

## EX 90mm Extruder Line Technical Specifications

No.	Components		Price
1		Five pulley straightener -Φ80mm	
2		EX90 extruder main machine	
3		Adjustable crosshead Model 25	
4		Front auxiliary water trough	
5		Vertical fan (wiping water)	
6		18M single layer water trout	
7		800 wheel type drawing machine	
8		Main electrical control/ operation	
9	Wear part and spare part	A batch	
10		Packaging/shipment and insurance	
<b>Total price:</b>			

Remarks:

1. All outsourced accessories, electrical equipment, components and spare parts are to be quoted respectively.
2. Installation quotation sheet is to be designed by the factory, including the costs of labor.

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# EX 90mm Extruder Line

## Technical Specifications

### A. Application

The equipment is applied to the extruding of the PVC plastic insulation (can be applied to that of the low smoke halogen free insulation material if the screw is changed). It is mainly used to the production of the 10mm<sup>2</sup>~35mm<sup>2</sup> “BV” comprehensive insulation cable.

### B. Production line parameters

1. The machine is that of right-handed type(left-handed inlet direction) and the total length is 35m.
2. Conductors applicable: stranded copper, single core(copper, aluminum) wire, braided core wire
3. Conductor diameter applicable: 10mm<sup>2</sup>~20mm<sup>2</sup> (taking-up by the coiler machine)
4. Extruding material: PVC/PE low smoke halogen free
5. Extruding volume: 275kg/h, (crosshead **open**, soft PVC)
6. Extruding outer diameter:  $\Phi 4.5\text{mm}^2 \sim \Phi 25\text{mm}^2$
7. The coiling size of the coiler machine: coiling inner diameter:  $\Phi 160\text{mm}/200\text{mm}$ , two coiling heads, the coiling height: 60~180mm
8. Production line height(crosshead center): 1000mm
9. Input power: AC 380V, three phases, 50Hz

### C. Main component brands

1. Main shaft motor: Taiwan Dongyuan
2. Wire arranging motor: MITSUBISHI servo and servo control system
3. Main inverter: Yaskawa Japan
4. PLC: Siemens
5. Industrial interface: 10 inches Kunluntongtai interface
6. Temperature controller: RKC Japan
7. Electrical appliances: all are of OMRON, SHIHLIN, SHANGQI, TEND etc.
8. Bearing: NSK, NTN Japan; screw: IKO Japan

### D. Main technical features

1. The proportional synchronization of the acceleration and deceleration of the main machine and the drawing ensures that the fluctuation range of the insulation outer diameter is  $\pm 0.015\text{mm}$ .
2. The adjustable crossheads are all with rapid relief valve
3. The main machine is of good co-movement and stability and the extruding breadth is stable and even, meeting the international standard.
4. Digital communications are achieved between the diameter gauge and the main machine. **RS232/485 connection and telecommunication system**, control the synchronization of the main and auxiliary machines and the drawing( overlay/decrease).

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5. Effective drying system ensures that the end product is free from water stain and of good imprint.
  6. The paying-off axle is applicable to the bobbins of Type 800 and 600.
  7. The wire arranging of the coiling machine is tidy and even, causing no pressing damage and being paying-off friendly.
  8. The double circuit mode of industrial control system control and proportional co-movement (single movement control) switch control is used in the main control system, the response of which is rapid and stable.

## E. Component descriptions

### 1. Tension pulley set

- 1) Fixed tension pulley:  $\Phi 800\text{mm}$ , flat shape groove, cast aluminum material, surface anode hardening treatment, tension pulley flat bottom groove.
- 2) Tension regulation range: equipped with 5Kg/M magnetic powder clutch, the tension regulation range is 5~150N, 1:5 second rate belt pulley deceleration.
- 3) Tension control: 15A control power control adjusting VR to the tension desired; VR signal is given out by the IP board and the tension ampere meter ensures the requirement of the feeding speed and the tension.

### 2. EX90 Extruder main machine (equipped with a PVC screw and a low smoke halogen free screw)

- 1) Main machine power: 90KW DC motor+DC driver; main machine revolving speed: 10~110rpm
- 2) Extruding volume: PVC 275Kg/H
- 3) Screw barrel and screw are made by 38CrMoLA; the screw L/D ratio is 26/1 and the screw is of new type BM.
- 4) Changzhou Guomao 225 type gearbox, output being the spline
- 5) Barrel electric heating: four section high performance aluminum heating, a neck section
- 6) The feeding section is of cycling water cooling, ensuring the feeding fluency.
- 7) Voltage applicable:  $\Phi 3-380\text{V}-50\text{Hz}$
- 8) **Barrel** cooling: 4 high pressure centrifugal fans (three-phase 380V)
- 9) Power heat control: RKC Japan temperature controller with control range of 0~399°C
- 10) Hopper dryer: Taiwan Shini SHD-100
- 11) Vacuum hopper loader: Taiwan Shini SAL-300C
- 12) One week upon agreement signing, the client provides two sets of dices and the seller manufactures accordingly.

### 3. Adjustable crosshead U20

- 1) A set of adjustable crosshead, with temperature taking points at three sections
- 2) Finished diameter:  $\Phi 20\text{mm}$ (no more than  $\Phi 25\text{mm}$ )
- 3) Heating is by the heating bar, with inlet pulley mechanism
- 4) Crosshead pinching: three piece pinching type, temperature taking point at one section, and heating by the heating bar

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#### 4. Front auxiliary water trough

- 1) Model: 3.5M double-bowl water trough
- 2) Trough body and water tank material: SUS304 hairline stainless steel plate with a thickness of 2.0mm
- 3) Trough shape: the big bowl is of L3.5M X W180mm X H150mm and is covered with sealed lid for efficient blowing
- 4) The moving volume of the small bowl is 800mm. The water heating system and the water supply pump are installed below.
- 5) Temperature control: RKC Japan temperature controller is used to control the temperature, ranging from 0 to 95°C.

#### 5. Vertical fan (to wipe the water)

- 1) Model: Vertical main machine power 2.2kw, vortex fan with an air volume of 230M<sup>3</sup>/HR
- 2) Co-movement of the wind blowing and wind drawing with the main machine, both being of switching mechanism.
- 3) The air knife is of four (100 section type) with a switch type PVC water tube. The air direction and the volume can be adjusted manually. The Co-movement of the air drawing and the drawing keeps the imprints away from water.

#### 6. 18M single layer water trough

- 1) material: SUS304 hairline stainless steel plate with a thickness of 2.0mm
- 2) 18M single layer, U shape, 250(W)×200(H);
- 3) The middle is equipped with three water storage tanks.
- 4) The sprinkler system is installed in the water trough.
- 5) The trough end is equipped with 1.5m drying. The vortex air pump and four (100 section type) with a switch type PVC water tube. The air direction and the volume can be adjusted manually. The air drawing co-moves with the drawing.

#### 7. wheel type tractor

- 1) Maximum traction force: 800kg
- 2) Speed: 180M/Min
- 3) Cable specification: Φ4.5-Φ25mm
- 4) Inlet center height: 1000mm
- 5) Main capstan : cast aluminum capstan with a diameter of Φ815mm (795.8mm) . The surface is of anode hardening treatment. The driving is that of 1:20 vortex decelerator and 5.5KW AC electrical motor.
- 6) Differential wheel: Three-piece independent cast aluminum capstan with a diameter of Φ815mm (795.8mm) . The surface is of anode hardening treatment.

#### 8. Main electrical control / operation box

- 1) Imported PLC is used in the all machine control system loop
- 2) 15 inches Kunluntongtai interface

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- 3) The power paying-off machine, the extruder main machine and the drawing machine can be controlled synchronically or their speeds can be adjusted independently. The all machine control system is that of inbuilt configuration control; the PLC, man-machine and the diameter gauge are all of digital communications (SR-232), realizing the stable co-movement control of the synchronic acceleration and deceleration; The inner pressure overload protection prevents equipment accidents caused by inner pressure overload.
  - 4) Cantilever type operation board with touch control screen and speed regulation button on it. Emergency switching speed can be adjusted either on the touch control screen or by the speed regulation button. The main machine and the drawing are of the co-movement control of the synchronic acceleration and deceleration.
  - 5) In addition to the touch screen, an analog type button controller is equipped to facilitate the error detection.

## **F. Machine Color**

The buyer is to provide the color palette, on which the color is based.

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|---|--------------------------|
| 1. Machine base                         | RAL7032 (computer grey)  |
| 2. Machine static part                  | RAL7032 (computer grey); |
| 3. Machine revolving part               | RAL2004 (Orange);        |
| 4. Safety protection part               | RAL2004 (Orange)         |
| 5. Electrical cabinet and operation box | RAL7032 (computer grey)。 |

## **G. Technical documents**

Three copies (one is electrical version) of the following technical drawings and documents are to be provided by the seller:

1. Equipment manual
2. Equipment maintenance and error diagnosis manual
3. Equipment layout and installation drawing
4. Electrical principal drawing and electrical connection drawing and electrical piping drawing
5. Pneumatic hydraulic principal drawing and piping drawing
6. Dice outer appearance drawing, wear part list and drawing
7. Driving sketch drawing and lubrication drawing
8. Controller and driver handbook and parameter table
9. PLC and interface configuration source program
10. Product quality certificate

## **H. Delivery period, installation, commissioning, acceptance and training**

1. The delivery of EX90 extruder production line is no more than 60 days upon the validation of the contract.
2. For the installation, commissioning and training, the seller is to dispatch mechanical

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and electrical engineers, electricians and bench workers to the site, installing and commissioning the equipment. The buyer's mechanical and electrical engineers are supposed to assist in the installation and commissioning.

3. The installation and commissioning should start within two days upon the arrival of the equipment and the commissioning is to be finished within 7 days.
4. The product specifications for the acceptance production of the line are to be decided on upon the signing of the contract.
5. The seller provides the buyer's mechanical, electrical and operation staff with a training program of seven days, ensuring that the equipment maintenance and the production operation can be carried out by the buyer independently.

#### **I. List of main materials, outsourcing accessories, spare parts and special tools**

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|--|------------|
| 1. Tool box                                      | 1 piece    |
| 2. Tools for operation and regulation            | 1 set      |
| 3. Barrel electrical heater                      | 1 piece    |
| 4. Crosshead electrical heater                   | 1 set      |
| 5. Crosshead clipping and neck electrical heater | 1 for each |
| 6. Barrel and crosshead temperature sensor       | 1 for each |
| 7. Honeycomb board                               | 1 piece    |

#### **J. Commissioning and acceptance**

1. The acceptance validates when the pilot products meet the standard as well as the relative index agreed upon in this technical agreement.
2. Three specifications and three materials are to be produced. The extruding material product meets the testing technical index, ensuring the stability of the accumulators.
3. Extruding diameter: The biggest difference for the lifting speed diameter permissible tolerance is  $\pm 0.03\text{mm}$ . The online wire diameter is even.
4. The actual acceptance of the coiling machine:  $10\text{mm}^2$  online 100~150M/Min continuous production 10KM as trial production acceptance standard.
5. The buyer is to produce the acceptance certificate.



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