

## HEAT & PRESSURE CONTROL FOR HAKKO AIR PUMPS

Linear style air pumps do run hot to the touch, especially down low on the body.

Hakko pumps will run normally around 65 degrees C or 150 + degrees F. The thermal overload safety will turn the pump off approaching 100 degrees Centigrade or 210 degrees F.

There are some precautions to take to prevent the air pump from getting too hot.

1) Position the pump in an area of good external cross-flow air circulation. If the pump is in a box on a hot day in full sun the Thermal Overload could be set off. In a box or under a fake rock add fans for cross-flow ventilation. Airflow should be directed under the feet.

2) You must allow proper air ventilation of the pump through the air line and diffusers. The pump cools by drawing air in through the top of the housing and pushes the air through the air lines and air diffusers. Kinked air lines or plugged diffusers will cause the pump to run hotter than normal. This excess heat will wear out the rubber diaphragms more quickly and could set off the thermal overload. For example, the Hakko 80l can produce 80 liters per minute but if the air distribution system only allows 40 lpm, the pump will run hotter. This also relates to water depth, pipe size and pipe length. If you are pushing very deep or through small pipe at long distances then the pump will have to work harder and will run hot. The built in thermal overload may shut the pump off and cool for 10 to 15 minutes and then turn on again. The life of the rubber diaphragms will be shorter.

- Max depth for Hakko is around 8-10 ft deep. Depths of 4 ft to 6 ft for ideal performance.
- Provide large size air tubing of 3/8" for HK25L through HK40L and 1/2" to 5/8" or bigger for the larger size air pumps. The HK150 to 250 may require up to 1 inch air tubing. You may split the air flow into smaller airlines, but your main line should be large diameter of 5/8 inch or bigger. Use 1" pipe for long pipe runs over 50 feet. Use 1" pipe for the Hakko 100L thru Hakko 250L.
- Do not use pipe lengths longer than 100 feet regardless of pipe size.
- Provide sufficient numbers and size of air diffusers to ventilate the full discharge of air. Every air diffuser has a corresponding maximum air flow per diffuser. Choose your air diffusers carefully. The rubber membrane style diffusers are ideal because they have very little back-pressure and can take high volumes of air flow and do not plug easily.
- Routinely clean ceramic type air stone diffusers with muriatic acid for 1 hour every 3 months or replace the diffusers if they are old.
- Provide an air bleeder valve if you cannot provide adequate diffusers or tubing size.
- Place the pumps in an open air flow area. If placed in a box add fans for cross flow ventilation.
- Protect the air pump from the direct sun and rain, snow or dirt.
- Periodically clean the top air filter.

Under normal circumstances your diaphragms will last at least 12 to 18 months. We have seen these diaphragms go 2 to 4 years under ideal situations. Diaphragm kits are available and easy to install.

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