
DF-DTS1250 Bow-shape Double Twist Stranding Machine

Technical Specifications and Quotation Sheet

A. Application

This machine is used for the concentric stranding of soft copper wire, aluminum wire, insulation wire and conductors with less than 7 strands. It is mainly used for the stranding of copper with 50mm² area of cross-section and aluminum with 70mm² area of cross-section.

The traditional cage type and tube type stranding machine are of low production efficiency. The cable makers in Europe and in the US have already used bunch stranding technique to produce electric installation wires and electronic equipment wires. To keep up with the pace of the technical development, we have introduced and developed the stranding equipment of concentric stranding wire, the bow stranding machine. The quality of the wire core stranded remains the same, but the speed is more than 4 times that of tube type or frame type stranding machines.

B. Technical parameters

No.	Parameters	data
1	Materials applicable	Bare copper wire, Tinning wire, Silvering wire, LY, BV, BVR
2	Inlet	Copper wire: $\Phi 1.0\text{mm} \sim \Phi 3.0\text{mm}/7\text{cores}$ Aluminum: $\Phi 1.0\text{mm} \sim \Phi 3.2\text{mm}/7\text{cores}$ Insulation wire: $\Phi 2.0\text{mm} \sim \Phi 6.5\text{mm}/2-4\text{cores}$ Stranding of stranded wire: $0.37\text{mm} \times 7 \sim 0.85\text{mm} \times 7$ stranded wire
3	Stranded wire cross section area	3.5-50mm ²
4	Pitch	40-350mm(can be set on the screen)
5	Stranded wire diameter	Copper: $\Phi 3.0\text{mm} - \Phi 10.0\text{mm}$ Insulation wire: $\Phi 5.0\text{mm} - \Phi 15.0\text{mm}$ Stranding cross section(flexible strand) : 3.5~70 mm ² Stranding cross section (1+6) : 3.5~50 mm ²
6	Stranding direction	Left or right, can be set on the screen
7	Spinning speed	800rpm(1600 Twist)

8	Maximum wire speed	150m/min
9	Main motor	45KW AC motor
10	Drawing motor	22KW AC motor
11	Coiling tension motor	7.5KW AC motor
12	Wire arranging motor	1HP AC motor+ inverter control
13	Take-up reel size	Φ1000mm -Φ1250mm
14	Take-up reel weight	MAX3500KG
15	Reel loading and unloading	Air pressure without axle, electrical elevated platform
16	Braking	Pneumatic braking
17	Meter counting error	≤3‰
18	Overall weight	13T
19	Overall noise	≤80db

C. Components

- | | |
|----------------------------------|---------|
| 1. Barrel type pay-off rack | 7 heads |
| 2. Line concentration controller | 1 set |
| 3. Meter counting system | 1 set |
| 4. 1250 Main stranding machine | 1 unit |
| 5. Electrical control system | 1 set |

D. Technical parameters for the main components

1. Barrel type pay-off rack

- 1.1 All seven racks are equipped with friction tension control, which is controlled by the semi-covering structure of the flat belt.
- 1.2 The seven racks being an integrated structure, an operational platform is equipped to facilitate the going through of the wire. Also equipped are safety ladder and safety protection fence.
- 1.3 The client himself is supposed to prepare the pay-off barrels, with the maximum size of about Φ1200*2000.
- 1.4 Porcelain painting is applied to all the pulley grooves in the racks and all the wire holes are of tungsten steel dies to keep the surface of the single wire or the conductor away from abrasion.
- 1.5 The pay-off speed can keep up with that of the production line even

the latter is at its maximum, causing no influence on the overall production efficiency.

1.6 E-stop buttons are equipped at the pay-off place.

2. Line concentration controller

2.1 Double socket type, one unit of 6 pulley set and inlet pulley board, one unit of 12 pulley set and inlet pulley board.

2.2 All the wire holes are of tungsten steel dies to keep the surface of the single wire or the conductor away from abrasion.

3. Tension balance apparatus

The tension balance device installed in the front of the forming table is used to balance all the wire tension on the same layer. This device consists of an independent rolling wheel and guarantees the same tension among all the wires and strands on the same layer. This part pass by 2 of 215 mm diameter roller of (1+6)layer.

4. Main machine

4.1 Synchronizing drive system:

- a. Drive shaft driven by main motor via V shape belt.
- b. The toothed belt pulleys at the ends of the drive shaft synchronized with those of the two main shafts via the toothed belt.

4.2 Power:

- a. Swivel motor: 45KW Anhui Wannan AC motor;
- b. Traction motor: 22KW Anhui Wannan AC motor;
- c. Take-up motor: 7.5KW Anhui Wannan AC motor;
- d. Wire-arranging motor: 0.75KW AC Induction motor

4.3 Spinning part:

- a. The main shaft 40Cr is annealed to eliminate the internal stress and thus avoids the deformation due to long serving time.
- b. The whole part has undergone dynamic balance adjustment, eliminating salient bumping and shaking during the production.

4.4 Blade part (Bow part)

- a. Material: Carbon fiber blade of strength and flexibility ensuring high anti-drawing strength
- b. For the wire going through, U type pulley mode is used. The outer diameter is $\Phi 49$, bottom diameter is $\Phi 28$, groove diameter is 6R, groove depth is 10.5 and the groove width is 20L. The groove bottom is sprayed with porcelain, ensuring the smoothness of the conductor surface.
- c. Both the upper and the lower plates of the bow are equipped with position detection safety switches.

4.5 Ship frame part:

- a. Using front

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- side inverted rotary hanging boat frame, operation and wire leading in the front side.
- b. The one-piece design and processing of the ship frame is annealed to diminish the deformation under use.
- 4.6 Tungsten steel die hole or the pulley is used for the wire going through, keeping the conductor surface away from abrasion.
- 4.7 Wire arranging part:
- a. Wire arranging motor:0.75KW Induction motor with inverter wire Speed synchronizing control
- b. Drive: ball screw
- c. Wire arranging distance: digitally set and subject to change
- 4.8 Traction part::
- a. Motor:22KW (1500RPM) AC Motor
- b. Type: U shape, 5×6 groove, double drawing pulley
- c. Pulley surface: pulley diameter is 500MM, bottom diameter isΦ 460, groove type is R10, the groove surface is of hard chromium plating.
- d. The drawing pulley is driven by the motor via worm gear decelerator synchronizing belt.
- 4.9 Take-up tension regulation part:
- a. Tension control:7.5KW (1480 RPM) AC Motor
- b. Tension range:2-20KG.
- 4.10 Take-up reel diameter(The following size is to be specified by the client):
- a. PN1000
- b. PN1250
- 4.11 Wire axis loading and unloading part:
- a. Type: Pneumatic drive axis, spring apical axis
- b. Both the right and the left apical axes have detection protection switches.
- c. Fluctuation axis: electrical elevated platform fluctuation axis
- d. Elevator motor: 2.2KW worm gear decelerator, drive screw elevated platform
- e. Safe control: safety limit detection switch control and safety back plate
- 4.12 Twist changing part:
- a. Twist range: 40-350mm
- b. Digital setting on the operation table, synchronizing motor operation control achieved by the PLC automatic calculation.
- 4.13 Safety hook part:
- a. Low noise design: all closed soundproof shield, less than DB-80
- b. The protection shield is installed with limit switch and is interlocked with the main machine electronics. The main machine

cannot start if the protection shield is not closed properly. The state of shield is indicated on the touch screen.

- c. Inner heat radiation: two 2HP centrifugal blowers achieving air circulation heat exchange
- d. Organic glass observation window is installed on the protection shield at the stranding bow base. The dimension of the window: width*height no less than 400*300mm, the window's lower edge is about 1.4 Meters above the floor.
- e. An anti-explosion energy-saving lamp of more than 40w is installed on the inner top of the protection shield for sake of watching the production process clearly.

4.14 Lubrication mode

- a. For the bearing part, fill it with oil regularly.
- b. For the gear part, fill it with oil by oilcan regularly.

4.15 Braking part

- a. The braking device is of pneumatic braking.
- b. Braking capability: 30KG-M.
- c. Braking mode: installed on both ends of the earth axes, 2 sets of braking device

5. Electrical control system

5.1 The system is of three phases and five wires, with power voltage of 380V/AC and 50HZ and single phase control power of 220V/AC;

5.2 All AC inverters are from Tai Wan Dong Yuan.

5.3 All AC motors are of Wan Nan or better brands and all three-phase induction motors are of energy-saving products.

5.4 The overall control system applies PLC and the control is achieved by the 10.4 " touch screen.

5.5 All low voltage electrical apparatus are of the famous national brands and the displacement sensor and the proximity switch are of Omron and better brands.

5.6 Electrical control cabinet by imitation Rittal electrical cabinet (with one side open form), with a cabinet base;

5.7 Interface features:

- a. Alarming inquiry, error auxiliary diagnosis, alarming storage, historical records checkable.
- b. The inspection and indication of machine operating condition.
- c. The setting, storing, adjusting and using of the technical parameters

5.8 A standard operation table is to be installed at the site. All the operations are to be done on the table.

E. Mechanical features

1. All synchronizing belts and triangle belts are of foreign brands;
2. All grease seals are of foreign brands;
3. Pneumatic components are of Airtac Taiwan or better brands;
4. All bearings of the 1250 main machine are of NSK.

F. Documents accompanying the machine

1. Within 10 days upon the validation of the contract, equipment contour layout and basic drawing are to be provided, 2 paper copies and 1 electronic edition; Within one month upon the validation of the contract, water, electricity and gas piping diagram and the electrical diagram are to be provided, 2 paper copies and 1 electronic edition.
2. Documents enclosed: Manual (wearing part drawing or specification, electrical diagram, wiring diagram and printed manuals for the inverter and other electrical instruments), 2 paper copies and 1 electronic edition; parameters for all the drivers (DC controller, inverter, etc.) and a table of the setting of other electrical instruments.

G. Others

1. Operation direction: right-handed machine (left paying-off, right taking-up)
2. Machine colour: equipment body and main machine safety shield are of sea blue (RAL 5015), the equipment base is of black (RAL 9005), the spinning part is of orange (RAL 2004), other parts such as belt, safety shield in the spinning part and defense net board are of yellow (RAL 1003), the main electrical cabinet and the operational table are of beige (RAL 7035)。

H. Installation

1. The client is responsible for the installation. The seller is supposed to send staff to the installation site to be of assistance.
2. Upon the installation, the client may decide on three wire specifications and produce 5000 meters for each specification on end. The acceptance report is to be provided after the above production.

I. Accessories

1. Carbon brush 1set
2. Tungsten dice 10 pieces
3. Tool box+ tools 1 set
4. Fuse wire 5 pieces

J. Quotation:

Product Series No. by Manufacturer: DF-DTS1250

UNIT PRICE : FOB Shanghai USD 117, 000 USD

(pay-off device not included)



K. Pay-off racks that we supply:

No.	Name and specification	Brand	Quantity	Unit price (FOB IN USD)	Total price
1	Barrel type pay-off rack	Dingfan	8	1000	
2	Φ 630 back type magnetic powder tension pay-off rack	Dingfan	8	2200	
3	Φ630C active pay-off rack	Dingfan	8	4500	
4	customized				

1. Barrel type pay-off rack



2. $\Phi 630$ back type magnetic powder tension pay-off rack



3.



