

THE RIGHT **PRODUCTS**

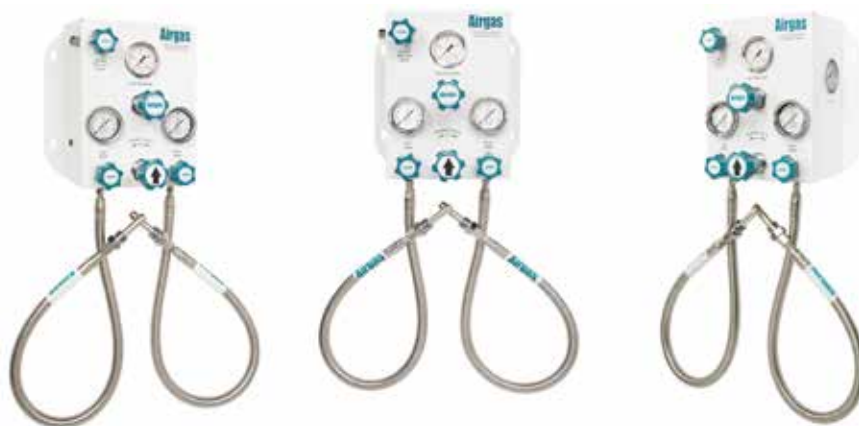
THE RIGHT **LOCATIONS**

THE RIGHT **EXPERTISE**



Airgas Specialty Gases

**AUTOMATIC CHANGEOVER PANELS W/ LINE
REGULATOR INSTALLATION AND
OPERATION MANUAL**



Shown: High-Purity Model Y11-ASCP120R580

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Introduction

The changeover panel is designed to provide continuous uninterrupted gas flow for applications using cylinder gas supplies up to 3000 PSIG. Ideal for high purity applications, this panel consists of either of two general purpose primary regulators and line regulator, or two high purity primary and line regulators, gauges, isolation valves, flexible pigtails, and mounting panel.

Unscheduled downtime created by depleted cylinders can be eliminated with this panel incorporated into your system. When the primary side is consumed, the panel automatically switches to the reserve supply and feeds the process at a constant pressure. The line regulator eliminates virtually any pressure variation associated with this switch.

Maximum Inlet Pressure: 3000 PSIG

Outlet Pressure: 10 - 200 PSIG (User Adjustable)

Maximum Flow Rate: 200 SCFH

Changeover Manifold Operation Theory

Combination Regulator System

The left manifold and the right manifold supply regulators mounted back-to-back with a single outlet and a single adjustment knob. The left manifold regulator is set to deliver product at ~250 PSIG when the left side bank is acting as the primary (or on-line) source and the arrow on the selector knob is pointing to the left. The right manifold regulator is set to deliver product at ~250 PSIG when the right side is acting as the primary (or on-line) source and the arrow on the selector knob is pointing to the right.

When the selector knob is turned so the arrow is pointing from the left side to the right side, the set point of the right side regulator is increased to a pressure higher than the left side regulator. Similarly, when the selector knob is turned so the arrow is pointing from the right side to the left side, the set point of the right manifold regulator is reduced to a pressure lower than the left side regulator.

NOTE: Always move the selector knob gently but fully against the mechanical stop to prevent the off-line manifold from feeding unintentionally.

The regulator that is set to deliver the higher pressure will supply gas until its source is depleted, at which time the inlet pressure will decrease to just below the set point of the other regulator. The other side will then be operating at a higher pressure, which will force the system to switch over and supply gas to the downstream process.

Specifications

Maximum Rated Inlet Pressure –	3000 psi
Outlet Pressure Ranges –	10-100 psi 10-200 psi
Flow Coefficient -	Cv = 0.06
Flow Capacity -	200 scfh @ 150 psi
Design Leak Rate -	2.0 x 10 ⁻⁸ cc/sec He
Weight -	11 lbs.
Ambient Operating Temperature -	40 F to 150 F
Inlet Connections -	36" Stainless Steel Corrugated Bellows with CGA Check Valves
Outlet Port -	¼" Compression

Materials

Body -	Brass or 316L SS
Bonnet -	Chrome Plated Brass Barstock
Seat -	PTFE
Diaphragms -	316L SS
Gauges -	Brass or Stainless Steel
Filters -	10 Micron Plated Bronze or 316L SS

PART NUMBERS AND AVAILABLE OPTIONS

Ordering Information						
Product Number	Material	No. Cyl.	Outlet Pressure (psig)	Capacity (scfh @ Max Del. Pressure)	Inlet Gauge Range (psig)	Delivery Gauge Range (psig)
Y11-CP120BR(CGA)	Brass	2	10-100	200	0-4,000	0-200
Y11-CP140BR(CGA)	Brass	4	10-100	200	0-4,000	0-200
Y11-CP160BR(CGA)	Brass	6	10-100	200	0-4,000	0-200
Y11-CP180BR(CGA)	Brass	8	10-100	200	0-4,000	0-200
Y11-CP420BR(CGA)	316 SS	2	10-100	200	0-4,000	0-200
Y11-CP440BR(CGA)	316 SS	4	10-100	200	0-4,000	0-200
Y11-CP460BR(CGA)	316 SS	6	10-100	200	0-4,000	0-200
Y11-CP480BR(CGA)	316 SS	8	10-100	200	0-4,000	0-200
Y11-CP120R(CGA)	Brass	2	10-200	200	0-4,000	0-300
Y11-CP140R(CGA)	Brass	4	10-200	200	0-4,000	0-300
Y11-CP160R(CGA)	Brass	6	10-200	200	0-4,000	0-300
Y11-CP180R(CGA)	Brass	8	10-200	200	0-4,000	0-300
Y11-CP420R(CGA)	316 SS	2	10-200	200	0-4,000	0-300
Y11-CP440R(CGA)	316 SS	4	10-200	200	0-4,000	0-300
Y11-CP460R(CGA)	316 SS	6	10-200	200	0-4,000	0-300
Y11-CP480R(CGA)	316 SS	8	10-200	200	0-4,000	0-300

Available Options	
Product Number	Description
Y15-4P72K2C	6-ft. pigtails for use with portable cylinder (2-Cylinder Kit)
Y15-4P72K4C	6-ft. pigtails for use with portable cylinder (4-Cylinder Kit)
Y99-BBCGA1K2	Block & Bleed assembly installed at CGA (2-Cylinder Kit)
Y99-BBCGA1K4	Block & Bleed assembly installed at CGA (4-Cylinder Kit)
Y78-EN200ALPK	Optional Alarm (Audio and Visual)
Y78-EXTCAB8	25 foot Cable Extender for Alarm
Y78-EXTCAB15	50 foot Cable Extender for Alarm
Y78-EXTCAB30	100 foot Cable Extender for Alarm
Y78-EXTCAB40	130 foot Cable Extender for Alarm

Airgas Quality Policy

The purpose of the Airgas Quality System is to continually improve our manufacturing and related processes to provide our customers with the highest product purity, consistency and service.

Options

An optional alarm package may be connected and set such that the decrease in discharge pressure from the combination regulator will cause the switch contacts to close indicating that a changeover has occurred. All high purity & general purpose changeovers are supplied w/ indicating pressure switch gauges that have field selectable reed switches that allow for easy alarm point setting. The electrical bulkhead connection located on the bottom of the enclosure is prewired at the Taylors' facility for easy future alarm pack installation; should an alarm be desired after the original changeover purchase. The ideal set point for each reed switch on the pressure indicating gauges is 400 PSIG, but each application is different so the customer has the ability to easily move to alarm point to any desired setting.

Alarm Package: Includes "SMART ALARM" panel which has visual and audible notification that a changeover has occurred. A silence button is integrated onto the panel and the power supply and 25ft of cable are included.



Product Number	Description	Size	Power Supply
Y78-EN200ALPK	Smart Alarm panel, 25ft of cable and power supply	4 ½" W 3" H 2 ¼" D (Panel only)	24-Volt Power Pack Supplied

Auto Dialer: Automatically dials out to either a pager or up to eight numbers when system switches from active to reserve bank. System can monitor up to three panels; message is programmable.



Product Number	Description	Dimensions	Power Requirements
Y78-ADS100	Automatic Phone Dialer	6.3" H x 7.6" W x 5.3" D	110 volts

Pressure Switch: NEMA 4 or Explosion Proof.

Installation Instructions

- A.** Unpack all components carefully and inspect for potential damage in shipment. If a lower pressure is required downstream at the intended point of use than the setting of the line regulator, use an appropriate line regulator.
- B.** The changeover panel is equipped with (4) mounting slots for ¼" bolts for simplified installation. This panel may be mounted directly to the wall or other structural support. The bottom of the panel should be mounted approximately 65½" from the floor. Mount the unit to the wall or sturdy surface with bolts, nuts and washers (not included).
NOTE: This unit can be installed outdoors, but it must be under a roof to protect it from direct rain and snow.
- C.** Connect gas distribution tubing (stainless steel or copper) consistent with your purity applications to the outlet ¼" compression fitting provided.
- ⚠ CAUTION: Do not connect stainless steel tubing to a brass tube fitting.**
- D.** After cylinders are moved into position at the changeover regulator, remove the cylinder cap and examine the cylinder valve outlet for contamination. Crack-open the cylinder valve briefly before attaching the pigtails (except when using hydrogen, methane or other reactive gases or mixtures).

Additional items required for installation (not supplied with changeover):

- 1. Mounting bolts, nuts and washers
- 2. Gas cylinders
- 3. Optional cylinder rack, mounting brackets, chains or straps to secure the cylinders
- 4. Bubble-type leak detector solution

Cylinder Storage and Use

- A.** When storing and using cylinders, secure to a wall or vertical support using brackets, restraining straps, chains, clamps, or other approved devices.
- B.** When moving cylinders, use a cylinder cart or truck with chain restraint in place. **Do not drag or roll cylinders.**
- C.** Do not drop or roll cylinders in a horizontal position, as the cylinder valve might be broken off releasing high-pressure gas and turning the cylinder into a projectile.

Attaching Cylinders to Changeover Panel

- A.** Close changeover panel isolation valves (at bottom of panel). Connect the pigtails to the cylinder valves with either the wrench-tight or optional hand-tight CGA connection. **Do not allow any oil, grease, or other potential contaminating lubricants to come in contact with any components.** These panels are factory assembled under rigorous high-purity conditions without any use of hydrocarbon or halocarbon lubricants.
- B.** Check for leaks at the cylinder valve and other connections using a thermal conductivity leak detector or by using an approved bubble-type leak detection solution.
NOTE: While soap solution is suitable for safety consideration, this is not the preferred method for high purity systems. Should a leak be present, aspiration of the soap solution into the process piping may present a contamination concern.
- C.** If a leak is found, depressurize component and tighten where necessary. Contact your gas supplier immediately if you have a leaking cylinder. If the cylinder is of flammable or toxic mixture, immediately close the cylinder valve and follow the safety instructions provided with the cylinder for proper venting of the gas. Even a leaking cylinder of an inert gas presents a danger in an enclosed area due to the displacement of air.

Operation (refer to Fig. 1- PD&I schematic diagram)

- A.** Turn large knob to cylinder 1. The change-over system is now drawing gas from cylinder 1.
- B.** Adjust the delivery pressure on the line regulator to the desired outlet pressure.
- C.** When cylinder 1 depletes to approximately 250 psig, the change-over system will automatically begin to draw from cylinder 2.
- D.** Before replacing depleted cylinder 1, turn the large knob to cylinder 2. This will ensure that cylinder 2 will be depleted before the panel switches back to the new cylinder 1.

NOTE: Do not use this system with toxic or corrosive gases requiring inert gas purging.

P&ID LEGEND	ABBR.
	CGA FITTING C
	CHECK VALVE CV
	VALVE HV
	FILTER F
	PRESSURE GAUGE PI
	REGULATOR PCV
	FLEXIBLE PIGTAIL

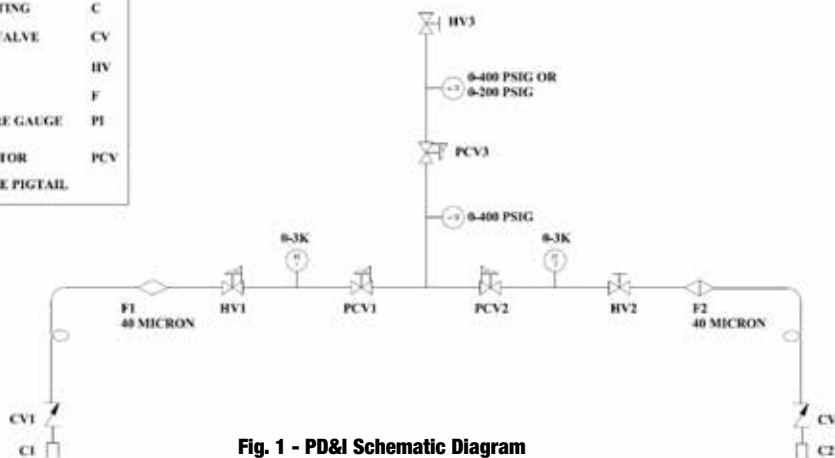


Fig. 1 - PD&I Schematic Diagram

Alarm Systems

The Airgas® Specialty Gases changeover panels can have either an Airgas® or customer-supplied alarm system connected to them. See the options section on page 5 of this manual for the Airgas® offerings. The Airgas® Specialty Gases SMART ALARM panels are intrinsically safe devices.. Therefore, the Airgas® SMART ALARM can be used with inert, oxidizer and flammable gases. The SMART ALARM does not require intrinsically safe barriers when being used for flammable gases or in hazardous/flammable environments.

When the customer supplies an alarm system, they must follow not only the necessary & applicable fire codes, they should ensure all equipment and tubing is properly cleaned to prevent the introduction of contaminants into the gas stream.

Troubleshooting Guide

This Airgas® Automatic Changeover Panel is designed to provide many years of trouble-free service with minimal user maintenance required. In the unlikely event the panel fails to perform as intended, gather the following information to assist Airgas® with problem diagnosis. Some changeover panels are equipped with an interstage pressure gauge, usually on the right side of the sheet metal panel or adjacent to the alarm pressure switch. The readings of this gauge are helpful in diagnosing changeover panel operation.

- What is the product number/configuration (provided by a label on the panel)?
- What is the gas service?
- How long has the unit been in service?
- What is the flow rate or how many cylinders do you go through in a week and how many hours a day do you run the process?
- What process uses the gas from the changeover panel?
- Does the system have an alarm? If so, is it working properly?

Start with gas flowing from the changeover panel and both cylinder banks at a minimum of 2000 PSIG (for liquefied compressed gases, such as CO₂, start with both cylinder banks at full pressure).

With inlet valves open and selector knob pointing to the RIGHT, record

- Pressure on left cylinder bank _____
- Pressure on right cylinder bank _____
- Interstage pressure, if equipped _____
- Delivery pressure _____

Close inlet valve from right cylinder bank.

- Does right cylinder bank gauge decrease? __*Yes __No
- If yes, does left cylinder bank begin to feed after right cylinder gauge decreases to about 240 PSIG? __*Yes __No
- Interstage gauge pressure, if equipped, after left bank begins to feed the system _____
- Delivery pressure after left bank feeds the system _____

Open inlet valve from right cylinder bank. Close inlet valve from left cylinder bank.

- Does left cylinder bank gauge decrease? __*Yes __No
- If yes, delivery pressure after right bank feeds _____
- Interstage gauge pressure, if equipped, after right bank feeds the system _____

Airgas® Equipment Warranty Policy

Airgas® warrants the initial user the products sold; that such are free from defects in material and workmanship under normal use, except corrosive service models or models used in corrosive service, see below. The non-corrosive model warranty period shall extend to 12 months from date of initial service or 15 months from date of shipment, whichever is less.

Corrosive Service:

Airgas® warrants “corrosive service” models for a period of 6 months from the date of shipment only if used properly in conjunction with an Airgas® cross purge assembly. Failure to use an Airgas® cross purge assembly or the use of models not designed for “corrosive service” will void all warranties.

Within said warranty period, Airgas® agrees, at its discretion, to replace or repair free of charge at its factory in Taylors, SC, any product or part that is found to be defective in workmanship or materials.

Airgas® will not pay for or warrant repairs made by anyone other than personnel authorized by Airgas® to make such repairs. **AIRGAS® SHALL NOT BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, OR INDIRECT DAMAGES, TO THE EXTENT PERMITTED BY LAW. EXCEPT AS OTHERWISE PROVIDED BY LAW, THIS EXPRESS WARRANTY SHALL BE THE EXCLUSIVE WARRANTY AND SHALL BE IN LIEU OF ALL IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF FITNESS FOR PARTICULAR PURPOSE AND MERCHANTABILITY.** The warranty and remedies provided in this express warranty shall not apply to any product that has been damaged by accident, abuse or misuse, or been modified or changed in any way except by personnel authorized by Airgas®. **THE REMEDIES STATED HEREIN SHALL BE EXCLUSIVE REMEDIES OF THE INITIAL USER UNDER THE EXPRESS WARRANTY CONTAINED HEREIN AND UNDER ANY OTHER WARRANTIES EXPRESSED OR IMPLIED REQUIRED AS BY LAW.**

WARRANTY ADDENDUM FOR CHANGEOVER PANELS: ANY ATTEMPT TO ADJUST THE SET POINT OF THE CHANGEOVER SHALL VOID ANY AND ALL WARRANTY PROVISIONS OFFERED BY AIRGAS®.