PROPORTION-AIR

PROPORTION-AIR SUPPLY

Independent pressure and flow control on a single output

Declutter a pneumatics lab workbench

DESCRIPTION

Perfect for developing, testing and diagnosing pneumatic equipment, the Proportion-Air Supply fits onto a laboratory benchtop alongside other equipment like power supplies and oscilloscopes. Executing burst tests, creating flow curves and calibrating air-piloted regulators are just a few of the applications this rugged device can accomplish.

The compact, all-in-one unit replaces the need for separate regulators and flow gauges attached to needle valves, a common setup for pneumatic testing. An easy-to-read digital panel meters feature one output, Channel 2, to regulate flow and pressure at the same time, like the way a variable DC power supply regulates voltage and current. The other output, Channel 1, is pressure regulation.

The Supply works with shop air, instrument air or inert bottle gases. See below for additional specifications.

SPECIFICATIONS

Electrical

Supply voltage	120/240 VAC (50/60 Hz)
Supply current	1.2 A (max)

Mechanical

Media	Air, CO2, Ar, He, N2O*, O2*, N2
Supply pressure	0 - 125% of range
Outlet pressure	0 - 100% of range
Flow rate	
Channel 1	
@50 PSI output	Full command, 16.2 SCFM
@100 PSI output	Full command, 28 SCFM
Channel 2	
Set flow range	1 - 10 SCFM
Port size	4 x 1/4 NPT
Filtration recommended	40 micron
Accuracy	
Channel 1 - *Pressure*	± 0.5% F.S.
Channel 2 - *Pressure*	± 0.5% F.S.
Channel 2 - *Flow*	± 4%
Linearity/Hysteresis	
Channel 1 - *Pressure*	± 0.5% F.S.
Repeatability	
Channel 2 - *Flow*	± 0.25%
Min. closed end volume	
Channel 1	3 cubic in.
Channel 2	3 cubic in.

Physical

Operating temperature	32°F (0°C) to 122°F (50°C)
Weight	10.2 lbs
Housing	Aluminum, Plastic Bezels
Connector	IEC 320-C14 power connector

Wetted Parts

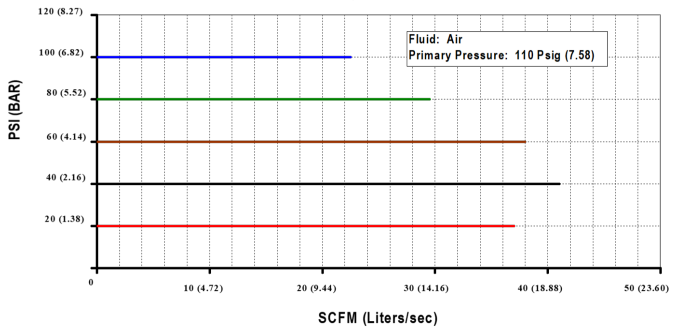
Elastomers	Viton and Buna-N
Housing	Anodized aluminum
Manifold	Nickel-Plated Aluminum or Nickel-Plated Brass (*Channel 2 may have non-plated brass or anodized aluminum orifice)*
Valves	430FR SS, Nickel-Plated Brass
Pressure transducer	High temp polyamide, alumina ceramic, epoxy, RTV and silicon
Other	Nylon tubing used to connect manifolds, brass bulkhead fittings

* Please consult factory for application assistance.

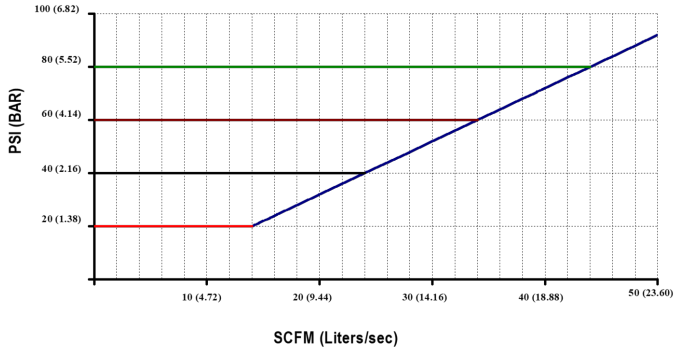
Technical Information

Flow Characteristics

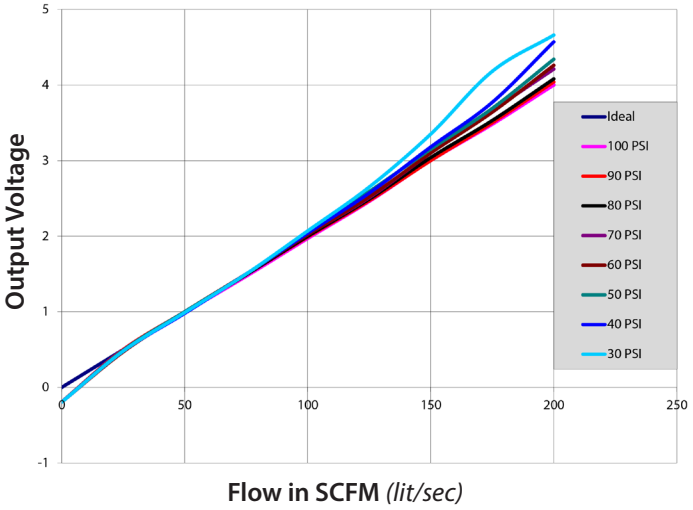
Forward Flow



Relief Flow

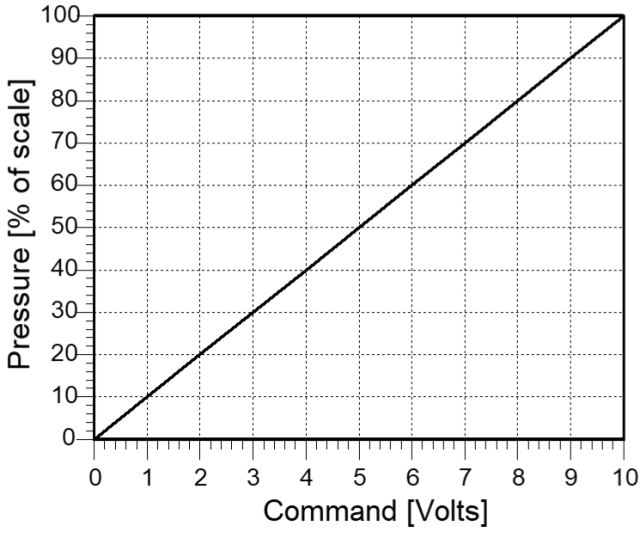


Pressure Compensated



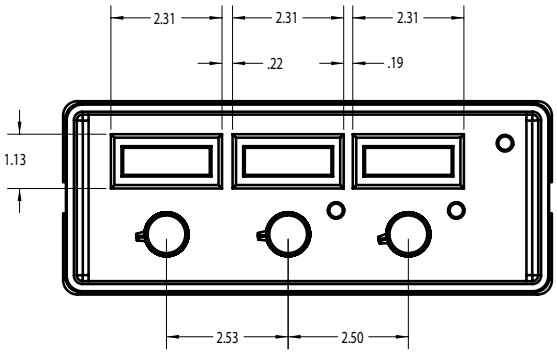
This graph illustrates how effectively the Proportion-Air Supply automatically corrects the flow output signal when the supply pressure varies over a wide range.

Linearity

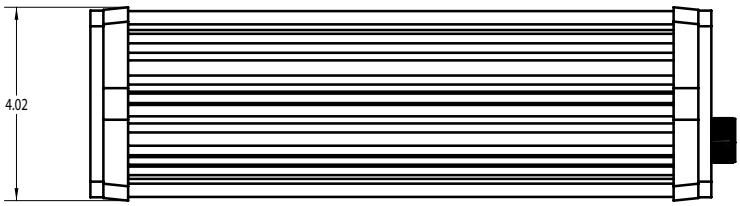


Linear characteristics when given a ramp signal from the control knobs.

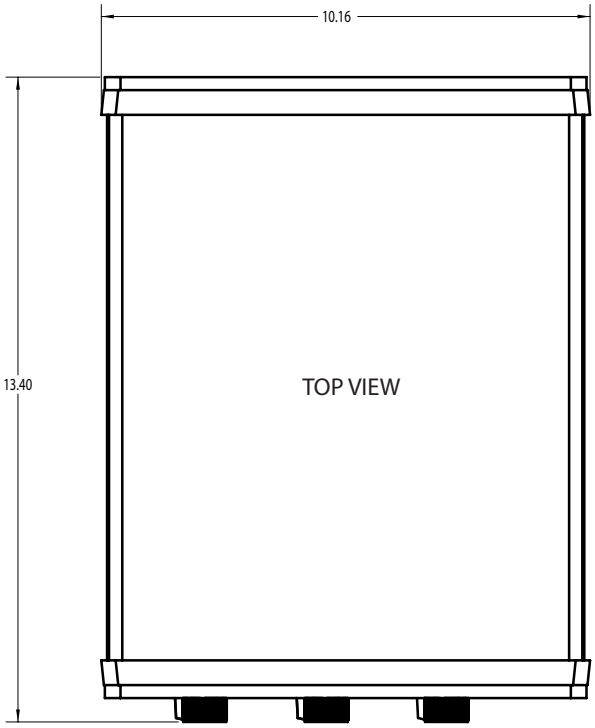
DIMENSIONS



FRONT PANEL



SIDE VIEW



Notes:
Dimensions are in inches.
Dimensions are for reference only.

INSTALLATION

1. Place the Proportion-Air Supply on a flat surface.
2. Plug in the AC power cord to the rear of the Proportion-Air Supply (Figure 1) and connect to a 120/240 VAC (50/60 Hz) power source.
3. Attach your desired fitting to the ¼" NPT ports on the rear (Figure 1).
4. Turn all 3 knobs fully counter-clockwise to zero each input.
5. Turn on the power switch on the rear of the Proportion-Air Supply. The Proportion-Air Supply should look similar to Figure 2. With the top right power LED on and each panel meter displaying approximately 000.0.
6. Turn on the desired inlet pressure to the Proportion-Air Supply.

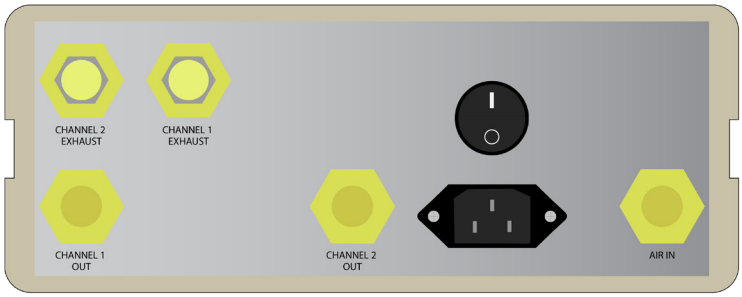


Figure 1

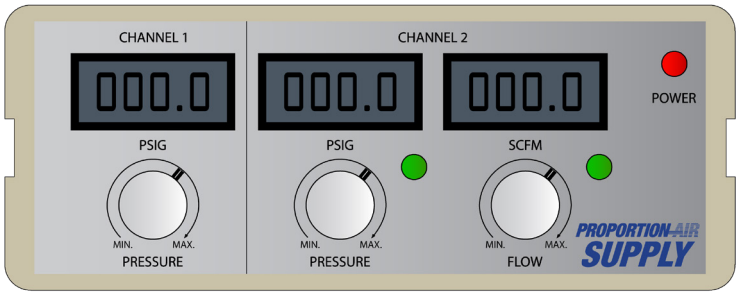


Figure 2

OPERATION

1. There are two channels (outputs) used on the Proportion-Air Supply. Each channel and their respective side are shown in Figure 2.
2. Channel 1 will be controlled by a single knob, while Channel 2 uses 2 separate control knobs, one for flow control and the other for pressure control. The control knobs on this supply will decide how much pneumatic pressure/flow to regulate on their respective channel. Each output and knob are labeled in Figure 3.
3. Three electronic displays are used to display pressure/flow output from Channel 1 and Channel 2. For Channel 1, the display will show how much pressure (in PSIG) is being output from Channel 1. Channel 2 has 2 electronic displays, the middle displays pressure in PSIG, while the right displays flow in SCFM. Both displays are used for observation of the Channel 2 output.
4. LEDs are used for further observation of user-inputs to Channel 2. The right LED is emitting light if the flow control knob (right knob) is limiting the output of Channel 2, while the left LED emits light if the pressure control knob is limiting. These LEDs are important for the user knowing which knob is constricting the overall output from Channel 2. Each LED and display are labeled in Figure 4.

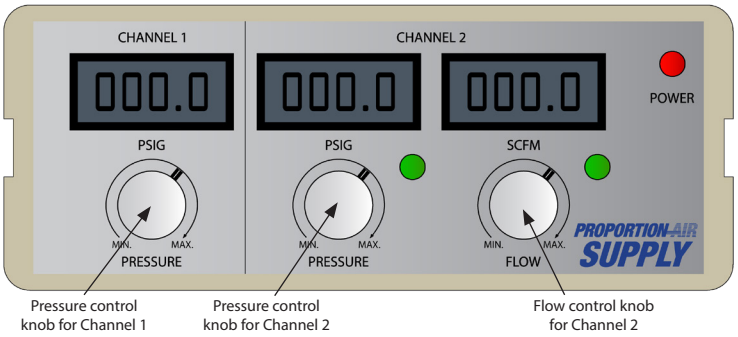


Figure 3

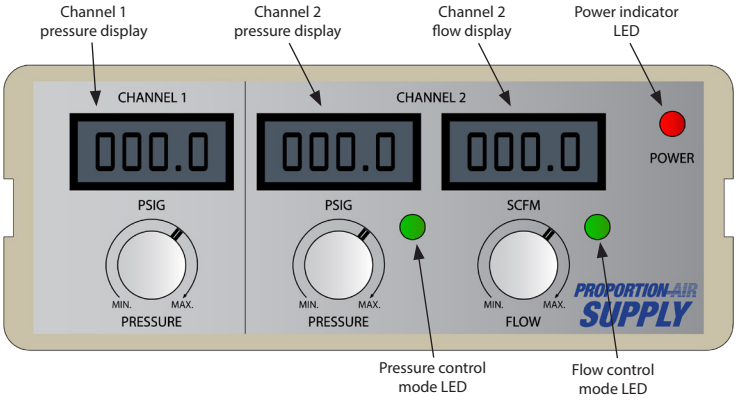


Figure 4

Channel 1 - Pressure

1. Set the command on Channel 1 to the desired pressure and the Channel 1 side will regulate to that desired pressure.

Channel 2 - Pressure

1. To set the Channel 2 pressure, set your pressure command to the desired pressure.
2. Set the maximum flow by increasing the flow command.
3. If more flow than commanded is required to reach the desired pressure, the unit will regulate the flow to what the flow command is set to. This is indicated by the flow control mode LED (Figure 4) being lit. The maximum pressure will be limited by the flow maximum (flow command) that is set.

Channel 2 - Flow

1. Set the flow command to the desired flow.
2. Increase the pressure command to set a maximum pressure used to reach the flow setting.
3. If more pressure than commanded is required to reach the desired flow, the unit will regulate the pressure to what the pressure command is set to. This is indicated by the pressure control mode LED (Figure 4) being lit. The maximum flow will be limited by the pressure maximum (pressure command) that is set.

CONFIGURATION

Proportion-Air Supply

Example Part Number	PAS	1	X	0	1	A	X	0	0	A	P	X	R	A	A
Section Reference ->		1	2	3	4	5	6	7	8	9	10	11	12	13	14

1	Type
1	Analog

2	Channel 1 Pressure Monitor
X	No analog monitor

3	Channel 1 Offset Pressure
0	Zero offset

4	Channel 1 Max Pressure
0	50 PSI
1	100 PSI
	**Max pressure is set at factory during assembly. Not interchangable after calibration.*

5	Channel 1 Pressure Unit
A	PSI

6	Channel 2 Pressure Monitor
X	No analog monitor

7	Channel 2 Offset Pressure
0	Zero offset

8	Channel 2 Max Pressure
0	50 PSI
1	100 PSI

9	Channel 2 Pressure Unit
A	PSI

10	Channel 2 Flow Type
P	Pressure Compensated

11	Channel 2 Flow Monitor
X	No analog monitor

12	Channel 2 Media
A	Air

13	Channel 2 Max Flow
A	1 - 10 SCFM
	Maximum Flow Based on 10:1 Turn-down

14	Channel 2 Flow Unit
A	SCFM

SAFETY PRECAUTIONS

Please read the following safety information before installing or operating any Proportion-Air, Inc. equipment or accessories. To confirm safety, observe 'ISO 4414: Pneumatic Fluid Power - General rules relating to systems' and other safety practices.

WARNING

Improper operation could result in serious injury or loss of life!

1. **PRODUCT COMPATIBILITY**

Proportion-Air, Inc. products and accessories are for use in industrial pneumatic applications with compressed air media. The compatibility of the equipment is the responsibility of the end user. Product performance and safety are the responsibility of the person who determined the compatibility of the system. Also, this person is responsible for continuously reviewing the suitability of the products specified for the system, referencing the latest catalog, installation manual, Safety Precautions and all materials related to the product.

2. EMERGENCY SHUTOFF

Proportion, Inc. products cannot be used as an emergency shutoff. A redundant safety system should be installed in the system to prevent serious injury or loss of life.

3. EXPLOSIVE ATMOSPHERES

Products and equipment should not be used where harmful, corrosive or explosive materials or gases are present. Unless certified, Proportion-Air, Inc. products cannot be used with flammable gases or in hazardous environments.

4. AIR QUALITY

Clean, dry air is not required for Proportion-Air, Inc. products. However, a 40 micron particulate filter is recommended to prevent solid contamination from entering the product.

5. TEMPERATURE

Products should be used with a media and ambient environment inside of the specified temperature range of 32°F to 158°F. Consult factory for expanded temperature ranges.

6. OPERATION

Only trained and certified personnel should operate electronic and pneumatic machinery and equipment. Electronics and pneumatics are very dangerous when handled incorrectly. All industry standard safety guidelines should be observed.

7. SERVICE AND MAINTENANCE

Service and maintenance of machinery and equipment should only be handled by trained and experienced operators. Inspection should only be performed after safety has been confirmed. Ensure all supply pressure has been exhausted and residual energy (compressed gas, springs, gravity, etc.) has been released in the entire system prior to removing equipment for service or maintenance.

CAUTION

Improper operation could result in serious injury to people or damage to equipment!

1. PNEUMATIC CONNECTION

All pipes, pneumatic hose and tubing should be free of all contamination, debris and chips prior to installation. Flush pipes with compressed air to remove any loose particles.

2. THREAD SEALANT

To prevent product contamination, thread tape is not recommended. Instead, a non-migrating thread sealant is recommended for installation. Apply sealant a couple threads from the end of the pipe thread to prevent contamination.

3. ELECTRICAL CONNECTION

To prevent electronic damage, all electrical specifications should be reviewed and all electrical connections should be verified prior to operation.

EXEMPTION FROM LIABILITY

1. Proportion-Air, Inc. is exempted from any damages resulting from any operations not contained within the catalogs and/or instruction manuals and operations outside the range of its product specifications.

2. Proportion-Air, Inc. is exempted from any damage or loss whatsoever caused by malfunctions of its products when combined with other devices or software.

3. Proportion-Air, Inc. and its employees shall be exempted from any damage or loss resulting from earthquakes, fire, third person actions, accidents, intentional or unintentional operator error, product misapplication or irregular operating conditions.

4. Proportion-Air, Inc. and its employees shall be exempted from any damage or loss, either direct or indirect, including consequential damage or loss, claims, proceedings, demands, costs, expenses, judgments, awards, loss of profits or loss of chance and any other liability whatsoever including legal expenses and costs, which may be suffered or incurred, whether in tort (including negligence), contract, breach of statutory duty, equity or otherwise.

WARRANTY

Proportion-Air, Inc. products are warranted to the original purchaser only against defects in material or workmanship for eighteen (18) months from the date of manufacture. The extent of Proportion-Air's liability under this warranty is limited to repair or replacement of the defective unit at Proportion-Air's option. Proportion-Air shall have no liability under this warranty where improper installation or filtration occurred.

PROPORTION-AIR

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Handcrafted in the USA

ISO 9001-2015 Certified