Jet Liquid Heater
Installation and Application Instructure

Preface

Thank you for selecting YJP series liquid heater produced by our company.

Before usage, be sure to read this instructure carefully, it will make you know well about structure ,performance,usage and maintenance of product. Correct usage and timely maintenance can guarantee reliability and economy of heater to prolong the life of heater.

YJP series products developed by our company is jet liquid heater, it is independent of motor, that is to say, it can make compartment warm and defrosted itself without operating motor. In addition, it can pre-heat motor in low temperature. This system with high voltage electrode igniting and high voltage jet oil fog has not pollution when opening and closing machine, compared with swing oil fog liquid heater , it is better in enviromental protection and ecnomicing energy. Products with digital control will be more convenient, its performance will be more reliable.

Dimension of special order product is different from ones in the instruture.

If you have any questions , please contact us:

INDEX

Brief Introduction

Jet liquid heater is a digital-control warming equipment independent of motor，its controll part has many functions :open at low temperature,stop at high temperature,alarm and stop when in trouble,show water temperature. It is also set multiple protection measure. As bus warm equipment , it has lots of performance super to congener products：

1 supplying oil is not affected by voltage to make combustion more steady.

2 back-oil makes products ecnomizing energy

3 newly heat exchange device can raise heat efficiency

4 using hi-voltage oil fog and hi-voltage electrode igniter,opening and closing do not cause pollution , jet liquid heater can apply to pre-heat water-cool motor in low temperature，it can keep refrigerant between 65℃ and 80℃ automotically. Using it to pre-heat motor in winter will reduce motor damage ,decrease oil-exhausting and prolong life of motor.

Attention!

1 Fuel is diesel, kerosene is not fit, No petrol!

2 In winter ,when temperature is below 0℃，add antifreeze into heater，if adding water, heater should be empty everyday to prevent freezing

3 Rated voltage: DC24V

4 Being be prohibitted from shutting down general power before *combustion* light quenches

5 Being prohibitted from changing any parts ,or not ,it will not at the range of maintenance

6 usage enviroment：

6-1 usage temperature：-40℃~+50℃

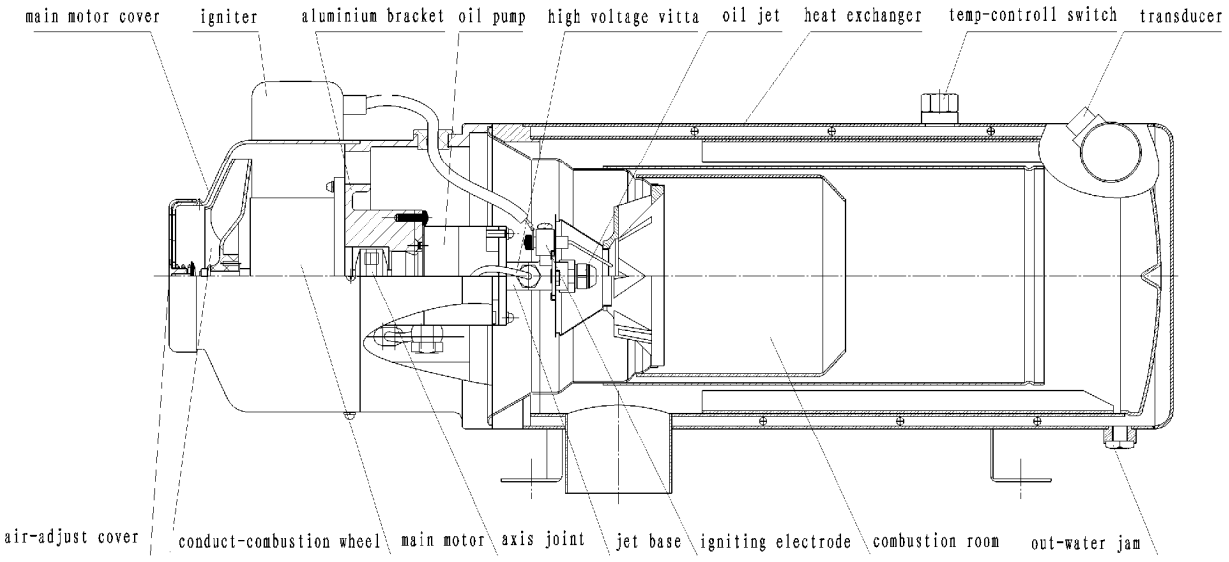
6-2 storage temperature：-50℃~+80℃

6-3 altitude ≤3000M （>3000M special order）

I. Main Technical Parameter

parameter / item / type	heating KW	Oil exhausing kg/h	Work voltage	power W	Media circling	Weight kg	dimension L×W×H mm	usage
YJP-Q35/2XT	35	3.31	DC20~30V	170	Water pump force circle	24	610×360×265	Motor operates in low temperature and warming ,defrosting of bus
YJP-Q30/2XT	30	2.97						
YJP-Q25/2XT	25	2.67				22	570×360×265	
YJP-Q20/2XT	20	2.37						
YJP-Q16.3/2XT	16.3	1.87						

II. Principle

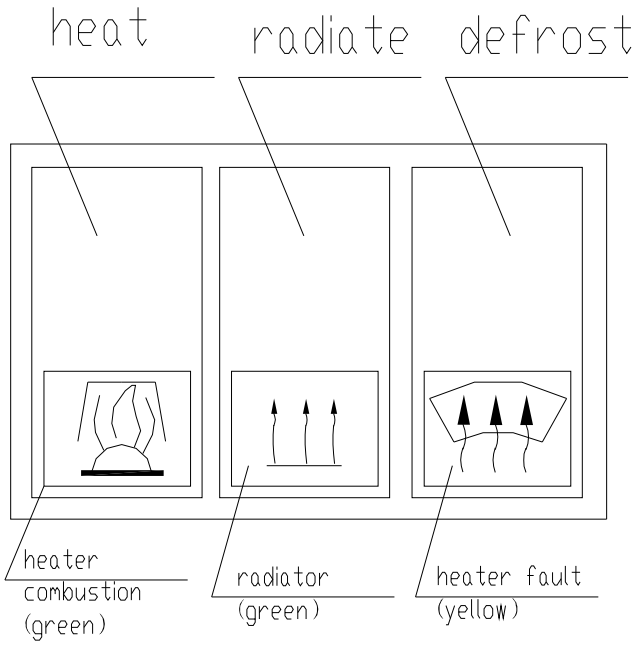


Under the operation of motor, oil is taken to jet by pump to produce oil fog under high speed air blow with motor circling. oil fog is burning under high voltage discharge of igniting electrode, its heat is sent to circling liquid in heat exchanger by conductive slice, under the operating of pump, liquid is taken to radiant equipment to make vehicle warm and defrost.

III Control method

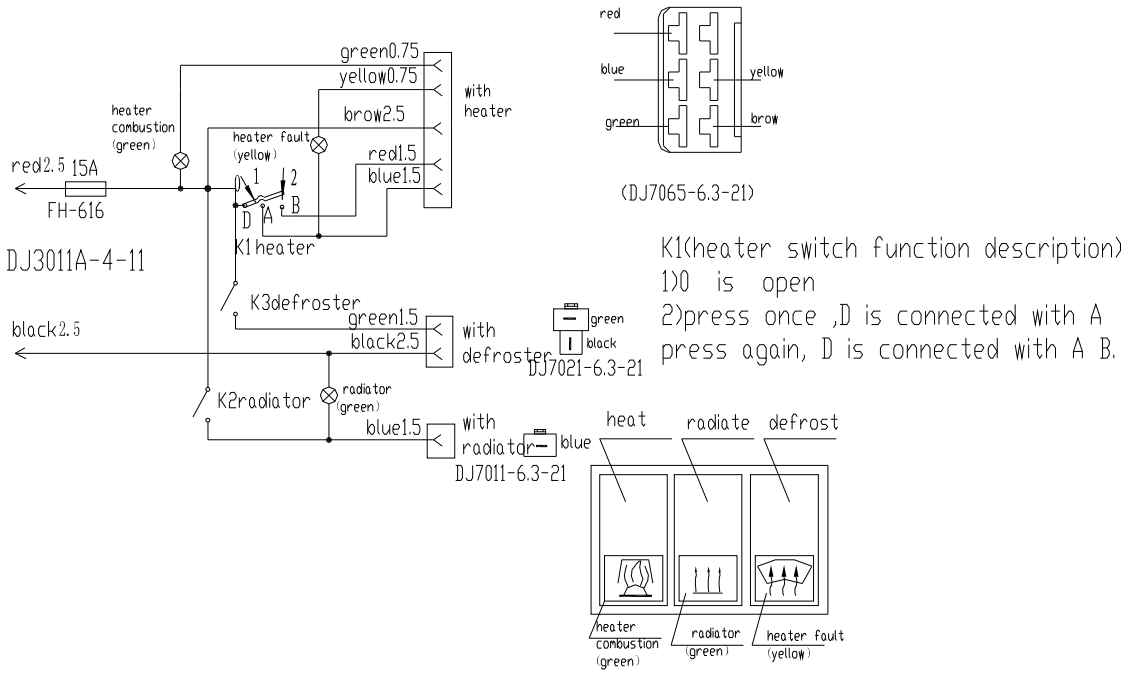
（I）Operation panel

1. Appearance and wiring diagram of heater tilting switch



heater tilting switch JK931-082

machine wiring diagram of jet heater with triple tilting switch：



2.light and switch：

(1.)operate heater： press ***heater*** once to operate heater water pump, press again to operate

heater. Heater is in normal state, green light shines. If heater is in trouble , *radiator* yellow light shines.

(2.)close heater：shut down *heating* quadratic button，green light quenches,wate pump runs normally.

(3.)operate radiator： press *radiator* button,green light shines,radiator begins working.

(4.)operate defroster： press *defroster* button,defroster begins working.

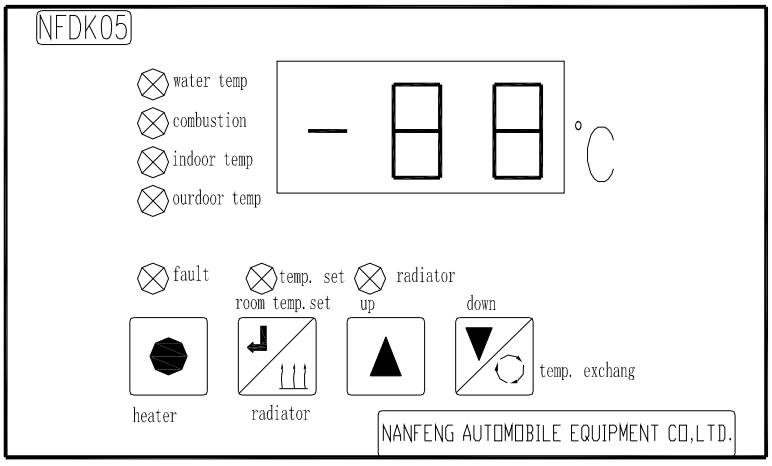
3.work schedule

- turn on *heater power* (water temperature<65℃)， main machine begins to pre-blow,after 18 seconds,igniting electrode begins to produce electricity(12 sec.), then electric valve supplys electricity after sec, if igniting succeeds,main body goes into normal combustion state，and light shines,igniting electrode closes. When water temperature rises to 80℃ or so， heater stops,light quenches. After this , main motor prolongs to work 150 sec. Water temperature is to 65℃， heater goes into next circle automotically. If igniting doesn't succeed, heater goes into second igniting state in two minutes,if the third igniting does not succeed, heater is in trouble.

Note:triple tilting switch board dimension 77.5mmX48.2mm

（II）Light-touch switch board

i.switch board（NFDK05）



ii.light and switch

(1.)operate heater. Press *heater* button second， show compartment temperature in temeprature area, pump is operating , open heater .

(2.)set in-bus temperature. Radiator is in the auto-operating state,press *temp-set* button,light shines,then press *up* and *down* to adjust temperature; press *temp-set* to return operating state,light quenches.

(3.)close heater. Press *heater* button second, temperature area quenches, after two seconds heater begins to close. When heater is closed and radiator is in manul state, water pump and radiator can be opened and closed synchronously.

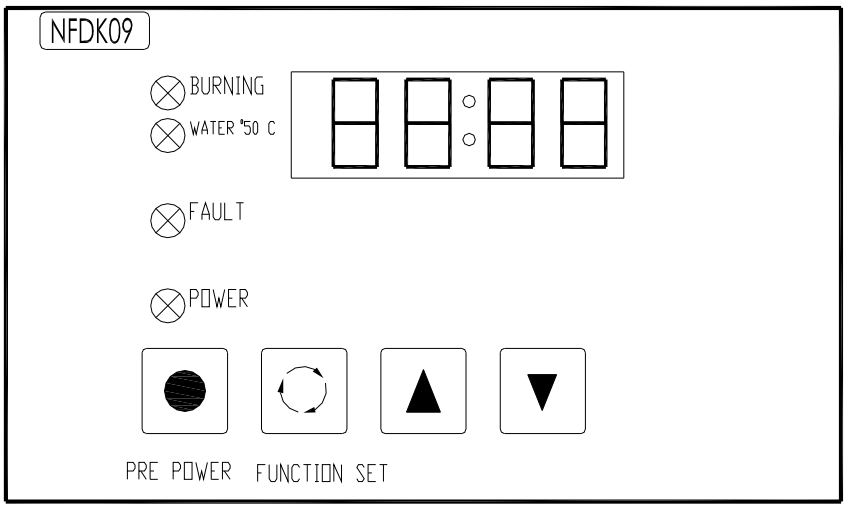
(4.) operate radiator manully. Press *radiato*r button, radiator operates, light shines.

(5.) close radiator manully. Press *radiato*r button, radiator is closed,light quenches.

(6.)temperature exchange. Press *temp-exchange*， out-bus temperature is shown, it will be exchanged automotically to show in-bus temperature after 10 seconds.

Note: light-touch switch board dimension 95mm×55mm

(III) Timer:



i. buttons

pre power: button 1

fuction :button 2

adjust : button 3

adjust: button 4

ii. set start-time of heater

press button 2——〉 press buttons 3、4 to adjust *hour* ——〉 press button2 ——〉 press buttons 3、4 to adjust *minute*——〉 press button 1 to save and exit

iii. set operating time of heater

press buton 2——〉 press button 3——〉 pres button 2——〉 pres buttons 3、4 to adjust time——〉 press button 1 to save and exit。

iv. set instant time(finish adjusting before factory)

press button 2——〉 press button 3 twice——〉 press button 2——〉 press buttons 3、4 to adjust *hour* —〉 press button 2——〉 press buttons 3、4 to adjust *minute* ——〉 press button 1 to save and exit。

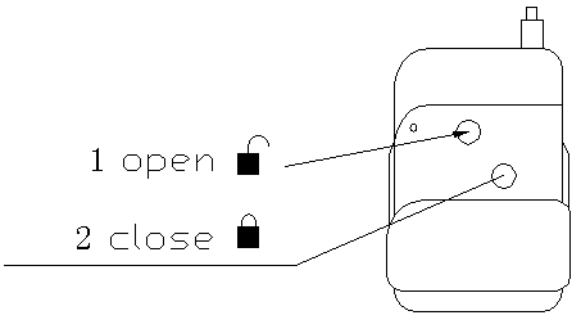
v. heater is open,in screen is remainder time,press buttons 3、4 to adjust remainder time

vi. if set operating time 00,this will prevent timer from starting。

vii. attention ,please! others settings can’ t be adjusted

Note: NFDK09 light-touch switch board dimension 95mm×55mm

(IV) Remote controller:



Remote controller application:

1) press button 1,heater is open,after half a hour it will close automotically
2) press button 2 ,heater is closed
3) remote controller switch and tilting switch in implement are paralell connection.
4) If distance is far,button should be pressed over second every time

（V）Continued timer

i usage

for common heater,general power in bus is shut down after closing heater 150 seconds, and for heater with continued timer , driver can shut down G-power in the case of not closing heater or closing heater just to ecnomic driver's rare time. Or driver doesn't close the heater, but he shuts down the G-power in bus ,at this time ,it can protect heater not to be damaged by back-fire to prolong the life of heater.

ii application

installing continued timer,operate the heater, heater goes into working state immediately. Only when heater doesn't stop working completely and G-power is shut down, it will alarm with buzzer every second, after 180 secnons, reserved power supply is broken,alarm will be over.

（VI）System Application:

Open all of water valves in heaer

Turn on ***water pump*** , ***pump*** light shines, you can utilize remaining heat from motor water tank to warm. If heating, turn on ***heating*** switch， heater goes into normal combustion state after about 20 sec, ***combustion*** light shines. Defrosting and radiant switches can be turned on or shut down at any moment. If being in trouble,***fault*** light shines,after shooting ,restart heater to work normally. If not using heater in summer, water-exhausted valve need be closed.

Be be prohibitted to shut down generel power in bus before *combustion* light quenches,or not ,it will damage heater and reduce its life!

IV Safeguard and Maintenance

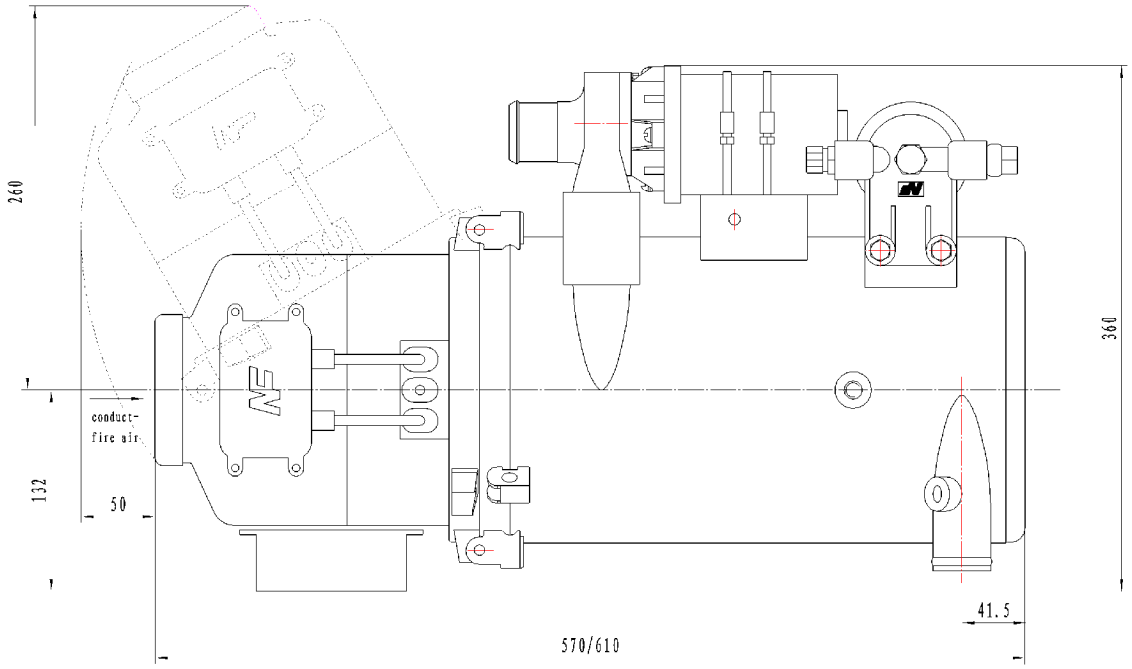
1 filter need be cleaned or filter core need be changed every 2-3 years
2 keep oil tank clean
3 keep circuit and oil pipes expedite, and parts are joint tightly.
4 Guarantee inlet and exhausting openings straightway
5 clean accumulating carbon timely
6 clean filtering net and oil jet timely
7 check system before usage every year（floor on which heater is fixed is smeary or not ）

V Installation

（I）installation

selecting product type,installation is seemed to be more important, because it decides usage effect of warming system directly. Installation has five steps:

1. To installe heater conveniently, please refer to the dirgram(below),heater should be installed in a cabin alone with not too high temperature and no combustible. Inlet and exhaust air openings must be clean not to inhale snowflake and spattering spray, air-exhausted opening can't face to the direction of driving.



2.Inlet-air of heater is ample, so a shutter (total area≥100cm^2) should be cut in the side of cabin, and waste air is prohibitted to be inhaled to inlet-air pipe to affect the operation,air-exhausted pipes stretch to the outside of cabin.

3.Oil pipe ($\phi 8\times 1$) is made from nelon colophony, joints M14×1.5, pipes must be joint tightly. Difference of oil tank liquid surface and heater center is within ±500 ㎜, distance between in-oil joint and surface of oil pipe is within 3m, heater pipes are single ,they can't be used with others pipe together.

4.Electric connection refers to circuit diagram

5.Canalage of heater has reasonable arrangment,affusion is at the top , position of heater is as low as possible, pipe can't be converted into hard bend, pipes resistant-pressure>6 kg/cm^2

（II）Fuel

heater with diesel can use oil tank with motor together,and it also can be equiped with a tank alone.If using diesel in winter,guarantee not to produce lump wax,because lump wax will make pipes jam to affect heater operating normally.

（III）Test

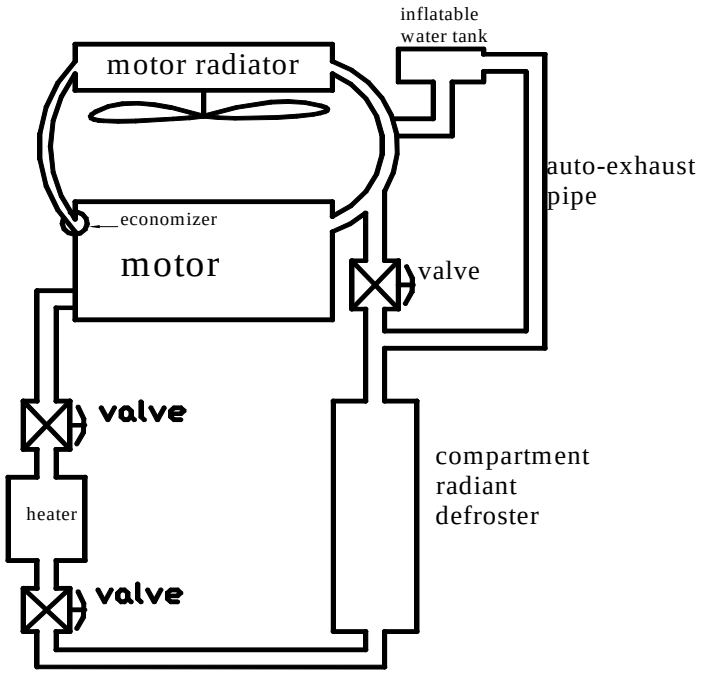
For using heater better ,after finishing installing heater and radiator, be sure to test heater, and repeat four steps below after exhausting every time：

1 Open all of the valves,operate motor after water tank is filled with water, run water pump of heater.
2 Open exhausing valve,and keep stepping on the gas, at the same time,continue infusing water(antifreeze)。
3 Water comes out from exhaust valve, go on stepping on the gas, add water(antifreeze)， open exhaust valve.
4 Repeat these steps N times,pipe way will be unblocked.

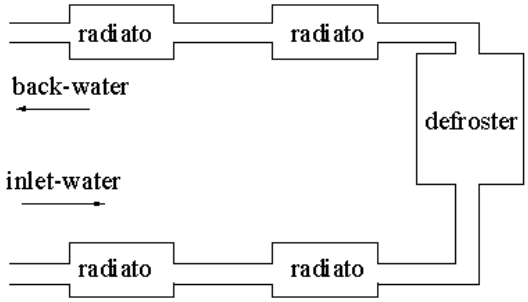
Note: Only system is filled with water,water pump works normally.

IF SYSTEM IS NOT FILLED WITH WATER, WATER PUMP WILL BE SLACK, AND HEATER CAN NOT WORK NORMALLY！

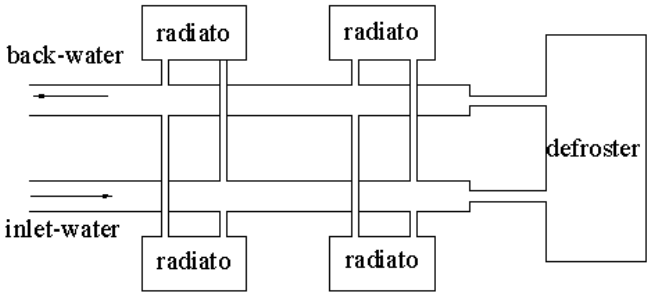
（IV）heating installation diagram：



compartment defrosting and radiant diagram



series connection



parallel connection

VI Trouble and Shooting

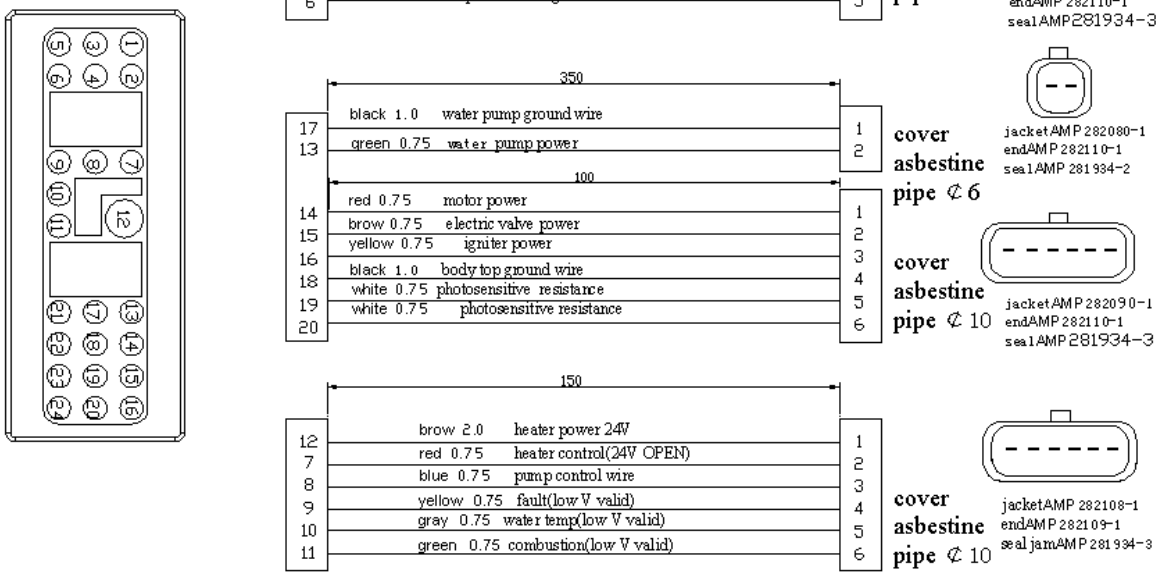
fault	reason	shooting
Water pump light doesn't shine,machine doesn't work	Power wire loop is not straightway or fuse is broken	Check circuit or change fuse
	Circuitry joints loose, inserts oxidize	Tighten or change joint
	Join circuitry wrong, ground wire contactsharmfully	Check circuit
	Control switch is damaged	change
Start,heat light shines， but machine doesnt go into combustuion state, and trouble and alarm to stop	Oil surface low, form wax, air leak, or jam	Add oil ,keep oil route clean,change
	Electricity in battery loses seriesly（<20V）	Recharge or change accumulator
	Temp control switch opens circuit	Change
	Electromagnetic valve works unnormally	change
Open,*heat* light does't shines, electrode does't discharge	Position of electrode is not adjusted fitly	readjust
Combustion is not steady,smokingand noisy	Voltage it too low	Recharge or change accumulator
	Air inlet and exhaust is not ecpedite,or air adjusting not fit	Clean jam out, adjust air opening
Water temp.of heater>85℃, nostop	Water temperature transducer damaged	change
Smoking, no back-oil	Oil pipe or filter parts jam	dredge
In winter,water temp.is high,but in-bus temp.is low	Water circle is not straightway	Open all of valves or exhaust
Water pump is slack	Seal part is damaged seriously	change
	No liquid in pump	Change seal-rubber parts
	Antifreeze does not cirlce, thereis air jam	Exhaust and add antifreeze
Smoking when combustion	Oil pressure is too little to produce oil fog	Clean jam out
	Air opening is adjusted down,inlet air is not enough	Adjust up
	Exhausing is too ample, or oil quanlity is pretty	Adjust down
Jet drops oil	Eleltrode position isnot fit	adjust
	Oil jet is too dirty to form oil fog	clean
	Pressure is low	Adjust pressure
	Air in the pipes between pump and jet	exhaust
Heater body is superheat	Electric valve is too dirty or invalid	Clean or change
	Air jam in the heater	exhaust
	Valve in circling system is not be opened	open
	Motor of water pump speed is low	check
Open,*heat* light doesn't shine, machine can't work normally	Control box is damaged	Change
	Temp-control switch acts	Change
Open,*heat* light shines, schedule is not according with appendix1	Control box is damaged	Change

VII、Meaning of Trouble Word

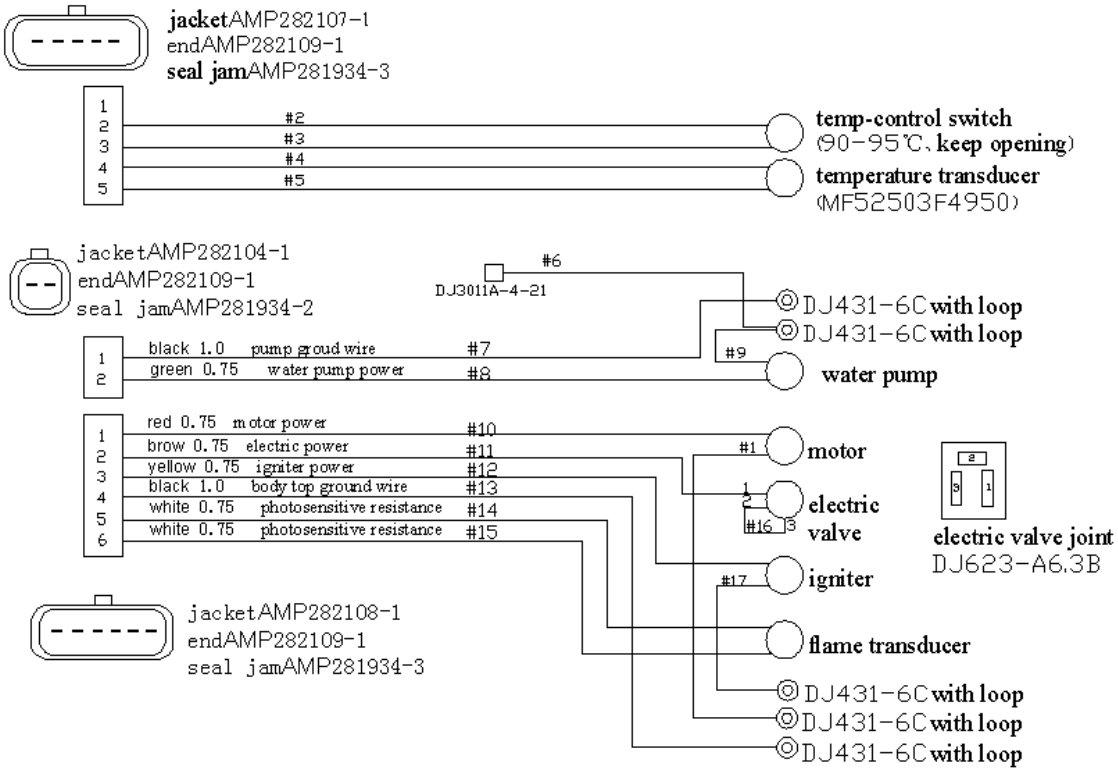
show	reason
1、flash once ,stop 3 seconds	fail to ignite
2、flash 2 times,stop 3 seconds	igniting is broken and failed
3、flash 3 times,stop 3 seconds	keep combustion after stopping 40 seconds
4、flash 4 times,stop 3 seconds	transducer is damaged
5、flash 5 times,stop 3 seconds	photosensitive resistance shows shortcircuit
6、flash 6 times,stop 3 seconds	visional light fault（photosensitive resistance motion when electrode discharges）
7、*fault light* keeps shining	control paneo is in trouble—check if load has over current，or not ,control panel is damaged
8、flash 8 times,stop 3 seconds	controller is damaged

Appendix I：heater wiring diagram

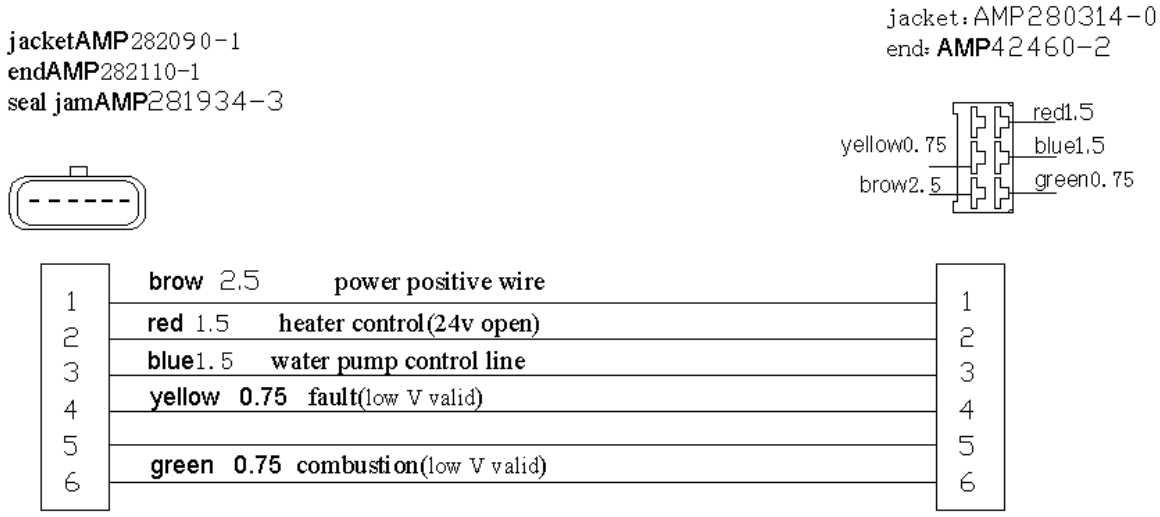
(1)control panel wiring diagram：



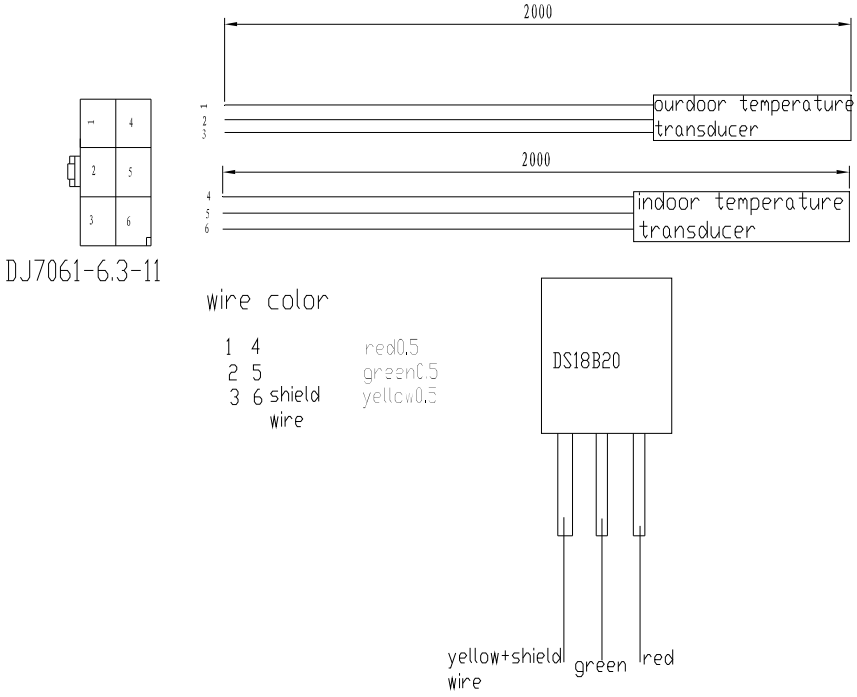
(2)heater wiring diagram：



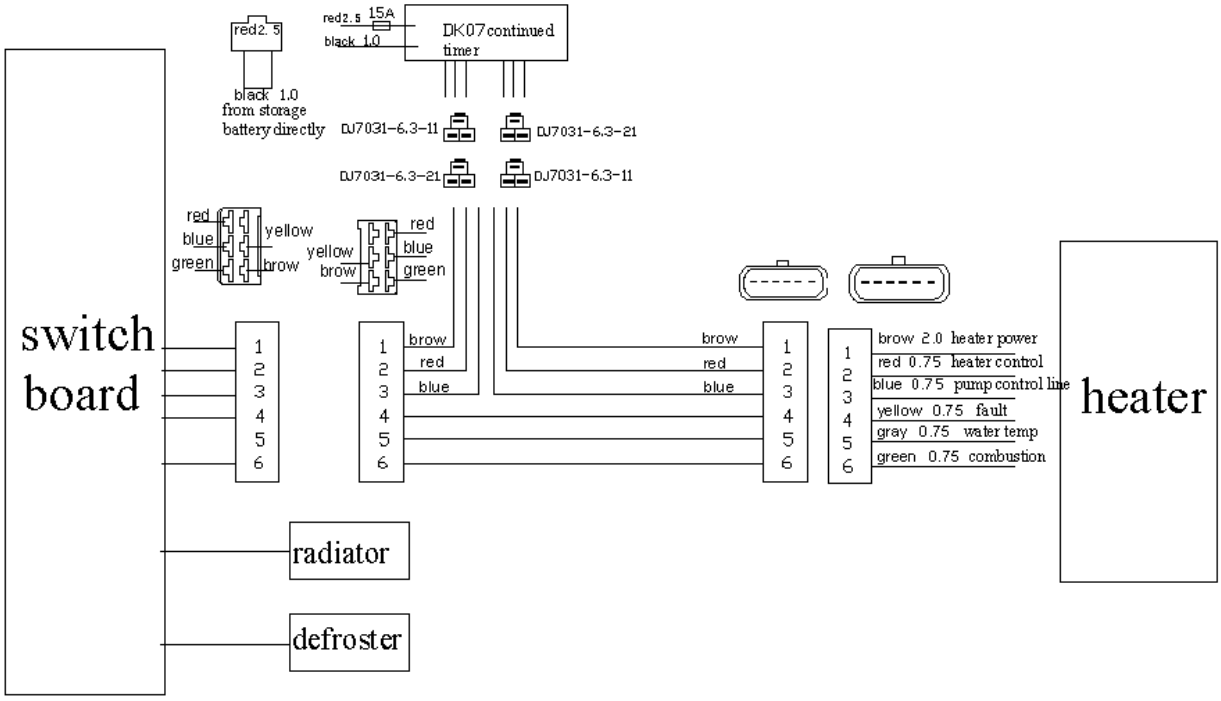
(3) **wire harness diagram(heater main body→control panel)**:



(4) transducer wiring diagram:



(5) circuit diagram



Appendix II Dimension

size / type	A	B	C	D	E	F	G	J	K	M	N	P	Q	R	dimension		
															L	W	H
YJP-Q16.3T	240	61	234	70	36	150	160	10	15	335	41.5	195	180	220	570	360	265
YJP-Q20T																	
YJP-Q25T															610		
YJP-Q30T	280																
YJP-Q35T