Fully Automatic Washing and Dyeing Machine Technical Document

JZ-A

Wuxi Jize Machinery Technology Co., Ltd., located in the beautiful city of Wuxi on the shores of the magnificent Taihu Lake, is a modern enterprise dedicated to garment dyeing, washing, and finishing equipment.

The JZ-A garment washing and dyeing integrated machine is a water-washing and dyeing equipment that combines washing, dyeing, finishing, and pre-dehydration functions. It significantly reduces energy consumption during the garment washing and dyeing process, alleviates labor intensity and workforce requirements, streamlines the production process, and enhances production efficiency.

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1 Overview

1.1 The JZ-A series garment dyeing products are characterized by low energy consumption, high production capacity, low labor requirements, and stable product quality through full automatic control. The structure of this series of products has been greatly optimized, distinguishing it from traditional garment dyeing machines. It effectively reduces water and steam consumption during the washing and dyeing process, saving approximately 50% of water and 30% of steam. Additionally, it reduces the usage of dyeing chemicals and additives by around 10%. The JZ-A-510-400 model has a rated capacity of 250 kg of dry clothes. The machine features fully automated control, equipped with an automatic discharge system and dehydration system, significantly reducing labor intensity and improving working conditions. It addresses labor shortage issues, increases equipment capacity and individual productivity, and reduces labor requirements for the same output. The equipment is equipped with functions such as automatic operation, temperature control, water control, and feeding, reducing the dependence on frontline workers for product quality and alleviating the shortage of skilled workers. In summary, this equipment can save more than 50% of labor costs. The machine adopts full automation control, equipped with a central control system interface and an interface for automatic delivery of dyeing chemicals, providing a solid foundation for the modernization and upgrading of washing plants.

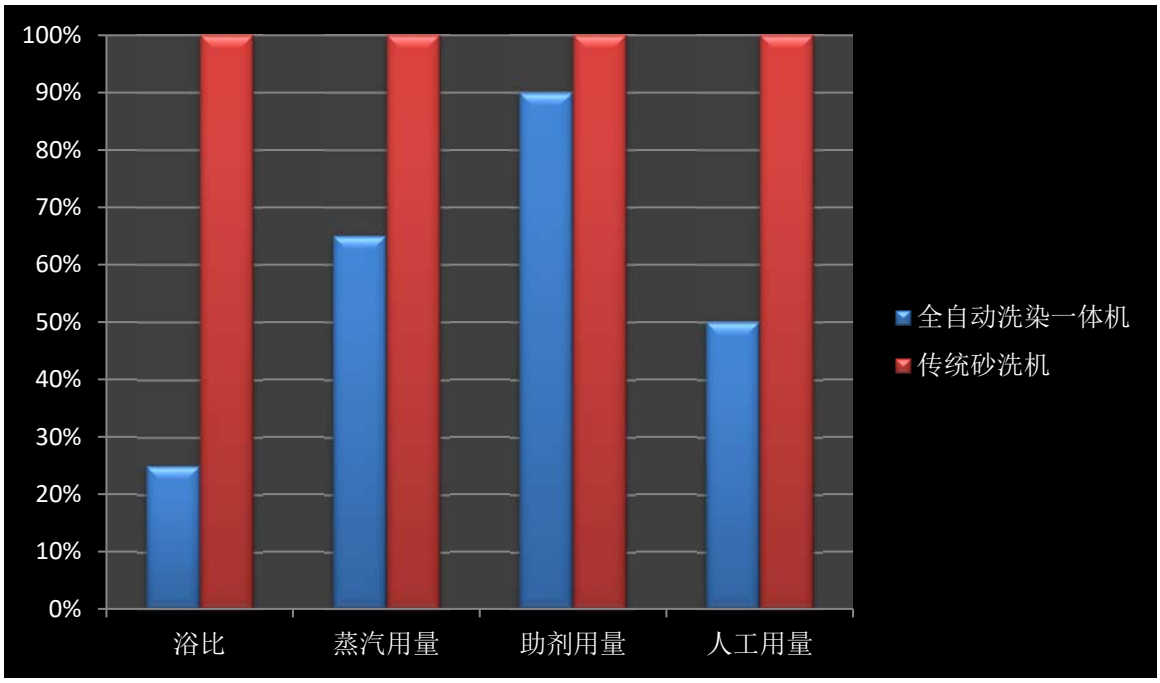
1.2 Machine Models

Item	Machine Name	Model
1	Fully Automatic Washing and Dyeing Machine	JZ-A-510
2	Fully Automatic Washing and Dyeing Machine	JZ-A-400
3	Fully Automatic Washing and Dyeing Machine	JZ-A-280
4	Fully Automatic Washing and Dyeing Machine	JZ-A-120
5	Fully Automatic Washing and Dyeing Machine	JZ-A-20
6	Fully Automatic Washing and Dyeing Machine	JZ-A-10

2 Features

2.1 Comparison table of labor consumption between automatic washing and dyeing

machine and traditional sand washing machine



Comparison of energy consumption and labor

2.2 Ultra-low liquor ratio

With a comprehensive washing liquor ratio of 1:2 to 1:4. The small gap of only 4cm between the inner and outer walls of the machine minimizes unnecessary space and reduces the liquor ratio. The equipment adopts a vertical structure, allowing the garments to be fully opened and come into full contact with the dye liquor, further reducing the liquor ratio. Most importantly, the equipment is equipped with a special-sized beating rib cage (refer to Figure 1), which enables penetration of the dye liquor both inside and outside the garments. The garments are fully exposed to the washing liquor inside the equipment, significantly enhancing the interaction between the washing liquor and the garments, resulting in a substantial reduction in the liquor ratio. In summary, the new vertical washing machine reduces the liquor ratio by 10 to 14 percentage points compared to traditional equipment. This greatly reduces production costs for customers and contributes to environmental conservation.

P1 Turning Cage Display

2.3 Significantly reducing water consumption also results in a substantial decrease in steam usage. As the water consumption per garment decreases, the steam required for water heating naturally decreases as well. Additionally, due to the excellent sealing performance of the equipment, less heat is dissipated, leading to a certain degree of reduction in steam usage. According to extensive customer feedback, steam savings of approximately 30% can be achieved.

2.4 The large-diameter rotating cage (JZ-A-510 cage ϕ1800*1900) allows garments to be fully spread out and easily accommodated, with a high loading capacity. The JZ-A-510 can accommodate an active dyeing load of 220 kg to 280 kg. Its single-machine loading capacity exceeds that of the old-style sand-washing machine (model 600), thus improving production efficiency and reducing resource waste in washing and dyeing

factories.

2.5 The equipment is equipped with an automatic unloading system (refer to Figure 2), reducing the labor intensity of retrieving garments and improving the efficiency of unloading. For example, the new machine (JZ-A-510) has an unloading time of 1 to 2 minutes, while the old machine requires 6 to 8 minutes for garment retrieval. Additionally, the equipment is equipped with a pre-dehydration function, with a maximum rotation speed of 100 r/min. This feature saves both labor and effort.

P2 Out the finished

2.6 The equipment is equipped with a flow rate control function for water inlet, allowing for the setting of different water volumes according to different processes. This eliminates the need for manual monitoring. The machine also has a quantitative temperature rise function, allowing for temperature setting and control of the heating rate. Temperature is a crucial factor in the dyeing process, and the automatic temperature control ensures good dyeing uniformity, consistency, and minimal batch variations, ensuring quality assurance. The equipment is equipped with a fully automatic feeding system, including automatic water inlet, automatic temperature rise, automatic reflux, automatic feeding, quantitative feeding, and automatic reflux system. Different feeding modes can be selected according to the choice of different dyes, thereby improving dyeing uniformity (refer to Figure 3 for the feeding cylinder and Figure 4 for the control cabinet). The equipment also has a central control expansion interface and an expansion interface for automatic dyeing chemical delivery.

P3 Barrel

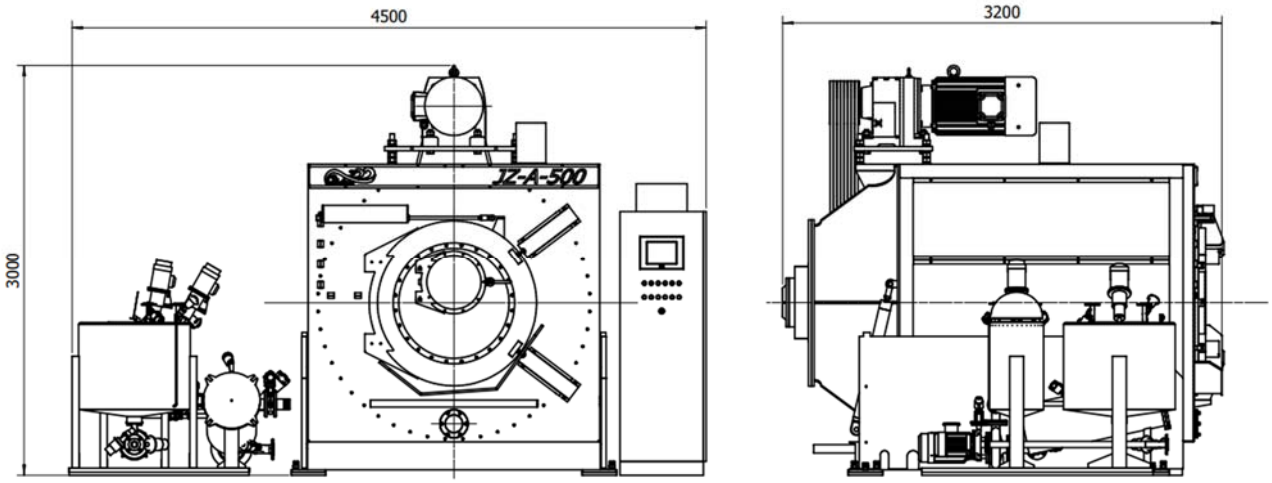
P4 Electrical Cabinet

3 Machine Technical Specifications

3.1 Machine Parameters Table

Model / Type	JZ-A-510	JZ-A-400	JZ-A-280	JZ-A-120	JZ-A-20	JZ-A-10
Rated Load Capacity (Kg)	250	200	140	60	10	5
Actual Load Capacity (Kg)	220~280	180~230	120~160	50~70	8~12	3~8
Dyeing Speed (r/min)	15~30	15~30	15~30	15~30	15~30	15~30
Dewatering Speed	100	100	100	100	100	100
Outfeed Angle (°)	16	16	16	16	0	0
Turning Cage Size (mm)	Φ1800*1900	Φ1800*1450	Φ1500*1400	Φ1200*1200	Φ1000*900	Φ750*500
Power (Kw)	37	28	19	12	7.5	5
Dimension L×W×H (mm)	3200*4500*3000	2750*4500*3000	2350*3500*3000	2100*3450*2150	1600*2300*1900	1100*2100*1700
Total Weight (T)	6.5	5.5	3.5	2.8	1.2	0.7
Inlet Diameter	DN65	DN65	DN50	DN50	DN45	DN32
Outlet Diameter	DN200	DN200	DN125	DN65	DN50	DN45
Heat Diameter	DN40	DN40	DN40	DN32	DN25	DN20
Barrel Inlet Diameter	DN20	DN20	DN20	DN20	DN15	DN15
Barrel Heat Diameter	DN20	DN20	DN20	DN20	DN15	DN15
Surface	Powder Coat, Painting	Powder Coat, Painting	Powder Coat, Painting	Powder Coat, Painting	Powder Coat, Painting	Powder Coat, Painting

Internal Surface	Polishing	Polishing	Polishing	Polishing	Polishing	Polishing



P5 Machine Drawing

3.2 Mechanical Configuration Parameters

Material	Turning Cage	S30408	Domestic
	Chemical barrel	S31603	Domestic
	Front elevation, outer barrel	S30408	Domestic
	Electrical box shell	SUS304	Domestic
	Bottom foot, Frame	Carbon Steel A3	Domestic
Pumps	Circulation Pumps	Special pumps for garment dyeing	Wuxi
	Dosing pumps	New Yang Ming (with its own waterproof ring)	Wuxi
	Agitator	New Yang Ming (with its own waterproof ring)	Wuxi
Valve	Water inlet valve, drain valve	Pneumatic disc valve	Wuxi
	Heating valve	Pneumatic angle seat valve (Y type)	Wuxi
	Reflux, backwash, chemical material valve	Pneumatic angle seat valve (Y type)	Domestic
Electrical	Main motor	Jiangsu Guomao	Changzhou
	Human-machine interaction	Kunlun Tongtai	Kunlun, tongtai
	Frequency converter	Yingweiteng	Shenzhen
	PLC	Mitsubishi	Japan
	Push Button	Jinlian	Taiwan
	Solenoid valve	210. 220	JELPC-Sino-Korean Joint Venture

	Oil mist separator	NanTian	Zhejiang
	Master cylinder water level controller	Pressure type	Domestic
	Tank water level controller	Air bubble type	Danfosi
	Proximity switch	Ottonix	Korea
	Encoder	Omron	Japan
	Main low voltage appliances	Schneider	Korea/ Japan
Surface	Inside surface of rotating cage	Mirror polishing	Outsourcing
	Outer surface of the main cage	Plastic spraying, paint spraying	Outsourcing
	Surface of electric box	Plastic spraying	Outsourcing
	Inside surface of the barrel	Mirror polishing	Outsourcing
	Outside surface of the barrel	Paint spraying	Outsourcing
	Floor foot	Paint spraying	Outsourcing
Others	Spindle steel	Yoshizawa customization	Custom
	Bearing	TWB	USA
	Water seal	CFW	Germany
Note: Unlisted parts are domestic quality brands.			

4 Project Photos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