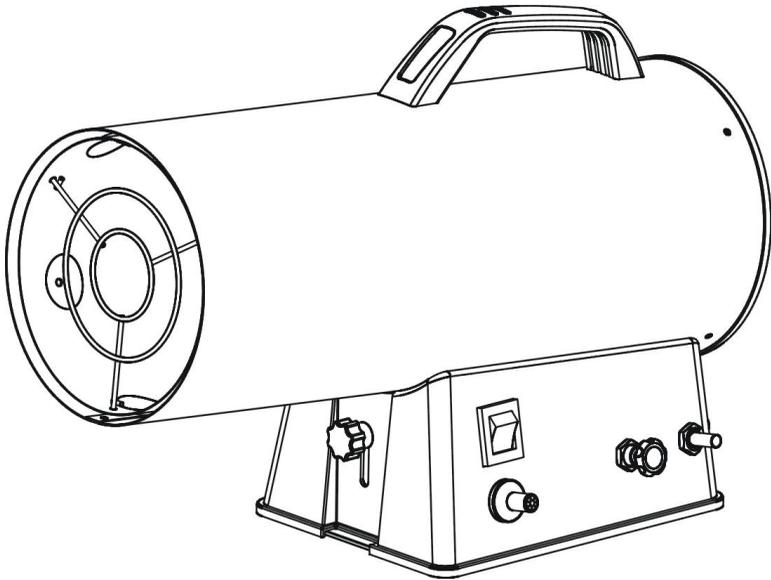


# Direct gas fired air heater

## User's manual

Model: ZSG101 35845(ZSG151) 35850(ZSG301) ZSG401



Dear customer: thank you very much for choosing our products, it's our pleasure to offer you our products and service. Please read the user manual carefully before using the appliance and operate following the operation instructions in this manual, in order to prevent fire or other accidental danger. Keep this manual in a safe place for future reference. Any understanding problem relates to this manual please contact your dealer.

**Warning:** During operation always provide adequate ventilation and keep a 2.5 m safety distance away from combustible articles.

### **safety warnings**

For your own and other's safety please read this USER'S MANUAL and follow its instructions carefully.

### △ Danger

- 1、 Never use the heater where flammable vapors may be present, there is danger of explosion, fire and burning。
- 2、 Always provide adequate ventilation during the use. Only use the appliance in well ventilated area, the air must be regular exchanged during the use (two times/one hour) , inadequate burning caused by oxygen shortage can cause carbon monoxide poisoning.
- 3、 Minimum ventilation requirements: When the appliance is used in inner room, make sure the room space is no less than 140 m<sup>3</sup> and the average air-circulation opening area is no less than 350cm<sup>2</sup>
- 4、 When gas leakage happens, firstly cut off the gas supply resource, then open all ventilation equipments, use more fan to dilute the leak out gas, (attention: do not use equipment which can cause sparkles when the leakage gas was not adequate diluted.)
- 5、 Do not put the machine in basement or use it under ground level, to avoid danger.

### △ Warning

- 1、 The appliance shall not be directed towards the gas cylinder
- 2、 Don't use spay products at the location where the heater is used, the gas from the spay tin can cause danger of fire and explosion.
- 3、 Don't use the appliance in place with combustible powder (wastepaper, wood crumbs, fibre scraps) , if these powder are sucked in the heater and heated up,flake and spark may be ejected out and cause fire and burning danger.
- 4、 Never block air inlet or heating part, it can cause abnormal burning and fire.
- 5、 Never modify the heater, alteration may cause malfunction and fire, is very dangerous
- 6、 This appliance is only for heating use in public area, should not be used for household heating.

### △ Attention

- 1、 In order to prevent fire while in operation, please don't place articles near the heater. Keep all combustible materials away from heater. Minimum clearances: Outlet(front) 2.5M, air inlet(rear)2M, top 2M, side 2M.
- 2、 While in operation, make sure that the ground surface does not overheat, overheating may cause fire.
- 3、 Do not fill fuel tank while heater is in operation, make sure the heater stopped and the flame extinguished before you fill the tank. Filling while in operation may result causing fire。

- 4、 Before use the appliance, make sure that the voltage and frequency on site is in accordance with the ones shown on rating plate
- 5、 Not to be used for the heating of habitable areas of domestic premises; for use in public buildings, refer to national regulations
- 6、 Don't expose the appliance to rain or snow, never use it in humidity places either. Pull out the plug before the routine maintenance and examination.

#### △ Cleaning and maintenance

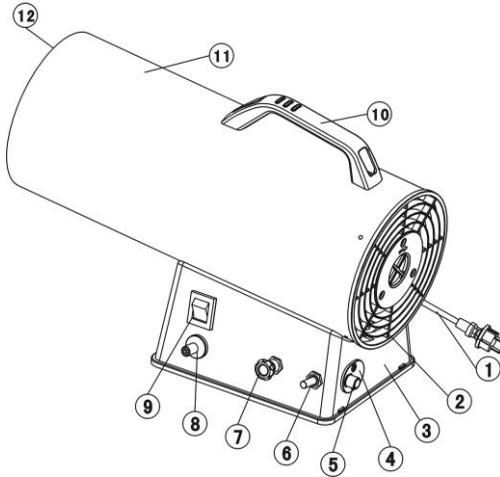
- 1、 Keep the unit clean and remove the dust. Clean the unit at least once a year. Use damp clothe to clean if it's too dirty.
- 2、 Let the appliance checked by customer service center once a year.
- 3、 Keep the appliance far away from inflammable objects.
- 4、 When the appliance will not be in use for a long time, please : remove the plug from the outlet and gas supply pipe from the appliance, then put a protection cover on the inlet pipe connection and place the appliance in a dustproof bag, then put it in a cool and dry ort out of the reach of child. Before you put the appliance in use again, make sure the fan works well and no inflammable material is attached to the unit.
- 5、 the need for isolating the appliance from the cylinder by means of the cylinder isolating valve when not in operation

***Warning: do not disassemble the appliance unless authorized by the supplier; do not clean or repair the unit when it's hot, or still in use, or the flexible pipe is not removed, or the plug is not pulled out from the socket yet. Danger of scalding or electric shock!***

#### **Brief Introduction of Products**

- 1、 This heater is a direct fired air heater, it incorporates a fan motor to increase air circulation and enhance the oxygen supply to ensure the effective gas burning. It warms up the room as a space heater. By adopting the method of direct fired air heating, it can achieve high heat input while keeps the energy consumption.
- 2、 This product incorporates a multifunctional electromagnetic control device which enables power shutoff-, flame failure- and overheating protections. The three kinds of protections prevent the gas leakage and potential carbon monoxide poisoning and fire danger induced by gas leakage.
- 3、 A gas rate adjustment valve is installed in this product, so the heat input can be regulated to fulfill variable requirements at different locations.

## Overview of Appliance



- 1、 Power Cord 2、 Fan Guard 3、 Base 4、 Fixation Nut for Gas Inlet  
5、 Protection Guard 6、 Flameout Protector 7、 Plastic Knob 8、 Igniter  
9、 Power Switch 10、 Plastic Handle 11、 Out Shell 12、 Air Outlet Grid

## Technical Data

Gas category	Gas pressure	Rated voltage	Motor power input	Max. gas consumption	Max. heat input	Hot air output
G30-I3B/P	0.5bar	230V 50Hz	25W	0.74Kg/h	10KW	300m <sup>3</sup> /h
G30-I3B/P	0.7bar	230V 50Hz	25W	1.11 Kg/h	15KW	300m <sup>3</sup> /h
G30-I3B/P	1.5bar	230V 50Hz	70W	2.2Kg/h	30KW	750m <sup>3</sup> /h
G30-I3B/P	1.5bar	230V 50Hz	70W	2.9 Kg/h	40KW	750m <sup>3</sup> /h

## Operation Instructions

- 1、 Prepare a full cylinder gas according to the heating requirements 。 (The gas container specification: no special requirements, the user can choose a proper container according to heating requirements and the gas consumption on marking label or consult the gas supplier.)
- 2、 Connect one end (with pressure adjusting valve) of the gas hose to gas cylinder, tighten the connector nut to make sure no gas leakage happens and open the gas tap. (Figure 1)

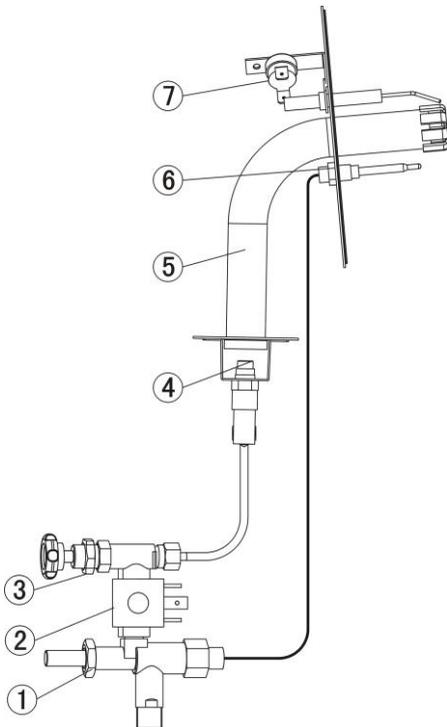
- 3、 Put the heater on a stable working underground, take away the protection guard from the machine, connect the other end of gas hose with machine and tighten the locking connector nut to ensure the soundness of the gas inlet. (Figure2 )
- 4、 Turn-on the gas container knob (Figure3 )
- 5、 Make sure the machine is proper connected with the gas cylinder and the power switch is at the “OFF (O)” position, plug the power plug in the socket outlet, shut on the power switch (put the power switch at the “ON (1)” position) . (Figure 4)
- 6、 When the turning of the fan blades becomes stable, use the right hand to push the aluminum handspike of the flameout protector and keep for 10 seconds, then use the left hand to press the igniter button for ignition.after the gas ignites keep on pressing the handspike for another 10 seconds then release the right hand and the gas will burn continuously. (Figure 5)
- 7、 Turn the adjustment knob to regulate the flame length and make it comply with the corresponding heat input. (Figure 6)
- 8、 Repeat the above 2-7 steps when the machine runs out of gas and a new full cylinder is to be replaced. ( *witch shall be undertaken in a flame-free atmosphere*)

		
<p>Tighten the connector according to the arrowhead direction</p>	<p>tighten the connector according to the arrowhead direction</p>	<p>open the gas supply tap according to the arrowhead direction</p>
		
<p>put the power switch at position “1”</p>	<p>ignite</p>	<p>Adjust flame magnitude</p>

**Attention:**

- 1、 When you operate the machine according to the above procedures and the heater doesn't operate correctly after three times ignition, never try to ignite again under this condition. There is explosion danger caused by high gas concentration! contact your dealer in time to clear the reason of malfunction.
- 2、 During the use try not to bend the flexible pipe to prevent the break of the pipe and the danger of gas leakage.
- 3、 Always equip the correct size of pressure adjusting valve and gas hose when using the heaters,( size of pressure adjusting valve: pressure  $P_u=700\text{mbar}\pm 70\text{mbar}$ . Flow volume  $Q_n=1.5\text{kg/h}$ )
- 4、 For the length of the flexible tube you may consult your gas supplier. A length with 1.5mis recommended, the type of the flexible pipe can be: 6.3mm High Pressure LPG Hose BS3212-Class 2/EN1763-1-Class 3-20Bar propane/butane or of higher standards.
5. The maximum allowable cylinder size is 10kg.

**Gas Supply Circuit**

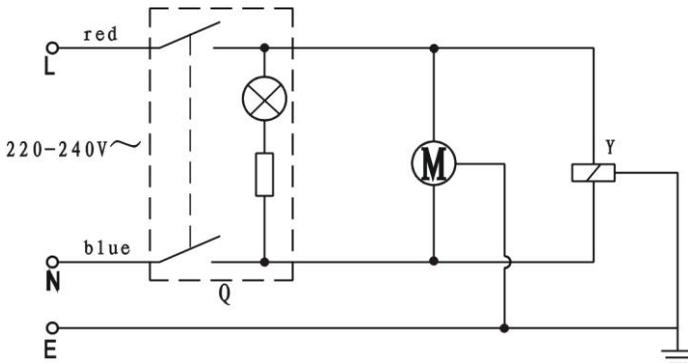


Item	Parts name
1	Flame failure protector
2	Electromagnetic valve
3	Adjustment valve
4	Gas nozzle
5	Burner Assembly
6	Thermocouple
7	Thermostat

## Working principles

When the machine is connected to the gas supply, the gas passes in sequence the following parts: 1、flameout protector 2、electromagnetic valve 3、gas rate adjustment valve 4、gas nozzle 5、being ignited by the high-voltage spark plug and burning at the burning head。 6、 current occurs in the thermocouple due to the heat output by gas burning. 7、 the thermostat activates a electric circuit to enable the small electromagnetic valve in the flameout protector magnetizing the armature of flameout protection valve, the gas passes through and burns continuously。

## Electric Circuit



## Requires a Hose and Regulator

- 1、 In order to use more safety and to keep the machine well working, Please follow below requirements to operate, make sure to buy the right regulator and hose for this machine. regulator specification: enter press 2.5-16Bar / out press 700mbar+70mbar Flux : 1.5Kg/h
- 2、 The nut which in one end of the hose connected with machine specification is G1/4L maintenance of the appliance.

## Maintenance of The Appliance

- 1、 After the connections of flexible pipes and valves and before the use of the appliance the user can check the soundness with liquid mixture of soap and water. In case bubble happens, which indicates that there is leakage, readjust the unit. Without bubbles, you may begin to use the unit.
- 2、 The user shall choose the proper pressure-release valve according to the working pressure indicated on the marking label.
- 3、 Examine the burning after the unit was ignited, the normal flame is blue and it won't get out of the front cover, the flame on the burn head is stable and the full circle has equal shape. Not being like this, there is something wrong with the burning.

- 4、 When the appliance is used under unsafe circumstances, at least a professional person shall be assigned to supervise the operation, to keep the appliance away from inflammable objects at any time. And after the service wait until the appliance cools down to ambient temperature before leaving. It's strictly forbidden to use the appliance in a place without adequate ventilation.
- 5、 A list of spare parts available: no spar parts and attachments are supplied when the appliance leaves factory, in case of need please enquiry and purchase the parts from your gas supplier or your dealer.
- 6、 When the gas container insulation valve failed and the gas supply can not be shut off normally, first turn off the power switch, then pull out the plug, send the unit together with the flexible pipe, gas container to gas supplier for repair. (attention: do not lose the flexible pipe connection.) .

### **Warning of local regulations**

For issues not mentioned in this manual please consult your gas supplier for help. Use the appliance according to the local law requirements.

### **Troubleshooting Guide**

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
Fan does not turn when electricity is connected	<ol style="list-style-type: none"> <li>1.No electric power to heater</li> <li>2. Blades of fan in contact with heater Housing</li> <li>3. Fan blades bent</li> <li>4. Fan motor defective</li> </ol>	<ol style="list-style-type: none"> <li>1.Check current at outlet. If voltage is correct, inspect extension and power cords for cuts, frays or breaks</li> <li>2.Check housing for damage. Be sure there are no dents in the housing obstructing the fan</li> <li>3. Straighten all fan blades</li> <li>4. Replace Motor Assembly</li> </ol>
Heater will not fire (ignite)	<ol style="list-style-type: none"> <li>1.No spark at ignition needle</li> <li>2.Incorrect spark gap</li> </ol>	<ol style="list-style-type: none"> <li>1.Inspect ignition needle wire. Re-attach, or tighten if loose. Inspect ignite, and replace if necessary.</li> <li>2.Set plug gap to 0.28" (7mm)</li> </ol>
Heater stops running by itself	<ol style="list-style-type: none"> <li>1.Temperature inside heater is too high, causing thermal switch to shut down operation</li> <li>2. Damaged thermocouple</li> <li>3.Damaged flameout protector</li> <li>4.Dust or debris accumulated in heater</li> </ol>	<ol style="list-style-type: none"> <li>1.If heater input or output is restricted, the inside temperature can become too hot. Keep the areas in front and behind heater clear of obstructions</li> <li>2.Replace thermocouple</li> <li>3.Replace flameout protector</li> <li>4.Clean inside of heater</li> </ol>