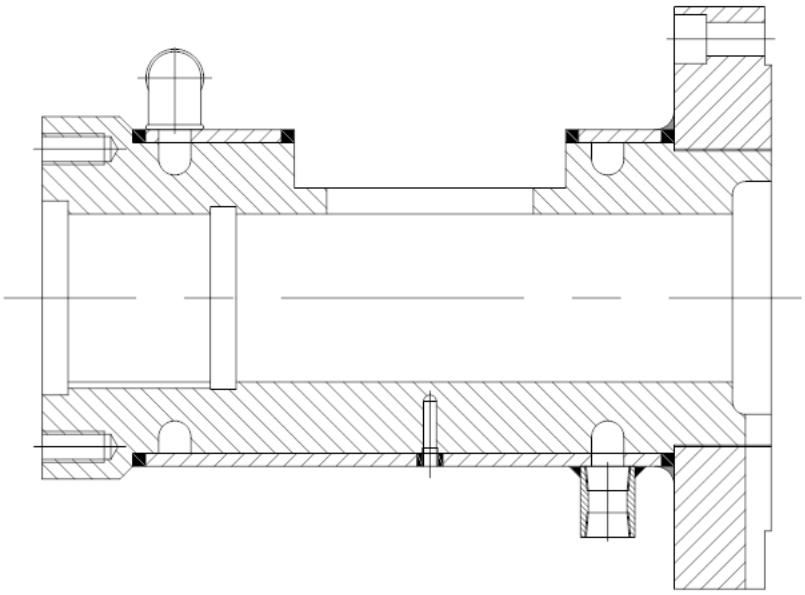
3）冷却水套的维护保养 Cooling Sleeve

挤出机的加料口壳体装有冷水装置，依靠水冷却。冷水装置每半年用高压水清洗一次，以清除水套内杂质，提高冷却效果。挤出机冷却用水要求 feeding mouth shell with cold water device, rely on water cooling. Cold water device should every six months with high pressure water cleaning once, in order to remove impurities, improve water set inside cooling effect. Extruder cooling water.Extruder cooling water required:

水的纯度 purity for water： 无污染，无石灰质 No population, no chalky

水 压 water pressure： 0.5－0.9MPa

水 温 water temperature： 10－20℃

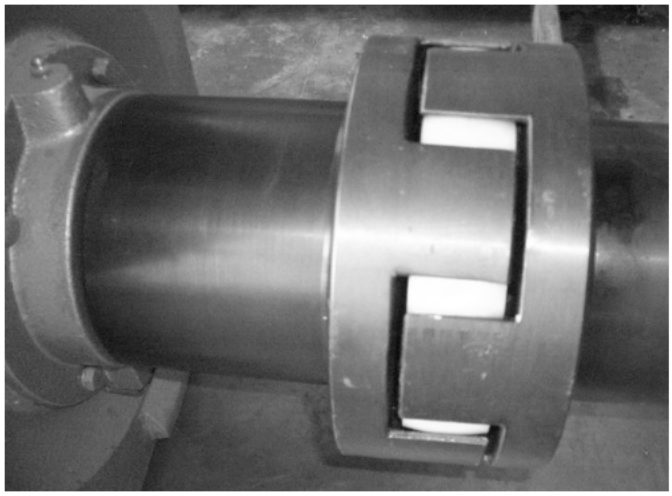


水套结构 water jacket structure

4）联轴器的维护保养 coupling maintence

联轴器在长时间的运转中会因设备的振动，而使电机和减速箱相对位置的产生改变，从而导致联轴器的错位、弹性体磨损，影响传动的平稳。所以每隔 3 个月就应检查联轴器

的同轴度、弹性体的磨损情况。以便调整联轴器或更换弹性体。Coupler in long time during operation because of equipment vibration, can make the motor and reducer relative positions have a little change, leading to the coupling of displacement, wear, the influence of transmission of elastomer smoothly. So every three months when we should check the coaxial tolerance of coupling, elastomers wear. In order to adjust couplings or replace elastomer.



注意：在使用过程中禁止拆开防护罩，以免转动部件伤人。在检修过程中拆开防护罩后，检修完成时请务必装好防护装置！Note: in use process, lest ban apart jammers rotating components hurt. In the process of inspection apart after completion, overhaul shield please make a pack good protective device!

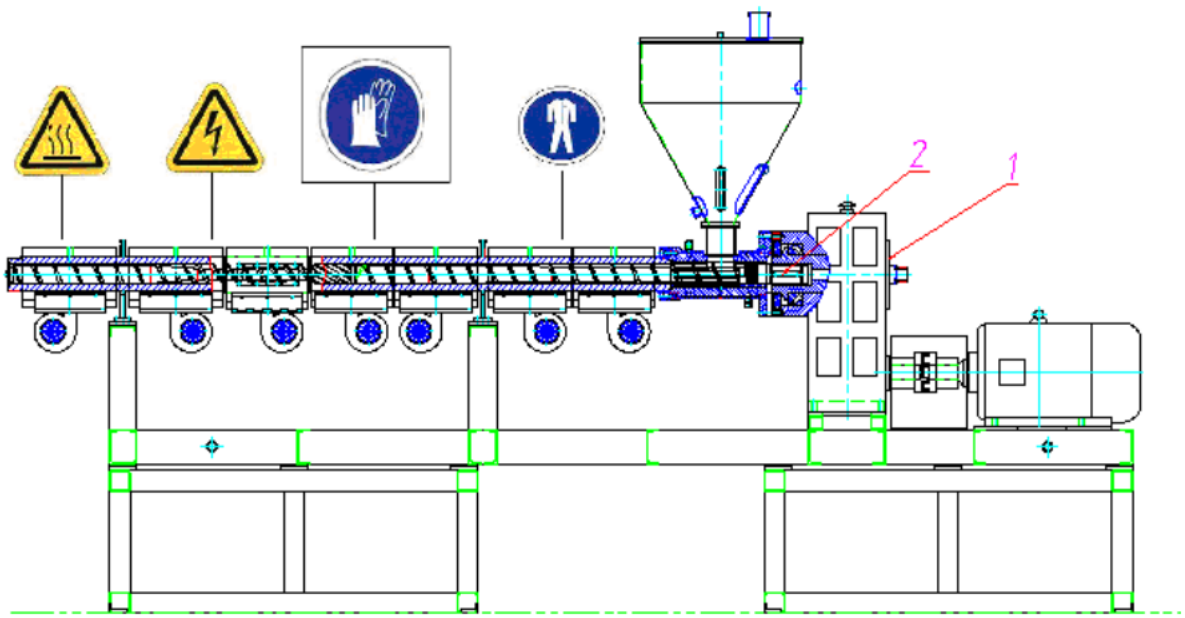
5）加热圈和冷却风机的维护保养 Bands heater and cooling fan maintenance

加热圈和风机是维持挤出单元热平衡的部件，加热圈和冷却风机的正常工作是挤出机稳定工作的保证。在每次升温时都应该检查加热温控表显示温度与对应加热圈的实测温度的误差，如两者温度相差很大，就必须细查原因，根据实际情况分析处理。在机筒温度接近设定温度时，冷却风机将会间歇地工作，此时可以检查风机的工作情况。如发现问题，因及时处理。在正常工作时，每班交接时应检查机筒的实测温度与风机的工作情况。(附图)Bands heater and cooling fan is component to keep extrusion unit heat balance, bands heater an cooling fan regular work is guarantee for extruder work stability. In every time when heating we should check the temperature control system table shows the temperature and error of bands heater actual temperature, As both the temperature difference is great, we must examine carefully reasons, according to the actual situation to analysis. At the barrel temperature close to set temperature, the cooling fan will work intermittently, at this time can check the cooling fan going. If find that the problem we handle in time. At normal work, when every handover should check the actual temperature barrel and fan work condition.

3.1.5、挤出单元的安全保护 safety protection for extrusion unit

挤出机在正常工作时，存在高温和高速转动的危险（其相应位置由相应得警告标志见图）。在接近高温部件作业时，需穿戴防高温服、防高温手套，以及穿防滑靴。电机与减速箱连接部分是高速旋转的联轴器，在联轴器罩不再正常位置或没有牢固地固定在机架上，不准启动挤出机。Extruder in normal work, it has the high temperature and high speed rotating danger. When close to high temperature parts, we need to wear cloth、gloves resistance to high temperature and ski boots. Electric motor and reducer connection part is high speed rotating shaft coupling, when coupling cover is not normal position or not firmly fixed on the frame, not start extruder.

挤出机安全标志贴放处



3.2 换网器、液压单元 screen changer ,hydraulic unit

3.2.1、换网单元基本参数及安全操作指导 basic parameter and safety operation direction for screen changer unit

1）换网单元的基本组成 The basic composition of draping unit

该生产线的换网单元由自动换网器和液压站组成。双工位板式配液压站（最高设计压力30Mpa，最大使用压力 25Mpa）this production line screen changer consists of automatic screen changer and hydraulic station.double working position plate type hydraulic station(the max.design pressure 25Mpa, the max. Working pressure 16Mpa)

2）换网器的构造 screen changer structure

本换网器是双工位工作的，在工作区域内可放置不同型号和数量的过滤网，放置的型号和数量不同对挤出压力和流量都有影响，贵公司可视其生产需要而定。This screen changer is of two-work position type,different model and quantity of mesh can be placed at working place,with different model and quantity the extrusion pressure and flow will different, we can do as your different requirement.

在换网器上，我们使用加热棒及热电偶来控制调节温度。其加热棒的规格及型号参见换网器说明书的技术参数。We always use heater bar and thermal couple to adjust and control temperature.the model of heat bar should references instruction book technical parameter.

在使用换网器前，密封调节环一定要调节到位，否则可能会导致漏料。另外，本产品在出厂前，在闸板上涂有高温润滑脂，首次使用切勿将其擦除，否则容易将其密封面擦伤。Before changing screen ,sealing adjust ring must be in position,or which will leads to leak material.otherwise,before leave from the factory,coat the high temperature lubricant grease on the flashsheet, first time to use it,do not remove the lubricant oil,or this will easy to make the sealing surface damaged.

本换网器最大可承受压力 16Mpa，换网压力的设定可根据生产环境和需要调整，但最大不可高于极限压力。一般情况下换网压力在 10MPa 时能顺利进行换网操作为正常，当换网压力达到 12Mpa 时仍不能顺利换网时，建议对整个换网系统进行检查（包括液压站、换网器）。This screen change can support the Max pressure is 16Mpa,changing screen pressure can be adjusted by different environment and requirement,but which should not higher than limitation pressure.as usual when screen changing pressure at 10MPa can work normally,this indicates all thing are available. When changing screen pressure reach at 12Mpa,but it can not work normally, we suggest to check all this relative system(includes hydraulic station,screen changer)

当换网器换工位工作时，应趁树脂还没有冷却时及时清理被替换出来的工位，将残余树脂清理干净，并喷上脱模剂，为下次换工位工作做准备，每次换网之必须保证网板在正确的位置，否则有可能把网板拉坏。When screen changer change work position,before the resin has not dried,to clean the changed position,cleaning the odd parts,and spay release agent,make a good preparation work for the next changing work,each time

when changing the mesh plate ,please guarantee it is in right position,or this will leads to damage it.

3）换网器的安全防护 screen changer safety protection

由于换网时，滑板运动很快以及从滑体里会流出很多高温熔体，所以换网时存在高温危险，因此在滑柱下面设置安全防护罩！换网过程中，操作人员不得处于滑板下面，换网结束后，快速更换过滤网并清理滑板和防护罩上的物料！清理物料时必须戴耐高温手套！ Because when changing screen ,slide plate moving quickly and a lot of high temperature substance will come out,, there will have high temperature dangerous in the process of changing work, so set a safety coat under the sliding pillar! In the process of changing net , operator should not be closed to the sliding plate,after changing net,quickly change screen pack and clean sliding column material. When cleaning the material must wear the gloves that high temperature resistance.

3.2.2、液压站的构造和安全操作及维护 Hydraulic station structure and safety operation and maintence

1) 概述 summary

液压系统在机械、冶金等行业中的辅助作用起到相当大的影响，它具有工作状态稳定，输出力均匀，操作方便，控制灵活等特点。已在各行业得到肯定。Hydraulic has a good function in machinery and metallurgy zone,with steady working condition,output balance,easy operation,flexible controlling .with a steady position in each zones.

2) 换网器液压系统主要技术参数 main technical parameter

a) 系统工作压力 working pressure P =16.0Mpa

b) 系统工作流量 working flow Q =9.0L/min，不可调节 unadjustable。

c) 控制电压 controlling voltage：DC24V

d) 系统电压 the whole system voltage：AC380V 6.8A 50Hz

工作介质 working medium：ISO VG 46 抗磨液压油 anti-wear hydraulic oil

e)

f) 油箱加油量 oil box oil required quantity：约 80L

g) 蓄能器容积 accumulator volume：10L

本泵站最高压力为 21.0Mpa，不得长时间超压使用。

The highest pressure pump station is 21.0Mpa, not be allowed overpressure using for a long time.

3) 液压系统主要组件 hydraulic system main parts

a) 电机泵组单元---由电动机、叶片泵、支架、联轴器组成 motor pump unit---consists of motor,blade pump,bracket,coupling.

电动机：中国上海造 功率 3kW 电流：6.8A 380V/50Hz IP44 转速：1440r/min 安装方式：B5 型号 Y100L-4

Motor:made in Shanghai,China power3kw current:6.8A 380V/50Hz IP44 Rotation speed:1440r/min installation way:B5 model: Y100L-4

高压齿轮泵：中国上海造，型号 CBD-F306LP1

High pressure gear pump: made in China,model CBD-F306LP1

公称排量 6ml/r 旋转方向从轴伸端看为顺时针向

Output volume 6ml/r rotation direction if of clockwise.

b) 控制阀组单元---由阀块、电磁换向阀、溢流阀、截止阀、单向阀等元件组成

采用插装阀形式设计，体积小，重量轻，易于安装及维护。阀块经镀镍处理，保证不生锈；主要阀类均为台湾产品。具体型号规格祥见原理图。Controlling valve unit----consists of valve block, solenoid direction valve,relief valve,stop valve,single direction valve and other parts. Adopt cartridge valve type design,with small volume, lighter weight, easy to installation and maintence. Valve block is special treated,and ensure stainless; all valves are made in Taiwan. The detail model should reference the shematic diagram.

c) 执行机构---油缸 implementation unit---hydro-cylinder

d) 能量储存---蓄能器 power storage --accumulator

蓄能器型号 accumulator model：NXQ—L10/200-H

e) 油箱及其他液压附件 oil box and other hydraulic parts

规格型号祥见液压泵站总装图 all model reference the hydraulic system.

4）液压系统工作原理 hydraulic system working principle

电机带动油泵回转，在吸油区形成负压，油液在大气作用下被吸入泵内，泵内排出的油液经溢流阀口溢流回油箱。Oil pump rotates together with motor,in the absorb oil zone will become negative pressure, with the function of air it is absorbed in pump, the oil flow out through relief valve.

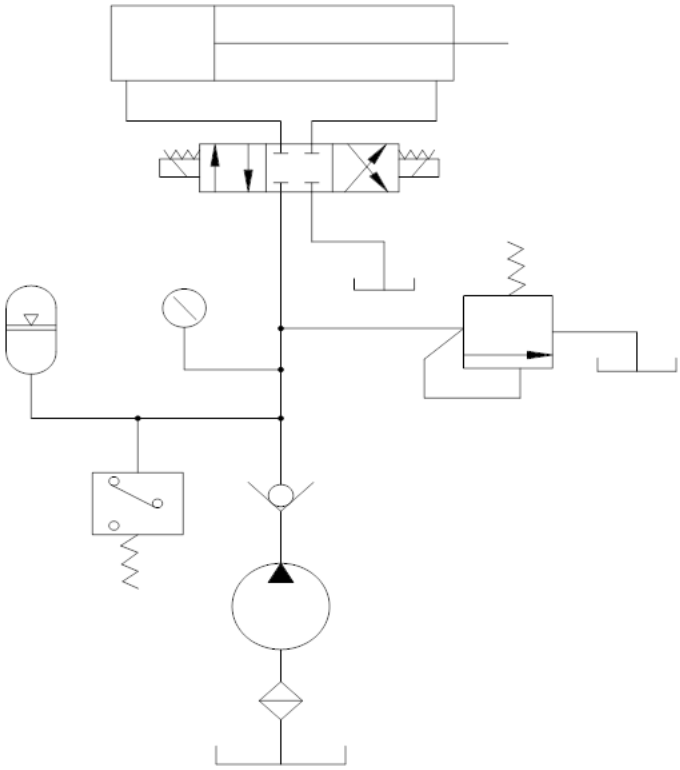
本系统由一压力继电器控制电机停止，以保证系统压力不会超过额定压力而损坏元器件。当系统压力升至压力继电器设定的植--- 16Mpa 时，电机停止工作，系统由蓄能器供油；当系统压力不足于换网时应手动重新启动电机，以使系统压力升高。This system is controlled by pressure relay, this will ensure the system pressure is not beyond setting pressure. When system pressure rise to the setting data of the relay ---16Mpa, the motor will stop working, accumulator provide oil;when system pressure is not enough,restart the motor ,so as to improve system pressure.

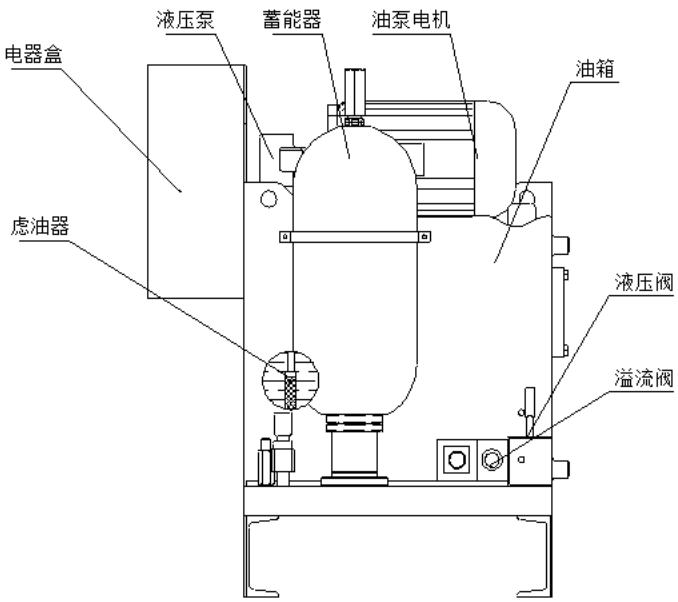
本液压泵站电磁阀控制电压为 DC24V。当电机启动时，通过调节溢流阀（YF08-00-00），系统压力缓慢上升至设定压力（16Mpa）时，压力继电器工作，电机停止，整个系统因蓄能器而处于保压状态。此时截止阀（LF06-01L-00）应处于关闭状态，只有在维修泵站需要释放压力时才能打开此阀。此时，只要接通电磁换向阀就可使油缸工作，从而实现换网操作。This hydraulic station solenoid valve controlling voltage is DC24V. When start up motor,by adjust relief valve (YF08-00-00),system pressure increase to setting pressure （16Mpa）, when pressure relay is working,motor stops, because of the accumulator the whole keeps in the condition of pressure. At this time stop valve （LF06-01L-00） should be in closed condition. Only when the maintence pump station need to release pressure,the stop valve can be opened.

★ 出厂时所有参数均已经调节好，原则上不用调节，如需调节，请在清楚原理的情况下调节！When leave factory, all relative parameter had been adjusted, in principle which is unnecessary to adjust, it there has some needs,please adjust it when all environment are ok!

★ 具体详见液压系统原理图（见下图）All please reference the hydraulic system

shematic diagram.





5）液压系统操作程序 hydraulic system operation program

a). 开机前准备 油箱液位确定：液压油加至液位液温计高度的 80%。Preparation work when start up machine, oil tank liquid level setting. Hydraulic oil heats to the

liquid level 80%.

电机转向确定：电机点动，电机尾罩风叶转向为顺时针或按标贴箭头方向。Setting motor rotation direction:motor moving point, motor tail cap fan blade rotates direction is of clockwise or as the same direction as the label arrows.

严禁无油或反转运行，否则将造成油泵干烧损坏！Strictly prohibited without oil or reverse run, otherwise it will cause damage to oil pump dry!

b)系统参数调节 adjust system parameter

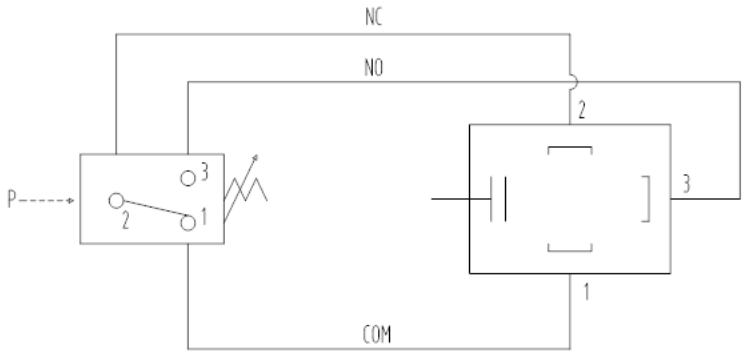
①系统压力调节：调节溢流阀---松开锁紧螺母，用 6mm 内六角扳手调节螺钉，顺时针调节压力升高，逆时针调节压力降低；调节后锁紧螺母。本系统工作压力 16Mpa 。 The system pressure adjusting:adjust relief valve---loosen nut,with 6mm hexagonal wrench to adjust screw, clock wise pressure rise up,anticlockwise pressure lown down; after adjusting work switch off the nut.this system working pressure is 16MPa.

②蓄能器皮囊内氮气压力设定：使用专用充气工具检测皮囊内氮气压力；本系统充气压力为 7~8Mpa。不足时应及时补充氮气。具体祥见后附“蓄能器”章节。Nitrogen pressure setting of the accumulator gasbag:with special tools to test nitrogen pressure in gasbag; this system pressure is 7~8Mpa。It should be gassed on time.

③压力继电器调节：顺时针旋转手柄，压力响应示值升高，反之降低，可大致参考刻度示值。具体响应值的调节方法---确认接好各电器件，启动电机，使系统压力缓慢上升，当电机自动停止时，此时压力表所示压力即为电接点压力表响应值。注意不要让系统压力超过额定工作压力 16Mpa，如系统压力超过额定压力未响应，应逆时针旋转压力继电器手柄，直到电机自动停止为止。如仍未停止应检查压力继电器故障，可用万用表检测触点接通情况；如压力继电器无故障则检查整个线路连接是否正确。Pressure relay adjusting:to turn the handle bar as clockwise way,pressure data increased, or lown down, all can reference the relative data.the detail adjusting way---guarantee each electrical parts, start up motor,help system pressure increase slowly, when motor stops automatical, at this time pressure gauge shows a electrical connection point . Pay attention

the system pressure should not beyond the rated data, if the system pressure beyonds rated pressure,but the all system does not have any reflation, to turn the electrical handle in anticlockwise, till the motor stops automatical. If the fault has not be find out, please use multimeter to test touching point condition; if the pressure relay is ok, then check the whole line cable connection way.

压力与压力开关接点之关系图如下所示 **relationship between pressure and pressure connection point as the following drawing ：**



6)、泵站常见故障排除 pump station common fault removed

故障状态 fault station	现象 phenomenon	原因分析 reason analyse	排除方法 remove way

泵的噪音大 too big noise of the pump	泵中发生气穴 there is air hole in the pump	吸油阻力大 oil sucking resistance is too big 吸油管径小 oil sucking pipe 吸油滤网堵塞 oil sucking mesh is blocked 油温过低、油液粘度高 泵转速过快 oil temperature is too low,viscosity of oil liquid is too high, rotation speed is too high 油液劣化起泡 oil liquid has bad quality and bubbles	减小吸油阻力 to reduce oil sucking resistance 增大吸油管径 enlarge oil sucking diameter 清洗滤网或更换 washing mesh or change it 加热油液 heating oil liquid 降低泵转速 low down pump rotation speed 更换油液 change oil liquid
	油液中混入空气 oil liquid mix in air	吸油口接头漏气 oil sucking mouth connector leakage 液位不够 oil level is not enough 轴封处有空气吸入	拧紧接头、更换密封 screw down connector ,change sealing device 增加液位 add hydraulic level 涂黄油检查、更换 coat butter and change it

	机械振动 machinery shaking	同心度超差 concentricity is so worse 泵、电机连接螺钉松动 pump.motor connected nut is moving 泵本身故障，如轴承、滑履损坏等 fault comes from pump, such as bear	同心度小于 0.1mm concentricity is less than 0.1mm 拧紧松动螺钉 screw down nut 修理或更换新泵 maintence or change a new pump
压力故障 pressure fault	无压力、压力不足 without pressure, pressure is not enough 调压不成线性比例 pressure adjusting can not become linear ration	电机反转 motor anti-rotation 液位不够 hydraulic level is not enough 吸油口漏气、未吸上油 油液中混入空气 oil sucking air leaking , oil liquid mix into air 油液温度过高、粘度低 压力阀故障 oil level temperature is too high,viscosity is too high 泵、元件磨损，泄露大 有其他卸荷通道 pump,component wearing	改变转向 change rotation direction 加足油液 adding enough oil liquid 拧紧接头、更换密封 screw connection, change sealing 放气、不让空气混入 leak air and air can not mix in 降低油温、更换油液 low down oil temperature, change oil liquid 清洗或更换压力阀 washing or change pressure valve 更换或修理 change or repairing 查找排除卸荷通道 search and remove fault
	压力不下来 pressure can not low down	压力阀阀芯卡住 卸荷通道被堵住 pressure valve core is blocked	清洗阀 让卸荷通道通畅 washing valve , keep unloading valve channel freely

流量故障 flow fault	流量不足 速度失控 flow quantity is not enough, speed is hard to control	泵发生气穴 pump with air hole 油液中混入空气 oil liquid mix into air 阀芯被异物卡住 valve core is blocked by foreign body 元件过度磨损、泄露大 component is ware too serious, leakage is too serious	减小吸油阻力 reduce oil sucking resistance 防止油液混入空气 to avoid oil liquid mix into air 清洗阀芯 修理或更换 washing valve core , repairing or changing
换向阀故障 changing valve fault	换向阀无动作 changing valve with action	无控制信号输入 without signal enter into 电磁铁插头接触不良 electromagnet plug does not connect well 电磁线圈烧坏 electromagnet wire is burned 电压不符、欠电压 voltage is not conformity, voltage id defectively 阀芯被异物卡住 valve core is blocked by foreign body 弹簧疲劳或折断 spring fatigue or broken off	输入控制信号 enter into controlling signal 使插头接触良好 make plug keeps well connected 更换电磁线圈 输入正确电压 清洗阀芯 更换弹簧 change the electromagnet wire ring , enter into the right voltage, washing valve core, change spring

7)、液压站的维护保养 hydraulic station maintence

①建立、健全维护保养记录，建立巡检专检规章制度。Creating and perfect maintence record,establish a normal rules and regulations.

②对液压系统的油温、清洁度、噪音及蓄能器进行定期检查 **make a regular test for the hydraulic system oil temperature , cleaning degree, noise and accumulator:**

- 油温过高（超过 80℃），会加速密封件老化及元器件磨损，大大缩短系统的工作寿命。如电机频繁启动，就要注意是否系统的某一部位出现泄漏，应及时处理，一旦油温过高应停机检查。If the oil temperature is too high(beyond 80℃), this will reduce the life span of the whole system. If start up the motor frequently,pay more attention to the phenomenon of leakage, and deal with this all immediately,if the oil temperature is too high, please stop machine and test.
- 液压油污染严重，出现恶臭变质现象，应更换液压油；原则上液压油每一年更换一次。When hydraulic oil is polluted seriously,whit the phenomenon of going bad, change the oil immediately;in principle hydraulic oil can be changed once every year.
- 工作过程中出现异常噪音，应初步判断噪音来源后马上停机检查，以免造成更大损失。In the working process, if there has abnormal noise,in order to avoid the loss, please judge the source of the noise and stop machine to have s test.
- 蓄能器内氮气压力应经常检测，具体祥见后附“蓄能器”节。To check the nitrogen pressure of accumulator frequently.

③ 检查液压站上阀组、堵头及管接头出是否有漏油现象，应及时更换密封件。**Check the valve unit on the hydraulic station, end cap and connector ,whether this all have the phenomenon of leakage, change the sealing component on time.**

④ 电磁换向阀换向动作是否灵活、单向节流阀速度调节是否有效、溢流阀压力调节是否正常，如有异常，应检修或更换元件。**Whether the electromagnet is flexible,whether the single adjusting valve is useful, relief valve adjusting pressure is normal, if it is abnormal ,please repair or change the component.**

⑤ 各种滤油滤芯每半年更换一次。**All kinds filter oil and filter core should be**

changed tew times each year.

吸油滤油器 sucking oil filter：MF-04

⑥ 如有技术问题，可向设备制造厂商咨询。If there has technical problem,please consult from the manufacturer.

8)、蓄能器的使用维护 maintence for accumulator

a) 安装 installation

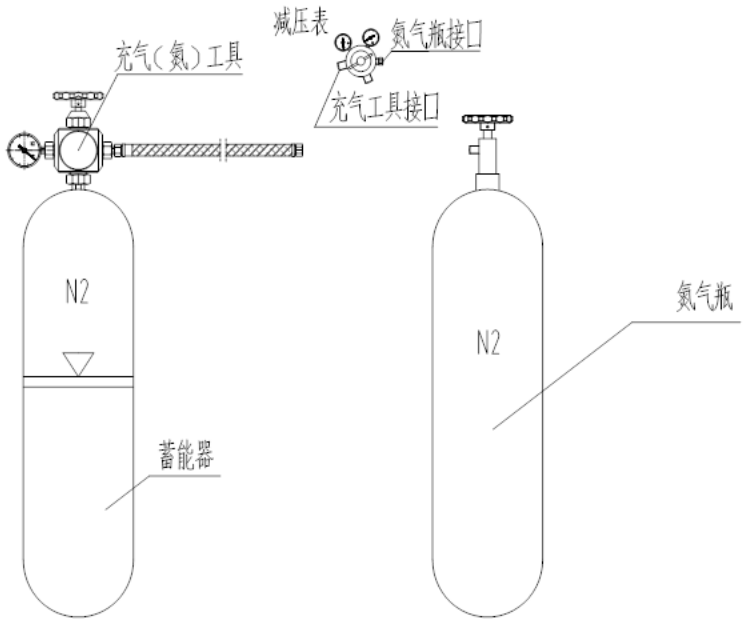
- 蓄能器原则上应该气阀朝上垂直安装，为便于维护和检查，气阀处应留有一定空间。In principle accumulator air valve should install in vertical position,in order to keep it is easy to maintence and check,where should leaves the space.
- 蓄能器的固定：蓄能器必须牢固地安装在托架或壁板上。Accumulator should install on the bracket and wall plate.
- 蓄能器与管路系统之间应设置截止阀或安全球阀，可供充气、调节放油速度或长时间停机时使用。Stop valves and safety ball valve should be installed between accumulator and pipe line system,with the function of inflation, adjusting oil outlet speed or long time stop machine.
- 蓄能器与液压泵之间应装设单向阀，当电机停止工作时防止蓄能器中所储存的压力油倒流。Between accumulator and hydraulic pump should place single valve,when motor stops working , to avoid the pressure in the accumulator backflowwing .
- 不得用焊接方法来固定蓄能器。To fix the accumulator should not use the way of welding.

b) 氮气的充装 nitrogen inflation

- 蓄能器严禁充装氧气、压缩空气或其他可燃性、腐蚀性气体。Oxygen, compressing air or other inflammable gas ,corrosivity air can not be inflated into the accumulator
- 蓄能器在充装氮气前必须对蓄能器进行检查。对未安装铭牌、铭牌上字样脱落得不易识别蓄能器种类、钢印标记不全或不能识别的、壳体上有缺陷不能保证安全使用的，应事先进行妥善处理，停止使用或查明规定使用压力。Before

inflating the nitrogen, check the accumulator is really necessary. If the brand of accumulator can not be guaranteed accurately, or it can not be used in a safe environment, please deal with it in reasonable way, stop using or check the setted pressure.

- 在充装氮气时应缓慢进行，以防充破胶囊。The action of inflation should be slowly.
- 请使用专用的充气（氮）工具（型号 CQJ-25-1500）为蓄能器胶囊充装氮气，本系统充装氮气压力为 5.5~6.0Mpa。具体充装方法见图示 please use the special inflation tools(model:CQJ-25-1500),when inflating ,this nitrogen pressure is 5.5~6.0Mpa,the detail inflation way as following ：



★ 充气（氮）工具用于对蓄能器进行充气、检测充气压力或改变蓄能器里已存在预充压力。The function of inflation tool is to inflating , check the pressure or change the pre-inflation pressure in the accumulator.

★ 如果被充的蓄能器最高压力低于氮气瓶最高压力时，可以通过减压阀向蓄能器进行充气。If the max. Pressure of accumulator is higher than the nitrogen bottle pressure, through reduce pressure valve to inflate

★ 充气完毕后，应关闭氮气瓶和蓄能器的接口，接着打开充气工具中的放气阀，放尽高压胶管中的气体，然后卸下充气工具。After finish inflating, switch off nitrogen bottle and accumulator connector, then switch on inflation tool pouring air valve,pour all air in the tube,and dismount the inflation tool.

注意：以上操作均应在液压系统无压力的情况下进行。Attention :all this above action is processing under the condition of no pressure.

c) 检查和维修 testing and maintence

● 检查漏气：蓄能器设置后，开始每周检查胶囊气压一次；一月后，每月一次；半年后，半年检查一次；一年后，每年检查一次。定期检查可以保持最佳使用条件，并及早发现泄漏及时修复使用。To check the leaking:after set accumulator, check the pressure of capsule each time every one week; one month later, each time for one month; after half a year later,check one time,one year later, check once. Regularly check can make sure machine in a good condition. Check out the fault at the first time!

● 检查方法：在蓄能器的进油口和油箱连接的油路上设置一个截止阀，并在截止阀前装一压力表。本液压站为电接点压力表。然后慢慢打开截止阀，使压力油流回油箱，同时观察压力表变化，压力表指针先是慢慢下降，达到某压力值后急速降到零，指针移动的速度发生变化的数值，就是充气压力。 此外也可以用充气工具直接检查充气压力，但每检查一次都会放掉一些气体。Testing way:to set a stop valve on the input and output oil mouth of accumulator, and install a pressure gauge before the stop valve.this hydraulic station is of connection point gauge. Then turn on the stop valve gradually, let the pressure oil re-flow into the oil box, and observe the pressure gauge,indicator of pressure gauge should decrease gradually, when reach the fixed pressure data low down to 0, the indicator moving speed data is the pressure.also we can use the inflation tool to check the pressure directly, but each time checking should vent air.

● 如蓄能器在液压系统中不起作用，请检查是否由于气阀漏气引起，以便给予补充氮气。若胶囊内没有氮气，气阀处冒油，请拆卸检查胶囊是否破损。若蓄能器向外漏油，请旋紧连接部分。若仍然漏油，请拆卸并更换有关零件。If accumulator has no

function in the hydraulic system, please check whether it leakages,so as to replenish nitrogen. If there without nitrogen in the capsule, the air valve takes air, please check whether the capsule leakages to avoid the damages.if the accumulator is leaking,please screw the connected part.if it still has the leakage phenomenon, dismount and change the relative spare parts.

- 卸下蓄能器前必须卸去压力油，使用充气工具放完胶囊里的氮气，然后才能拆装。Before dismount accumulator please dismount pressure oil,pour out the nitrogen in the capsule when use inflation tools, the the dismount work can be processed.

d) 附则 supplementary article

- 蓄能器严禁充装氧气，以避免引起爆炸。The oxygen should not inflated into the accumulator, in case of exploding
- 系统调试之前，应排尽管道内空气。通过蓄能器下部排气螺堵或截止阀来完成）before debugging the whole system, pour out the all air in the pipe.by accumulator down part or stop valve to finish all works.
- 蓄能器使用前必须检查胶囊内氮气压力是否符合充气压力确定值。To check the nitrogen pressure, whether it is suitable for the fixed pressure data.

3.3、计量单元基本参数及安全操作指导 melting unit basic parameter and safety operation direction

3.3.1 计量泵的基本参数 basic parameter of melting pump

JW150/33 计量泵 JW150/33 melting pump

华西计量泵：250CC

驱动功率 driving power： 18.5kW

变频控制 inverter controlling： Danfoss Danmark

压力传感器 pressure sensor： 美国 Dynisco

3.3.2 计量泵的说明 instruction of melting pump

a)、开车准备 preparation work before start up

A、齿轮泵在安装之前必须清理干净，必须清理至聚合物熔融期间没有金属颗粒脱落出来。Before install gear pump,please clean up it, clean up the polymer.

B、一般情况新泵不能用熔剂或者润滑脂加油剂清洗，因在新泵出厂前泵内已加入干膜润滑剂。As usual the new pump should not use the agent of fusion or

lubricant grease to wash,because it had been lubricant by dry grease.

C、如果泵不是本公司安装好运出，请一定要看以下安装说明书。Before install the pump , please read the instruction book in detail!

D、泵起用之前，必须调节检查、计量、监视和记录单的功能是否完善。Before using the pump, please check all relative parts is available.

b)测量说明 measuring instruction

A、压力测量在泵的输入输出两端，尽可能作记录。Pressure measuring should on the input and output end ,take a note is really necessary.

B、温度说明在泵的输入输出两端，要求作记录。Temperature instruction should be in the output and input end of the pump,take a note.

C、箱体温度的测量在需要的地方设测点。Set the heating point when measure the house temperature.

D、电能消耗必须测量，同样要求连续记录，事故停机也要求不间断记录。Measuring the power consume,also which need to take a note consistently.

c)、安全条例 safety requirement

A、输出端压力=P 最大允许值 Output end pressure=Max. P	光报警、可能的话声音报警 light alarming,if possible voice alarming
B、输出端压力>P 最大允许值 Output end pressure > Max. P	紧急停机 urgency stopping
C、输入端压力=3bar Input end pressure =3bar	光报警、可能的话声音报警 light alarming,if possible voice alarming
D、输入端压力>3bar Input end pressure>3bar	如停产时，约 2 分钟后停泵 if stop working,2 minutes later stop pump
E、输入端压力>100bar(标准型) Input end pressure>100bar(standard) >40bar(特殊型,special)	紧急停机 urgency stopping
F、驱动马达 $I>I_{额定}$	限流开关反应,在 $I=1.2I_{额定}$，时跳掣

Driving motor I>I limit current switch reflection,I=1.2I $_{额定}$

G、$T_{减速箱}<T_{设计值}$ 开机时，泵驱动马达锁紧

When start up machine,lock the driving pump motor

H、$T_{减速箱}<T_{最小值}$ 运行期，如停产时停泵 when operation,as you stop operation,please stop pump.

I、$T_{最小值}≦T_{设计值}$-20℃

3.3.3 计量泵的运行操作 working operation of melting pump

1)、允许操作条件 allowance operation environment（一）

A、新装泵，在加入干膜润滑剂情况下，无负载空行最长时间（最低 10 分钟）new pump,under the condition of add into dry film lubricant, without loading can work the max. Time is 10 minutes

B、已注入熔融聚合物的热状态下的泵（在生产停业后），无负载空行最长时间（最低 10 分钟）the pump under the heating condition of melt polymer (after stop working),without loading which can works the max.time is 10 minutes

C、泵输入端最大操作压力 operation pressure of pump input end：

1、标准型：100bar（开口端驱动轴）

Standard type:100bar(open mouth end driving shaft)

2、特殊型：40bar（封口端驱动轴）

Special type:40bar(closed mouth end driving shaft)

进口端操作压力的选择与挤出机的操作特性有关，也与聚合物的熔特性有关，并且常由用户指定（挤出机反压越高聚合物混炼得越好）the operation pressure of the input end which depends on the performance of extruder,also which has the relation ship with the polymer,and it always depends on the requirement of the customer.

D、最小压力差△P 最小=P 输出- P 输入= P 输出×0.15(bar),但不能小于+5bar。这一技术条件是轴承经允分润滑必须的。因此，P 输出- P 输入必须总是正值。如果没有提供压力差△P 最小自动测定，可用人工目测获得，一般没有什么影响，（在大多数情况△P 最小都没有到达）。The Min. Pressure difference △P=P input -P input=P output×0.15(bar),

but which should beyonds +5bar.this technical condition is a necessary step for bear lubrication.so P input-P output should always be the positive value.if there is provide the Min. Pressure data, to test it manual, as usual there with any effection.

2)、允许操作条件 allowance operation environment（二）

A、本泵提供绝热的先进技术（温度均一分布）。This pump provide a heat insulation condition(temperature distribute balance)

B、泵加热之后，密封装置的六角螺丝应使用规定的力矩重新紧固，因密封装置会收缩。After pump is heated, hexagonal of sealing device should be installed again , because the sealing device will shrink.

C、温度到达要求后，泵必须在此温度下保持 1 小时。When temperature reach the requirement, the pump should keep warm for about 1 hour.

D、再检查计量和记录装置。Then check the measuring and note device.

E、使用人工调节，把给料压力调至所需的最低压力。With manual adjusting, adjust the feeder pressure to the setted lowest pressure.

F、开泵，把输出速率调到约等于挤板机的最小通过速率 start up the pump,adjust the output speed rate to the lowest passing rate of the extrusion sheet machine：

$n_{泵}$=输出速率 output rate $Q_{(升/分)}$ /给定输出 the setting rate $V_{(升/转)}$

G、给料压力调节器指示压力，或产物从模头挤出时，调节泵，以便达到所需的调节压力，如果压力过低，请降低速度；如果压力过高，请提高速度，然后转至自动调节。Feeder pressure regulator indicate pressure,or when the final product extrusion out from the die head, adjust pump, so as to reach the required pressure,if the pressure is too low, low down the speed;if the pressure is too high , increase the speed, then roll to automatic rotation.

H、5-10 分钟后，通过泵速，调节所需的通过速率。After 5 to 10 minutes,to adjust the velocity by pump speed.

3)、生产中断后的开动 after product interrupt start up

A、如果工厂停产，泵必须充分加热，以确保没有不熔融的塑料在内，达到加热温度后，在此温度下保温 1 小时。If the factory stops working, to heat the pump

sufficient ,so as to protect reach the heating temperature and keep warm for 1 hour.

B、挤出线在其他部分也必须确保足够的加热，以防止未熔融的块状塑料在里面脱落。In order to avoid the material dropping, the whole line should be heated sufficiently.

4)、停产或生产中断时的停机 stop producing or when product suspend stopping

A、把泵的速度调低到最小通过速率；adjust the speed of the pump to the lowest velocity;

B、挤出机关机（必要时，首先停止粒料供给，让挤出机空行）；extruder switch off(if necessary,stop supplying the material at first, then keep extruder null string)

C、5-10 秒钟后停泵。After 5-10 minutes,please stop pump.

5)、紧急停机 urgency stop machine

A、计量泵输入压力过高： 停挤出机，几秒钟后停泵

The input pressure of melt pump is too high:stop extruder,after several seconds stop pump

B、计量泵输出压力过高： 停挤出机，并立即停泵

The output pressure of melt pump is too high:stop extruder,after several seconds stop pump immediately

C、泵驱动电机电流过高： 停挤出机，并立即停泵

The driving current of pump is too high:stop extruder,after several seconds stop pump

3.3.4、计量泵的拆卸、安装及维护保养 dismount,installation and maintence of melt pump

1）拆卸 dismount

非压力问题，泵（特别是新泵）不要拆卸，这或多或少会给泵的损坏带来一定的危险性。Non pressure problem,the pump(especially for the new pump)should not be dismounted,this will always has some dangerous.

泵可以轻易的拆卸而不受到损坏，但一定要按下面的拆卸说明进行（安装时也如此，按安装说明进行。） 拆卸带有高聚物残留物的泵，首先必须把泵加热 1 小时，加热温度比高聚物熔点高出 50-100℃。The pump can be dismounted easily,but all thing should do as the dismounting instruction(so does the installation work) when dismounting the pump with the residue, please heat it for about 1 hour,the temperature should beyond 50-100℃.

A、拆下密封板（16），取出内六角螺栓（12），取下压块（18），拆出所有密封装置（11、13、14）；dismount sealing plate(16),get out the hexygeon(12), take down pressing block(18),dismount all sealing device(11,13,14)

B、除（10）之处，松出所有其他壳体螺丝（22）；except (10),loosen all screw

C、把 6 只加热管（13）全部从齿轮泵中取出；bring out all 6 heating tube from the gear pump.

D、松出未松的壳体螺丝（22）；loosen the shell screw (22)

E、用两把螺丝批撬开并拆出壳体（2、10）；with 2 sets screw lever and dismount shell(2,10)

F、用拆卸装置小心把短轴（非传动边）的轴承（3）拆出，不能有倾侧；with dismount tool to take out the short shaft(not the transmission edge),without any gradient

G、用拆卸装置（不带中心片），把主动轴的轴承（6）拆出，不要丢失键销（20）；with the dismount tools(without central sheet),dismount the active shaft(6),not loosing the bolt(20)

H、拉出短轴（4）；pull out the short shaft(4)

I、拉出主动轴（5）；pull out the active shaft(5)

J、用拆卸装置拆出所有轴承、衬垫（19）；with dismount tools dismounting all bears,liner(19)

K、不能用轴去推出另一轴上的轴承，否则轴承密封缘会被损坏；can not ues onr shaft to push other bear on the shaft,or the sealing will be damaged;

L、泵的内部构件决不能使用手锤拆卸。Inner part of the pump can not use the hammer to dismount

2）安装 installation

在安装新泵之前先把轴承和轴放到溶剂中浸泡除油清理干净，在轴的支 承部位和齿轮表面上，以及轴承孔和轴承面上喷上少量合适的润滑剂。Clean up and remove the oil on the bear and shaft before install the new pump,spray lubricant on the supporter part and the surface,and the bear hole and the bear.

A、从非驱动的一边把轴承（3、6）装进泵体，不要忘记装上键销（20）；to install the bear (3,6) to the pump body by the non driving side, do not forget to install the bolt(20)

B、所有 4 只轴承的端面润滑槽均必须朝向输入端；all 4 bear of the lubricant tank should face with the input end.

C、安装壳盖（2）时，应使泄放槽和泵体的泄放孔相重合；after install the shell cover(2),keep the leakage tank and the pump leakage hole meeting for each other;

D、小心地装入短轴（4）和驱动轴（5）；be carefully to install short shaft(4)and driving shaft(5);

E、在驱动一边装上另外两只轴承和键销（20）；install other two bears and bolt of the driving .

F、装上衬垫（19）、壳盖（10）和坚固螺丝（12）；install all liner(19),cover(10)and the hard screw(12);

G、装上所有密封装置（11、13、14、16）及压板（18），观察旋转方向；installing all sealing device(11,13,14,16)and pressing plate(18),inspect the rotation direction;

H、将加热管（13）喷上接触介质，插进泵体，联接起来；add touched medium on the heater tube (13), plug into pump body.

I、主动轴端喷上润滑层；spray lubricant layer on the initiative shaft;

J、装上万向轴法兰和万向节轴。Install cardan axis flange and cardan axis.

3）维护和保养 maintence

a)、轴承和轴 bear and shaft

这些部件被不断替换的原料所润滑，不需要保养。然而，在使用有磨损性原料的情况（包括含有磨损性的成分在内），生产中有滴漏现象的地方，其部件的严重磨

损是可以预想到的，也可能是泵体在齿轮区域有被腐蚀现象，这些部件当然毫无疑问要更换。This part need to be lubricant consistently, which do not need to maintence. Otherwise,when usingthe material with wearing,there is the phenomenon of leakage,the wear can be forecast.ti is also the phenomenon of gear zone corrosion.

b)、万向节轴 cardan axis

润滑点：万向节轴所有的油嘴要加润滑脂直至润滑脂从密封处和排出阀流出。Lubrication point:all oil jet of the cardan axis need to lubricant till the oil pour out from the valve.

c)、泵的清理 treatment of pump cleaning

洗刷弄脏的泵，有可能把污物刷进轴承里，如果泵损脏必须拆开，但是新泵未装之前不能拆开，在泵的安装过程中，必须小心，保持干净。Washing the pump , it maybe make the dirty substance brush into bear, if the pump need to be dismounted,all thing need to be done after install the new pump, in all installation process, keep all thing clean.

4）安全保护 safety protection

计量泵在正常工作时，存在高温和高速转动的危险（其相应位置由相应得警告标志见图）。在接近高温部件作业时，需穿戴防高温服、防高温手套，以及穿防滑靴。电机与减速箱连接部分是高速旋转的联轴器，在联轴器罩不再正常位置或没有牢固地固定在机架上，不启动挤出机。When melt pump in normal operation, there with high temperature and high speed rotation dangerous(the relative position will show on the relative alarming sign). When under high temperature part work, please wear anti-high temperature cloth,and anti-high temperature glove,and anti-slide boot.the connection part of motor and gearbox is of high speed couplet,under the condition of couplet is not in the right position or is not fixed on the frame, please do not start up the extruder.

3.4、分配单元基本参数及安全操作指导 Distributor unit basic parameter and safety operation instruction

3.4.1、分配器的基本参数说明 Data of distributor

本分配器为 A/B 层共挤芯棒复合分配器，分层结构为 A/B，ABA，加热功率 10kW This distributor

for A/B layer co-extrusion mandrel composite dispenser, layered structure for A/B，ABA, heating power 10kW。

3.4.2、分配器的安装示意图 Drawing of distributor (see attached)

详见生产线附带分配器说明书

3.4.3、分配器的结构特点 Distributor structure and characteristics

A、通过调整分流杆的角度来控制各层的比例和均匀程度。如图 2－1－1 所示，选择相应的分流杆看准盖板上的刻度旋转一定的角度就可以控制该层的复合比例。如图 2-1-2 所示调节分流杆时请注意盖板上的刻度 By adjusting the shunt stem from the Angle of control of all layers of proportion and homogeneous degree. As shown in figure 2-1-1 shows, choose corresponding shunt stem certain scale cover plate rotating certain Angle can be used to control the layer of compound proportion. As shown in figure 2-1-2 shown regulation pay attention to shunt stem flats on the scale。

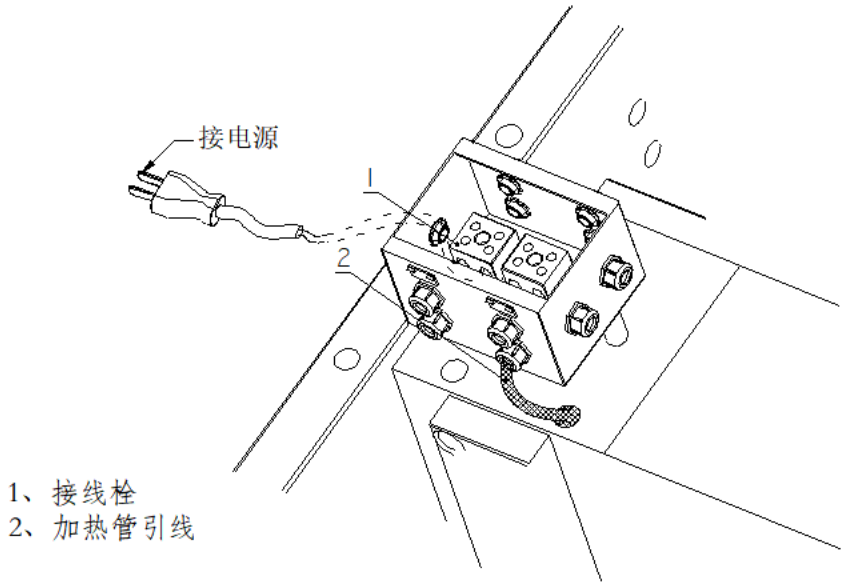
B、生产过程中因特殊原因，必要时可以旋转分流杆使该层单独关闭，但我们不建议采用此方法实现不同层数的产品的更换。如需更换产品请更换相应的分流芯棒来完成。Production process for a specific reason, when necessary, the shunt rod can rotate layer alone, but we don't recommend closed by this method storeys products replacement. As the need to change the product please replace the corresponding shunt mandrel will finish（*具体操作请参见操作说明 Specific operation please see operating instructions*）

C、分流杆是满足用户在使用各种流道性、溶脂性、粘性不同的物料复合时解决各层复合均匀而设计的。它可以根据试车产品实际情况，通过调整分流杆流道的角度以调整进料量的大小达到复合均匀的目的 Shunt pole is to satisfy users in the use of various flow sex, de-fatting sex, viscous different material compound when solving the layer compound evenly and design. It can test the product according to actual situation, by adjusting the shunt flow Angle to adjust lever feed into the size of the composite evenly to purpose。

D、更加安全的接线方式，所有的加热元件的引线都接入一接线盒内，再通过一根电线与外部的电源接通。这样的接线方式减缓了加热元件电线的老化，避免了接头直接暴露在外面，减少漏电的危险 Safer wiring way, all the heating elements leads access a terminal box, again through a wire and outside of the power is connected. So the connection mode of slowed the heating element wire of aging, avoid the joint direct exposure to the outside, reduce the leakage of

danger。

如图 2-2-3 所示，加热元件的电线接入接线盒后，分别接在接线栓上。再由一根总线接入外部电源。As shown in figure 2-2-3 shown, heating element, after the wire access junction box then in a binding posts respectively. Again by a single bus access external power supplies.**注意：更换或者维修加热元件接线过程中，只需将加热元件的两根引线分别接入接线栓的两个插孔即可，但与外部电源连接时就需注意将零线和火线区分开来。否则将造成不可估量的后果。Note: to replace or maintenance heating element wiring process, just put the heating elements respectively two root fuses two taps access binding posts can, but with external power connection should be paid much attention to neutral and firewire to distinguish. Otherwise it will cause immeasurable consequences.**



3.4.4、分配器的操作说明 Distributor of operating instructions

根据实际生产 A、B 两层制品时，需要选择合适的分流芯棒（如图 3－1-1 所示），更换分流芯棒时必须在停机后高温状态下进行 According to the actual production of A and B two layers of products, you need to choose appropriate shunt mandrel (pictured), shown 3-1-1. Replace shunt mandrel must in high temperature condition after stopping：

A、 完全松开分流芯棒上的 8 个 M12 的紧固螺丝并拆卸下 complete loosen shunt mandrel on 8 M12 the screw and remove。

B、 分流芯棒上有两个 M12 的螺丝孔，在这两个孔中拧进螺丝，慢慢顶开芯棒，底下可以用木棒或紫铜棒轻打 diversion mandrel, there were two M12 the bolt hole, in these two hole

twist screws, slowly propped mandrel, underneath can use stick or purple tongbang tap。

C、在分流芯棒的中心螺孔上安装上 M12 的吊环，然后拉出分流芯棒，在分流芯棒上下各有一个紫铜圈，此紫铜圈起密封作用，请清理干净并保存好，切勿丢失或损坏 in the center of shunt mandrel install screw holes on M12's rings, and pulled out shunt mandrel, in shunt mandrel fluctuation each had a copper laps, the copper laps up sealing function, please clean up and keep good, not lost or damaged。

D、用紫铜刮片和紫铜棒小心清理分流芯棒流道中的残余树脂，清理干净后保存好以备下次更换以减少操作时间 use copper air-compressor and purple tongbang careful cleaning the shunt mandrel port residual resin, clean up after to save the stores of times more change to reduce operating time。

E、将另一准备更换的干净的分流芯棒，安装好密封铜片，小心装入模体中。安装分流芯棒时注意安装方向（如图 3-1-2 所示注意安装标识），如果是三层芯棒需考虑制品是复合面层还是复合底层，按实际生产要求安装分流芯棒 put another prepare replacement of clean shunt mandrel, install the good sealing pieces of copper, carefully load die bodies. Install shunt mandrel carefully when installation direction (figure 3-1-2 shown note installation identifiers), if is three mandrel products should be considered to be of a complex surface or composite ground floor, according to actual production asks to install shunt mandrel。

F、安装入分流芯棒后，逐个对角拧紧所有紧固螺丝，加热到正常工艺温度后再次拧紧紧 固螺丝，然后开机调试。根据实际生产的产品质量与理论要求达到的产品质量的差距适当的调整分配器。直至最终得到满意的产品 Install the shunt mandrel region.then diagonal tightened, after all, tighten the screws heated to a normal process temperature again after firmly fixed screw, then twist boot debugging. According to actual production product quality and theory of product quality requirements to adjust the gap dispenser. Until eventually get the satisfactory products。

3.4.5、分配器的维护和保养 Distributor maintenance and maintenance

A、一般清理与维护 General cleaning and maintenance

本手册说明的维护操作仅仅是对那些有资格的技术员或技师而言 this manual is only maintenance operation instructions for those qualified technicians or technician is concerned.。

1、 在更换生产产品时和每次停产检修时对设备的彻底清理是很必要的 in the replacement of a production product and every production maintenance on equipment thoroughly clean is very necessary。

2、 请注意任何的树脂和润滑材料的销毁都必须按照当地的环境保护条例执行 please note any resin and lubricating material destruction of all must, in accordance with the local environmental protection regulations。

3、 在生产过程中对设备的操作及温度高低的循环操作和设备的振动都可能引起某些连接螺丝、接头的松动。为避免损坏这些零部件，每次休息停产时都应由设备保养人员对设备各个连接螺丝和接头进行检查 in the process of production of equipment operation and temperature cycle operation and equipment vibration are likely to cause some connection screws, joint of loose. In order to avoid damage these parts, every time when shut down to rest shall be the responsibility of the equipment maintenance personnel of each connection screws and equipment joint inspection。

关闭机器 STOP THE MACHINE

1、将主控电源开关转至“OFF”位 power switch turn to "OFF" position。（将主电源切断 power off）

2、检查整个电路是否已经断电 Check whether the circuit has been without electricity。

B、拆卸清理 Remove and cleaning

1、拆卸场地和准备工作 Remove sites and the preparation work

分配器的拆卸和清理场所要充分远离“粗件”生产区。工作场地应保持清洁。

工作区内应备有各种工具（螺丝刀、扳手）、软刮片（紫铜、软铝制品）、清理及抛光材料 Distributor removal and clean place should fully away from "rough piece" production. The work site should be kept clean.

Work area should be equipped with various tools (screwdriver, spanner), soft, soft copper air-compressor (stock), cleaning and polishing materials。

2、拆卸清理 Remove cleaning

拆卸清理分配器应在高温状态下进行，停机断电之后，设备仍处于高温状态时，将分配器拆离

生产线，将分流芯棒及各个零部件拆卸出来，并迅速清理各个零部件上的残余树脂。清理时必须使用软刮片或铜刷，可以借助石蜡或者相关溶剂。切勿使用钢铁器具 Remove cleaning distributor shall be in high temperature condition, power outage after device is still in high temperature condition, will allocator to detach from production line, will shunt mandrel and various parts remove out and quickly clean all parts of the residual resin. When clearing must use soft air-compressor or copper brush, can use the paraffin wax or related solvent. Do not use steel utensils。

清理过程中注意察看各个零部件是否有损伤或者损坏，特别是分流芯棒、摆叶片及分流杆等关键件。如果有损伤的请先修复再使用，损坏的请更换备用件 Cleaning process attention see all parts any damage or damage, especially shunt mandrel, arranging the blade and shunt bar etc key-module. If there is damage please first repair damaged used again, please change spare parts。

各个零部件清理干净后，参照结构示意图将其重新安装好。安装时请注意几处安装标识，如分流芯棒、两侧型腔盖板。必须对应安装否则会出现不能使用或不可估量的后果。将所有的紧固螺丝涂上高温润滑脂，并按本说明手册给定的各种螺丝的扭矩将其拧紧。后安装入生产线，将其加温至工艺温度后再次拧紧紧固螺丝 Each parts after cleaning, with reference to structure schematic redirect installed. When installation, please pay attention to several installation logo, such as distributary mandrel, sides cavity cover plate. Must correspond to install can appear otherwise cannot use or immeasurable consequences. All the fastening screw with high-temperature grease, and press this manual given various screw torque its tightened. After installation into production line, its heat to process temperature again after securely tighten the screw。

3、我们建议本设备在使用六个月左右后应完全拆卸、清理，并检查相关设备。对可能出现故障的所有零部件（螺丝、螺栓、加热元件、引线等）应更换。然而具体的维护、维修时间间隔应视所加工的原料及生产周期等相关问题而定 We recommend this equipment in the use of six months or so after should fully disassembled, cleaning, check and relevant equipment. On may malfunction all parts (screws, bolts, heating element, lead, etc.) should be replaced. However, the specific maintenance, repair time interval should inspect working raw material and production cycle and other related problems and decide。

3.4.6、分配器的包装和运输 Distributor of packaging and transportation

本设备在运输前都经过仔细的检查和包装，即便如此，如果运输不当仍有可能损坏某些零件。

收到本产品时应检查实物与发货清单是否一致，包装是否完好 This equipment before shipping are carefully check and packaging, even so, if the transport undeserved remains possible damage certain parts.

Receiving this product should check real and shipping list is consistent, the packing is in good condition。

如果包装受到损坏请按如下做 If the package damaged please click below：

A、检查设备的外观是否受到损坏 Check the equipment of exterior whether damaged

B、拍摄所有损坏、损伤的部位 Filming all damage, the site of injury

假如设备在运输时受到损坏 If the equipment transported damaged：

C、尽快联系营运商 Contact suppliers

D、保存好包装材料（以便营运商将本设备运回本公司接受检查），需运回本公司检修时请尽量使用原始包装件和原始包装材料，如上述的包装件都不可用了，请按如下说明做 Save the packaging materials (so carriers will this equipment shipped back to our company to accept inspections), need to carry the company maintenance, please try to use original package and original packing materials, such as the above all, not with the package, please click below that：

1、使用专业生产包装产品的厂商生产的包装件 Using professional production manufacturer of packaging products package

2、每种分类零件都放置在同一个箱子里，以防遗失 Each classification parts are placed in the same box, in case of loss。

设备不允许露天放置 Equipment does not allow open-air placement

推荐的室内存放环境 The recommended indoor storage environment：

温度 Tem：　　5℃～50℃（40℉～120℉）

湿度 humidity：　　<70%

3.4.7、分配器的危险性 Distributor risk

分配器工作在高温高压环境中，任何违规操作都有可能产生危险。分配器表面工作中处于高温，为了能够操作，分配器未作保护，请不要将分配器上警告标牌、警告标志移位或破坏 Distributor work in high temperature and high pressure environment, any violate compasses operation have would be dangerous. Distributor surface work in high temperature, in order to be able to operate, dispenser not protect, please don't put on warning signs, dispenser warning signs

shift or destroyed。

注意 假如操作者的操作不和本手册说明的一致或者与安全生产过程的规章不一致，不论是机械工还是操作者都将得不到安全的保证 f the operator of the operating instructions of consistent with this manual or and safety production process rules and inconsistencies, whether the mechanic or operators will not safety guarantee。

警告 只有有资格的操作者才能进行对本设备的机械或者电气的维修和维护工作。本设备工作在高温状态下，因此对本设备的操作者操作时应穿好高温防护服，包括手、手臂、脸部、眼睛都应采取相应的防护措施 Only qualified operator can carry this equipment of mechanical or electrical maintenance and maintenance work. This equipment work in high temperature condition, therefore this equipment operators should wear good operating temperature protective clothing, including the hand, arm, face and eyes should be the homologous protective measures。

放置本设备的场所应设适当的通风设施，使得设备所产生的热和废气尽快的散去，保持良好的生产环境 Place the equipment place should establish proper ventilation facilities, making equipment produced by the heat and exhaust the dispersed as soon as possible, maintain good production environment。

3.4、模具单元基本参数及安全操作指导 die unit basic parameter and safety operation direction

3.4.1、模具的基本参数 die basic parameter

模具类型：衣架式流道模具 cloth hanger type.

模具宽度 die width：5300mm

制品宽度 product width：5000mm

中间片材厚度 sheet thickness：δ=0.8-3mm

3.4.2、模具的运输和包装 transportation and package of die

本设备在运输前必须仔细检查和包装，即使如此，如果运输不当仍有可能损坏某些零部件。

收到本产品时应检查实物与发货清单是否一致，包装是否完好。This equipment before shipment must be carefully checked and packaging, even so, if the transport undeserved remains possible damage certain parts.

如果包装受到损坏 If the package were damaged：

· 检查设备的外观是否受到损坏 Check the equipment of exterior whether damaged

· 拍摄所有损坏、损伤的部位 Filming all damage, the site of injury

假如设备在运输时受到损坏 If the equipment transported damaged：

· 尽快联系营运商 Contact suppliers

· 保存好包装材料(以便营运商将本设备运回本公司接受检查)

需运回检修时请尽量使用原始的包装件和原始的包装材料。如果上述的包装件都不可用了，请按如下说明做 Save the packaging materials (so carriers will this equipment shipped back to our company to accept inspections)Need to carry maintenance try to use the original package and the original packaging material. If the above package are not used，Please click below that：

· 使用专业生产包装产品的厂家生产的包装件 Use specializing in the production of packaging products manufacturers package

· 每种分类零件都放置在同一个箱子里，以防遗失。Each classification parts are placed in the same box, in case of loss.

设备不允许露天放置 Equipment does not allow open-air placement.

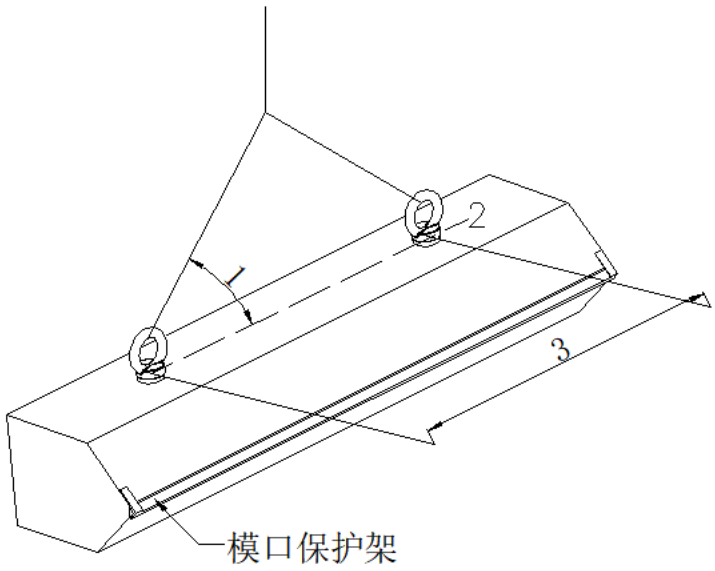
推荐的室内存放环境 The recommended indoor storage environment：

·温度 temperature： 5ºC 至 50ºC(40ºF 至 150ºF)

·湿度 humidity： <70%

3.4.3、模具的吊装 die hoisting

吊装示意简图 See Drawing：



·标号 1 的角度不应小于 60°**Label 1 Angle should be not less than 60**;

·吊装的高度不宜超过标号 2 的中心线的目视水平高度 Hoisting height is unfavorable exceed label the centerline of the visual level 2 height;

·标号 3 所指的两个吊环应大致水平 3 the two rings referred to label should roughly level.

注意 attention:

本公司设计的模具在模具运输过程中装有模唇保护架，请注意拆卸和保存。拆卸过程中不要碰伤模唇，因为模唇在整套设备中属相当重要的部位，模唇中任何细微的损伤都将可能影响产品质量。The company in the mold design of mould in the process of transportation with die lip protection frame, please pay attention to remove and preservation. Remove process don't bruising die lip, because die lip in the whole equipment is quite important place, die lip in any of the subtle damage may affect the quality of products。

3.4.4、模具的操作 Operating of Die

注意所有的安全警告 all of the safety warning should be noticed

·操作者应明确吊装模具用的起吊装置的极限起吊重量。The operator should make clear with the lifting equipments installation mould limit hookon weight。

·操作者应明确设备工作在极高的温度，在手、手臂及脸部穿戴好足够的防护用品。

附页上说明了本副模具的零件说明及数量以便用户参考。(我们建议用户先检查一下备用的零件是否与说明的相符)The operator should determine equipment working in high temperature in the hand, arm and face dressed enough protection articles.

On the attached sheet illustrates this vice mould parts specifications and quantities so that users reference. We recommend that users (check stock of spare parts and explain whether agree)

·本模具在包装时使用了高温润滑剂。在包装箱内有电源导线、吊环以及各种各样的拆装工具。(将以发货清单的方式告诉用户)The mould in packaging used a high-temperature lubricant. The package has power wires, rings and various kinds of disassembly tools. (will with shipping list way tell users)

·使用吊环将模具从包装箱内吊出。并且注意模唇的保护装置。Use rings from the box will die hoisted out. And note the die lip protective device

·将模具放置与模具(支架)小车上，仔细的调整好高度使模具与连接体连接平稳。模具小车的稳固与否直接影响到模具的使用情况。die with mold (stent placement cars, and carefully) adjust height mould and connection implant connecting smoothly. Mould car firm or not directly affects the mold use。

·连接电源线及热电偶并检查各个电源线及热电偶的连接是否正确。Connect the power cord and thermocouple and check each power lines and thermocouple connection is correct。

·检查控制结构是否标准和连接正确并检查其温度设定是否恰当。加热模具和分配器到操作温度。Check control structure whether standards and are connected correctly and check the temperature setting proper. Heating mould and distributors to the operating temperature。

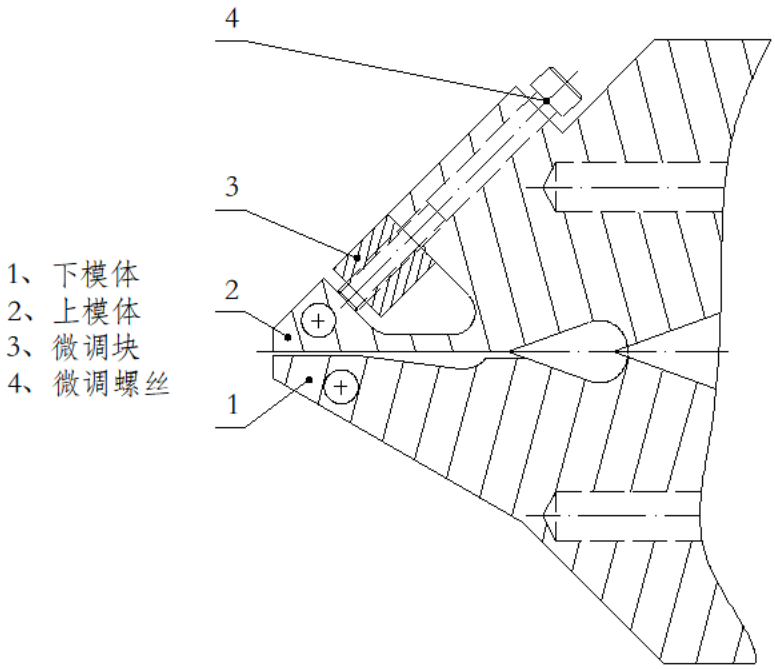
·当模具加热到操作温度时至少保温一小时再进行生产。When the mould heated to the operating temperature at least an hour again insulation production。

·按照给定的各种螺丝的扭矩，对加温后的模具的各部分的螺丝重新拧紧校正。注意：拧紧模具体大螺丝的过程应按如下的顺序，模具中间的螺丝先拧再依次往两端操作，左边和右边要交替进行。起初阶段模唇的微调螺丝应保持接触松弛的状态。According to the given all the screws to warm up the torque, mould parts of the screw to tighten the calibration. Note: tighten the screws process of mould specific big follows the same order should be in the middle of the screw, mould first twist again ordinal to both ends operations, to the left and to the right to review. At first stage die lip of fine adjustment screw should maintain contact with flabby condition。

·本模具设计有弹性模唇及节流棒装置，它们装配时处于最大的开口处，此时可以根据需要，用软隙规(软材料制品包括铝(Al)、黄铜(brass)等)测量并调整它们的开口大小。This mold design elastic modulus lip and restrictor bar device, they are assembled in the biggest opening, right now can according to the needs, with soft gap rules (soft materials products including aluminum (Al), brass (side), etc.), measure and adjust their opening size。

·当完成了上述的准备过程之后，就可以进行生产了。When finished after the preparation process, can undertake production。

3.4.5、推出式模唇调节系统 Launch type die lip adjustment system



·安装 Install

将 M10(M12)微调螺丝装进模具上模的配合孔中，后将螺丝旋进微调块中直到螺丝轻微接触上模体为止。(微调螺丝应保持在松弛状态)M12 M10 (will) fine adjustment screw loaded into the mould mold mating hole, after screw precession fine-tuning block until screw touch on die bodies so far. (fine adjustment screw should be held in flabby condition)

·操作 Operating

用配备的“**T**”形扳手拧调节螺丝，不要用加力杆或大扳手调节模唇调节螺丝。及时更换损坏的调节螺丝和微调螺丝。用“**T**”形扳手调节微调螺丝使得模唇开口间隙达到设计的预设值。初次调节时请使用千分尺测量开口大小，调节微调螺丝直到开口为设计预设值为止。之后调节(右旋)微调螺丝调整整个幅宽的开口大小，使用铜规(设计开口大小)测试。直到整个幅宽的开口大小都均匀一致并达到设计要求时才调节完毕。并且请检查是否每个微调螺丝都和模体接触。Equipped with the "T" spanner twist adjusting screw, do not use strength rod or big wrench adjust die lip adjusting screw. Promptly replace the damaged adjusting screw and fine adjustment screw. With the "T" spanner adjust fine adjustment screw

make die lip openings clearance to design the default values. First please use micrometer adjustment, adjust the size measurement openings until openings for the design of the fine adjustment screw default values so far. After adjustment (dextral) fine adjustment screw adjusting the whole breadth of opening size, use cupreous rules (size) test. Design openings Until the whole breadth of opening size are uniform and meet the design requirements only adjust finished. And please check whether each fine adjustment screw and die bodies contact.

3.4.6、保养和维护 Maintance

1）一般的清理和维护 **General cleaning and maintance**

注意 Note：

本手册说明的维护操作仅仅是对那些有资格的技术员或技师而言。
This manual is only maintenance operation instructions for those qualified technicians or technician is concerned。

·在更换生产产品时和每次停产检修时对模具设备的彻底清理是很必要的

·请注意任何树脂和润滑材料的去除销毁都必须按照当地的环境保护条例执行。In the replacement of a production product and every production in mould maintenance equipment thoroughly clean is very necessaryplease note any resin and lubricating material removal destroyed all must, in accordance with the local environmental protection regulations

·在生产过程中对设备的操作及温度高低的循环操作和设备的振动都可能引起某些连接螺丝、接头的松动。为避免损坏这些零部件，每次休息停产时都应由设备保养人员对设备各个连接螺丝和接头进行检查。In the process of production of equipment operation and temperature cycle operation and equipment vibration are likely to cause some connection screws, joint of loose. In order to avoid damage these parts, every time when shut down to rest shall be the responsibility of the equipment maintenance personnel of each connection screws and equipment joint inspection。

2）关机过程 **Process of stop the machine**

警告 Note：

所有的清理、维护、修理工作都必须在下述的关机过程完成的情况下进行。All the cleaning, maintenance and repair work must be in the following shutdown process is complete

关闭机器 stop machine

·将主控电源开关转至“OFF”位。The power switch turn to "OFF" position。(将主电源切断 cut down main power)
·检查整个电路是否已经断电。Check whether the circuit has been without electricity。

3）拆卸和清理 **Remove And Install**

拆卸场地和准备工作 Remove sites and the preparation work

·挤塑模应在专门的的场所拆卸、清理、检修和维护。此场所要充分远离“粗件”生产区。工作场地应保持清洁，并垫以瓦楞纸板或橡胶板。Extrusion die in special places

shall be removed, cleaning, maintenance and maintenance. The site should be fully away from "rough piece" production. The work site should be kept clean, and pad with corrugated sheet or rubber sheet。

·工作区内应备有各种工具(螺丝刀、扳手)、软刮片(黄铜、软铝制品)、清理及抛光材料，以及尽可能有挤塑模的预热装置。Work area should be equipped with various tools

(screwdriver, spanner), soft air-compressor (brass, soft stock), cleaning and polishing materials, and possible extrusion die of preheater。

·挤塑模应趁热拆卸，必须迅速工作以免过早冷却。当挤塑模还在挤塑机上时，将模头温度加热至比生产时的温度高出 20℃左右，之后停止加热断开所有电源，迅速松开侧板上的螺丝，拆卸下两侧板。在模具仍处于高温状态时，松开上下模体的紧固螺丝，以及和主机的连接螺丝。之后用吊车吊起上模体放在附近的工作区内，并迅速清理上、下模体。清理流道时必须使用软刮片或铜刷，将流道内的任何残余树脂清理干净，可以借助石蜡或相关溶剂清理，切勿使用钢铁制器具。Extrusion mould should strike disassembly, must quickly work early cooling. To avoid When extruded plastic mould in crowded, will die head when heated to a temperature of higher temperature than producing ℃ around 20 after heating power, disconnect all stop quickly loosen lateral plate under the screws, remove both sides sheet. In the mold is still in high temperature condition, loosen the screw upper die bodies, and host the connection screws. After with the crane lift on die bodies in nearby working area, and quickly clean upper and lower die bodies. Cleaning port must be used in soft air-compressor or copper brush, will be in the flow of any residual resin is clean, can use the paraffin wax or related solvent clean, do not use steel making appliances。

·模具冷却后的清理，模具流道以及密封圈应用软刮片、细平磨石和金相砂纸予以清理及抛光，模具其他表面宜用软刮片和 240#以上的细砂纸清理。每个装配接触、非接触面都要将残余树脂清理干净。After cleaning, mold cooling mould flow and seal rings application soft and fine flat blade and metallographic sand stone be cleared up and polishing, mould other surface appropriate USES soft air-compressor and 240 # above of fine sand

paper cleaning. Each assembly contact, the interface to residual resin clean。

·当上述工作都已完成之后，就可以进行再装配。在装配前应检查模具流道的光洁度，必须除去较小的微细划痕，较严重的损伤应送回厂方修理。When the above work has been completed, can undertake again assembly. Before assembly should check mold runner smooth finish and must remove fine scratches, smaller than serious injuries should be sent back to the manufacturer of repair。

·在挤塑模正式装配前，最好将其流道涂以薄层有机硅脂，如钼石或石墨脂，以保证挤塑模在工作过程中以及以后拆卸时均很方便。In extrusion die formal before assembly, best will its port coated with thin layers of organic silicon grease, such as molybdenum stone or graphite fat, in order to ensure that the extrusion mold in work process and later disassembled are very convenient。

·装配时应注意各装配尺寸符合装配要求，定位好后，在模具处于冷却状态时拧紧各连接螺丝，当模具连接与挤塑机后，并加温至操作温度后应再次拧紧各连接螺丝。注意 Assembly should be paid attention to when the assembly size accord with assembly request, after a good location, in the mold in cooling state tightened each connecting screw, when mould connection and crowded, and heating color-printed after to the operating temperature after each connecting screws should be again tightened。:

模具加温前一定要仔细检查各个电源线的连接是否正确。此外，还必须校正热电偶。Mould heating must check carefully before each power wires connected correctly. In addition, still must correction thermocouples

我们建议模具在使用六个月左右后应完全拆卸、清理，并检查相关设备。对可能出故障的所有零部件(螺丝、螺栓、加热棒、引线等)应更换。然而具体的维护、维修时间间隔应视所加工的原料生产周期等相关问题而定。We suggest that the mold in the use of six months or so after should fully disassembled, cleaning, check and relevant equipment. On may malfunction all the parts (screws, bolts, heating pipes, fuses, etc.) should be

replaced. However, the specific maintenance, repair time interval should inspect working raw material production period and so on related problems and decide。

4）调试常见问题及处理和注意事项 **common problems and debugging process and the matters needing attention**

挤塑模在生产过程中最容易出现的问题是挤出不均匀，影响产品质量，甚至调试不出合格的产品。引起挤出不均的原因有多种多样，比如温度的控制，原料配方，挤出机的挤出压力等等，各方面的因素综合影响的结果。Extrusion mold in production process most prone to question is extrusion uneven, affect the quality of products, and even debugging not qualified products. Cause extrusion uneven reason has many and varied, such as the control of the temperature, the formula materials, extruder of extrusion pressure etc, various aspects of factors influence the results。

现在就这几个方面一般性的问题，做几点解释和说明。以方便用户在实际生产调试中参考。Now these a few respects general questions, do some interpretation and explanation. The users in the actual production debugging in reference。

·开机前的加温和保温工作一定要做好，根据您生产的产品的塑料的特性设定合适的加热温度。各区的温度和挤出压力控制均匀与否，对产品挤出的均匀和稳定很有影响。在调节温度的过程中，需要注意的是热电偶反馈的温度和在模具上的玻璃温度计视值不应相差太大，一般在 1-2°C 左右是正常的，超出了这个范围，就很可能热电偶所测的温度不是模具实际的温度，应检查热电偶是否插到位。温度控制均匀稳定后，挤出机的挤出压力控制均匀稳定也很重要。Before starting the heating and insulation work must do well, according to your production product performanceistics of plastics setting proper heating temperature. The temperature and extrusion pressure control of product evenly or not, uniform and stable extruder had an impact. In the process of temperature adjustment, you need to be aware of temperature and in thermocouple feedback mold the glass on the thermometer depending on the values should not are far too big, general in 1-2 ° C or so is normal, exceeds the scope, probable thermocouple measured the temperature is not die actual

temperature, should check whether the thermocouples inserted in position. Temperature control homogeneous steady, extruder of extrusion pressure control uniform stability is very important also。

·一般挤出不均匀时，开始很少调整模具的微调螺栓来调节，等温度和挤出压力都调节均匀稳定后，仍有波动或者挤出不均匀时才考虑调节模具。General extrusion uneven, start rarely adjustment mould fine-tuning bolt to adjust, wait temperature and extrusion pressure regulating uniform stability, still have volatility or extrusion uneven regulation only when considering the mould。

·在调节模具时，应注意各区的调节过渡，防止调节螺栓咬死。In regulating mould, attention shall be paid to the regulating transition, prevent adjusting bolt bite dead。

·模唇的微调，同样得注意调幅的问题，调节的幅度不应过大，阻流棒和模唇的调节幅度我们推荐不应大于 1.00mm。另外，调节时不允许单个螺栓的调节，最少的在波动区域内得调节 3 个以上的微调螺栓。

如果上述调节都调试过后，仍然存在规律性的波动，或者挤出不均匀的话，就很可能是挤出机的波动或分配器的芯棒引起的。If above-mentioned regulation, after all debugging still exists the regularity of fluctuation, or extrusion uneven's words, he is probably extruder fluctuations or distributor of mandrel cause.

·无论是新模具还是老模具，都有可能出现漏料的问题。出现漏料时，最常见的原因是在漏料的部位的紧固螺栓没有拧紧，老模具也有可能是多次的拆卸和清理损伤了密封圈，如果漏料严重需停产检修。Whether new mold or old mold, appear likely leakage material. Appear when leakage material, the most common reason is the leaks material parts of the bolt no tight and old mold may also have been dismantled and cleaning damage the sealing ring, if leakage material production maintenance. If leakage is serious, please stope operate to test.

·另外，模具的放置一定要平稳，并且要固定好，否则生产时产生的震动会影响挤塑机螺杆的使用寿命，也影响产品质量。In addition, mold placed must smoothly, and fixed or

production are produced when the vibrations will affect crowded color-printed screw using life, also affect the quality of products

5）安全警告 **Caution**

在接通电源前，确信地线已接地，否则不允许接通任何电源。安全警告的标识牌必须始终保持在其位置上，当接通电源线后不允许打开任何的电源盖、电线盖、电线导管和插头。In before plug-in power, convinced ground already grounding, otherwise don't allow no connection power supply。Safety warning sign must always keep in its position, when switching power supply cord after not allowed to open any power cover, wire lid, wire catheter and plug。

3.5、三辊压光单元基本参数及安全操作指导 Three roller calendar consist of and technical data

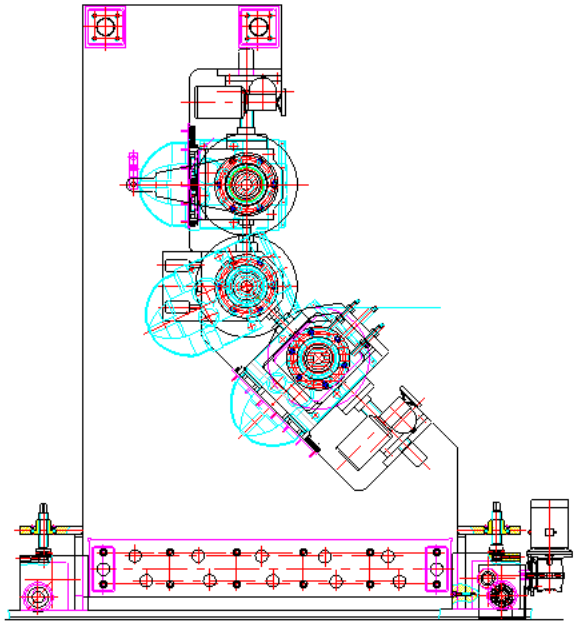
3.5.1、三辊压光机组成基本参数 Basic parameter of three-roller calender

三辊压光机主要由三辊压光机、水辊温控制器、液压站组成。Three roller calendar consist of mirror roller ,water temperature and hydraulic station.

三辊压光机基本参数 basic parameter：

辊筒规格 model of roller：	φ700mmX5300mm
表面粗糙度 surface roughness：	Ra≤0.04m
基本硬度 basic hardness：	≥HRC55
三辊驱动功率 driving motor：	3kW×3
三辊轴承 bear	Japan NSK
三辊形式 type：	L 型 L type
辊筒间隙调整 space adjusting：	涡轮减速机调距 worm and gear mechanism

三辊压光机外形 three-roller calender：



3.5.2、三辊压光单元的吊装和运输 Three roller calander's Lifting and transportation

1、吊装 Lifting

三辊压光机的吊装需用承载 60 吨以上的吊索吊装，在吊装过程中请采取保护措施保护辊筒表面，并在吊带与三辊之间用软质东西隔开，以防止机器表面在吊装过程中划伤。Three roller calander the hoisting smooth machine needs 6 tons of sling hoisting, in hoisting process please taking protective measures to protect the rollers surface, and in condole belt and three roll with a soft things between separated, to prevent the surface in hoisting process scratch.

2、运输 Transportion

运输时，必须将三辊压光机牢靠地固定在包装箱中。同时，对三辊的辊筒包裹保护，防止在运输中损伤。Transportation, must the three roller press machine firmly fixed in light of packing. At the same time, to three rollers rollers package protection, prevent damage in transit。

3.5.3、三辊压光单元的就位 Install

三辊压光机的就位是和整线安装同时进行。根据生产线的布置图，将导轨按地基图布置在地面，然后将三辊压光机就位。Three roller calander machine and the whole line positioning is installed simultaneously. According to production line layout, will guide according to the foundation in the ground, and then figure layout three roller calander machine in place。

3.5.4、三辊压光单元结构特点 Performances

此三辊压光机采用立斜式三辊结构。主要有机架、辊筒、辊筒传动机构、辊距调节机构、三辊移动系统、三辊中心高度调节机构、辊筒温度控制系统等组成。Adopt wallsheet type LiSan roller structure. Basically have frame, rollers, the rollers transmission mechanism, roller from adjusting mechanism, three rollers mobile system, three rollers center height adjustment mechanism, the rollers temperature control system etc。

1)、机架由底座及墙板等组成，底座由型钢焊接而成，墙板为整体。Frame by base and wallsheet etc, base by steel welded, wallsheet for whole。

2)、辊筒采用内部采用介质恒温流通，三组辊中，中间辊的轴承固定，只可转动不可移动，上下辊筒相对中间辊筒通过涡轮蜗杆传动，辊筒间相对行程为 100mm. Inside the roller adopt medium balance flow channel, among three rollers, middle roller bear fixed, which is just turning but not moving, the relative stroke is 100mm.

3)、传动机构 transmission structure

辊筒的旋转靠三台变频电机通过减速器直接驱动，减速机输出轴为空心轴，空心轴直接套装在辊筒轴端上。The rollers rotation by three direct drive motor through reducer, gear reducer output shaft for hollow shaft, hollow shafts rollers axle directly suit in carry on。

4)、辊筒间隙调节机构 **The rollers gap adjusting mechanism**

此机构由蜗轮蜗杆电机驱动上、下辊筒向中间辊筒移动。This structure is moved by worm gear motor driving up and down roller space.

3.5.7、三辊压光单元安全操作

三辊压光机的主要作用是对片材定厚、压光及牵引定型等作用。是影响制品品质的关键部分。三辊压光机的正确操作关系制品质量和人员安全。请按照以下步序操作 Three roller calander's main function is to plank set thickness, pressure light and traction finalizing role. Is the effect of products quality key components. Three roller light machine correct operation of the product quality and the personnel security relations. Please follow these steps sequence operation：

1）开机前，请先清洁三辊压光机辊面。Before starting the first, please clean the surface of the three roller calender machine 。

2）初次开车请先检查三辊的旋向，弄清楚生产线采用的是上进下出的走片方式还是下进上出。在电气系统检修后，也应按照此步序。First drive please check three rollers swing, this production line adopts is top in bottom out of the way. Walk slice In electrical system after repair, also should follow the steps sequence

3）检查水辊温控制系统的管路连接及进出水情况，保证本系统要求的水压。初次开车请检查水泵电机旋向是否合水泵标示旋向一致。Check the water roller temperature control system of the pipeline connection and inlet and outlet water circumstance, make sure the system to the pressure. First drive please check the pump motor spin to whether suits to spin pump labeled consistent。

4）初次使用三辊液压站时，请先检查电机旋向。检查水路的安全情况，保证水路中水管和泵阀完好性。检查丝杆升降机动作的正确无误。First use three roll hydraulic station, please check the motor direction. Check the safety condition, ensure the oil-way tubing and

proper valve in oil. Check hydraulic cylinder action is correct。

5）启动三辊，让辊筒低速旋转后，开启水辊温控制系统。将辊筒温度调节至生产工艺温度。tart three rollers, let the rollers low-speed after turn, open water roller temperature control system. Will the rollers temperature adjustment to the production process temperature。

6）三辊穿片时请使用点动开关，手动启动三辊。

7）发生片材绕辊时，请立即拉动急停开关停止三辊，三根压光辊会自行分开，以保护辊面。Occur around the roller, sheet please stop three rollers, three poles press polishing roll themselves separate, to protect the roller surface。

3.5.8、三辊压光单元维护和保养 maintenance for three roller calender

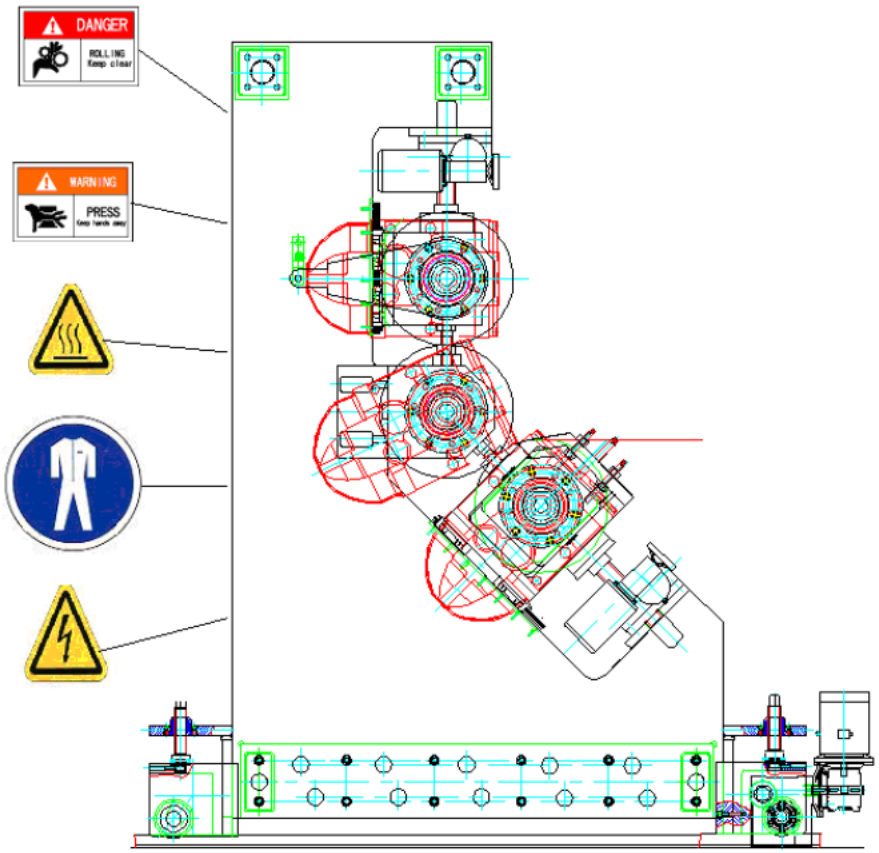
1)、减速机在初次使用 300-600 小时后，应换油一次。以后每 3000 小时换油一次。更换应在减速器停车，润滑油尚未冷却时排放。使用润滑油为 N220。Reducer, on the first used 300-600 hours, should replace the oil again. After every 3000 hour change oil again. Replacement should be in reducer, lubricating oil is cooled yet parking emissions. Use lubricant for N220。

2)、三辊压光机上轴承座，每隔半年需从油嘴加入润滑脂，直至润滑脂从密封处和排出阀流出，并清除轴承座上多余的油脂。Three roller bearing light on every six months, from nozzle to join the thickener.they until grease from seal and the discharge valve outflow, and remove the redundant grease on the bearing。

3)、三辊压光机暂时不使用时，必须对辊筒包裹保护。Three roller light machine temporarily when not in use, must on the rollers package protection。

4)、机器在运转时应随时检查电机工作情况。machines in operation should always check motor work situation。

5)、定期对旋转接头、辊温管路进行检查，清除结垢，防止水汽化发生故障。Regularly for rotating joint, roller temperature pipeline inspection, remove scaling, prevent water vaporizing failure。

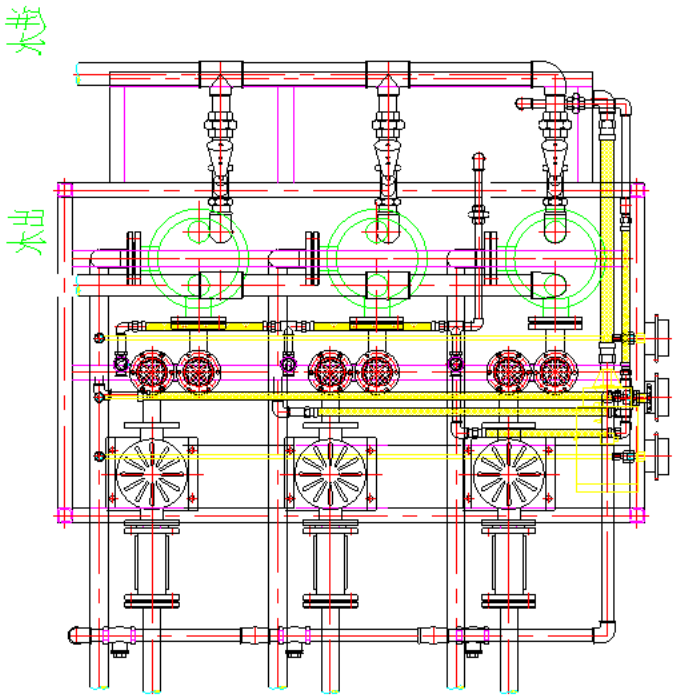


三辊安全标志贴放处

3.6、辊温控制系统 **Roller temperature control system**

此系统由管道系统、加热冷却装置及外部水冷系统组成。This part consist of pipe syetem,heating and cooling units

3.6.1 水辊温外形



3.6.2 水辊温控制器基本参数 water roller temperature controlling basic parameter

水泵功率 water pump power： 5.5kW×3

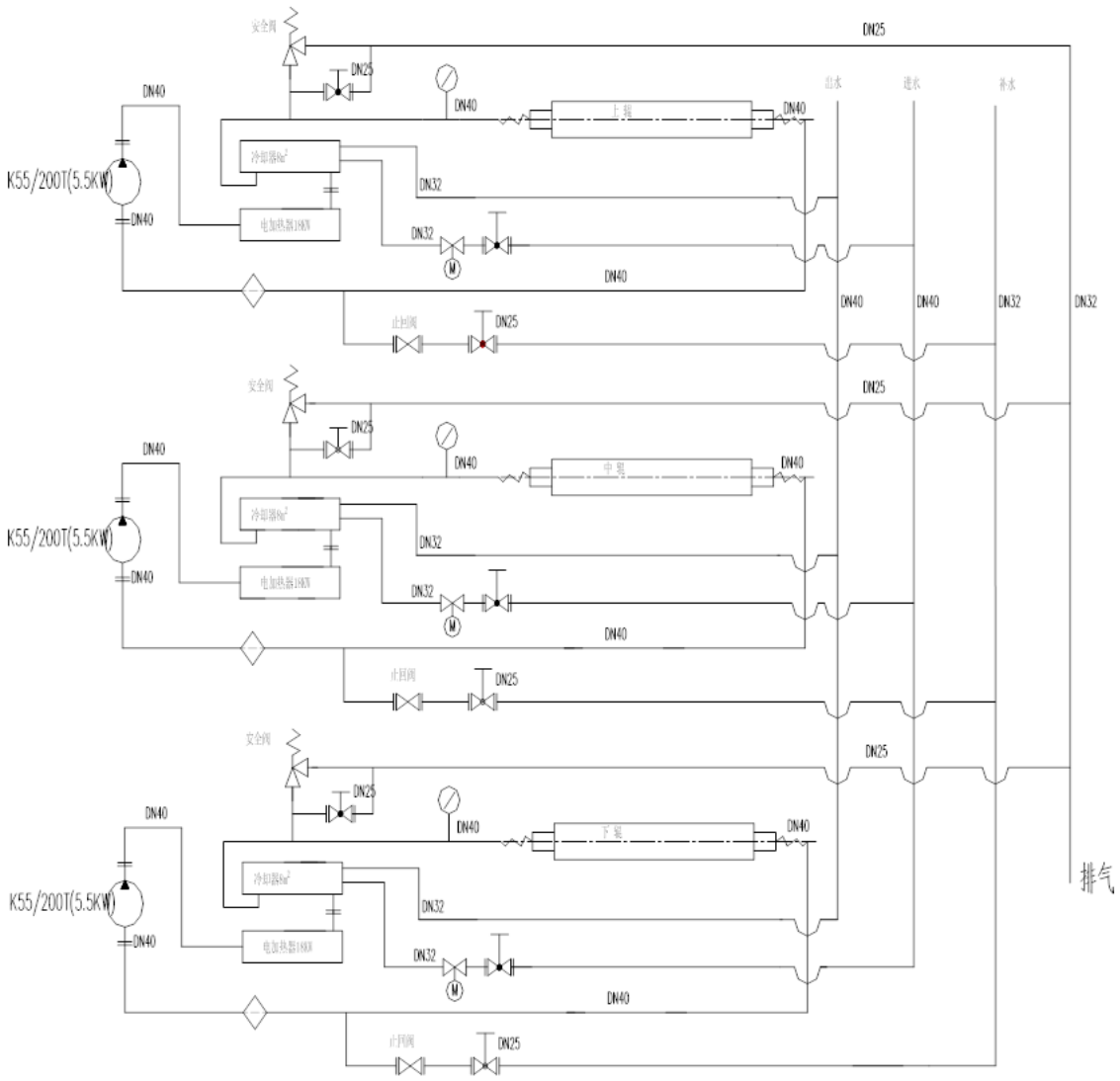
加热功率 heating power： 24kw×3

冷却介质 Cooling medium 水 water

加热水循环系统的压力表为电接点压力表，它控制着启动加热时的压力，使水循环系统具有一定的压力后才能启动加热，以便保护加热器。通常，要求在 1Kg/cm^2 以上压力时启动加热，否则，就要以系统排气或间隔启动水泵来进行调整，待系统压力升高后才能正常运行。水泵不能长时间运行在 3Kg/cm^2 以下系统压力下，热水站与外部有三套管路连通，补水管、冷却水管、回水管，补水压力要求在 3Kg/cm^2 以上，用水使用软化或蒸馏水。冷却水为常温循环水，用水流量约 1.5m^3/h，水压在 3Kg/cm^2 以上。回水管要求无压力。This system consists of pipeline system, heating, cooling device and external water-cooling system composition. Heating water cycle system gauges for contact monometers, it controls startup when heated to the pressure, make water cycle system has certain pressure to activate heating in order to protect the heater. Usually, 1Kg/cm2 above requirements in start-up pressure when heated, otherwise, it

must take the system exhaust or undertake adjustment interval start pump, let the system pressure increases the ability after normal operation. Pump can no longer 3Kg/cm2 running in the following system under pressure and hot water standing with external three casing road connectivity, filling water pipe, cooling water pipe and pipe, filling water pressure requirements back in 3Kg/cm2 above, water use soften or distilled water. Cooling water circulating water, water flow for normal temperature of 15,000 m3 / h, hydraulic 3Kg/cm2 above in. Back without pressure pipe requirements。

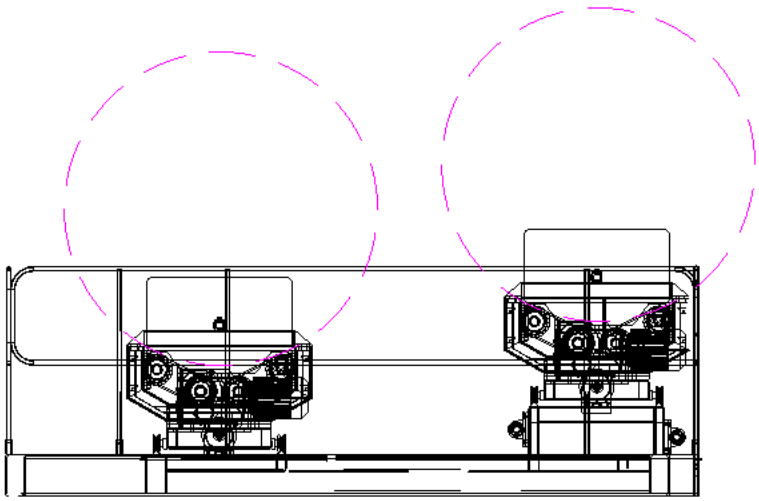
3.6.3 辊温控制系统原理图 roller temperature controlling system schematic diagram：



3.7、上下无纺布放卷装置 up and down non woven unwinding device

PE 板材生产线，其制品结构上下覆无纺布，中间为塑料层，上覆无纺布装置在三辊顶部，下覆无纺布位于三辊压光机后面。PE sheet production line, both of the product two side coated with non-woven ,the middle layer is of plastic,on the top of the three roller calender and behind the three roller calender coat non woven.

3.7.1 外形尺寸如下 outside dimension as following:



3.7.2 基本参数 basic parameter

形式 type:	双工位结构 two work position structure
最大放卷直径 Max. Winding diameter	1500m
电机功率 motor power:	1.5kw

3.9、冷却输送单元基本参数及安全操作指导 basic parameter and safety operation direction of cooling conveyor system

冷却装置主要用途是将压光后的片材冷却定型、引取。The function is to cool down the final sheet.

3.9.1、冷却输送基本结构参数 basic structure parameter of cooling conveyor

冷却架长度 length of cooling bracket：8m

托辊材料：铝辊、表面氧化处理。Carrier roller material:aluminum roller, oxidation treatment the surface

规格 model：Φ70mmX5300mm

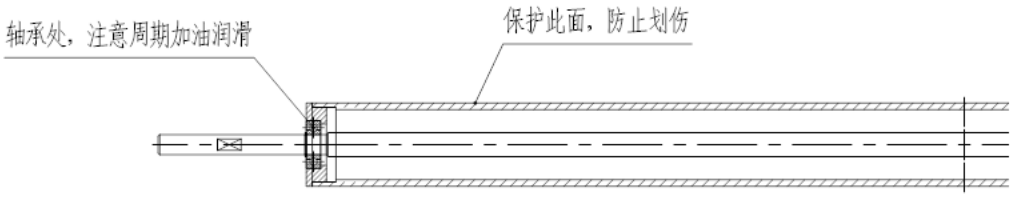
切边 trimming ：滚刀 blade（二把 2 sets,中间可调 the middle one can be adjusted）

3.9.2、冷却辊架维护和保养 maintence of cooling bracket

·辊筒未使用前应涂防锈油，用棉布包裹等措施保护。The end of roller should coated

with anti-corrosion oil,package with cotton .

·使用时应经常检查辊筒表面有无腐蚀及划伤，以免损伤片材表面。当辊筒表面有微小腐蚀及划伤时，可用金相砂皮打磨光滑。必要时更换辊筒。The check the surface of roller frequently,to avoid damaging the sheet surface.if necessary ,please change the roller.



3.10、切边定宽单元基本参数及安全操作指导 trimming unit basic parameter and safety operation guide

切边定宽单元固定在冷却架上，主要用途是将冷却架上片材进行切边，以及定宽分片。Trimming unit is fixed on the cooling bracket,the mainly function is cutting the sheet on the cooling bracket,and fixed width.

3.10.1、切边定宽单元基本参数 trimming and fixed width basic parameter

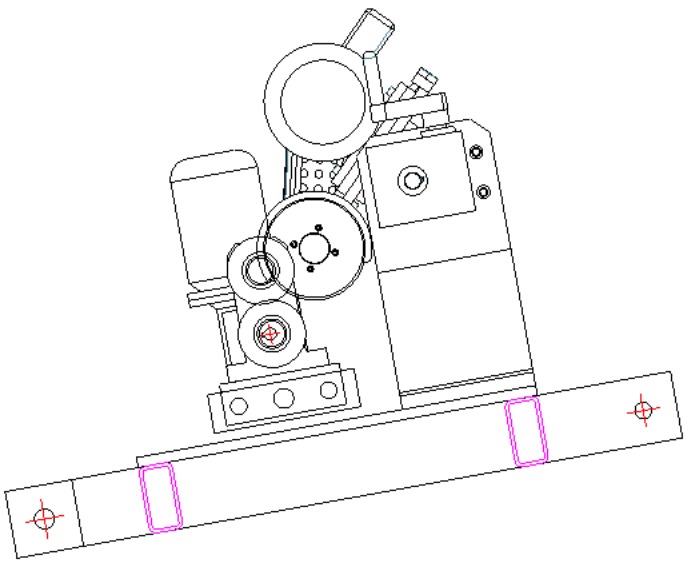
滚刀数量 blade nos：3 把/sets

电机功率 motor power：2x0.18kw

滚刀横向行程 blade crossing stroke：160mm

3.10.2、切边定宽结构外形 trimming and fixed width structure outside structure

滚刀切边外形图（覆布后用） blade trimming outside drawing(after coated woven)：



滚刀横向移动也是通过丝杆带动，滚刀的切割通过电机传动下滚刀，用齿轮啮合传动上滚刀，这样实现了上下滚刀同速和异向转动。Hob moving crossing by lead screw, hob cutting transmit by motor, with gear engagement to transmit hob, this will realize the up and down hod moving with the same speed but different direction.

3.10.3、切边、定宽操作 trimming ,fixed width operation

·定宽 fixed width

片材定宽分切时，通过调节丝杆调节滚刀的位置来控制片材的宽幅。When fixed the width of sheet,by adjusting lead screw blade to control width of sheet.

·切边 trimming

电机传动下滚刀，通过齿轮啮合传动上滚刀，上下滚刀实现同速异向，实现板材的分割。The blade under the transmission motor unit, by gear engagement to transmit blade, up and down blade realize the same speed but the different direction, to realize the separate cutting of sheet.

3.10.4、切边的安全防护 trimming safety protection

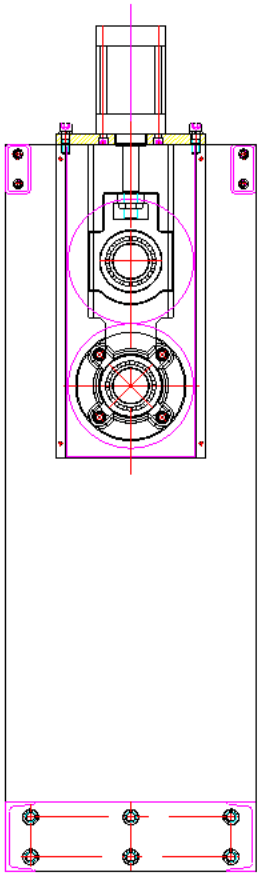
由于切边的滚刀非常的锋利，严禁手指等部位接触刀滚刀以及周围运行的片材！在不使用时请用棉布或其他东西包装好滚刀，涂上防锈油，并放在安全不易伤到人的地方。Due to the sharp knives cutting-type very fingers, forbidden areas such as contact razor blade and blade around running sheet! When not in use

please use cotton cloth or other things packaged blade, besmear oily-type, and not easily hurt people in a safe place.

在拆装过程中，请注意刀片，先拆下滚刀并放在安全不易伤到人的地方。

以免划伤手指，严禁用坚硬物体敲打丝杆及其他零件。定期检查固定螺钉，防止由于螺钉的松动而产生的事故。In the disassembly process, please note blade, first dismantling the blade and not easily hurt people in a safe place, lest scratch fingers, forbidden to use hard objects.it knapped screw and other parts. Regular inspection screw, prevent the bolt looseness arising from the accident.

3.11、牵引单元基本参数及安全操作指导 haul-off unit basic parameter and safety operation indication



牵引机外形 **outside of haul-off unit**

3.11.1、牵引单元基本参数 haul-off unit basic parameter

牵引功率 haul-off unit motor： 4kW

牵引辊规格 roller specification： φ350mmx5300mm

胶辊材质 runner roller material：丁腈橡胶

3.11.2、牵引机的吊装和运输 haul-off unit hoisting and transportation

1、吊装 hoisting

牵引机的吊装需用承载 2 吨以上的吊索，按照吊装图吊装。减速机的吊装详见减速箱使用说明书。This action need sling with the ability of supporting 4t substance,do all thing as the relative drawing.hoisting of gearbox should reference gear box instruction manual.

2、运输 transportation

牵引机在运输过程中，将牵引机固定在包装箱中。为防止运输过程中牵引辊辊表面损伤，必须对辊筒进行包裹保护。In the process of haul-off transportation,haul-off need to be fixed on the packing case.in case of unhappened thing,to package the roller is necessary.

3.11.3、牵引的安全操作 safety operation of haul-off unit

1、牵引开机前准备 preparation work for starting

开机前先打开气源，检查气源压力。开启手动单向阀，分别升起牵引压辊，到顶后手动阀换向，分别压下两辊筒。反复几次，检查牵引压辊左右气缸是否同步。（左右气缸在工作中压力不等，片材会跑偏，影响片材手卷的平整。）根据实际情况调节气缸节流阀，使左右气缸同步。First,turn on the air source and check pressure of air source.turn on manual single direction valve,and rise up haul-off roller one by one, to change direction when on the top and press down the two roller.repeatedly several times,and check cylinder of haul-off roller two side to make sure it is synchronous.(if left and right cylinder in different working pressure,sheet will in the wrong position)

2、牵引开机中的安全操作 safety operation of haul-off unit

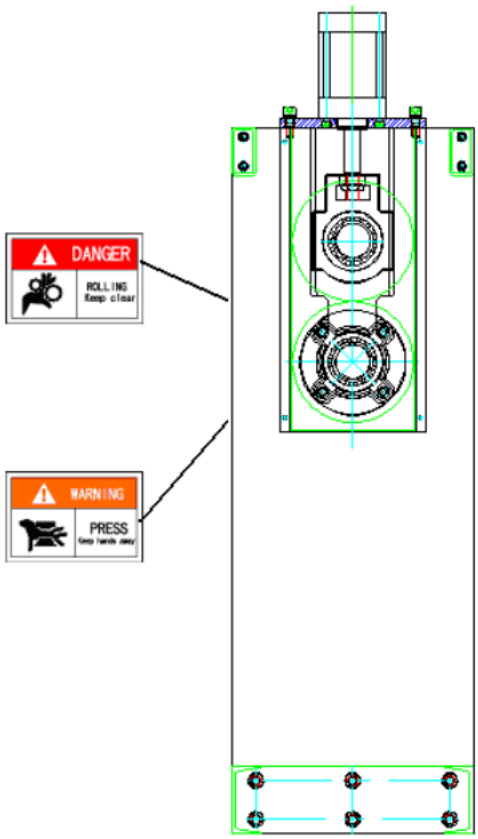
开机时，先升起牵引压辊。将冷却架上的片材穿过牵引机，拉紧片材，启动牵引电机。然后压下牵引压辊。When start up,to rise up haul-off roller initial. Make sure sheet on the cooling bracket traverses haul-off unit, pull strength sheet,start up haul-off motor.then press down haul-off roller.

3.11.4、牵引安全防护 safety protection

由于牵引辊处于运动之中，所以操作人员要小心注意！身体部位不得伸入辊筒之间！操作人员在穿片时一定要停止牵引机，穿片完成后，压紧牵引辊，才能启动牵引电机。两组辊筒之间，同步带轮，滑动轴承座处均存在挤伤，压伤等潜在危险，因此设置了安全防护罩，并且在防护罩上贴了警示标识！在正常工作时，如没有特殊必要，不得靠近这些潜

在危险点！除维修外,操作人员不得私自拆下防护罩。Because haul-off roller is in operation,the operator should keep a way for safety!

Keep away from the roller body!When the necessary work should be done, please stop operating.the two units roller ,synchronous belts,sliding bear seat are all in danger, so the safety cover is necessary and also attaches warning sign on it! Keep away from the dangerous point is really necessary.no one can dismount safety cover except operator.



3.11.5、牵引保养和维护 haul-off unit maintence

牵引机在正常的使用过程中，必须定期保养和维护。维护保养方法 when haul-off unit is operating ,it need to be maintence frequently. The maintence way：

1、减速机在初次使用 300-600 小时后，应换油一次。以后每 3000 小时换油一次。更换应

在减速器停车，润滑油尚未冷却时排放。使用润滑油为 N220。First time When gear box works 300-600 hours,change oil once time. Later to change the oil each3000 hours once time. When lubricant oil is not cool, this is the best time to change oil.the lubricant oil is N220.

2、牵引装置上使用的轴承座，每隔半年需从油嘴加入润滑脂，直至润滑脂从密封处和排出阀流出，并清除轴承座上多余的油脂。Bear seat of haul-off device should be lubricated twice each year,when lubricant grease flow out from sealing part and pouring out valve,and remove the spare oil grease.

3、牵引辊压紧辊表面材料为橡胶，长时间使用会令橡胶辊表面结垢，应定期使用非油性洗剂对辊筒清洁。短期停车后，需对胶辊进行包裹保护。长时间停机会令橡胶表面老化，需作好相应保护措施。如过渡老化，必须修复。Surface of haul-off roller is rubber,if long time use the roller which will cause dirty on the surface,so clean the roller regularly which is really necessary.after short time stopping machine,please package the roller.the protection work is really necessary.

3.12 横切机 crossing cutter

该牵引横切装置实现自动计长切割，使整个生产过程更加方便操作，并且保证切割长度，减少不必要的浪费。牵引组件中电机为力矩电机，长度信号采集与第一组牵引机，当到达设定长度时，计米器将信号传递给牵引横切装置，辅助牵引停止，滚刀 压紧杆压下，滚刀开始切割，此时前面的设备处于运转状态，将片材储备在牵引机与辅助牵引之间，当横切切割完成后，压杆抬起，辅助牵引机加速，将片材拉紧，继续新的一卷的收取。The traction crosscutting device to realize automatic measuring, cutting, make the whole production process more convenient operation, and ensure the cutting length, reduce unnecessary waste. Traction components of motor torque motor, the length of the signal acquisition and the first set of tractors, when reach the set length, the meter device to pull the signals to the crosscutting device, auxiliary traction stop, hob presser bar under pressure, hob start cutting, at this time in front of the equipment in the running state, the sheet reserves between tractor and auxiliary

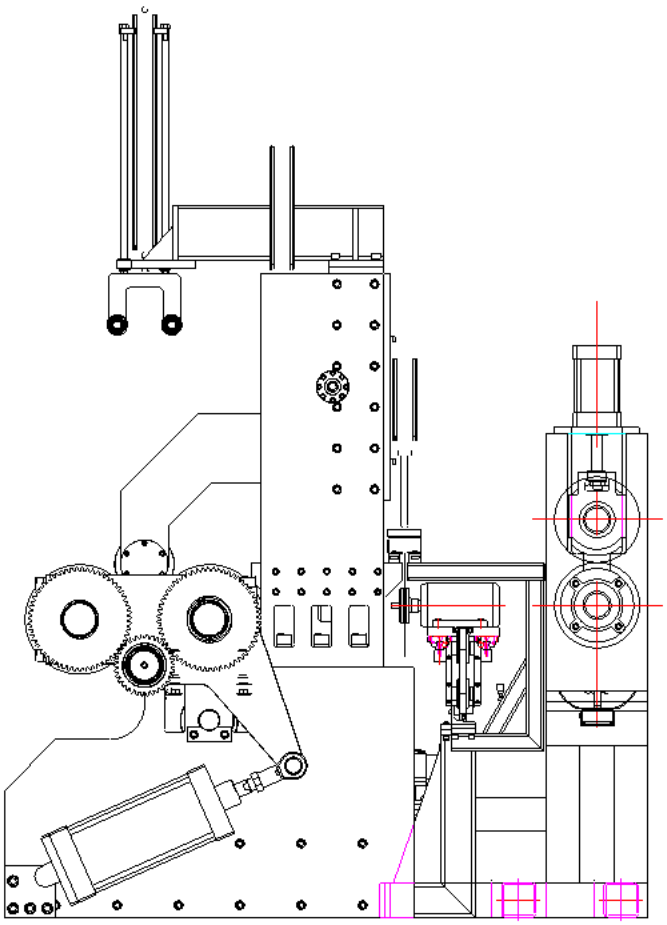
traction, when after the completion of the transverse cutting, compressive bar is raised, auxiliary tractor speed, the sheet taut, continue to charge of a new volume.

组成部分：牵引组件、滚刀切割组件组成。滚刀电机底座通过链条传动实现滚刀的横向移动，滚刀的切割是通过电机直连式的传动。Components: traction components, hob cutting components. Hob motor base by chain transmission to realize the lateral movement of the gear hob, hob cutting is directly connected by motor drive.

and down controlling

3.12 单工位摩擦收卷机 Single station friction winder

3.12.1 单工位摩擦收卷机外形 Shape



3.12.2 单工位摩擦收卷机用途 Performance

单工位摩擦收卷机属于终端设备，它将生产出来的成品片材卷成料卷，便于堆放、运输、出售，双工位收卷机可以连续不停机操作。It is used to wind the finished product into roll for easy stack, transportation and sles. Non-stop

operation is workable.

3.12.3 结构及特点 structure and features

此收卷机采用单工位收卷机，包括机架、电机、辊筒装置等。机架由型钢焊接而成，强度可靠。卷取装置由电机通过链条驱动，其它由两边轴承座、辊筒等组成。当收卷完成时，气缸推动，两摩擦辊倾斜角度，收卷制品顺势滚下来，为下一轮收卷做好准备。The winding machine using simplex winding machine, including frame, motor, roller device, etc. Frame composed of steel welding, strength and reliable. Take-up device driven by motor through the chain, other side bearing, roller, etc. When winding completed, cylinder, two Angle, friction roller rolling down winding products conveniently, prepare for the next round of winding.

3.15 上料干燥系统 feeder dryer system

500kg 立式搅拌机 vertical mixer 2 台 2 pcs

1.5 吨干燥机 2 台 1.5T dryer 2 pcs

1000kg/h 真空上料机 2 台 vacuum loader 2 pcs

在日常的应用过程中，要注意以上设备的安全维护和保养，对转动部件处的轴承隔时进行润滑，对加热元件等要在额定功率和标示的使用条件下使用。When in normal using process,pay more attention to all machine maintence,to lubricant the bear in the rotation part regularly,use the heating component under the condition rated power and indicator.

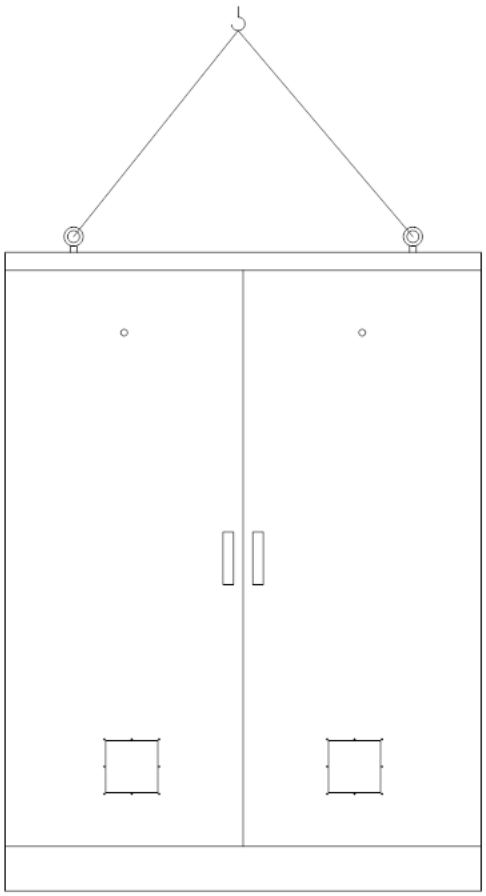
四、电器控制系统 electrical controlling system

4.1、电器控制系统组成 electrical controlling system unit

主机调速器 main speed adjuster：	ABB
继电器 relay：	日本和泉 IDEC
接触器 contactor：	西门子 SIEMENS
低压断路器 low voltage breaker：	施耐德 SCHNEID
空气开关 air switch：	正泰 CHINT
PLC：	西门子 SIEMENS

4.2、电柜的吊装与运输hoisting and transportation of electrical cabinet

4.2.1、吊装（如图所示）hoisting (reference the following drawing)



其它小电控箱的吊装用叉车等机械搬运。Other smaller electrical cabinet hoist by forklift.

4.2.2、运输transportation

电柜必须包裹一层PS发泡片，然后用木箱装运，电柜牢固地固定在包装箱中；electrical cabinet should be coated by a layer of PS foam sheet,then packaging by wooden case,electrical cabinet should fixed in the wooden case.

4.2.3、电柜的安全操作规程safety operation of electrical cabinet

1)、电气柜按照《PE生产线的布局图》摆放；to place electrical cabinet as production line;

2)、电气柜与设备的连接线必须按照《电气原理图》连接;connection of electrical cabinet and equipment should reference electrical diagram;

4.2.4、设备的废弃处理 equipment treatment

当设备的使用期达到它的使用寿命时，机器再不能继续使用或维修时，用户不得随意将其丢弃，应从保护环境和节约能源的角度考虑，交付给有关环境管理部门或者按照当地环保法规进行妥善处理。When it is closed to life span,machine can operate or repair normally, user should not throw it ,but make consideration from environment protection,as for the handling problem,which should carry out by relative official department.

同时，在使用和维修的过程中，要考虑到保护环境的重要性，对从机器上拆换下来的废件，替换的废油等要进行妥善的处理，以免造成环境污染。

还有，在生产过程中，要从节约能源和材料的角度考虑，尽量减少废料的产生。Meaning while,pay more attention to the around environment,when operating and servicing, for all waste part dismount from machine which should deal with properly .in the process of product,attention to avoid unnecessary waste.

五、开关机说明 instruction for starting and switching off

（PE板材挤出线各部位设备名称与功率大小详见线图,请结合<<电气原理图>>仔细阅读以下操作说明.）each part of PE aluminum and plastic composite panel extrusion line reference the detail drawing,please read the detail instruction book carefully.

5.1开车前的准备preparation work before starting up:

- 加热圈及接线盒端子是否松动。

Whether terminal of heater ring and wiring case is strength

- 热电偶的位置及插入状况。

Position of thermal couple should be right.

- 管道接头部位是否松动，有无泄漏。

Adapter connector of pipe line keeps tightly

- 水夹套的冷却水接通，先开出水阀，再开进水阀。

Switch on water jacket ,first to switch on water valve, then switch on input water valve.

- 挤出机驱动马达的转速限度：≤1500rpm。

Extruder driving motor rotation speed limitation

- 减速机油冷却部件油压计（警报）：1～1.5Kg/cm^2。

Gearbox oil cooling part oil pressure gauge(alarming system)

- 电机旋转是否与挤出机螺杆要求的转向相同，是否予以改正。

Rotation direction of motor is the same as extruder screw .this will be ok!

5.2、开机步骤 start up steps：

步骤1：检查水，电，气源是否充足，检查物料是否合格，干燥料斗，上料系统工作是否正常，辅机水加热系统是否正常，收卷机工作是否正常； step 1:to check water ,electricity,pneumatic , material,dryer hopper and feeding system;whether this all are working normally, whether support equipment heating system is normally, whether winder system works normally.

步骤2：挤出机料斗内加满物料,插上插板； step 2:hopper fill with material,and plugging spile ;

步骤3：接通料斗座下面的冷却水，按照工艺温度设定机筒和模具各区的温度后开始加热。当加热温度达到设定值时，挤出机即进入自动保温状态，当工作环境低于12℃时，挤出机需要至少持续保温2小时，当工作环境高于16℃时，挤出机只要保温1.5小时即可。如果生产车间温度过低，可以用石棉布对机筒进行保温，在整个过程中，料斗座下的冷却水不得中断。打开压光机水加热器开关，并启动三辊，并给定较低的速度转动，加热至正常工艺温度后,并保温1-2小时，首次测温需要用玻璃温度计校准温度；getting through cooling water under hopper seat,according to technology temperature set barrel and model temperature,then heating work can be started.when heating temperature reach setting data,extruder is in thermal insulation condition,when working temperature lower than 12℃,thermal insulation work should lasts less than 2 hours,when working temperature higher than 16℃, thermal insulation work should only lasts 1.5 hours.if work shop temperature is a little low,adopt asbestos cloth to keep warm, in the whole process,cooling water under hopper seat should be continually. Switch on calender and start up three-roller calender,provide a low speed to rotate,heating to technology temperature, keeping warm for 1 or 2 hours,initial temperature tests should be with the help of temperature gauge.

步骤4： 检查换网器工作是否正常，网片是否换上； step 4:to check whether screen changer works normally.

步骤5：启动计量泵，给定较低的速度转动，因为流道内还没有充足料；step 5:to start up melting pump,because in the runner there is not enough material ,with low rotation speed is really necessary;

步骤6：启动挤出机，并同步调整计量泵与挤出机的速度至生产工艺所需的速度；step 6: start up extruder,to adjust the speed of melting pump and extruder to technical speed;

步骤7：当压力稳定在5Mpa时，在人机界面《闭环控制》画面中，切换到压力闭环控制状态，实现模头恒压运行；如果进料不稳定,造成压力波动较大，则立即将其转换到压力开环控制状态，否则会损伤设备;step 7: when pressure keeps steady in 5Mpa, in the frames of man-panel, change to pressure closed ring controlling

condition, to realize model head constant voltage operation;if feed stock is not steady,which causes too big pressure wave,then change it to pressure open ring controlling condition, or this will damage equipment;

步骤8：将三辊压光机上辊与中辊间隙调至所需要的间隙，然后打开上辊，使模口出来的料从中穿过，最后绕过中辊从下辊引出来，至牵引辊，正常后将上辊压紧，将三辊与牵引速度调至同步，且上辊与中辊之间压紧后，不能有堆积料，否则透明度较差；如果挤出的板材成形后，板向上凸起，则上辊相对于中辊温度偏低，需要加上辊温度或降低下辊温度；板向上凹起，则上辊相对于中辊温度偏高，需要减上辊温度或升高下辊温度；step 8:to adjust the space between up-roller and middle-roller to set point,then open up-roller,let material through the space, final round the middle roller draw forth from the down roller,when all thing are normally,compacting up-roller,keep same speed between three roller calender and the traction , also between up-roller and middle roller,there should not with any material;if the final product is raised,the temperature between up-roller and middle roller is a little low,this need to increase the temperature of up-roller or reduce down roller; if it is the opposite condition,then reduce the down roller temperature or increase the down roller temperature.

步骤9：当需要增加挤出产量时，压力闭环控制时，提高计量泵的转速；手动开环控制时，先提高计量泵的转速，再提高主机的转速，使泵前压力能稳定在所需要的工作

压力； step9: when the output need to be increased, pressure closed ring controlling,to increase the rotation speed;if it is manual open ring control, first to increase the rotation speed of melting pump, then increase the rotation speed of extruder,keep the pressure before pump in the setting working pressure.

步骤10：测量需要制品的宽度，对应放下两边切边刀具，并将两边的废边料绕与机器两边的废边收卷机上； measure the width of final product,put down the two sides cutter, and the two sides wastes material wind on the winder.

步骤11：当挤出片材正常后，将片卷绕与液压收卷机A轴上，在计数器上设定长度，然后将计米轮放在牵引辊上，当到达设定长度时，开始报警，操作员在控制面板上给出“消音”信号，A轴自动停止，操作员用剪刀剪开片材，并将其绕与B轴，正常后将计数器清零，周而复始。When the sheet is normal,winding sheet on the circling shaft A, to set the length on the data counter, then put the data counter on the haul-off roller,when reach in the fixed length, alarming,operator give the "removing voice " signal, A shaft stops working,operator cut down the sheet,and wind it on the shaft B, when all things are normally, set the data counter clean, do all this action repeatedly.

5.3、停机步骤 closing down steps：

步骤1：插上进料斗插板；step 1:to plug in feeder spile

步骤2：闭环控制时，降低计量泵的速度；手动开环控制时，同时降低计量泵与主电机速度；step 2:when under condition of closed ring controlling ,low down the speed of melting pump;when manual opening ring controlling ,low down melting pump and motor speed;

步骤3：降低三辊速度，然后使三辊压光机向后退，上下辊分开；step 3:low down three-roller calender speed,separate up-roller and down-roller;

步骤4：模口不能正常出料后，停止三辊压光机运行；step 4:when ejection work can not process normally, stop three-roller calender;

步骤5：停止三工位收卷机，停止废边收卷机；

步骤6：机筒内物料排空后，停止主机运行，停止计量泵运行；step 6:after there is no material in the barrel, please stop machine operating;

步骤7：若为压力闭环控制时，在人机界面《闭环控制》画面中，将其转换至手动开环控制状态，且把机筒温度降至100℃，15分钟后关掉所有加热开关；when it is controlled by pressure close ring, on the display of manual-panel,change it into manual controlling,low down barrel temperature to 100℃, after 15 minutes, please turn off all heater switch;

步骤8：关掉所有的电源开关，气源，水源开关，以及所有安全防护装置恢复到原位；switch off all switch, air source,water source,and reset all protection device;

六、机器故障分析与排除 fault analyses and remove

6.1、挤出机部分 **extruder part**

故 障 排 除fault removing

故 障 状 态 现 象stoppage phenomenon	原 因 分 析reason	排 除 方 法solution
噪声增大 high noise	1．噪声来自螺杆机筒，螺杆与机筒在运转时有摩擦声，甚至有啸叫声；noise comes from screw barrel,in the process of barrel and screw working ,there is always with some grating; 2．噪声来自冷却风机，风机叶轮与外壳有摩擦；noise come from air cooling fan, air fan impeller and shell will have rub	1．新机器开机时，因料筒内没有充足的物料，会有一点摩擦声，运行一段时间会有好转；the new machine will always has some noise at the first operation,after while the noise will not exist; 2．将有摩擦风机整修一下，或更换；to repair air fan or change it

主机螺杆电机电流增大，或电流时大时小 motor current of extruder screw is not steady	1．物料没完全塑化；material plastify is not good 2. 物料下料不均匀；material is not balance	1．提高工艺温度；rise up technology temperature 2．检查料斗下料口；to check hopper;
工艺温度到，螺杆仍不能转动technology temperature has arrived,but screw still can not rotate	1．下料口至螺杆根部物料硬化，抱死螺杆，使电机不能启动；material hardening ,which causes motor stop working	1．提高螺杆根部的温度，并启动主电机；to start up motor and improve temperature of screw;
压力显示不准确；pressure data shows not accurately	压力传感器损坏；pressure sensor is broken	更换压力传感器；to change pressure sensor
压力显示波动大，在闭环控制时，造成主电机速度振荡；pressure display is not steady	挤出机下料口进料不均匀；extruder feeding system is not balance	检查进料不均匀的原因，并排除原因， 转换到“开环控制”状态，待进料均匀后，再转换到“闭环控制”状态；the check the reason for unbalanced feeding and remove the reason,change to "opening ring controlling "condition,after the feeding system is steady,then change to "closing ring controlling" condition
加温时，某区温度升不上去；when heating ,one of the zones can not rise	1．该区加热回路，过载跳闸；this zone heating circuit,overload trip 2．温度传感器损坏；temperature	1．如果是过载继电器跳闸，将整定电流调大；如果是断路器跳闸，则需要更换容量大一档的断路器；if solid state relay trips,thus

up	sensor is broken; 3．某区加热圈或加热棒损坏；heater ring of heating bar of one heating zone was broken;	need a larger volume breaker; 2．更换温度传感器；to change temperature sensor; 3．环加热圈或加热棒；circle heater or heating bar
加温时，某区温度不升反而下降；when heating,temperature can not rise up but reducing;	温度传感器+ -极接反；temperature sensor connect wrong	温度传感器+，-极对调；to exchange the temperature sensor two ends.

6.2、三辊压光机与牵引机 three-roller calender and haul-off unit

故障状态 现象stoppage phenomenon	原因分析reason	排除方法solution
三辊压光机或牵引机有一辊电机跳闸；one roller motor of three-roller calender or haul-off unit trip	1．速度不同步；speed is not synchronous. 2．电机故障；motor fault	1.速度，使速度同步；keep speed synchronous 2．通过变频器显示的故障代码与<变频器使用手册〉查出故障原因；by reference the fault No. And <manual book of inverter>Shows on the inverter to check out the reason
电机响声较大；motor with high voice	1．电机插头没有插紧；motor plug is not tighten;	1．插紧电机插头；keep motor plug tighten

	2. 减速箱内缺油或齿轮损坏；gear box is short of oil or the gear is broken	2. 加油或修复更换齿轮；add oil or change gears;

6.3、三辊温度控制器（参考辊温控制原理图）**three-roller calender temperature controller**

故障状态 现象stoppage phenomenon	原因分析reason	排除方法solution
水泵启动后压力表上无压力显示；after start up water pump pressure gauge shows nothing	1. 水泵反转；water pump reversal 2. 没有充足的水源，水泵空转；without enough water,water pump idling 3. 管路中有较多空气；in the pipe there has too many air	1. 调换电机任意两相线；to exchange any wire of motor; 2. 外供水源的压力＞2KG/CM^2；water supply pressure ＞2KG/CM2 3. 排掉管路中的空气；remove air in pipe line
温度失控，不能降温；temperature abuse,temperature can not be raised	冷却电磁阀YV11，YV12，YV13其中任一个阀不能工作；cooling solenoid YV11，YV12，YV13, one of the solenoid can not work	检查冷却电磁阀YV11，YV12，YV13是否正常工作并排除；to check cooling solenoid YV11，YV12，YV13, whether it is operating normally
温度失控，不能升温；temperature	1. 该区加热回路，过载跳闸；this zone heating	1. 如果是过载继电器跳闸，将整定电流调大；如果是断

abuse,temperature can not be cooled	circuit,overload trip 2．温度传感器损坏；temperature sensor has some problem 3．冷却电磁阀阀体内有杂物，使电磁阀不能完全关闭；cooling pneumatic angle body with impurity,which leads to solenoid stops working ；	路器跳闸，则需要更换容量大一档的断路器；if solid state relay trips,thus need a larger volume breaker; 2．更换温度传感器；to change temperature sensor; 3．打开电磁阀阀体，清洗内部；仍不能解决则更换电磁阀；turn on angle body and clean inside;if the fault still in ,please change the solenoid;
水泵不能启动water pump can not be turned on	1．水泵过载或过流跳闸；water pump overload or over current trip	将整定电流调大，如仍跳闸，则检查电机三相线圈是否正常，是否有相线对地短路现象，然后排除之；to adjust whole current,if the trip action still exist,then check 3-phase wire ring of motor ,whether it is ok or not.thus it is easy to make the fault reason.

注：如故障仍未排除，请及时于本公司联系，未经本公司同意，擅自拆装，造成一系列问题，将由用户自己负责，敬请谅解！Note: If the fault has not solved, please contact the company, without our consent, unauthorized disassembly, resulting in a series of questions, will be the responsibility of the user, please be informed!!

当设备的使用期达到它的使用寿命时，机器再不能继续使用或维修时，用户不得随意

将其丢弃，应从保护环境和节约能源的角度考虑，交付给有关环境管理部门或者按照当地环保法规进行妥善处理。When it is closed to life span,machine can operate or repair normally, user should not throw it ,but make consideration from environment protection,as for the handling problem,which should carry out by relative official department.

同时，在使用和维修的过程中，要考虑到保护环境的重要性，对从机器上拆换下来的废件，替换的废油等要进行妥善的处理，以免造成环境污染。在生产过程中，要从节约能源和材料的角度考虑，尽量减少废料的产生。Meaning while,pay more attention to the around environment,when operating and servicing, for all waste part dismount from machine which should deal with properly .in the process of product,attention to avoid unnecessary waste.

由于本公司不断致力于产品的更新换代和开发，所以该说明书中提供的图表、说明、参数等与实际产品可能有所不符，具体以实物为准,图片仅供参考，不便之处尽请谅解。Because Jwell apples to developing new product, all relative drawing ,instruction,parameter will have some difference,which just for referencing.