

JLK12+18/630 框式绞线机技术规范

Technical specification for JLK12+18/630 Rigid frame stranding machine



一. 设备简介

Brief introduction of equipment

本机主要适用于生产大长度的钢芯铝绞线，铜、铝导线圆形、扇形线芯的绞合紧压等。该设备的主要特点：线盘分装在绞笼在四周成四等分，上盘方便、设备刚性强度高、整体性能好、转动惯量小、运行速度高。该设备采用 36 级变速牙箱，双主动、双牵引装置，分线轮能自然分线，避免线芯在绞合过程中擦毛，并设有每盘断线停车装置。本设备适用于大长度、大截面交联电缆线芯的生产。18 盘绞笼带有 12 根同步管，可作钢丝铠装用。

This machine is mainly suitable for the production of large-length steel core aluminum strands, copper, aluminum wire round, fan-shaped wire core twisting and pressing and so on.

The main features of the equipment are as follows: the reel is divided into four equal parts around the winch, the upper plate is convenient, the equipment has high rigid strength, good overall performance, small moment of inertia and high running speed.

The equipment adopts 36-grade variable speed tooth box, double active and double traction device, the dividing wheel can divide the wire naturally, avoid wiping the wire core in the process of stranding, and is equipped with a stop device for breaking wire in each disc.

This equipment is suitable for the production of cross-linked cable cores with large length and large cross-section.

The 18-plate winch cage has 12 synchronous tubes, which can be used for steel wire



armoring.

二. 主要技术参数

Main technical parameters

2.1 绞合单线直径:	铜: $\Phi 1.8-5.0\text{mm}$ 铝合金: $\Phi 1.8-4.5\text{mm}$ 铝 $\Phi 1.8-5.0\text{mm}$
2.2 绞合最大直径:	$\Phi 50\text{mm}$
2.3 绞笼转速最大:	12 盘 145r/min (绞笼牙箱 6 级变速) 18 盘 145r/min (绞笼牙箱 6 级变速)
2.4 绞合节距:	12 盘 65-1007mm 18 盘 65-1007mm
2.5 牵引线速度 (牵引牙箱 36 级变速):	7.0-62m/min
2.6 主电机功率:	75Kw (AC)
2.7 框架内放线盘规格:	PND630
2.8 双牵引轮规格:	$\Phi 2000\text{mm}$ (双驱动双牵引轮)
2.9 设备 (长 \times 宽 \times 高):	约 32m \times 3.6m \times 2.8m
2.10 设备总重量:	40T
2.11 设备中心高:	1100mm
2.1 stranded single wire diameter:	copper: $\Phi 1.8-5.0\text{mm}$. Aluminum alloy: $\Phi 1.8-4.5\text{mm}$. Aluminum $\Phi 1.8-5.0\text{mm}$.
2.2 maximum diameter of stranded:	$\Phi 50\text{mm}$.
2.3 maximum speed of the cage: transmission of the cage tooth box).	12: 145r/min (6-stage 18: 145r/min (6-stage
transmission of cage tooth box).	
2.4 stranded pitch:	12: 65-1007mm. 18: 65-1007mm.
2.5 traction wire speed :	7.0-62m/min.
Main motor power:	75Kw (AC).
2.7 Specification of in-frame reel:	PND630.
2.8 Specification of double traction wheel: drive double traction wheel).	$\Phi 2000\text{mm}$ (double
2.9 equipment (length \times width \times height):	about 32m \times 3.6m \times
2.8m.	
2.10 Total weight of equipment:	40T.
2.11 equipment Center height: 1100mm	

三. 设备主要组成部件

Main components of equipment

3.1 WTF1600 龙门放线架	1 套
3.2 井字架	1 套
3.3 12、18 盘绞笼体	各 1 套





- 3.4 并线模架及紧压装置 2 套
- 3.5 计米器 1 套
- 3.6 主传动系统系统及 36 级变速牙箱传动装置 1 套
- 3.7 ϕ 2000 双轮牵引装置 1 套
- 3.8 2500 龙门收排线架 1 套
- 3.9 电控系统及操作台 1 套
- 3.1 1 set of P01600 Payoff.
- 3.2 1 set of Derrick.
- 3.3 1 set of winch bodies for 12 and 18 plates respectively.
- 3.4 2 sets of parallel die base and pressing device.
- 3.5 1 set of meter.
- 3.6 main transmission system and one set of 36-grade variable speed gearbox.
- 3.7 ϕ 2000 one set of two-wheel traction device.
- 3.8 1 set of 2500 Takeup.
- 3.9 1 set of electronic control system and console

四. 主要部件的技术参数及结构

Technical parameters and structure of main components

4.1 WTF1600 放线机

WTF1600 take-off machine

4.1.1 设备主要技术参数

Main technical parameters of equipment

技术指标	技术数据
线盘直径	PN630mm----PN1600mm
线盘宽度	475mm-----1180mm
线缆直径	7mm-----100mm
线盘升降速度	0.6m/min
张力放线方式	机械张力，张力大小手动可调，张力均匀
线盘最大重量	6t
升降减速机型号及电机功率	BLY10-29-1.1Kw
开合减速机型号及电机功率	BWY10-23-0.75Kw
设备重量	2t

Technical index	Technical data
Reel diameter	PN630mm----PN1600mm
Reel width	475mm-----1180mm
Cable diameter	7mm-----100mm
Reel rising and falling speed	0.6m/min
Tension release mode	Mechanical tension, tension can be adjusted manually, tension is uniform
Maximum weight of reel	6t



Type of elevator and reducer and motor power	BLY10-29-1.1Kw
Type of opening and closing reducer and motor power	BWY10-23-0.75Kw
Equipment weight	2t

4.1.2 设备的结构特征

- 1、整机有开合底架、两个立柱，滑动轴承座，顶尖提升机构组成。
- 2、本机无需使用吊车即可装卸线盘，操作简单。
- 3、左右立柱内装有线盘支承转轴，可同时升降，也可单独升降，具有调整线盘中心孔水平误差的功能。
- 4、两立柱开合分别采用摆线减速机传动，可使左右立柱横向开合，适应线盘宽度大，线盘夹紧力可调，超负荷自动保护。
- 5、线盘降到地面后，升降机构自动停止工作，保护线盘和机器不受损坏。
- 6、升降，开合电机均有限位开关保护，保护机器不受损坏。

4.1.2 structural characteristics of equipment.

1. The whole machine is composed of opening and closing underframe, two columns, sliding bearing seat and top lifting mechanism.
2. This machine can load and unload reel without using crane, so it is easy to operate.
3. The left and right column is equipped with a spool supporting shaft, which can rise and fall at the same time or alone, which has the function of adjusting the horizontal error of the central hole of the reel.
4. The opening and closing of the two columns are respectively driven by a cycloidal reducer, which can make the left and right columns open and close laterally, adapt to the large width of the reel, the clamping force of the reel is adjustable, and the overload can be protected automatically.
5. After the reel is lowered to the ground, the lifting mechanism stops working automatically to protect the reel and the machine from damage.
6. The lifting, opening and closing motors are protected by limited position switches to protect the machine from damage.

4.2 12、18 盘绞笼体

绞笼框架为四分形，结构紧凑，每段绞笼分别在分线板前装有单线预扭装置。

4.2.1 绞笼体由地轴传动，六级变速牙箱带动绞笼体传动，操作手柄可实现正反转，空档，手柄变速容易，定位又准确。六级变速箱齿轮为 6 级精度，经过淬火磨齿，运转平衡，无噪声，变速箱润滑由独立电机带动油泵供油进行喷淋润滑。每段绞笼的刹车靠气动蝶式刹车器来完成。

4.2.2 带断线停车功能。

4.2.3 线盘的张力采用机械张力带，张力大小可调节，张力控制稳定。

4.2.4 绞笼穿线模嘴，材料均为合金钢模芯，表面光滑、耐磨性好，能防止线芯刮伤。

4.2.5 每段绞笼前端分线板处都配有预扭装置，可提高绞线质量。

4.2.6 绞笼内适用线盘规格：PND630。上盘方式为单个手动上盘，提供上盘吊具和电动扳



手，起重设备由客户自备。

4.2.7 每段绞笼处设置操作按钮，可单独绞笼的点动、刹车解除按钮和 220V 电源插座便于操作，设置紧急停车按钮以保障安全。

4.2.8 每段绞笼处带有独立手动推拉式 U 型移动防护网。

4.2.9 另外 18 盘绞笼中心管内带有 12 根同步管。

4.2 12, 18 plate winch body.

The cage frame is four-fractal and the structure is compact. Each cage is equipped with a single-wire pre-twisting device in front of the shunt board.

4.2.1 the winch body is driven by the ground shaft, the six-stage variable speed toothbox drives the cage body, and the operation handle can realize positive and reverse rotation, neutral, easy speed change and accurate positioning.

The gear of the six-stage gearbox is of grade 6 precision, after quenching and grinding, the operation is balanced and there is no noise. The gearbox is lubricated by the oil pump driven by an independent motor for spray lubrication.

The brake of each section of the winch is completed by pneumatic butterfly brakes.

4.2.2 with off-line parking function.

4.2.3 the tension of the reel adopts mechanical tension band, the tension is adjustable and the tension control is stable.

4.2.4 the wire-piercing die nozzles of the winch cage are made of alloy steel die core, with smooth surface and good wear resistance, which can prevent scratching of the wire core.

4.2.5 there is a pre-twisting device at the front dividing board of each section of the cage, which can improve the quality of the strand.

4.2.6 applicable reel specification in the cage: PND630.

The upper plate mode is a single manual upper plate, which provides the upper plate hanger and electric wrench, and the lifting equipment is provided by the customer.

4.2.7 each section of the winch is provided with an operation button, which can be operated separately by the click of the cage, the brake release button and the 220V power outlet, and the emergency stop button is set up to ensure safety.

4.2.8 each section of the winch is equipped with an independent manual push-pull U-shaped mobile protection net.

4.2.9 there are 12 synchronous tubes in the center tube of the other 18 coils.

4.3 并线模架及紧压装置

4.3.1 设备在每框绞笼后各配一组并线模架和滚轮紧压装置，并线模架可前后调节，调节距离 300mm。

4.3.2 并线模架可完成并线成缆或一次拉拔紧压成缆，并线模架内腔尺寸为高 90mm*宽 80mm，拉拔紧压模具外形尺寸建议为 $\phi 60*40$ mm。

4.3 parallel die base and tightening device.

4.3.1 after each cage, the equipment is equipped with a parallel die base and a roller pressing device. The parallel die base can be adjusted back and forth to adjust the distance 300mm.

4.3.2 the parallel die base can complete the parallel cable or the cable can be drawn and pressed at one time. The inner cavity size of the parallel die base is 90mm



* wide 80mm, and the external dimension of the drawing die is suggested to be ϕ 60*40mm.

4.4 计米器

4.4.1 电子计米器和机械计米器可供用户选用，能满足 ϕ 50 mm以下直径的线缆计数。

4.4 Meter.

4.4.1 Electronic meter and mechanical meter are available for users to choose from, which can meet the cable counting of ϕ 50 mm or less.

4.5 主传动装置

4.5.1 本机由 75KW 主电机带动主传动牙箱，一路传至绞笼，一路经 36 级牵引牙箱传至牵引轮。主传动牙箱和牵引圆锥齿轮箱采用硬齿面减速器，传动精度高，无噪音。

4.5 main transmission.

4.5.1 this machine is driven by 75KW main motor to drive the main transmission dental box, all the way to the winch, all the way through the 36-level traction dental box to the traction wheel.

The main transmission tooth box and traction bevel gear box adopt hard tooth surface reducer with high transmission precision and no noise.

4.6 2000 双牵引装置

4.6.1 2000 双牵引装置为双主动、双牵引，自然分线，避免在绞线过程中线芯刮伤。

4.6.2 牵引轮为钢结构件，双支撑结构，牵引力大，最大牵引力可达 10 吨，结构牢固可靠。

4.6.3 在牵引轮处设有气动止退压线装置，以防止停车再开车时线缆打滑，保证绞线质量。

2000 double traction device.

4.6.1 2000 double traction device is double active, double traction, natural wire separation, to avoid wire core scratching in the process of stranding.

4.6.2 the traction wheel is a steel structure with double support structure, the traction force is large, the maximum traction force can reach 10 tons, and the structure is firm and reliable.

4.6.3 Pneumatic retraction wire device is installed at the traction wheel to prevent the cable from slipping when parking and driving again and to ensure the quality of the strand.

4.7 2500 龙门收排线装置

4.7 2500 Takeup

4.7.1 设备主要技术参数

Main technical parameters of equipment

技术指标	技术数据
线盘直径	PN1250mm----PN2500mm
线盘宽度	950mm-----1900mm
线缆直径	10mm-----120mm
变速箱参数 一档 n1	2-----7 r. p. m



二档 n2	3-----15 r. p. m
三档 n3	5-----30 r. p. m
线盘升降速度	0.6m/min
收线电机	YVP132M-4-7.5Kw(AC 变频电机)
收线速度	2.7-80m/min
线盘最大重量	8t
升降减速机型号及电机功率	BLY11-29-1.5Kw
开合减速机型号及电机功率	BLY10-23-1.1Kw
设备重量	4t

Technical index	Technical data
Reel diameter	PN1250mm-----PN2500mm
Reel width	950mm-----1900mm
Cable diameter	10mm-----120mm
Gearbox parameters	n1 2-----7 r. p. m
	n2 3-----15 r. p. m
	n3 5-----30 r. p. m
Reel rising and falling speed	0.6m/min
Take-up motor	YVP132M-4-7.5Kw(AC variable frequency motor)
Take-up speed	2.7-80m/min
Maximum weight of reel	8t
Type of elevator and reducer and motor power	BLY11-29-1.5Kw
Type of opening and closing reducer and motor power	BLY10-23-1.1Kw
Equipment weight	4t

4.7.1 设备的结构特征

4.7.1.1、整机有开合底架、两个立柱，滑动轴承座，顶尖提升机构和排线架组成。

4.7.1.2、本机无需使用吊车即可装卸线盘，操作简单。

4.7.1.3、左右立柱内装有线盘支承转轴，可同时升降，也可单独升降，具有调整线盘中心孔水平误差的功能。

4.7.1.4、两立柱开合分别采用摆线减速机传动，可使左右立柱横向开合，适应线盘宽度大，线盘夹紧力可调，超负荷自动保护。

4.7.1.5、排线机构采用微电脑来控制排线，可调节线缆直径大小；光杆上装有换向装置，换向装置的间距可根据线盘宽度从 475mm---1900mm 任意调节。

4.7.1.6、线盘降到地面后，升降机构自动停止工作，保护线盘和机器不受损坏。

4.7.1.7、收线采用变频电机，收线速度分三档，可根据工艺线速度及收线盘直径选择不同的档位，西门子变频器控制，采用力矩模式控制，张力稳定可靠。



4.7.1 structural characteristics of equipment.

4.7.1.1, the whole machine is composed of opening and closing underframe, two columns, sliding bearing seat, top lifting mechanism and wire frame.

4.7.1.2, this machine can load and unload reel without using crane, so it is easy to operate.

4.7.1.3, there is a spool supporting shaft in the left and right column, which can be raised and lowered at the same time or separately, which has the function of adjusting the horizontal error of the central hole of the reel.

4.7.1.4, the opening and closing of the two columns are respectively driven by a cycloidal reducer, which can make the left and right columns open and close laterally, adapt to the large width of the reel, the clamping force of the reel is adjustable, and the overload is protected automatically.

4.7.1.5, the wire arrangement mechanism uses a microcomputer to control the wire arrangement, and the diameter of the cable can be adjusted; the polished rod is equipped with a reversing device, and the spacing of the reversing device can be arbitrarily adjusted from the 475mm---1900mm according to the width of the reel.

4.7.1.6, after the reel is lowered to the ground, the lifting mechanism automatically stops working to protect the reel and the machine from damage.

4.7.17. The take-up line adopts frequency conversion motor, and the take-up speed is divided into three gears. Different gears can be selected according to the process line speed and take-up coil diameter. Siemens frequency converter control, using torque mode control, tension is stable and reliable.

4.8 电气控制

4.8.1 电机驱动装置采用西门子变频器控制，整机由西门子 PLC 控制运行、主机在警铃响后延时启动。控制系统采用动力柜和操作台两个部分。

4.8.2 在主操作台、放线架、收线架及每段绞体处设置紧急停车按钮。

4.8.3 在主操作台及每段绞笼处设置操作按钮，可单独绞笼的点动。

4.8.4 当主机启动、运行及点动时，收线与主机联动、并保持绞线张紧状态，主机停机后收线延时停机。

4.8.5 断线停车控制，当出现断线时主机停车，但不影响整机点动。

4.8.6 气路刹车和止退装置采用电磁阀断电刹车方式。

4.8.7 操作台可控制、显示主要参数及长度量。常用控制设外部按钮。

4.8.7 电器柜具有机械性能和防尘设计，并配备单独照明和冷却风机。

4.8 Electrical control.

4.8.1 the motor drive device is controlled by Siemens frequency converter, the whole machine is controlled by Siemens PLC, and the main engine starts delayed after the alarm.

The control system consists of two parts: the power cabinet and the console.

4.8.2 set the emergency stop button at the main console, release frame, take-up frame and each stranded body.

4.8.3 set the operation button at the main console and each section of the winch, which can be moved separately.

4.8.4 when the mainframe starts, runs and starts, the take-up line is linked with



the mainframe and the stranded wire is kept in a tight state. After the mainframe stops, the take-up line is delayed and stops.

4.8.5 off-line parking control, when there is a disconnection, the main engine stops, but does not affect the whole machine.

4.8.6 Air brake and backstop device adopts solenoid valve power-off braking mode.

4.8.7 the console can control and display the main parameters and length measurements.

Commonly used control sets external buttons.

4.8.7 Electrical cabinets have mechanical properties and dustproof design, and are equipped with separate lighting and cooling fans.

五. 其它

Other

5.1 设备操作方向：左手机

5.2 设备颜色，由用户提供色板。

5.3 整机轴承全部采用哈轴、瓦轴、洛轴产品。

5.4 全部变速箱牙箱齿轮都经淬火，磨齿处理。

5.5 电控柜内元器件：PLC 西门子 S7-200Smart；人机界面：西门子触摸屏；变频器：西门子产品；低压电器元件采用施耐德产品。

5.6 电机采用西门子电机。

5.7 气动元器件采用亚德客产品。

5.1 device operation direction: left mobile phone.

5.2 device color, which is provided by the user.

5.3 the bearings of the whole machine are all made of Harbin shaft, tile shaft and Luo shaft.

5.4 all gearbox gears are quenched and ground.

PLC Siemens S7-200Smart; man-machine interface: Siemens touch screen; frequency converter: Siemens products; low-voltage electrical components using Schneider products.

5.6 the motor adopts Siemens motor.

5.7 Pneumatic components are made of Yadak products.

六. 提供资料

Provide information

随机提供以下图纸、资料及其它

6.1 提供设备使用说明书、总平面基础图、电气原理图、气路图、外部接线图及安装材料规格数量表。

6.2 提供控制用 PLC 程序梯形图、软件操作平台、使用说明书、编程手册等。

6.3 提供设备中配制的调速器、专用收排线控制器、变频器以及其它电控主要元器件的使用手册、设计指南、使用说明书和操作手册等。

6.4 提供设备易损件图纸。

6.5 提供设备的传动系统图、各种润滑图表。

6.6 提供设备全套地脚螺栓。

Provide the following drawings, materials and others at random.



6.1 provide equipment operating instructions, general plane basic diagram, electrical schematic diagram, gas circuit diagram, external wiring diagram and installation material specification table.

6.2. provide control PLC program ladder diagram, software operating platform, operating manual, programming manual, etc.

6.3 provide the user manual, design guide, operation manual and operation manual of the governor, special take-up and discharge line controller, frequency converter and other electronically controlled main components in the equipment.

6.4 provide drawings of vulnerable parts of the equipment.

6.5 provide the transmission system diagram and various lubrication charts of the equipment.

6.6 provide a full set of anchor bolts for the equipment.





Bearing is NSK Japanese

Ground shaft

