



**AIR/TAK**  
**Compressed Air System Products**

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**OPERATING INSTRUCTIONS**  
**Pressure Control System PCS-20 through PCS-100**

**TABLE OF CONTENTS**

<b>PAGE NO.</b>	<b>DESCRIPTION OF CONTENTS</b>
3	A. Introduction
3	B. Receiving
3	C. Location
3	D. Foundation
3	E. Piping
4	F. Electrical
4	G. Programming
5	Programming Keys
6	Operations Page
7	Setup Page
8	H. Operation
8	I. Maintenance
8	Design Conditions <span style="float: right;">J.</span>
8	K. Shutdown
9	Troubleshooting Guide
10	Warranty Policy
10	Other <i>Air/Tak</i> Products

**A. INTRODUCTION**

*AIR/TAK's* Compressed Air Pressure Control System (PCS) precisely regulates the low side compressed air

system pressure to a manually adjusted set pressure. The system responds to air usage fluctuations by automatically increasing or decreasing the size of the flow control valve's orifice. This provides for a constant low side pressure, increasing the efficiency of the compressed air system by reducing overall system pressure.

The Pressure Control System automatically allows for periods of increased demand by increasing the flow of stored higher pressure compressed air from the upstream receiver tank(s). This has the effect of averaging out compressed air usage and enables the compressed air system to be operated with less compressor HP capacity. The compressor(s) would no longer need to provide maximum flow at peak usage periods, but only need to maintain flow equal to average usage.

## B. RECEIVING

Upon receiving your Pressure Control System:

1. Inspect the shipping carton for any apparent damage.
2. After removing the crate, inspect the unit for any hidden damage.
3. Report any damage immediately to the carrier and notify your supplier.

## C. LOCATION

The recommended location is downstream of the dryer(s), filter(s) and the "high pressure" receiver tank(s). The unit should be easily accessed for operation and maintenance. A "low pressure" receiver tank(s) and/or ample piping for "low pressure" storage should be designed into the system.

Install check valve (optional) prior to PCS to ensure that pilot air pressure is maintained in the event of a supply side pressure failure.

Note: All piping should be sufficiently large so as to prevent any flow restrictions at peak air usage.

## D. FOUNDATION

The unit should be securely mounted in the upright position with the inlet and outlet horizontal to each other. This unit is not designed to be completely freestanding; therefore it must be securely piped and supported.

The control box is mounted as an integral part of the unit or can be remotely mounted. The remote mounting option comes with 20' of sheathed wire.

## E. PIPING

Bypass piping and valves are standard features on the Pressure Control System. The bypass will permit isolation of the unit for servicing and will eliminate the need to shut down the complete compressed air system.

All Pressure Control Systems are supplied with a pilot air coalescing prefilter with an automatic drain valve. This is to help keep the pilot air clean and protect the system. *Note:* The pilot air connection is taken from the inlet to the Pressure Control System. No additional air connection is needed.

Leak test all piping components of the Pressure Control System. Pay particular attention to the pilot airline. Verify the entire system is bubble tight.

## F. ELECTRICAL

The Pressure Control System is completely wired at the factory. Power connections can be made by drilling a hole anywhere in the terminal box. Connect the power leads to the terminal block that is conveniently located within the box. Always be sure adequate power is available to maintain efficient operation of your Pressure Control System.

The Pressure Control System will require less than 2 amps.

A properly sized fused main disconnect switch (supplied by the installer) should be located near the Pressure Control System. The use of fuse-tron time-delay fuses will permit smaller fuse sizes.

Verify that the Pressure Control System is properly grounded.

## G. PROGRAMMING OF THE PRESSURE CONTROL SYSTEM

The Pressure Control System comes from the factory preprogrammed. All that should be required during installation and start-up is for the desired downstream pressure to be set. Press the up or the down arrow key until the bottom number displayed on the PCS control shows the desired air pressure. In the event that fine tuning is needed or programming is changed inadvertently, the following information may be needed.

### Process Controller Display

1. The top number displayed is the actual system pressure.
2. The bottom number displayed is the desired system air pressure (set by operator).
3. Status Light: indicates a signal is being sent to the control valve (primary valve in a multiple valve system).
4. Light 2: indicates a signal is being sent to the *optional* backup valve.
5. Light 3: is a *optional* pressure variance alarm indicating the system operating pressure differs from the set pressure by  $\pm 3$  PSIG or more.
6. Light 4: indicates a signal for *optional* outputs.



### Programming Keys



Up key



Down key



Advance key



Infinity

### Navigation

**TO FIND THE OPERATION PAGE:** Press the Up and Down keys together for three (3) seconds.

**TO FIND THE SET UP PAGE:** Press the Up and Down keys together for six (6) seconds.

Once you have selected a page, press the Up or Down key to find a specific menu within that page as shown in the following charts (see pages 2 and 3). The Page (Set Up or Operations) will remain in the lower display and the menus will appear in the upper display.

Press the Advance key to go to a parameter within a menu. The menu parameter will appear in the lower display and the value will appear in the upper display.

Press the Up or Down key to change a value.

Press the Advance key to set a value and go to the next parameter.

Press the Infinity key in order to return to the normal display (current system pressure and user pressure set point).




**TIPS:** The following adjustments may be needed during the initial start up:




- a. If the PCS outlet pressure variation above and below the set point is too great and/or the regulation is too slow, change the propband (refer to shaded area on chart) to a lower value.
- b. If the PCS outlet pressure varies very quickly (hunts), change the propband (refer to shaded area on chart) to a higher value.




### OPERATIONS PAGE:

<i>MENU</i>	<i>PARAMETER</i>	<i>DESCRIPTION</i>	<i>FACTORY VALUE</i>	<i>USER VALUE</i>
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Mon				
OPEr	OPEr	Operations Page		




 				
USEr				
OPEr	OPEr	Operations Page		
	A-M	Auto-Manual Operations Mode	Auto	
	Aut	Auto-tune	Off	
	AtSP	Auto-tune Set Point	90	
	CAL 1	Calibration Offset	0	




 				
Pid1				
OPEr	OPEr	Operations Page		
	Pb 1	Propband	20	
	rE 1	Reset 1	4	
	rA 1	Rate 1	0.0	




**SETUP PAGE:**

MENU	PARAMETER	DESCRIPTION	FACTORY VALUE	USER VALUE
------	-----------	-------------	---------------	------------

 				
InP1				
SEt	SEt	Setup Page		
	SEn1	Sensor Type	Proc	
	In 1	Input Type	4-20	
	rL 1	Range Low	0	
	rh 1	Range High	250	
	dEC1	Decimal 1	0.0	
	Ftr1	Input Filter	5.0	

 				
Out 1				
SEt	SEt	Setup Page		
	Ot 1	Output 1	COOL	
	Prc1	Output Type	4-20	

 				
Out 4				
SEt	SEt	Setup Page		

 				
gLbL				
SEt	SEt	Setup Page		
	Unit	Units Type	US	
	C-F	Temperature Scale	°F	
	Err	Input Error Latching	nLAt	
	FAIL	Failure Mode	MAn	
	MAn	Manual Default Power	-100.0	
	PLSP	Power Limit Set Point	999	
	PL A	High Power Limit Above	100	
	PL b	High Power Limit Below	100	
	rP	Ramping Mode	OFF	
	OPLP	Open Loop Detect	OFF	

## H. OPERATION

Before placing the Pressure Control System on-line, verify that there are no piping restrictions or areas of significant pressure drop in the plant air system. The bypass valve should be open and the isolation valves at either side of the control valve should be closed at this time. Verify that pilot air pressure is properly supplied to the control valve and that electrical power is connected to the unit.

Open the isolation valves at the sides of the control valve. Turn on the Pressure Control System. Close the bypass valve.

The control valve is a fail-to-open valve. In the event of a power failure or loss of system or pilot air pressure, the

control valve will open and the system will function like a standard piping system (i.e. equalization between the “high” and “low” pressures and the presence of standard system pressure drops).

**I. MAINTENANCE**

Periodically (at approximately the same schedule as the air system main filters) check and replace if necessary the pilot air filter element. To check or replace the filter element, first shutdown the Pressure Control System (see shutdown procedure). Close the filter isolation valve, then loosen and remove the filter bowl, exposing the filter element. Replace if necessary.

**J. DESIGN CONDITIONS**

Each Pressure Control System is shipped complete and ready for installation. Every system is tested and preset at the factory for optimum service. The following are the standard operating conditions:

- Pressure Operation Range: 30 PSIG to 150 PSIG
- Maximum Inlet Temperature: 100°F
- Maximum Ambient (Room) Temperature: 120°F
- Capacity: Stated in Standard Cubic Feet per Minute (SCFM).

**K. SHUTDOWN**

The Pressure Control System may be shutdown by first opening the bypass valve. Turn the Pressure Control System to the “off” position. Close the isolation valves.

**TROUBLESHOOTING GUIDE**

SYMPTOMS	PROBABLE CAUSE	REMEDY
Low Discharge Pressure.	a. Low inlet pressure.	a. Verify compressors running normally.
	b. High downstream air usage.	b. Check for air leaks or open valves downstream.

	c. Pilot airline clogged or leaking.	c. Clean or repair pilot airline.
	d. Control valve stuck.	d. Check for debris in valve and actuator.
	e. Control valve failure.	e. Repair or replace valve.
	f. Downstream pressure setting too low.	f. Adjust setting.
	g. PCS control failure.	g. Check electrical connections. Replace control if necessary.
	h. Isolation valves closed.	h. Open isolation valves.
<b>High Discharge Pressure.</b>	a. PCS not turned "on".	a. Turn unit "on".
	b. Pilot airline clogged or leaking.	b. Clean or repair pilot airline.
	c. Control valve stuck.	c. Check for debris in valve and actuator.
	d. Control valve failure.	d. Repair or replace valve.
	e. Downstream pressure setting too high.	e. Adjust setting.
	f. PCS control failure.	f. Check electrical connections. Replace control if necessary.
	g. Bypass valve open.	g. Close bypass valve.

### **AIR/TAK WARRANTY POLICY**

*AIR/TAK products will be warranted to be free from defects in materials and workmanship for a period of one year from date of shipment or up to one year from the verified date of installation not to exceed 15 months. Date of installation will be verified upon receipt of the completed Warranty Registration Card. All AIR/TAK refrigerated dryers will additionally be warranted on parts only (excluding fan motors and drain valves) for a period of two years from the date of shipment. Also, deliquescent and regenerative air dryer pressure vessels and refrigerated air dryer heat exchangers have a 5-year prorated warranty.*

*All defective pressure vessels and heat exchangers returned to AIR/TAK for warranty consideration must be returned freight prepaid. Warranty will be determined after factory inspection. Failure to return a defective heat exchanger or pressure vessel will result in warranty denial.*

*Repairs, adjustments, parts, etc. are limited to actual labor cost provided that such defects are promptly reported and approved following AIR/TAK's warranty procedures. In no event shall the cost of repairs exceed the actual cost of materials and labor.*

*AIR/TAK or its representatives reserve the right to decide which warranty items are authorized. AIR/TAK shall not be liable for incidental or consequential damages that may result from a breach of the warranty described above.*

*For more information on warranty policies and procedures, contact your authorized AIR/TAK Distributor.*

***AIR/TAK's line of quality Compressed Air System and Fluid Cooling System products includes:***

***COMPRESSED AIR SYSTEM FILTERS \* AIR-COOLED & WATER-COOLED AFTERCOOLERS  
REFRIGERATED AIR DRYERS \* RAD-PAK REFRIGERATED AIR DRYER/FILTER PACKAGES  
CAD COMBINATION AFTERCOOLER/DRYER SYSTEMS  
HEATLESS REGENERATIVE AIR DRYERS \* HLD-PAK HEATLESS REGENERATIVE AIR DRYER/FILTER PACKAGES  
EXTERNALLY HEATED REGENERATIVE AIR DRYERS \* BLOWER PURGE REGENERATIVE AIR DRYERS***

***CLOSED LOOP FLUID COOLING SYSTEMS \* FLUID CHILLERS***

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