SET UP AND OPERATION GUIDE
4900 SERIES POWDER TORCH AND DISPENSER

Safety Depends on You. This equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation … and thoughtful operation on your part. DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT. And, most importantly, think before you act and be careful.

INTRODUCTION

The 4900 series powder torch and dispenser is a highly specialized version of standard oxy-fuel gas equipment. The addition of iron powder into the preheat flame produces an extremely hot flame enabling the operator to cut metals that were previously difficult or impossible to cut with other oxy-fuel processes.

⚠ WARNING: Fumes and gases may be hazardous to your health

- Keep your head out of the fumes.
- Use enough ventilation and/or exhaust to keep fumes and gases away from the breathing zone.
- Special ventilation may be required when powder cutting stainless steel, cast iron, non-ferrous, other oxidation resistant metals or coated metals which could produce highly toxic fumes.
- Keep the exposure as low as possible and below the Permissible Exposure Limit (PEL) and the Threshold Limit Values (TLV) using mechanical ventilation. In confined spaces, or in some circumstances outdoors, or if exposure cannot be controlled to applicable limits, a NIOSH approved respirator approved for the powder and metal being cut may be required.
- The operator should be experienced and completely familiar with safe practices for oxy-fuel cutting torch operation. Powder torch operation produces significantly more sparks than normal cutting operations, therefore, the operator and any helpers should wear appropriate protective clothing.
- Safety and health information is available from various sources, including but not limited to, those listed below and applicable federal, state and local regulations.

Read and understand the manufacturer's instructions for this equipment and the powder to be used, including the material safety data sheet (MSDS), and follow your employer's safety practices. An MSDS for the powder and metal being cut is available from your welding distributor or from the manufacturer.

Reference Publications

- Safety in Welding, Cutting and Allied Processes (available from the American Welding Society, 550 N.W. LeJeune Road, Miami, Florida 33126 or free download from www.aws.org)
- AWS C4.2, Recommended Practices for Safe Oxyfuel Cutting Torch Operation (available from the American Welding Society, 550 N.W. LeJeune Road, Miami, Florida 33126)
- CGA P-1, Precautions for Safe Handling of Compressed Gases in Cylinders (available from Compressed Gas Association, 4221 Walney Road, 5th Floor, Chantilly, VA 20151
- AWS Fact Sheet No. 1 Fumes and Gases, (available from the American Welding Society, 550 N.W. LeJeune Road, Miami, Florida 33126, www.aws.org)
- Harris Products Group's Equipment Operation Safety Guidelines (HCSGB-6193)
- Occupational Health and Safety Administration (OSHA) regulations including those relative to Hexavalent Chromium

DISPENSER

The 4900 series powder dispenser is a container from which iron powder is delivered at an accurate and uniform rate to the powder torch. Pressurized nitrogen or oil-free dry compressed air is to be used to convey the powder through a special powder hose. The dispenser is equipped with an air filter, flow control regulator, bleeder valve and relief valve set at 35 psi.

⚠ CAUTION: The dispenser is not designed to be used at pressures above 35 psi. Do not adjust the pressure above 35 psi for any reason or the relief valve will open.

SETTING UP THE DISPENSER

Powder flow is controlled by the positioning of the powder transfer cup nut (fig.1) and regulator pressure setting. The transfer cup nut position should be set before filling the dispenser for the first time.

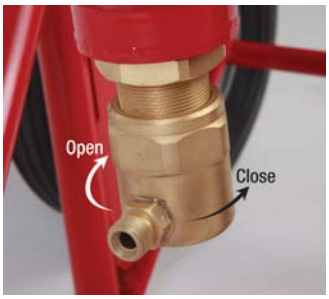

Figure 1

1. Facing the dispenser, close the powder transfer cup by turning the nut counter-clockwise until resistance is felt.
2. Open by turning the powder transfer cup nut clockwise two to three turns.
3. Position the hose connection so that it is facing the front of the dispenser.
4. Further adjustments should not be necessary, however, if required, repeat steps 1 through 3 above.
5. Attach the powder hose to the powder transfer cup outlet and the powder torch inlet before charging the dispenser with powder. (Hose is available in 25ft and 50ft lengths. Lengths beyond 50ft are not recommended.)

LOADING THE POWDER This model will hold approximately 100 lbs of iron powder (sold separately).

1. Before loading the powder, open the vent valve on top of the dispenser to release any pressure. Close vent valve after pressure has been exhausted.
2. Open the dispenser lid by turning the large wing nut counter clockwise until the bolt and nut can swing forward out of the way.
3. Pour the powder through the screen provided to remove any large particles.
4. Before closing the lid, make sure the lid gasket and sealing area is clear of excess powder to prevent leaking.
5. Lower the lid on the dispenser and seal it in place by placing the bolt and wing nut into the slot and tightening the nut hand-tight. Do not use a wrench.

⚠ CAUTION: Use only nitrogen or oil-free dry compressed air. Moisture in the powder will cause clumping and powder flow interruptions.

CONNECTING THE GAS SUPPLY TO THE DISPENSER

Figure 2

1. Connect the supply hose to the inlet ball valve at the back of the dispenser and to the supply regulator outlet.
2. Insure the inlet ball valve, bleeder valve and powder valve on the torch are in the closed position and the flow control regulator adjusting screw is backed off.
3. Set the supply regulator pressure between 50-100 psi.
4. After opening the inlet ball valve, the flow control regulator should be set between 5-15 psi for proper powder flow.

When shutting down the dispenser for short periods, turn off the gas supply or back off the flow control regulator adjusting screw and open the bleeder valve until pressure is removed from the dispenser. If the dispenser will be out of service for several days, remove the powder. If the powder is dry, it can be reused if returned to its original container and properly stored.

TORCH

The 4900 series powder torch is a torch that features a multi-jet powder head that fits over the cutting tip. The powder head has a ring of ports that encircles the cutting tip, feeding powder into the preheat flame and cutting oxygen.

NOTE: Before proceeding with the next step, the operator should have already connected the torch to oxygen and fuel gas supplies according to instructions provided with the torch.

OPERATION OF THE TORCH

Powder flow is controlled by the operator at the powder valve located on the torch. (Fig. 5) The valve only requires ¼" turn to be fully open by pushing the lever forward until it contacts the stop.

Figure 5 Valve shown in open position

⚠ CAUTION: Do not throttle the valve (less than fully open) as this will cause excess wear and premature failure of the valve.

Normal start-up and shutdown procedures for cutting torch operations should be followed to insure safe operation. Lighting and flame adjustment of the powder torch is the same as a standard cutting torch. **Refer to the tip chart below for proper cutting tip selection and pressure settings.**

1. After lighting, position the torch over the work as for ordinary cutting however the tip stand-off should be 1-1/2" to 2-1/2".
2. Push the powder valve lever fully forward to start powder flow.
3. Depress the cutting oxygen valve. With powder flowing, pre-heating takes only a fraction of a second, allowing flying starts to be made.

REMOVING AND REPLACING THE POWDER HEAD

1. Loosen compression nut 'A', then loosen and completely unscrew nut 'B'.

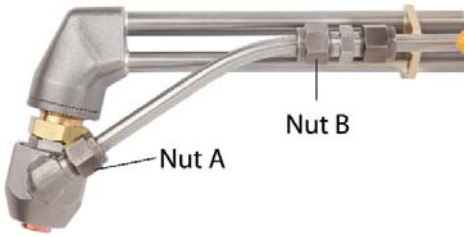

Figure 3

2. Powder head will slip off torch head to allow for removing, changing or tightening torch tip
3. Replace powder head in position over tip and nut, orienting it to align the compression fitting
4. Thread on nut 'B' completely then tighten both compression nuts 'A' and 'B'. (Do not over tighten) NOTE: The cutting tip should extend a minimum of 1/16" beyond the face of the powder head. (See Fig. 4)

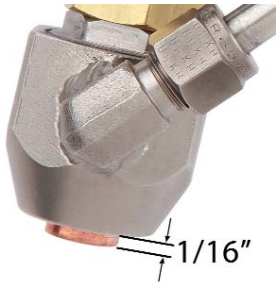

Figure 4

TIP STYLE 229				
Tip Size	6	8	10	12
Material Thickness	6" (150mm)	8" (200mm)	10" (250mm)	12" (300mm)
Oxygen Pressure	55-65 psi	60-70 psi	65-75 psi	70-85 psi
Oxygen Flow	600 ft^3/hr	900 ft^3/hr	1350 ft^3/hr	1950 ft^3/hr
Fuel Gas Pressure	8-10 psi	9-11 psi	10-13 psi	12-15 psi
Fuel Flow	35 ft^3/hr	42 ft^3/hr	47 ft^3/hr	52 ft^3/hr

POWDER HEAD MAINTENANCE

The powder head should be cleaned periodically or when powder flame is distorted.

1. The powder head is a two piece threaded unit that can be opened by turning the hex headed internal counterclockwise.
2. Clean powder jets using manual tip cleaner wires