# PNEUMATIC ABRASIVE CONVEYORS MODELS 16-PAC, 24-PAC, 30-PAC AND 36-PAC O.M. 04117

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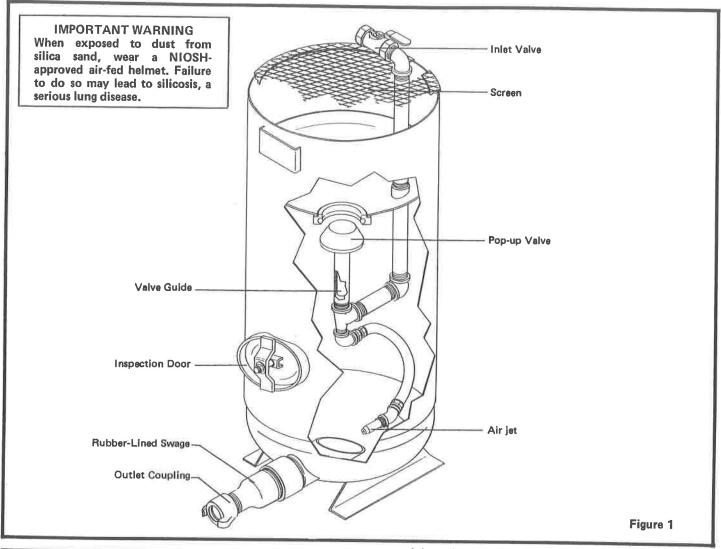
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It is the responsibility of the user to insure that proper training of operators has been performed and a safe work environment is provided.

Our company is proud to provide a variety of products to the abrasive blasting industry, and we have confidence that the professionals in our industry will utilize their knowledge and expertise in the safe efficient use of these products.

© CLEMCO INDUSTRIES CORP.
One Cable Car Drive
Washington, MO 63090
Phone (636) 239-4300
Fax (636) 239-0788





#### 1.0 INTRODUCTION

1.1 General Description. Clemco's Pneumatic Abrasive Conveyor (PAC) moves abrasive by means of compressed air. Air entering the unit through the inlet valve (Figure 1) causes the pop-up valve to seat and the vessel pressurizes. An air jet at the bottom of the unit entrains abrasive and forces it through the rubber-lined swage into the abrasive hose, which carries it to its destination.

#### 2.0 SET-UP AND OPERATION

#### 2.1 Set-Up

- 1. Start the compressor and bring it up to operating temperature and pressure. The minimum operating pressure for the PAC units is 40 p.s.i., and the maximum is 125 p.s.i. The best pressure for any particular job must be determined by testing.
- 2. Load the abrasive to be moved into the top of the PAC unit. Never load the PAC unit with the screen off.
- 3. Connect the air line from the compressor to the

inlet valve. For best performance, use a 1-1/4" I.D. or larger air line.

4. Connect the abrasive hose to the outlet coupling. Use 1-1/2" blast hose (available from Clemco in 50' lengths). Do not use ordinary air hose. Make sure the coupling gaskets are in place and not worn. Safety wire these couplings together through the holes provided.

#### 2.2 Operation

- 1. To start the unit, open the inlet valve. Abrasive conveying will begin immediately.
- 2. When you want to stop an empty unit or reload a unit, first make sure that all the abrasive is out of the conveying hose. (Abrasive left in the hose may flow back into the PAC unit and jam it.) Then close the inlet valve. The pop-up valve will open so that abrasive can flow into the unit.
- 3. Never leave abrasive in the unit overnight. Moisture may accumulate and cause the abrasive to jam. If jamming due to moisture is a recurring problem, install a moisture separator as near to the inlet valve as possible.

#### 3.0 MAINTENANCE

#### **IMPORTANT WARNING**

All maintenance should be performed while the unit is depressurized.

3.1 Replacing the Pop-Up Valve. To gain access to the popup valve, remove the inspection door assembly. Using a small pipe wrench, unscrew the pop-up valve guide (Figure 1) by turning it counter-clockwise. Remove the pop-up valve and guide from the machine, install the new pop-up valve and then screw the valve guide (with the pop-up valve in it) back into position inside the machine. Put a new gasket on the inspection door assembly before bolting the door back onto the machine. After tightening the bolts, test for leaks.

3.2 Replacing the Pop-up Valve Seat Gasket. Remove the old gasket by wedging your forefingers between the gasket and the retainer and slowly working it loose. Use a screwdriver if necessary. Push the new gasket all the way through the port and then fit it into the groovein the retainer. For the last few inches, pull up on the gasket and allow it to "pop" into position.

#### 4.0 REPLACEMENT PARTS AND ACCESSORIES

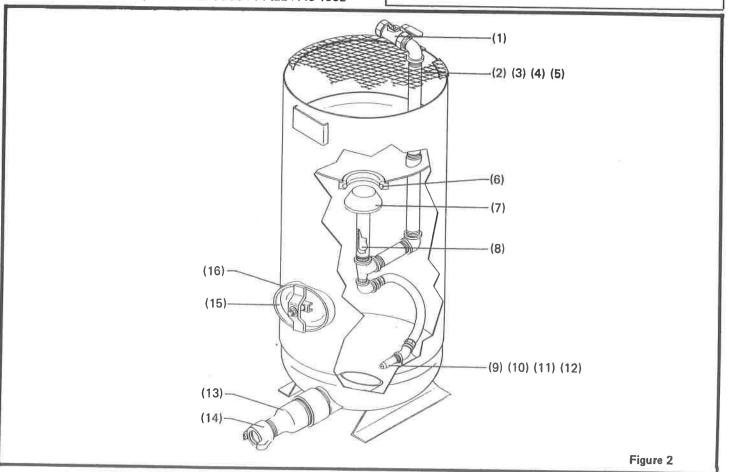
#### 4.1 Accessories

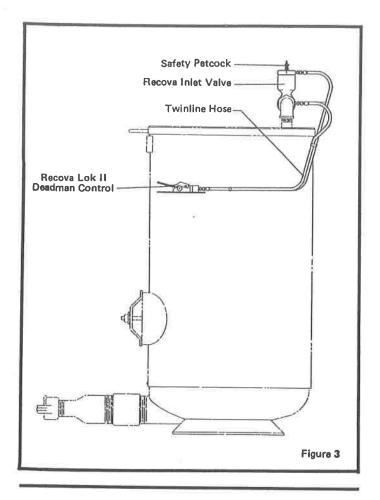
Discharge hose, 1-1/2" I.D. x 50'	8
PAC cycle timer ass'v., 115V a.c. 14 PCT 348	n:
ressure regulator with gauge	14
Recova-Lok II complete	n
Recova inlet valve	n
Twinline air hose, 5', coupled	2

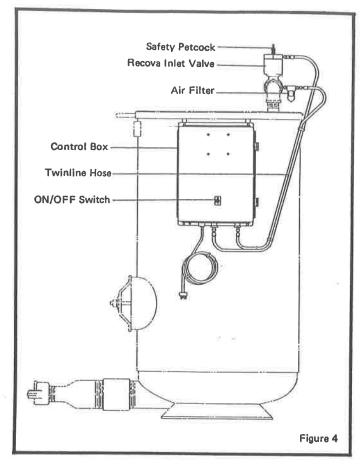
#### 4.2 Replacement Parts

Item	Description	Stock No.
(-)	16" Pneumatic Abrasive Conveyor	
(-)	with jet	PAC 1668
()	with jet	PAC 1669
()	with Jet	PAC 4142
oart	with jet	PAC 5281
(1)	1" ball valve with handle	PAC 2396
(2)	Screen, 15-1/2" dia., for 16" PAC 34	PAC 1666
(3)	Screen, 21" dia., for 24" PAC	PAC 1667
(4)	Screen, 31-1/2" dia., for 30" PAC 34	PAC 1713
(5)	Screen, 37-1/2" dia., for 36" PAC 34	PAC 1714
(6)	Pop-up valve seat, rubber	PAC 2225
(7)	Pop-up valve and shaft	PAC 2323
(8)	Pop-up valve guide83	O CDE 1046
(9)	Air Jet, 1/4", for 16" PAC	DAC 1606
(10)	Air jet, 5/16", for 24" PAC34	DAC 1607
(11)	Air Jet, 3/8", for 30" PAC	PAC 1600
(12)	Air jet, 1/2, for 36" PAC	PAC 1698
(13)	Rubber-lined swage	PAC 1699
(14)	Ouick coupling threaded 2"	PAC 1695
(15)	Quick coupling, threaded, 2"23	PAC 0562
(16)	Inspection door assembly, 6" x 8" 13 Inspection door gasket, 6" x 8" 13	PRP 2369

## IMPORTANT WELDING OF ANY KIND ON THIS UNIT RENDERS THE NATIONAL BOARD APPROVAL NULL AND







#### 5.0 ACCESSORIES

**5.1** Recova-Lok II (Figure 3). To install, unscrew the existing manual valve and replace it with the Recova inlet valve. Connect the Recova Lok II to the inlet valve by means of the twinline hose provided. Either leg of the hose can go to either fitting on the Recova-Lok II. The safety petcock on top of the inlet valve must be closed; otherwise the system won't work. To open the inlet valve, press in the safety button on the side of the Recova-Lok II and depress the handle. To close the inlet valve, release the handle.

#### 5.2 Electric Cycle Timer (Figure 4)

a. Introduction. If the cycle timer was purchased for use with a pneumatic abrasive conveyor, the kit should contain: a control panel, a1 inch inlet valve and an 18 inch length of twinline hose. The cycle time is designed for use with 120 volt a.c., 60 cycle current.

- b. Installation. First remove the manual inlet valve at the top of the PAC unit and replace it with the inlet valve provided. Be sure that the arrow on the body of the inlet valve points in the direction of the inlet pipe towards the blast machine. Place the control panel on the rim of the PAC unit using the brackets provided. Attach the air filter to the inlet valve. Be sure the flow arrow points away from the inlet valve. Connect the inlet valve to the control panel using the twinline hose supplied. The line leading from the air filter is connected to the inlet fitting on the control panel; the other line is connected to the outlet fitting. (The two ports on the valve are marked IN and OUT.)
- Operation. Connect the control panel to a 120 C. volt a.c., 60 cycle power source. This activates the cycle timer. After lifting the cover of the control panel, you will see the timer in the upper left hand corner. On the timer face are three arrows: a red arrow (permanently fixed at "O"), a black or off pointer (which times the filling function of a PAC unit) and a blue arrow. The blue arrowcontrols the time that a PAC unit conveys abrasive. The length of each cycle depends on many variables and thus is best determined by experience. As one guideline, it is recommended that the cycles be of equal length. Either cycle can then be lengthened or shortened, depending upon specific operating conditions.

#### d. Troubleshooting.

- 1. If the cycle timer does not work: Insure that power is reaching the control panel. Test for voltage using a voltmeter or an ohmmeter. Be sure that the ON/OFF switch to the left of the control panel is in the ON position. Insure that the air hoses to the control panel are connected to the proper fittings. An improper connection is indicated by a continual leakage of air from the small copper exhaust tube at the base of the control panel. Check the cycle timer for proper functioning. Insure that the blue and black arrows do not point straight up and cover the red arrow. If the red arrow does not move when the ON/OFF switch is ON, the timer is defective and should be replaced. If the timer functions but the valves on the PAC unit do not activate, remove the air inlet fitting at the base of the control panel and check for air. If no air is escaping, the solenoid is defective and should be replaced.
- 2. If the cycle timer works but air leaks from the outlet valve during the ON cycle: If the piston in the inlet valve is broken, replace it. If the outlet valve "chatters," insufficient air is being delivered to the outlet valve, and air hoses should be inspected for a loose fitting.

- 3. If the cycle timer works but the inlet valve does not open: Check the tightness of the hose fittings at the base of the control panel and the inlet valve. Check to be sure that the petcock at the top of the inlet valve is closed. Inspect the inlet valve to insure that the piston inside the valve is not frozen in the closed position. If the piston is frozen, lubricate the valve (see Maintenance) or replace it.
- 4. If the air continues to escape from the inlet valve when the switch is in the OFF position: Open the inlet valve and check for a worn or damaged valve seat or a weak or broken spring, and replace the respective part.
- e. Maintenance. Once a week, with the air off, place one to three drops of machine oil through the safety petcock at the top of the inlet valve. This will lubricate the inlet valve assembly.

#### f. Replacement Parts

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# PNEUMATIC ABRASIVE CONVEYORS Models 16-PAC & 24-PAC

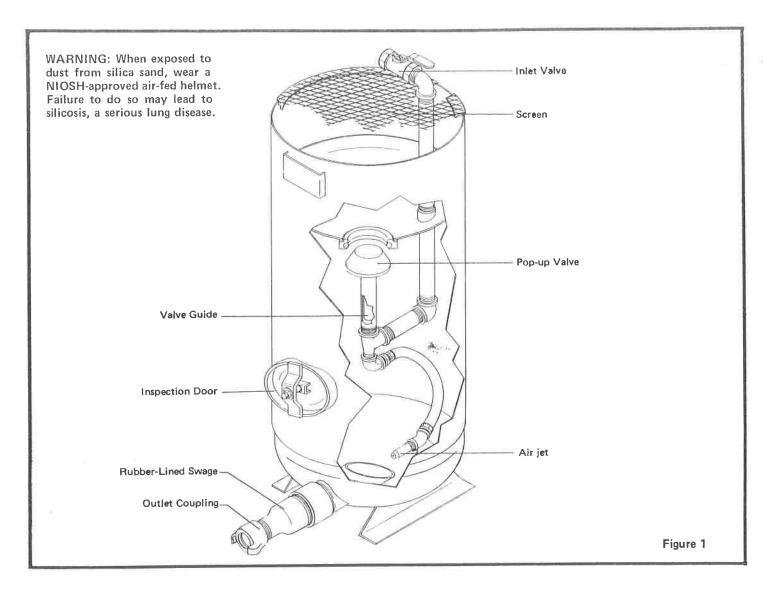


## ABRASIVE BLAST EQUIPMENT

**OWNER'S MANUAL** 

CLEMCO INDUSTRIES 2177 Jerrold Avenue San Francisco, CA 94124 Phone: 415/282-7290 Telex: 34416

Stock No. 87MAN 4117 Manual No. 145-1177 Date of Issue: February 15, 1978



#### 1.0 INTRODUCTION

1.1 General Description. Clemco's Pneumatic Abrasive Conveyor (PAC) moves abrasive by means of compressed air. Air entering the unit through the inlet valve (figure 1) causes the pop-up valve to seat and the vessel pressurizes. An air jet at the bottom of the unit entrains abrasive and forces it out through the rubber-lined swage into the abrasive hose, which carries it to its destination.

#### 2.1 Set-Up

- 1. Start the compressor and bring it up to operating temperature and pressure. The minimum operating pressure for the PAC unit is 40 p.s.i., and the maximum is 120 p.s.i. The best pressure for any particular job must be determined by testing.
- 2. Load the abrasive to be moved into the top of the PAC unit. Never load the PAC unit with the screen off.
- 3. Connect the air line from the compressor to the inlet valve. For best performance, use a 1%" I.D. air line or larger.

4. Connect the abrasive hose to the outlet coupling. Use 1½" blast hose (available from Clemco in 50' lengths. Do not use ordinary air hose. Make sure the coupling gaskets are in place and not worn. Wire these couplings together.

#### 2.2 Operation

- 1. To start the unit, open the inlet valve. Abrasive conveying will begin immediately.
- 2. To stop the unit when empty, or to reload, close the inlet valve. The pop-up valve will open so that abrasive can flow into the unit. Make sure that all abrasive is out of the conveying hose before closing the inlet valve. Abrasive left in the hose may flow back into the PAC unit and jam it.
- 3. Never leave abrasive in the unit overnight. Moisture may accumulate and cause the abrasive to jam. If jamming due to moisture is a recurring problem, install a moisture separator as near to the inlet valve as possible.

#### 3.0 MAINTENANCE

"1 Replacing the Pop-up Valve. To gain access to the pop-up valve, remove the inspection door assembly. Using a small pipe wrench, unscrew the pop-up valve guide (figure 1) by turning it counter-clockwise. Remove the pop-up valve and guide from the machine, install the new pop-up valve, and then screw the valve guide (with the pop-up valve in it) back into position inside the machine. Put a new gasket on the inspection door assembly before bolting the door back onto the machine. After tightening the bolts, test for leaks.

**3.2** Replacing the Pop-up Valve Seat Gasket. Remove the old gasket by wedging your forefingers between the gasket and the retainer and slowly working it loose. Use a screwdriver if necessary. Push the new gasket all the way through the port and then fit it into the groove in the retainer. For the last few inches, pull up on the gasket and allow it to "pop" into position.

#### 4.0 REPLACEMENT PARTS AND ACCESSORIES

#### 4.1 Accessories

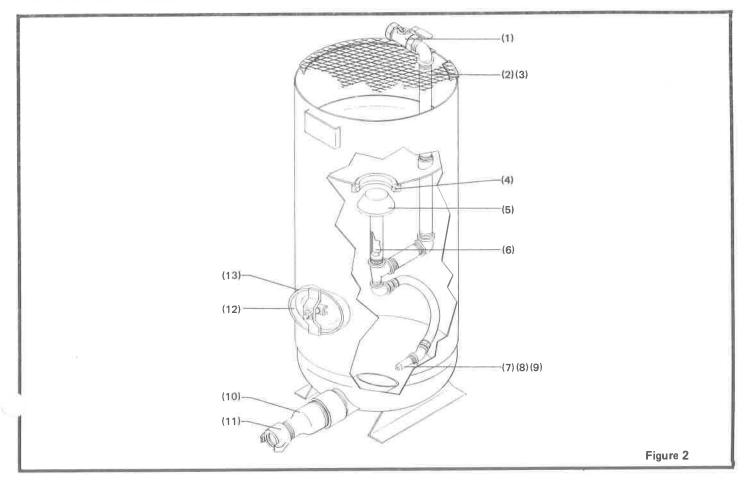
Discharge hose, 1½" I.D. x 50'20	PAC 4358
Pressure switch with adjustable timer, electric34	PAC 1677
1" Pressure regulator with gauge	PAC 1904
Recova-Lok control valve	
1" Recova inlet valve	PAC 1980
win line air hose, 5', coupled	PAC 1952

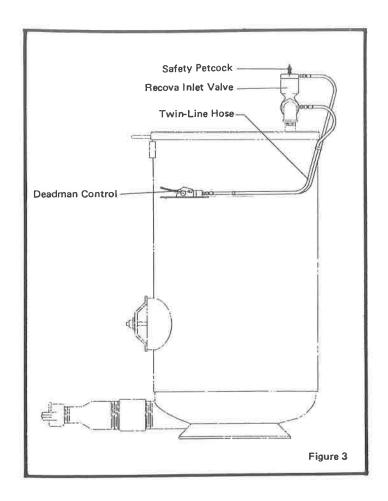
#### 4.2 Replacement Parts

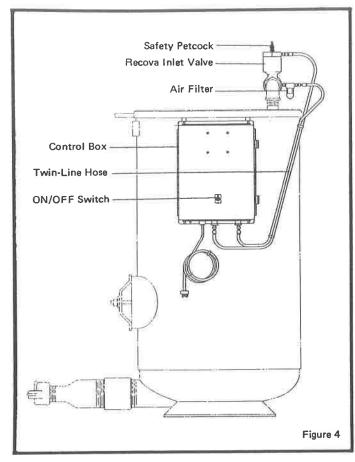
Item	Description	tock No.
(—)	16" Pneumatic Abrasive Conveyor with jet	34 PAC 1668
()	24" Pneumatic Abrasive Conveyor with jet	34 PAC 1669
(1)	Air inlet valve, 1"	3 PAC 2396
(2)	Screen, 151/2" dia., for 16" PAC	
(3)	Screen, 21" dia., for 24" PAC	34 PAC 1667
(4)	Pop-up valve seat, rubber	3 PAC 2325
(5)	Pop-up valve and shaft	13 PAC 2321
(6)	Pop-up valve guide	33 SPF 1845
(7)	Air jet, ¼", for 16" PAC	
(8)	Air jet, 5/16", for 24" PAC	
(9)	Air jet, 3/8", for 24" PAC	34 PAC 1698
(10)	Rubber-lined swage	34 PAC 1695
(11)	Quick coupling, threaded, 2"	
(12)	Inspection door assembly, 6" x 8"	
(13)	Inspection door gasket, 6" x 8"	

#### **IMPORTANT**

WELDING OF ANY KIND ON THIS UNIT RENDERS THE NATIONAL BOARD APPROVAL NULL AND VOID.







#### 5.0 HOOK-UP OF ACCESSORIES

5.1 Recova-Lok Control Valve (Figure 3). To install, unscrew the existing manual valve and replace it with the Recova inlet valve. Connect the deadman control to the inlet valve by means of the twin-line hose provided. Either leg of the hose can go to either fitting on the deadman control. The safety petcock on top of the inlet valve must be closed; otherwise the system won't work. To open the inlet valve, press in the safety button on the side of the deadman control and depress the handle. To close the inlet valve, release the handle.

5.2 Electric Cycle Timer (Figure 4). To install, unscrew the existing manual valve and replace it with the Recova inlet valve. Attach the control box to the PAC unit by means of the bracket provided. Attach the air filter to the Recova inlet valve as shown in figure 4, and then connect the inlet valve to the control box, using the twin-line hose supplied. The line leading from the air filter goes to the inlet fitting on the control box; the other line goes to the outlet fitting. (The two ports on the valve inside the control box are marked IN and OUT.)

The timer, located inside the control box, has three pointers. The black pointer sets the duration of the "fill" phase (inlet valve closed, pop-up valve open). The blue pointer sets the duration of the "blow" phase (inlet valve open, pop-up valve closed). The red pointer cycles between these two during operation. The safety petcock on top of the Recova inlet valve must be closed, otherwise the system won't work. The timer's ON/OFF switch is on the control box cover.

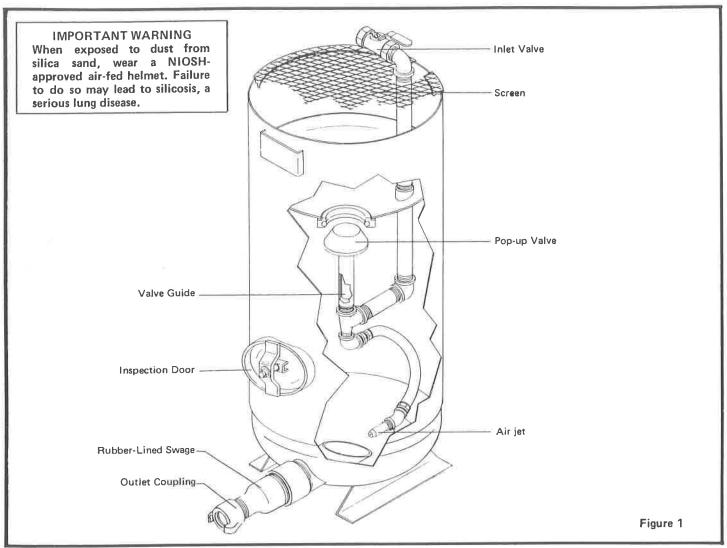
### PNEUMATIC ABRASIVE CONVEYORS

Models 16 – PAC, 24 – PAC, 30 – PAC and 36 – PAC



CLEMCO INDUSTRIES • 2177 Jerrold Ave. • San Francisco, CA 94124
Phone: 415/282-7290 • Telex: 34416

### **OWNER'S MANUAL**



#### 1.0 INTRODUCTION

1.1 General Description. Clemco's Pneumatic Abrasive Conveyor (PAC) moves abrasive by means of compressed air. Air entering the unit through the inlet valve (Figure 1) causes the pop-up valve to seat and the vessel pressurizes. An air jet at the bottom of the unit entrains abrasive and forces it through the rubber-lined swage into the abrasive hose, which carries it to its destination.

#### 2.0 SET-UP AND OPERATION

#### 2.1 Set-Up

- 1. Start the compressor and bring it up to operating temperature and pressure. The minimum operating pressure for the PAC units is 40 p.s.i., and the maximum is 125 p.s.i. The best pressure for any particular job must be determined by testing.
- Load the abrasive to be moved into the top of the PAC unit. Never load the PAC unit with the screen off.
- 3. Connect the air line from the compressor to the

inlet valve. For best performance, use a 1-1/4" I.D. or larger air line.

4. Connect the abrasive hose to the outlet coupling. Use 1-1/2" blast hose (available from Clemco in 50' lengths). Do not use ordinary air hose. Make sure the coupling gaskets are in place and not worn. Safety wire these couplings together through the holes provided.

#### 2.2 Operation

- 1. To start the unit, open the inlet valve. Abrasive conveying will begin immediately.
- 2. When you want to stop an empty unit or reload a unit, first make sure that all the abrasive is out of the conveying hose. (Abrasive left in the hose may flow back into the PAC unit and jam it.) Then close the inlet valve. The pop-up valve will open so that abrasive can flow into the unit.
- 3. Never leave abrasive in the unit overnight. Moisture may accumulate and cause the abrasive to jam. If jamming due to moisture is a recurring problem, install a moisture separator as near to the inlet valve as possible.

#### 3.0 MAINTENANCE

#### IMPORTANT WARNING

All maintenance should be performed while the unit is depressurized.

3.1 Replacing the Pop-Up Valve. To gain access to the pop-up valve, remove the inspection door assembly. Using a small pipe wrench, unscrew the pop-up valve guide (Figure 1) by turning it counter-clockwise. Remove the pop-up valve and guide from the machine, install the new pop-up valve and then screw the valve guide (with the pop-up valve in it) back into position inside the machine. Put a new gasket on the inspection door assembly before bolting the door back onto the machine. After tightening the bolts, test for leaks.

**3.2** Replacing the Pop-up Valve Seat Gasket. Remove the old gasket by wedging your forefingers between the gasket and the retainer and slowly working it loose. Use a screwdriver if necessary. Push the new gasket all the way through the port and then fit it into the groovein the retainer. For the last few inches, pull up on the gasket and allow it to "pop" into position.

#### 4.0 REPLACEMENT PARTS AND ACCESSORIES

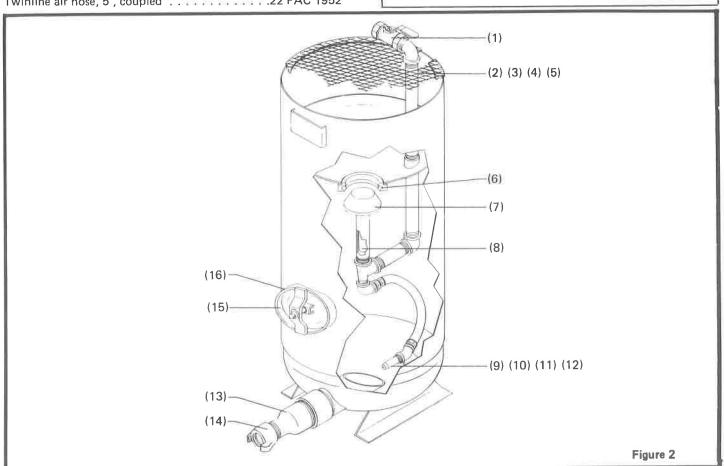
#### 4.1 Accessories

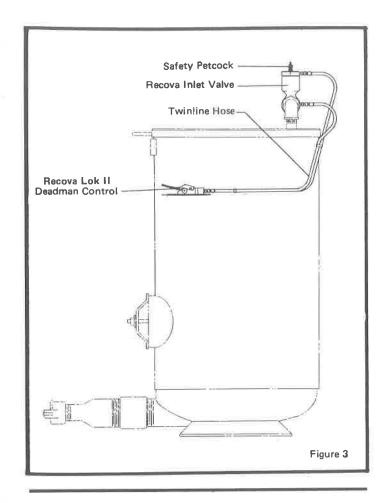
Discharge hose, 1-1/2" I.D. x 50"
PAC cycle timer ass'y., 115V a.c
1" Pressure regulator with gauge
Recova-Lok II complete
1" Recova inlet valve
Twinline air hose, 5', coupled

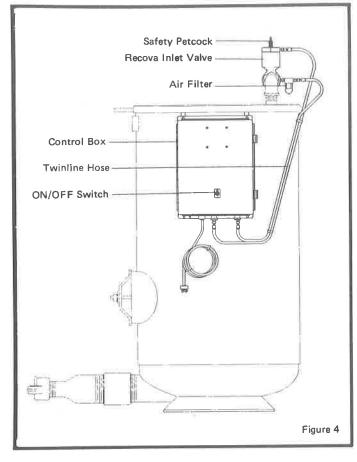
#### 4.2 Replacement Parts

Item	Description	Stock No.
(-)	16" Pneumatic Abrasive Conveyor	
	with jet	PAC 1668
(-)	24" Pneumatic Abrasive Conveyor with jet	PAC 1669
(-)	30" Pneumatic Abrasive Conveyor	
, ,	with jet	PAC 4142
(—)	36" Pneumatic Abrasive Conveyor	
	with jet	PAC 5281
(1)	1" ball valve with handle	3 PAC 2396
(2)	Screen, 15-1/2" dia., for 16" PAC	PAC 1666
(3)	Screen, 21" dia., for 24" PAC	PAC 1667
(4)	Screen, 31-1/2" dia., for 30" PAC34	I PAC 1713
(5)	Screen, 37-1/2" dia., for 36" PAC34	I PAC 1714
(6)	Pop-up valve seat, rubber	3 PAC 2325
(7)	Pop-up valve and shaft	3 PAC 2321
(8)	Pop-up valve guide8	3 SPF 1845
(9)	Air jet, 1/4", for 16" PAC	PAC 1696
(10)	Air jet, 5/16", for 24" PAC	PAC 1697
(11)	Air jet, 3/8", for 30" PAC	PAC 1698
(12)	Air jet, 1/2, for 36" PAC	PAC 1699
(13)	Rubber-lined swage	PAC 1695
(14)	Quick coupling, threaded, 2" 23	3 PAC 0562
(15)	Inspection door assembly, 6" x 8"	3 PRP 2377
(16)	Inspection door gasket, 6" x 8"	
£10)	mapeotion door gasket, o x o	2.11. 2000

## IMPORTANT WELDING OF ANY KIND ON THIS UNIT RENDERS THE NATIONAL BOARD APPROVAL NULL AND VOID.







#### 5.0 ACCESSORIES

**5.1** Recova-Lok II (Figure 3). To install, unscrew the existing manual valve and replace it with the Recova inlet valve. Connect the Recova Lok II to the inlet valve by means of the twinline hose provided. Either leg of the hose can go to either fitting on the Recova-Lok II. The safety petcock on top of the inlet valve must be closed; otherwise the system won't work. To open the inlet valve, press in the safety button on the side of the Recova-Lok II and depress the handle. To close the inlet valve, release the handle.

#### 5.2 Electric Cycle Timer (Figure 4)

a. Introduction. If the cycle timer was purchased for use with a pneumatic abrasive conveyor, the kit should contain: a control panel, a1 inch inlet valve and an 18 inch length of twinline hose. The cycle time is designed for use with 120 volt a.c., 60 cycle current.

- b. Installation. First remove the manual inlet valve at the top of the PAC unit and replace it with the inlet valve provided. Be sure that the arrow on the body of the inlet valve points in the direction of the inlet pipe towards the blast machine. Place the control panel on the rim of the PAC unit using the brackets provided. Attach the air filter to the inlet valve. Be sure the flow arrow points away from the inlet valve. Connect the inlet valve to the control panel using the twinline hose supplied. The line leading from the air filter is connected to the inlet fitting on the control panel; the other line is connected to the outlet fitting. (The two ports on the valve are marked IN and OUT.)
- volt a.c., 60 cycle power source. This activates the cycle timer. After lifting the cover of the control panel, you will see the timer in the upper left hand corner. On the timer face are three arrows: a red arrow (permanently fixed at "O"), a black or off pointer (which times the filling function of a PAC unit) and a blue arrow. The blue arrow controls the time that a PAC unit conveys abrasive. The length of each cycle depends on many variables and thus is best determined by experience. As one guideline, it is recommended that the cycles be of equal length. Either cycle can then be lengthened or shortened, depending upon specific operating conditions.

#### d. Troubleshooting.

- 1. If the cycle timer does not work: Insure that power is reaching the control panel. Test for voltage using a voltmeter or an ohmmeter. Be sure that the ON/OFF switch to the left of the control panel is in the ON position. Insure that the air hoses to the control panel are connected to the proper fittings. An improper connection is indicated by a continual leakage of air from the small copper exhaust tube at the base of the control panel. Check the cycle timer for proper functioning. Insure that the blue and black arrows do not point straight up and cover the red arrow. If the red arrow does not move when the ON/OFF switch is ON, the timer is defective and should be replaced. If the timer functions but the valves on the PAC unit do not activate, remove the air inlet fitting at the base of the control panel and check for air. If no air is escaping, the solenoid is defective and should be replaced.
- 2. If the cycle timer works but air leaks from the outlet valve during the ON cycle: If the piston in the inlet valve is broken, replace it. If the outlet valve "chatters," insufficient air is being delivered to the outlet valve, and air hoses should be inspected for a loose fitting.

- 3. If the cycle timer works but the inlet valve does not open: Check the tightness of the hose fittings at the base of the control panel and the inlet valve. Check to be sure that the petcock at the top of the inlet valve is closed. Inspect the inlet valve to insure that the piston inside the valve is not frozen in the closed position. If the piston is frozen, lubricate the valve (see Maintenance) or replace it.
- 4. If the air continues to escape from the inlet valve when the switch is in the OFF position: Open the inlet valve and check for a worn or damaged valve seat or a weak or broken spring, and replace the respective part.
- e. Maintenance. Once a week, with the air off, place one to three drops of machine oil through the safety petcock at the top of the inlet valve. This will lubricate the inlet valve assembly.

#### f. Replacement Parts

Description	Part Number
Cycle Timer, PAC	15 PCT 1980