

DSTS Tools

Operation Manual



Catalogue

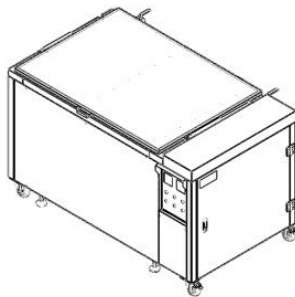
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1. Overview

1.1 Equipment Overview

The equipment is a single-tank integrated ultrasonic cleaning machine. It uses a weak alkaline water-based cleaning detergent. The operator puts the workpiece into the tank through the workpiece device and completes the cleaning of the parts within the set temperature and time. It can effectively remove oil and impurities on the inner and outer surfaces of the workpiece. The equipment is equipped with an intelligent temperature control heating system and a digital display timing system. The equipment is simple and convenient to operate.

1.2 Variety and specification



Ultrasonic cleaning machine view

Model	Gal	Tank Size (inch) L1 × W1 × H1	Machine Size (inch) L × W × H	Ultrasonic Power	Ultrasonic Frequency	Heating	Opening Method	Voltage	Max. Current
DS-300L-28T	81	39.3 × 21.6 × 22	57 × 40 × 35	1.8kw	28khz	10kw	Manual	3ph 220V	33A
DS-430L-28T	110	47.2 × 23.6 × 23.6	66 × 41 × 36	3.5kw	28khz	10kw	Manual	3ph 220V	37A

1.3 Working Conditions

- ◇ The installation environment must be well ventilated and free of flammable, explosive, corrosive, or conductive gases or dust.
- ◇ No liquid splashing and excessive dust.
- ◇ Ambient humidity $\leq 80\%$. Ambient temperature $32\sim 122^{\circ}\text{F}$.
- ◇ Keep away from vibration and heat sources.
- ◇ The foundation must not be tilted, soft or irregular
- ◇ Install on a solid concrete foundation and use a level to level the equipment after it is in place.
- ◇ There must be a reliable grounding wire connected to the equipment.
- ◇ The space around the equipment must be greater than 11.8in to ensure ventilation and heat dissipation.
- ◇ Cleaning detergent: $7\leq \text{PH}\leq 13$.
- ◇ Detergent concentration: Please refer to the detergent manufacturer's recommendations for details.

2 . Precautions for Safe Use

2.1 Safety Symbols

Signal language used

Danger Danger that can lead to personal injury or death

Warning Dangerous situations that can lead to personal injury or death



Caution Danger that can lead to minor injuries

Note Danger that can lead to economic damage to the device, people and the environment





Note Important information that makes the product or warranty invalid

Information Other information that can help you understand the situation

Please follow all safety instructions on the equipment labels and in this manual.

Photo	explanation	Photo	explanation
	General warning of danger		Electric shock hazard warning

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	Warning for hot surfaces and heat sources		Wear protective glasses
	Wear ear protection		remind



General Safety Tips

For your personal and product safety, please read the following instructions carefully before activating the device.



·If there is loud noise around the device, hearing protection measures must be worn in accordance with relevant laws and regulations.

·Some animals may be able to sense the high-frequency noise produced by the device. Keep pets or livestock away from the device.

Danger of Electric Current



·Danger to life if live cables or components are touched!
·Before cleaning the equipment or opening the electrical box, shut down the device and disconnect the power!



·Only authorized personnel may perform operation, repair, servicing and maintenance work.
·The grounding must be reliable to ensure the safety of personnel and machines.



·Electrical parts such as adapter boxes and conduit pipes may come into contact with cables or high voltage may exist due to humid working environment. Do not touch these parts after the power supply is connected to avoid electric shock.

·Before replacing electrical components, turn off the main power and make sure the part is of the correct specification.

·Do not touch any electrical switch with wet hands to avoid the risk of electric shock.

·Before leaving the equipment after work, be sure to turn off the main power supply.

- Do not scrape off the labels and warning signs on the machine. 。
- To ensure the safety and accuracy of the device, please do not hit the device.。



·Be careful of burns when touching the workpiece and basket! Wear protective gloves

2.2 Requirements for Operators

Note	
	<p>Only authorized professionals can</p> <ul style="list-style-type: none">·repair the device.·operate the device. <p>Otherwise the manufacturer's product warranty will become invalid.</p>

Dangerous	
	<p>When the equipment or environmental noise exceeds 75Db, it may damage hearing.</p> <p>In this case, the operator requires the wearing of hearing protection.</p>

2.3 Manufacturer Safety Program

The design and production of the equipment refer to risk analysis, relevant international regulations and standards, representing the latest technology to ensure safety during use.

Note



Please observe the warnings displayed on the device.
Do not make any unauthorized changes to the device.
The electrical and mechanical properties of the device may be altered and affected.

2.4 Liability of the User

The prerequisite for ensuring safe production is that all necessary safety measures are implemented. The development, inspection, and implementation of safety measures are the responsibility of the buyer. The buyer needs to understand the relevant procedures and associated risks, be responsible for the designation and assignment of personnel, and bear ultimate responsibility for the safety of personnel and equipment.

User's responsibility:

- ✧ Unpacking and assembly
- ✧ Safety training, relevant personnel understand the basic regulations of work safety and accident prevention.
- ✧ Selection of cleaning scheme.
- ✧ The supply of water and electricity meets the requirements of equipment operation.
- ✧ Develop, coordinate and implement equipment maintenance.

2.5 Operator's Responsibility

Operator's responsibility:

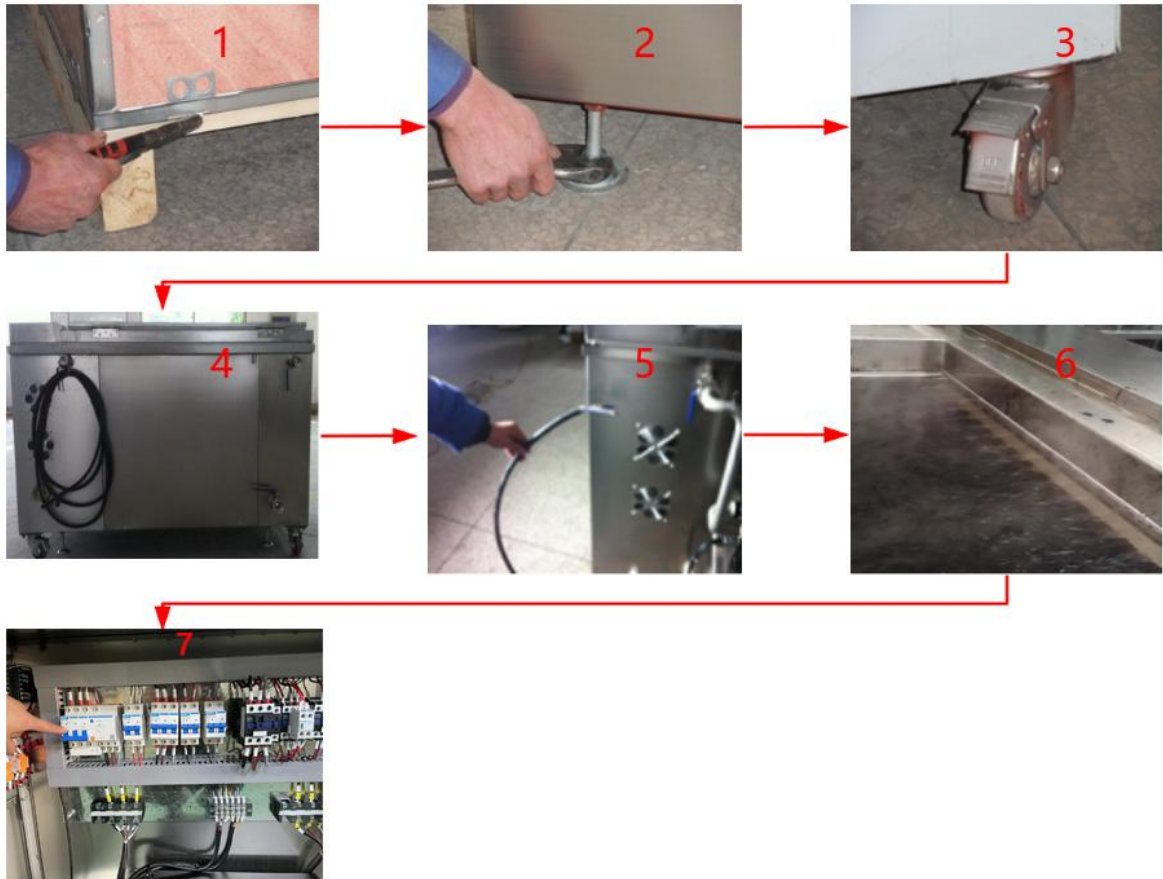
- ✧ Understand and comply with the basic regulations of work safety and accident prevention.
- ✧ Pay attention to relevant safety regulations and safety tips in the manufacturer's instructions.
- ✧ Under no circumstances should their behavior affect work safety.
- ✧ Wear personal protective equipment and use protective measures.
- ✧ Timely notify the operator of maintenance and repair equipment information.
- ✧ When equipment anomalies are found, report to the responsible person immediately and ask for removal.

2.6 Environmental Protection

High temperature, steam, noise and other emissions may occur during normal operation. The operator and staff shall comply with the protective measures and regulations of the factory. Sewage discharge shall comply with laws and regulations related to environmental protection.

3 Install

3.1 Quick Installation



3.2 Installation Instructions

3.2.1 Open Box

- ✧ Before unpacking, check the appearance for obvious damage. If yes, please take photos in time and keep them, and contact the supplier immediately
- ✧ Open the corresponding latch from the bottom and open the wooden

case properly to avoid damage to the internal equipment caused by violent unpacking.

- ✧ Do not move the device directly when there is a heavy load in the tank or the tank is filled with liquid. Otherwise, the casters may be damaged.

3.2.2 Horizontal Adjustment

- ✧ Use the tightening tool and level to adjust the level;
- ✧ Make sure the brakes are locked for moving wheels of the same height;

3.2.3 Brake Lock

- ✧ Ensure that the brakes are locked when the device is in use;

3.2.4 Pipe Connection

- ✧ Connect water intakes, overflow , and drain according to the labels
- ✧ Ensure that the overflow port is normally open; For special cases, if it is necessary to increase the effective cleaning height, close the overflow port, but special attention needs to be paid to liquid overflow;

3.2.5 External Power Connection

- ✧ Connect the device accurately according to the voltage indicated on the device nameplate;
- ✧ If phase sequence protection is installed on the device, the phase sequence may be inconsistent. Adjust the phase sequence to work

normally;

3.2.6 Add Water

✧ When adding water to the tank, ensure that the drain is closed, and pay attention to whether the tank leaks, if any, stop in time;;

✧ When adding liquid to the type A cleaner, ensure that the liquid is injected according to the valve status as shown in the figure above.

When injecting liquid for the first time, ensure that the liquid reservoir tank is filled with at least half of the liquid volume.

✧ Do not add hot water above 176 ° F directly.

3.2.7 Power on

✧ Use a dedicated tool to verify that the power supply is correctly connected before powering on the system;

After the power-on, if no power indicator is displayed, the phase sequence of the power supply may be inconsistent. You can adjust the phase sequence

3.2.8 Other Instructions

✧ For some models equipped with pneumatic door opening, external compressed air power is required, please connect according to the instructions, and the access air pressure must be $\geq 0.5\text{Mpa/cm}^2$; The opening and closing speed is adjusted by the needle valve at the inlet and outlet of the cylinder.

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- ✧ Before using the equipment, read the operating instructions carefully to understand the structure and performance of the equipment and be familiar with the requirements for operation, adjustment, lubrication, and maintenance of the equipment to avoid damage to the equipment.

4. Operation

4.1 Operation Process



4.2 Instrument setting

4.2.1 Thermometer Setting

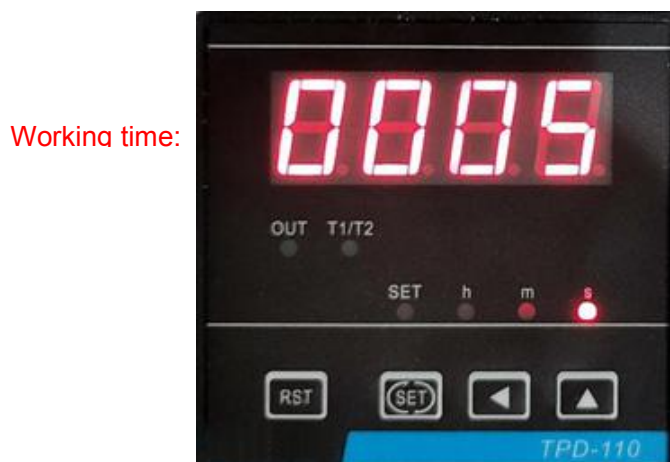


Step 1: First press the "set" key once, the working temperature display "SP"; selection;

Step 2: touch "◀" movable, touch "▲" and "▼" for numerical;

Step 3: Touch "SET" again, Set parameters complete, exit.

4.2.2 Time setting



Step 1: press "set" key once first;

Step 2: touch "◀" shift, touch "▲" for numerical selection.

Step 3: Tap the "SET" button again to complete the parameter setting and exit.

4.3 Procedure Description

4.3.1 Specification setting

- ✧ Temperature setting maximum temperature should not exceed 146°F; Working at high temperature for a long time is easy to cause the transducer to fall off
- ✧ The schedule can be set in seconds, minutes, and hours. The factory

default unit is second.

- ✧ The second startup uses the same parameters as the previous startup

4.3.2 Turn Heating

If the cleaning detergent is selected in powder form; In order to fully dissolve the powder detergent, heat the temperature to about 86-95°F before adding the detergent. For liquid cleaning detergent, there is no need to heat in advance.

4.3.3 Add Cleaning Detergent

- ✧ Do not turn on the ultrasonic when adding the cleaning agent;
- ✧ Add the cleaning detergent according to the specified process concentration. After adding, stir the liquid through a tool to ensure that the cleaning agent is dissolved thoroughly;
- ✧ Use detergent with PH < 7 with caution and evaluate the MSDS characteristics of the detergent.

4.3.4 Turn on Ultrasonic

- ✧ At this stage, the ultrasonic wave is turned on to dissolve the cleaning agent more thoroughly, and the liquid degassing treatment can also be carried out, which is conducive to the cleaning effect;
- ✧ During the period, you may hear a harsh screaming sound, which is normal, when you put in other parts or baskets, the sound will automatically disappear;

4.3.5 Parts Placement

- ✧ Parts can not be directly into the cleaning tank for cleaning, must be through the tooling basket;
- ✧ Parts placement comply with the principle: no overweight, no excess, less superposition principle.

4.3.6 Cleaning

- ✧ Make sure the ultrasonic is off when the parts are put into the cleaning tank;
- ✧ After the parts are put in, the liquid is basically stable and the ultrasonic wave is turned on for cleaning;
- ✧ High temperature liquid injection during cleaning may cause burns, please wear appropriate labor protection products;
- ✧ Avoid stirring the liquid during cleaning;

4.3.7 Take Out Parts

- ✧ The parts are removed by taking out the basket;
- ✧ When taking out, turn off the ultrasound first;

4.3.8 Turn off

- ✧ If it is determined that the equipment will be shut down for a long time, please turn off the power after turning off the ultrasonic and heating; Close the water inlet valve at the same time;
- ✧ If the shutdown is only for a short time (within 1 hour), please turn off

the ultrasound;

4.4 Wrong Operation Alerts

Error operation	Consequence statement	Correct operation
Start the device first and then add the cleaning liquid	1) Heating pipe dry burning, short circuit occurred; 2) The ultrasonic transducer is damaged	The liquid must exceed the position above the side ultrasonic plate
Use high temperature liquid to pour directly into the cleaning tank.	The transducer is easy to fall off	Water flooding below 122 ° F
Continue to run the equipment when the cleaning solution is insufficient	1) Heating pipe dry burning, short circuit occurred; 2) The ultrasonic transducer is damaged	Add liquid in time
Ignore the abnormal status of the device and continue to run	Damage to the machine is more serious, and even easy to produce personal safety injuries	After troubleshooting and checking, confirm that the device is working normally

5 Fault Analysis and Troubleshooting

Fault phenomenon	Fault cause	solution
A trip occurs when the power switch is activated	The front-end circuit breaker or power cable has small specifications	Replace the incoming leakage circuit breaker or power conductor
No response when the power switch is turned on	The phase sequence is wrong, or the cleaner is not connected to the neutral line	Phase sequence error -- change the position of any two phase lines of the power supply inlet line; Check whether the neutral line is connected
Button failure	Loose thread	Re-tighten the screws related to it according to the drawing
Trip when heating on	Heating pipe leakage	Turn off the power, remove the heating tube connection cable, and power on to confirm whether the trip is made. The corresponding trip heating tube is the damaged heating tube and can be replaced
Activate ultrasonic trip	Ultrasonic power failure	Open the ultrasonic safety one by one, test separately, corresponding to a set of safety trip, indicating that the corresponding ultrasonic power supply is damaged. Contact the manufacturer
unheated	The temperature control meter shows 000, and the contactor does not draw	Open the left sealing plate and check whether the sensor cable is disconnected. If it is disconnected, reconnect it. If it is not disconnected, replace the temperature sensor
	Temperature indicator normal, contactor suction	Check whether the heating circuit breaker is tripping, if tripping can be re-closed; If there is no trip, use the test pen to test the lower end screw of the heating contactor, if there is electricity, replace the heating tube

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It was heating up normally, and suddenly it's slowing down	Check whether the circuit breaker or contactor is burned out	If there is a burn out, replace the circuit breaker or contactor
	No burn marks	The electric pen is used to test whether the three phases at the input end of the heating tube in the electric box have electricity, and the clamp meter is used to measure the current of the heating tube. If there is no current in one phase, it indicates that the heating tube is broken and can be replaced with a new one.
Poor cleaning effect	Low temperature, no exhaust	When the temperature reaches, exhaust gas is completed and then cleaned
	The cleaning liquid is too dirty	Change the cleaning liquid
	Could be a set of ultrasound damage	Start the ultrasound, see if there is a red light, if so, please contact the manufacturer
Circulating pump does not turn humming	The circulating pump shaft is rusty	Clean shaft
Circulation pump does not turn water or water is very small	The circulating pump's own filter or filter is blocked	Replace the filter and remove the fault After the replacement is still faulty, open the circulation pump inlet pipe connection to clean the filter screen
The oil scraper does not turn the steel belt	The pressure belt screws are loose	Adjust the steel belt press screws
The oil scraper machine does not turn, the contactor or relay is in the drawn state, and the circuit breaker does not trip	Motor failure	Start the oil scraper with an electric pen to test the terminal of the oil scraper. If there is electricity, the oil scraper does not turn, and the oil scraper can be replaced

6 Maintenance and Repair

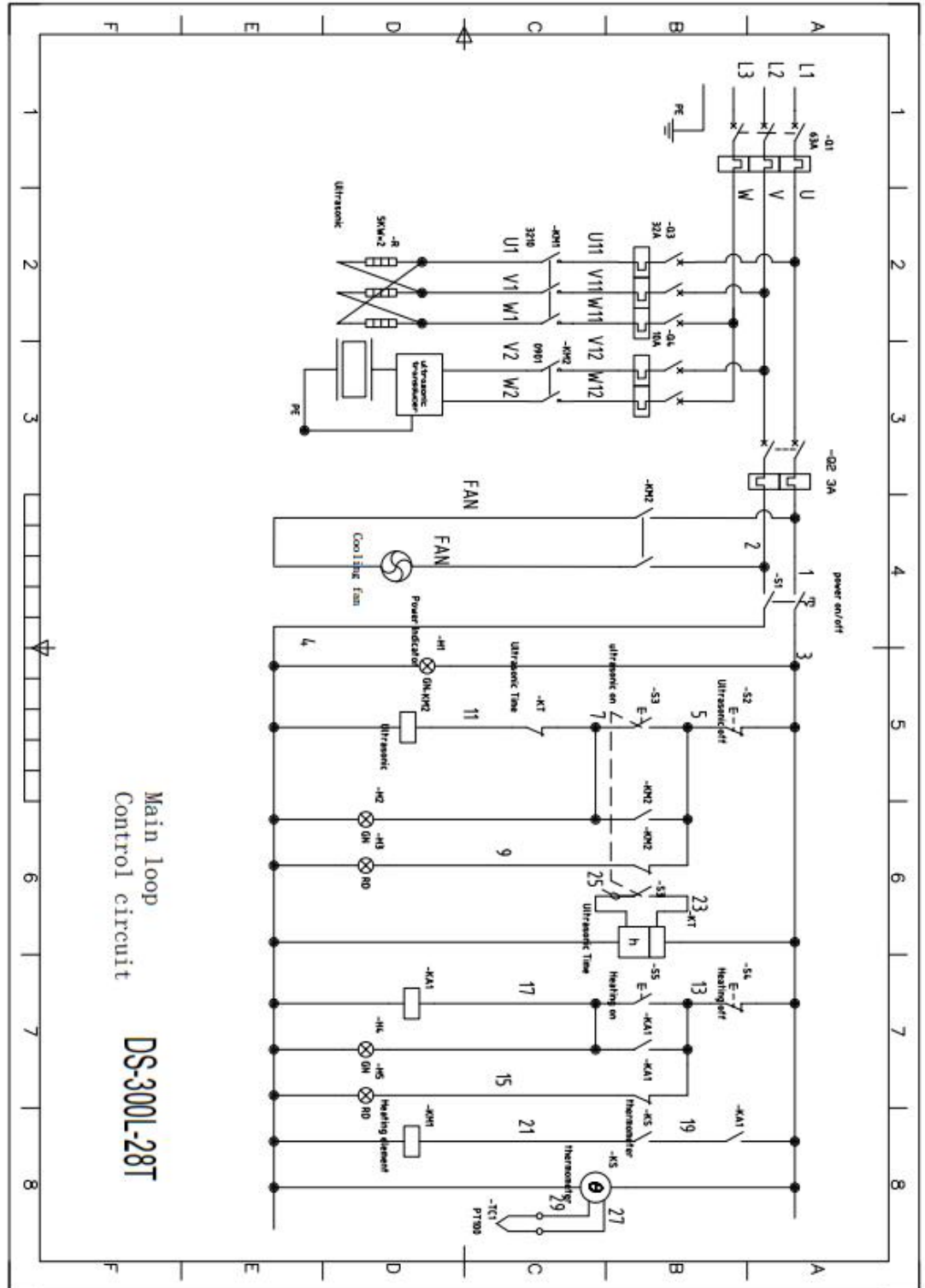
Item cycle	Every week	Every quarter
Cleaning tank	√	
Clean the heating tube covering		√
Check whether indicating components such as the liquid level sensor and pressure gauge are normal		√
Check whether the tooling is damaged or deformed. If it is damaged, it is forbidden to go online	√	
Replace the cleaning medium to prevent deterioration	√	
Check whether pipes leak and handle them in time	√	
Regularly check the alarm and various key functions, regularly check whether the wiring terminals are loose, and do fastening		√

7 Attachments

Name	Quantity
Basket	1pc
Manual	1pc

8 Circuit diagram

8.1 DS-300L-28T MAIN LOOP AND CONTROL CIRCUIT



8.2 DS-430L-28T MAIN LOOP AND CONTROL CIRCUIT

