

# POWDER DISPENSERS

100 LB. CAPACITY, P/N 2217290  
400 LB. CAPACITY, P/N 2223093



## CAUTION

These INSTRUCTIONS are for experienced operators. DO NOT permit untrained persons to install, operate, or maintain this equipment. DO NOT attempt to install or operate this equipment until you have read and fully understand these instructions. If you do not fully understand these instructions, contact your supplier for further information.

## I. INTRODUCTION

### A. PURPOSE AND DESCRIPTION

The powder dispenser is a container from which the powder required in various powder processes can be delivered at a uniform, accurately controlled rate. Pressurized nitrogen is required to convey the powder from the dispensers.

The powder dispenser is designed for operating up to 40 psi for general powder cutting and scarfing operations with any powder cutting or scarfing torch or with any powder cutting attachment. It is equipped with a nitrogen filter, nitrogen throttling valve, nitrogen regulator (40 psi delivery), relief valve (45 psi setting), relief valve (45 psi setting), and powder ejector assembly. The ejector assembly is supplied with a standard nozzle (P/N 65Z47) which is suitable for use with the AC-4 Powder Cutting Torch for cutting materials up to 10-inch (250 mm) thick. If greater economy of powder flow is desired for precision cutting of materials up to 2-in. (50 mm) thick, an accessory small-orifice ejector nozzle (P/N 65Z49) is available for replacing the standard nozzle. The nozzles can be easily interchanged without removing the ejector unit from the dispenser.

The cover can be easily removed for charging or cleaning the dispensers. The screen, located just under the cover, sifts out oversize particles of powder which might otherwise cause clogging. In the ejector, which is located in the bottom of the hopper, the powder is picked up by the nitrogen stream and conveyed from the hopper through the powder hose (P/N 2119297). The pressure regulator and

filter are mounted externally on the hopper.

### B. PRINCIPLES OF OPERATION

Powder flow to the ejector unit is the result of gravitational force and the pressure differential between the discharge end of the nitrogen line in the ejector and the surface of the powder when the torch powder valve is opened. Nitrogen passing through the ejector draws powder from the ejector baffle plate into the gas stream forming a nitrogen-powder mixture which then passes through the ejector outlet tube to the torch or lance. The ejector adjusting screw controls the amount of powder falling on the baffle plate; the regulator and throttling valve control the nitrogen supplied to the ejector and the hopper. By manipulating the ejector adjusting screw, the regulator pressure, and throttling valve, the proper nitrogen-powder mixture can be obtained.

## II. SETUP AND OPERATING PROCEDURE

### A. ACCESSORY AND SUPPLY REQUIREMENTS

1. For normal powder cutting and scarfing operations, use only OXWELD No. 200 Cutting and Scarfing Powder (731F00). Use only dry powder. Powder should be stored in a dry, warm location. For consistent operation, maintain a minimum of at least 50 lb. of powder in the dispenser.
2. Supply the dispenser from a source of clean dry nitrogen capable of delivering a minimum of 200 cfh at a minimum line pressure of 40 psig.

**NOTE:** Only cylinder nitrogen should be used as the

*powder-conveying gas. It should be supplied directly from the nitrogen cylinder regulator to the filter on the dispenser. Make up a special hose assembly with fittings on one end of the nitrogen regulator outlet. The 5/8" — 18 connection (adaptor 10Z30) on the filter may be removed and the 1/4-in. NPT inlet connection utilized, if so desired. Adjust the nitrogen regulator to deliver approximately 50 psig and make the smaller operating adjustments at the dispenser regulator.*

*screw setting and the dispenser pressure can be varied to obtain the desired powder flow.*

**IMPORTANT:** *Under no conditions should the dispenser be used with pressures above the maximum rating of 45 psig.*

## **B. PLACING A NEW DISPENSER IN SERVICE**

1. Remove the dispenser cover and the screen and with an air line clear the ejector unit, gas lines, and hose of all foreign particles.
  2. Completely close the throttling valve.
  3. Charge the dispenser with powder as noted in Section "A" above. Use only dry powder.
  4. Screen the powder through the screen provided in the hopper to remove any oversize particles. Securely reassemble the lid on the powder drum to prevent moisture or foreign particles from getting into the remaining powder.
  5. Put the cover on the hopper, and seal it in position by tightening the clamping wing screws hand-tight. Do not use a wrench.
  6. Hose connections:
    - a. All hoses and fittings should be carefully blown clear of water or particles of foreign matter before connection.
- CAUTION:** *Use only nitrogen as the powder conveying gas.*
- b. Connect the powder apparatus to the ejector unit located at the bottom of the hopper by means of the powder hose P/N 2119297.
  - c. Connect one end of the supply hose to the nitrogen source and connect the other end of the hose to the filter inlet connection.
7. Turn the adjusting screw on the ejector all the way in (clockwise) to closed position and open the dispenser throttling valve wide. NEVER close the throttling valve while powder is flowing through the dispenser.
  8. For cutting and pad washing operations using the AC-4 Torch or a torch with powder cutting attachments, adjust the dispenser as follows:
    - a. Back off the ejector adjusting screw 1/2 to 1-1/4 turns.
    - b. Open the powder valve on the torch, attachment, or machine valve block.
    - c. Regulate the dispenser pressure from 5-10 psi for the desired powder flow.

- d. Tighten the ejector adjusting screw locknut.
  - e. Back off the throttling valve as necessary to obtain smooth, non-pulsating powder flow.
9. Check the powder flow rate as per operating instructions in the torch instruction booklet by collecting, in a container, the powder discharge for 1 minute. If weighing facilities are not available, a household measuring cup may be used to approximate the weight of powder discharged. One cup contains approximately 24 oz. of loosely packed No. 200 powder. This cup must be loosely packed since 24 oz. of powder can be reduced to 5/6 the volume of a cup by jarring the cup. Density of loosely packed No. 200 powder is 0.1 lb/in.<sup>3</sup>.

## **C. SHUTTING DOWN A DISPENSER FOR SHORT PERIODS**

1. Shut off the nitrogen supply line valve or back out the regulator adjusting screw.
2. Open the bib cock until you get a "zero" pressure reading on the regulator.

## **D. SHUTTING DOWN A DISPENSER FOR PROLONGED PERIODS (e.g., overnight)**

1. Shut off the nitrogen supply line valve.
2. Close the ejector adjusting screw.
3. Open the torch powder shutoff valve.
4. Open the bib cock until you get a "zero" pressure reading on the regulator.
5. Turn the pressure-adjusting screw on the nitrogen regulator to the left (counter clockwise) until it turns freely.
6. If the dispenser will be out of service for several days, remove powder from the hopper. If it is still dry, the powder may be saved by putting it back into its original container.

## **E. OPERATING PROBLEMS**

1. **Powder flow steady but volume is low.** This condition is usually caused by too little powder falling on the ejector baffle plate. By backing off the ejector adjusting screw, powder flow will be increased, correcting the difficulty. To a limited extent, adjustment of the regulator can also be used to control the powder flow rate.
2. **No powder flow, with only nitrogen being discharged.** This condition occurs if the powder level in the hopper has become too low, moisture or oversize particles or foreign material are clogging the powder flow through the ejector, or the adjusting screw on the ejector is closed.
3. **No powder flow and no nitrogen flow.** This is usually a sign of an obstruction in the powder lines. The powder hose lines should be disconnected and cleaned. It may also result from one of the following conditions:
  - a. Closed torch powder valve.

**NOTE:** *For cutting operations, both the ejector adjusting* 2

- b. No hopper pressure.
- c. Completely closed throttling valve, or valve closed too far.
- d. Large leak at the throttling valve or at the cover gasket.
- e. Kinked powder hose.
- f. Clogged powder ports in the powder apparatus.
- g. Powder in the throttling line.

Complete readjustment of the dispenser, as stated in Section II-B, is generally necessary.

- 4. **Powder flow is unsteady.** This condition is caused by improper adjustment of either the regulator pressure or the ejector adjusting screw. When powder flows in spurts with a tendency to plug (excess powder), either increase the nitrogen flow by raising the regulator pressure, or decrease the powder flow by closing the ejector adjusting screw slightly.
- 5. **Powder flow gradually tapers off.** This may result from one of the following conditions:
  - a. Hopper almost empty.
  - b. Regulator valve open to wide.
  - c. Poor powder flow due to dampness.
  - d. Oversize particles in the powder.

### III. MAINTENANCE INSTRUCTIONS

#### A. RELIEF VALVES

A daily check of the relief valve is recommended to make certain that adequate relief is being obtained at 45 psi. The valve used is a standard safety valve set to relieve at this pressure.

The relief valve should be checked when the outfit is set up and ready to operate. Before you light the torch, do the following:

1. Open the powder valve on the torch or attachment.
2. Turn in the pressure-adjusting screw on the regulator to the right (clockwise) all the way.
3. If the pressure goes beyond 45 psi and the relief valve does not pop, shut off the dispenser and torch powder valves. Replace the relief valve with a new one.

#### B. EJECTOR UNIT

To remove the Ejector Assembly from the dispenser or to clean or replace parts, proceed as follows:

1. Remove the screen and all powder from the dispenser, and blow out the hopper shell with air.
2. Disconnect the tube assembly from the ejector inlet connection (11Z58).
3. Unscrew the powder conveying hose from the ejector outlet tube (11Z23).
4. Unscrew the adjusting screw (134Z02), taking care not to displace the powder baffle plate (52Z90) and spring (29Z73), and unscrew the lower locknut (136Z12) from the ejector body. (The locknut locks the adjusting screw in place once the correct powder flow is obtained.)
5. Unscrew the upper locknut (136Z12) from the ejector body (83Z93). (This locknut locks the ejector body to the dispenser.) The ejector body may now be lifted out of the dispenser. The ejector body may now be lifted out of the dispenser. The ejector nozzle is still in the ejector body. If necessary, this may be removed by unscrewing in a clockwise direction (left-handed threading).

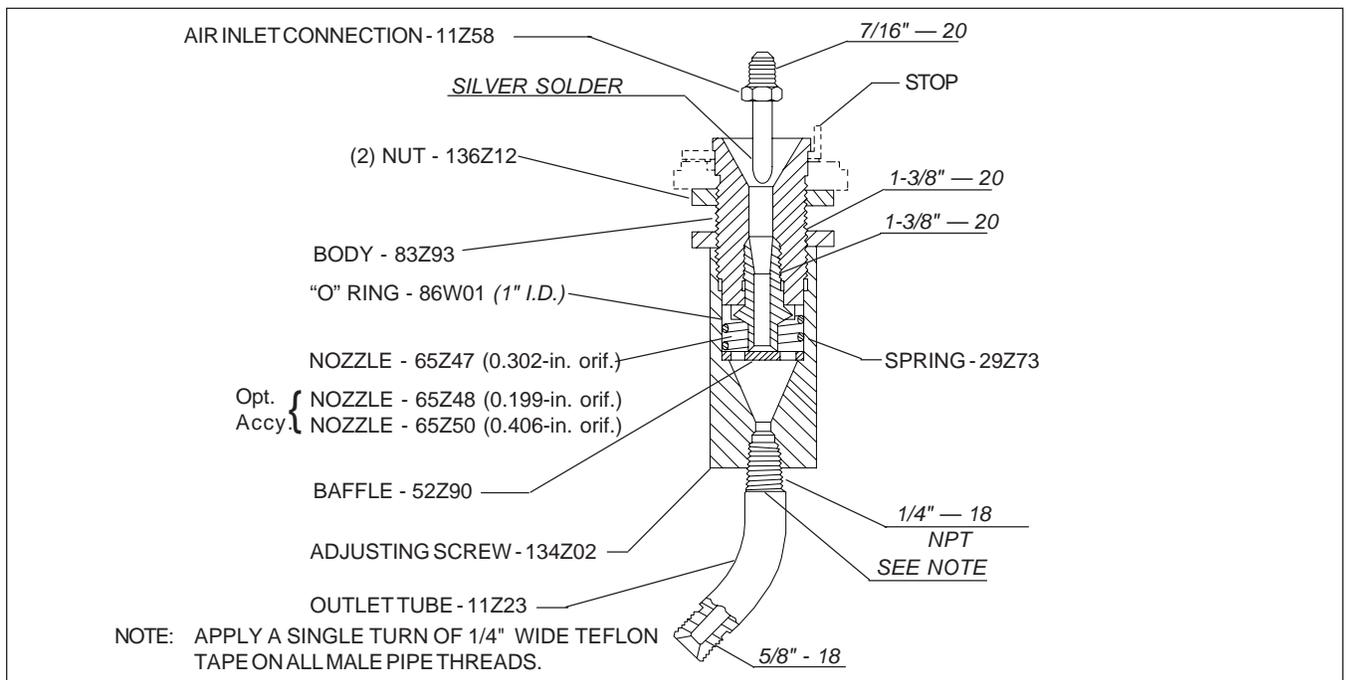


Fig. 1 - Ejector Assembly - Part No. 60Y43

6. To reassemble, reverse the above steps.

**To change Ejector Nozzles, proceed as follows:**

1. Follow steps 1, 3, and 4 in "Remove the Ejector Assembly from the Dispenser" above.
2. Unscrew the ejector nozzle in clockwise direction until it is free from the ejector body.
3. Screw in the new ejector nozzle in a counter clockwise direction and reassemble the ejector unit by reversing steps 1, 3, and 4 in "Remove the Ejector Assembly from the Dispenser" above.

**C. FILTER**

The filter is equipped with a transparent bowl. When water is seen to accumulate in the bowl, the filter should be drained by means of the bib cock on the bottom of the bowl.

**D. REGULATOR**

The regulator mounted on the dispenser is a commercial shop type with 1/4-in. NPT inlet and outlet connections. Refer to the manufacturer's instruction sheet packed with the dispenser for maintenance and parts information.

**E. DISPENSER LEAKAGE**

Nitrogen leakage from several spots on the dispenser can cause erratic powder flow. If, for any reason, there should be sudden leakage or venting of the chamber in the hopper above the powder while the powder shutoff valve on the

apparatus is closed, it is possible to draw powder back into the air throttling line. Powder in the air throttling line prevents normal adjustment of the dispenser, and will probably require dismantling for cleaning.

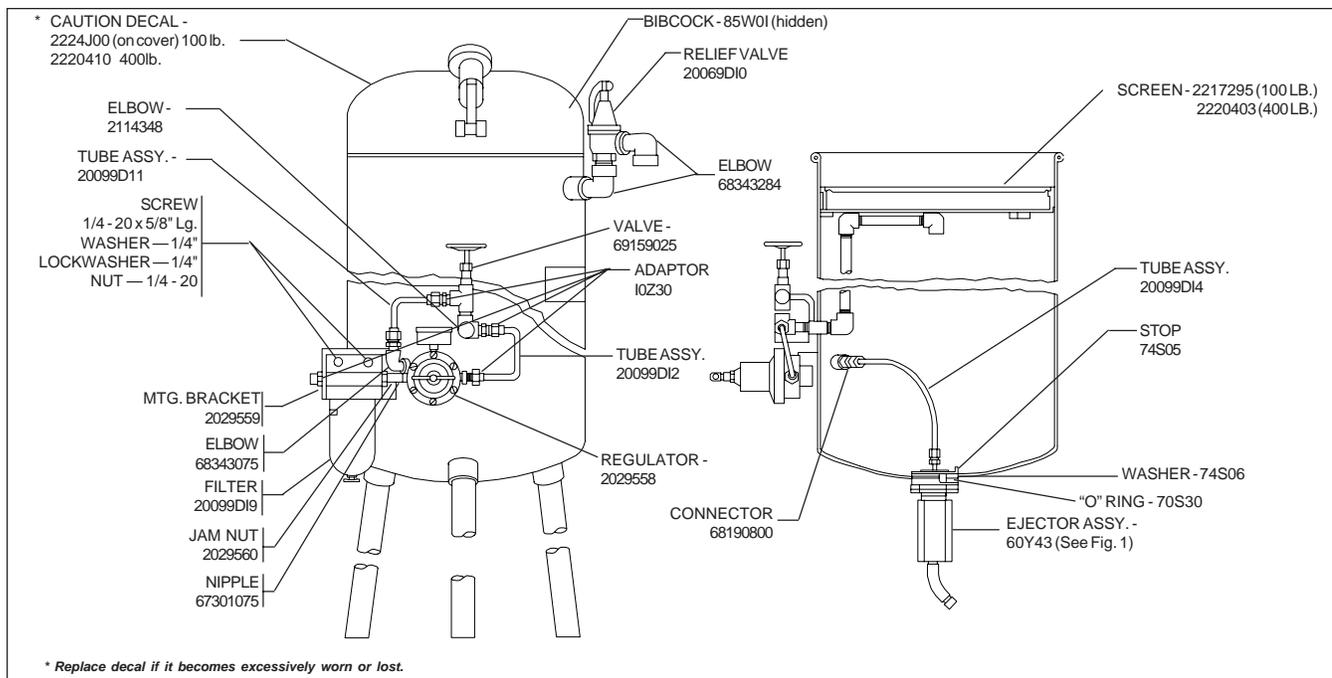
**IV. RECOMMENDED ACCESSORIES**

**A. POWDER HOSE, P/N 2119297**

Powder hose connections are fitted with 5/8" - 18 nuts to prevent powder lines from being connected to oxygen or acetylene lines. The procedure of blowing powder from hose fittings before making up the connection has been found helpful in eliminating the tendency to cause galling and seizing of the threads in hose connection nuts.

**B. NITROGEN SUPPLY HOSE, P/N 2211347, 110 ft. long .**

Nitrogen supply hose connections are fitted with "B" size A-W nuts and nipples.



**Fig. 2 - Powder Dispenser Assembly  
100 lb. P/N 22117290 (illustrated)  
400 lb. - P/N 2223093**