

13 Dies Al Rod Breakdown Machine with Dual-spool take-up

1. Application

The machine is used for drawing $\Phi 9.5\text{mm}$ aluminum rod to $\Phi 1.7\sim\Phi 4.8\text{mm}$ wire, followed by double spool take-up.

It is a tandem type drawing machine with all the drawing capstans aligned in a row. The 12 drawing capstans are driven by the same motor while the final capstan is driven by another independent motor.

2. Main technical data

2.1	Inlet diameter	$\Phi 9.5\text{mm}$ Al rod
	Outlet diameter	$\Phi 1.5\sim\Phi 4.8\text{mm}$ Al rod(1350)
2.2	Max outlet line speed	25m/s
2.3	Diameter of drawing capstan	$\Phi 450\text{mm}$
2.4	Number of dies	13
2.5	Drum speed ratio	1.238
2.6	Take-up type	Dual-spool take-up
2.7	Main motor	250 KW AC
2.8	Fix speed capstan motor	75 KW AC
2.9	Motor for double take-up	22*2 KW AC
2.10	Dimension	around 28550L×5500W×3820H mm
2.11	Weight	around 35440 Kg

3. Main composition of the line

3.1	Payoff	1set
3.2	Main drawing machine	1set
3.3	Accumulator for tension	1set
3.4	Dual-spool take-up machine	1set
3.5	Pointing and threading machine	1set
3.6	Lubrication for gearbox	1set
3.7	Electrical control system	1set
3.8	Al powder filter system	1 set
3.9	Welding machine (hydraulic)	1 set

3.10 Cold welding machine	1 set
3.11 PND630 bobbin	60 pcs
3.12 Series of drawing dies	2 sets
3.13 Drawing oil	10 drum(185kg/drum)

4. Description

4.1 Payoff

- 4.1.1 Type : Upright with guiding pulleys
- 4.1.2 The pay off is composed of support frame and dual guiding wheels.
- 4.1.3 The internal width of the pay off is 4500mm and height is 5180mm.
- 4.1.4 It is equipped with automatic line stop function.



4.2 Main drawing machine

- 4.2.1 It is a slip type drawing machine (i.e. there is slippage between the aluminum wire and the drawing capstan surface) for aluminum wires. It consists of 12 drawing capstans (same diameter).
- 4.2.2 The machine is mainly composed of several parts: drawing tank, transmission gearbox, lubrication system for the rotating parts and drawing part, and motors for the main machine.
- 4.2.3 There are 6 switches for jogging, which are used for running the machine. With one way overrun clutch, it is of special design to prevent the machine from moving in backward direction.
- 4.2.4 There is a small inclination between the axis of the drawing capstans and the gear box transmission axis. This special design can avoid the wire from overlapping with each other on the drawing capstan surface, while maintaining a straight path from the first capstan up to the last one.
- 4.2.5 The capstans are made of steel with tungsten carbide coating to ensure a long life.
- 4.2.6 Stainless steel door to avoid leakage of drawing emulsion.
- 4.2.7 The drawing capstans and drawing dies are cooled by both submerged and sprayed emulsion to ensure a complete cooling and lubrication. The machine includes a gear emulsion supply system and drawing lubrication system which includes pump and heat exchanger etc.
- 4.2.8 The machine will give alarm and stop in case there is no lubrication oil.



4.3 Accumulator and tension controller

4.3.1 Accumulation length 6.5m

4.3.2 Max. tension force 138dN

4.3.3 It is composed of movable pulleys and fixed pulleys. The movable pulleys are balanced by the reaction of the pneumatic cylinder and so the pulleys can maintain at a stable floating position. It provides a sensitive tension control and makes the life of the deviation components longer.

4.3.4 The tension is controlled by adjustment of pressure of pneumatic cylinder.



4.4 Dual-spool take-up

4.4.1 Take-up reel PND500-630

4.4.2 Max. winding speed 20m/s (for PND630 dynamically balanced reels)

4.4.3 Auto change bobbin speed 6m/s

4.4.4 Take-up motor 22KW(AC,2sets)

4.4.5 Pneumatic disc brake

4.4.6 The traversing device is moving on a ball screw nut and driven by an independent AC motor. The traverse distance is adjustable.

4.4.7 The wire is cut when the preset-length is achieved. The winding changes from the full reel to the empty bobbin automatically, up to 99% successful rate. The reels are loaded and unloaded by manual.

4.4.8 The smooth and stable wire-path ensures the quality of the surface of the wire.



4.5 Pointing and threading machine

4.5.1 Pointing machine roller dia. $\Phi 110\text{mm}$

4.5.2 Roller rotating speed 16r/min

4.5.3 Capstan dia. $\Phi 430\text{mm}$

4.5.4 Cutting function is available

4.5.5 The pointer is of saw shape. When tightened, the wire will be wounded into coils automatically.



4.6 Electric control system

4.6.1 Power source: 380V, 50HZ

4.6.2 The AC motor, PLC controlled, human-computer interface can show both the work condition and fault condition.

4.6.3 Electrical cabinet

A. Electrical cabinet for Main drawing machine

B. Electrical cabinet for Dual-spool take-up

C. Operator desk

4.7 Electric control system

4.7.1 The drawing machine and the final capstan are driven by single quadrant digital drive. The dual reel take-up is driven by ETD series four quadrant digital drive.

4.7.2 The whole line is controlled by SIEMENS PLC .The drawing machine and the final capstan will be synchronized automatically during quick die change as well as reel change over. Besides, when the speed is reduced during reel change over, the line speed will be also synchronized.

4.7.3 When producing different wire sizes on different spool sizes, there is an automatic line speed limitation with reference to the motor speed of the drawing machine, final capstan and the take-up when one of them reaches a certain nominal rotating speed (voltage).

4.7.4 The winding tension is maintained constant. At emergency stop, the wire will still remain tight and won't break. Under normal line stop, the movable pulley of the accumulator will still remain at the middle position. When the machine starts again, the movable pulley is allowed to be at any position.

4.8 Al powder Filter system

Centrifugal Aluminum/copper powder separator is mainly used for Aluminum or Copper Rod breakdown machine to separate the aluminum/copper powder from the oil, It can keep the ash content in the drawing oil does not exceed a certain concentration. It can extend the working life of drawing oil by more than 5 times than normal filter and can reduce drawing oil cost The machine is automatic working design, it is no need to clean and continue running with consumables.

Main motor: 4KW DC motor

Working flow: AL : 22L/min

Dirty clean: Automatic

Working mode:

Automatic

Included: Main separator, inlet hose with filter, Dirty barrel, Oil return back hose, Remain oil return back hose.

4.9 Hydraulic Cold pressure Aluminum Rod welding machine

(Aluminum Rod Size 9.50 mm)

LS5TY-A(J5-A)型



接线范围

The range of wire

铜(Cu) Φ 4.00mm-8.00mm

铝(Al) Φ 4.00mm-15.00mm

(扁线、异形线材按截面积计算)

电机功率 5.5KW

Power of motor

工作压力 6.5MPa

Work pressure

外形尺寸 长X宽X高(mm)

External dimension LXWXH(mm)

1190x570x1100mm

重量

Weight 650Kg

J5 DIES FOR 9.50 ALUMINUM ROD

4.10 LS3T-B Cold Pressure welding machine with trolley for Aluminum wire

LS3T-A/B/C/D 接线范围 铜(Cu) 1.00mm-3.25mm

The range of wire

铝(Al) 1.00mm-5.00mm



Following dies are need for Aluminum pressure welding: (J3 DIES)

---1.56 mm/2.06 mm/2.20 mm/2.38 mm/2.59 mm/2.67 mm/3.10mm: 7sets of dies

--3.35mm/3.37mm: 1 set dies

- 3.44mm/3.47mm: 1 set dies
- 3.91mm: 1 set dies
- 4.25mm: 1set dies
- 4.39mm/4.42mm: 1 set dies
- 4.72mm/4.77mm: 1set dies

5. Main Feature

- 5.1 The equipment is ironed cast. The main gear is processed by carburizing and quenching, and each junction plane of driven gear box is without osmotic oil.
- 5.2 The dia. of wire drawing capstan is 450mm, and adopts columnwise structure. The speed fixed wheel and wire drawing wheel are driven by different motor, and the speed can be adjusted synchronic, then we can changing mould quickly.
- 5.3 The winding changes from the full bobbin to the empty bobbin automatically, up to 99% successful rate.

6. User provide on themselves

- 6.1 Foundation build and tube line build.
- 6.2 Emulsion oil, lubricant, hydraulic oil used for drawing machine.
- 6.3 Cooling water pool and recycle system.
- 6.4 Aluminum coil, bobbins for trial test of machine.
- 6.5 Whole drawing dies for trial test of machine.
- 6.6 Power supply, wire and cable and auxiliary for installation.
- 6.7 Air supply of 0.6Mpa.
- 6.8 Welder machine

7. Scope of supply

- | | |
|---|-------|
| 7.1 Payoff | 1set |
| 7.2 Main drawing machine | 1set |
| 7.3 Accumulator | 1set |
| 7.4 Dual-spool take-up | 1set |
| 7.5 Pointing and threading machine | 1set |
| 7.6 Lubrication for gearbox | 1set |
| 7.7 Oil Lubrication and cooling system for drawing part(includes centrifugal filter) | 1 set |
| 7.8 Electrical control system | 1set |

7.9	Foundation bolt and shim	1 set
7.11	Some spare parts	
	Traversing Guide wheel	2 pcs
	Proximity switch	2 pcs
	Contactor	2 pcs
7.12	User manual(operation and maintenance)	1pc
7.13	Lay-out and foundation drawing	1pc
7.14	Electrical diagram drawing	1pc
7.15	Wearing parts drawing	1pc

8. Main part brand

Item	Name	Brand	Note
1	AC inverter motor	ANHUI WANNAN	
2	Inverter	INOVANCE	CHINA BRAND
3	PLC	SIEMENS	S7-1200
4	Button, relay and small than 100A contactor etc.	SCHNEIDER	
5	Touch screen	SIEMENS	12"
6	Main bearing	NSK	

