

# ***PROPORTION* *AIR***



## **QB3 Electro-Pneumatic Pressure Regulator**

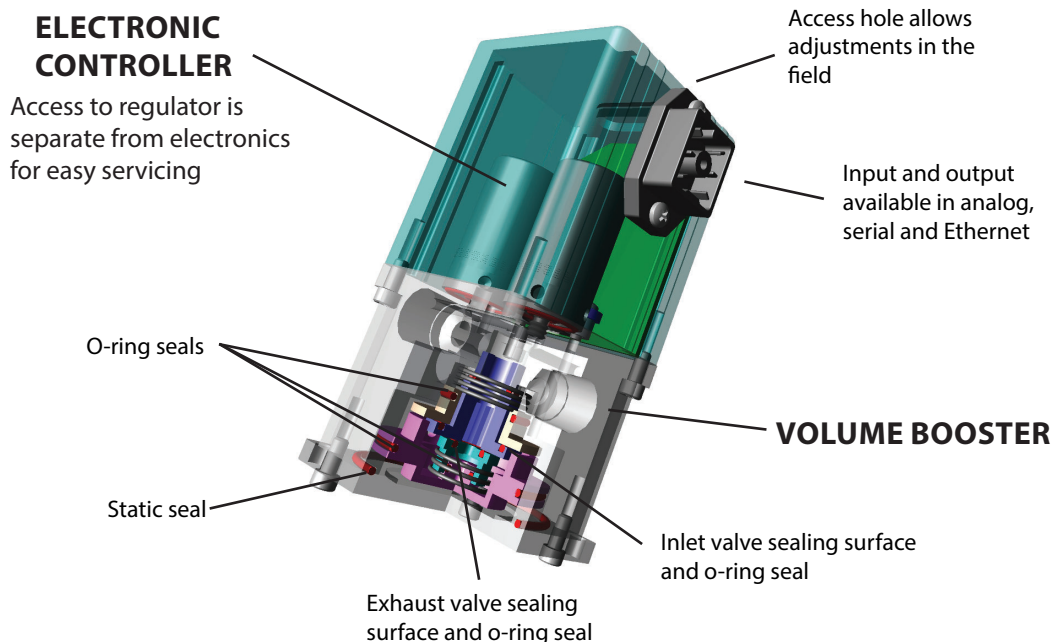
Meet the needs of industrial environments requiring precision pressure control and higher flows with great repeatability.

**Increase Productivity • Save Space • Decrease Complexity**

# QB3 Overview

The QB3 pressure control valve is a complete electronic pressure regulating package consisting of a pilot unit with two solenoid valves and closed loop electronic controls mounted on an internal volume booster. The pressure transducer monitors the output pressure for closed loop control and provides a monitor signal representing active pressure.

The analog monitor signal is constantly compared against the command signal to achieve your desired set pressure. The QB3 pressure control valve offers high flow and great repeatability. This compact package can be mounted in any orientation (exception: only vertical with full scale pressures below 10 PSI) and is immune to the rigors of the industrial environment. Like most of our products, the QB3 can be modified in numerous ways to meet the most demanding applications.



## SPECIFICATIONS

### Electrical

Supply Voltage ..... 15-24 VDC  
Supply Current ..... 100-250 mA\*  
Command Signal ..... 0-10 VDC | 4-20 mA  
Command Signal Impedance ..... VDC=10 K $\Omega$  | Current = 100  $\Omega$

### Analog Monitor Output

Voltage ..... 0-10 VDC @ 20 mA max  
Current ..... 4-20 mADC Sinking (sourcing opt)

### Physical

Operating Temperature ..... 32-158° F (0-70° C)  
Weight ..... 1.1 lbs (0.50 Kg)  
Housing ..... Anodized Aluminum  
Connector ..... 6-pin Hirschmann

**Approvals:** CE compliant, except for models with Modbus TCP, Modbus RS232, Modbus RS485, Ethernet/Proportion-Air, P2 Profiler and digital display.

### Mechanical

Pressure Ranges ..... Vacuum-150 psig (10.3 bar)<sup>†</sup>  
Output Pressure ..... 0-100% of range  
Flow Rate ..... 30 SCFM (850 LPM) (see charts)  
Min Closed End Volume ..... 3 in<sup>3</sup>  
Port Size ..... 1/4" NPT (BSPP available)  
Filtration Recommended ..... 100 micron (ordered separately)  
Linearity/Hysteresis .....  $\pm 0.5\%$  F.S.  
Accuracy (Pressure) .....  $\pm 0.25$  to  $\pm 0.5\%$  F.S.  
Accuracy (Monitor) .....  $\pm 0.3\%$  F.S.

### Wetted Parts

Elastomers<sup>‡</sup> ..... Viton and Buna-N  
Manifold ..... Nickel-Plated Aluminum or Nickel-Plated Brass  
Valves ..... 430FR SS, Nickel-Plated Brass  
Pressure Transducer ..... High temp polyamide, alumina ceramic, epoxy, RTV and silicon

\*Some options require more current.

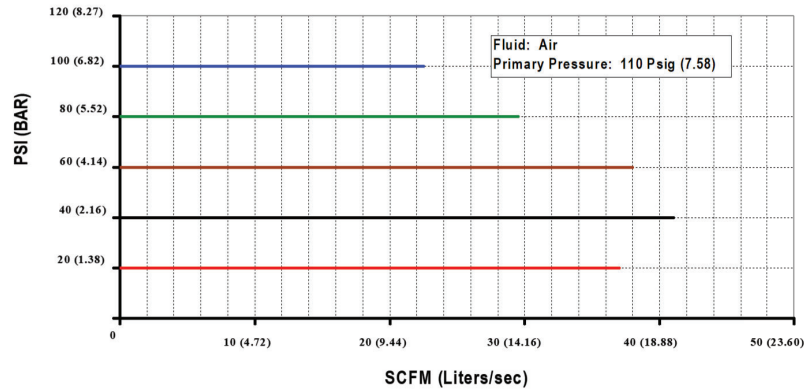
<sup>†</sup>Pressure ranges are customer-specified.

<sup>‡</sup>Others available.

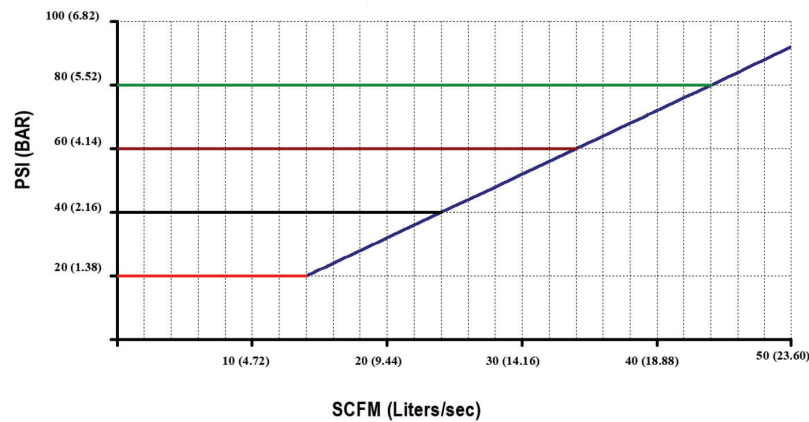
Please consult factory with questions.

## Flow Characteristics

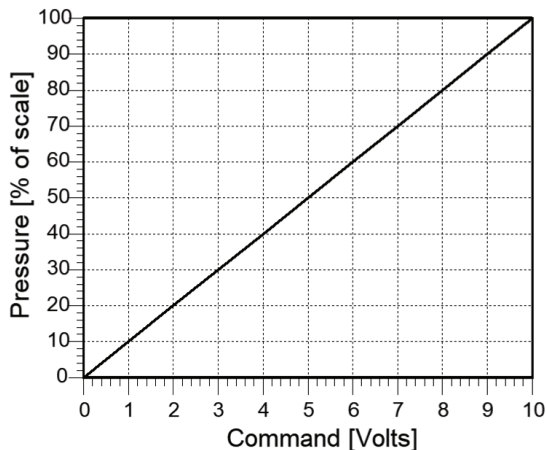
### Forward Flow



### Relief Flow

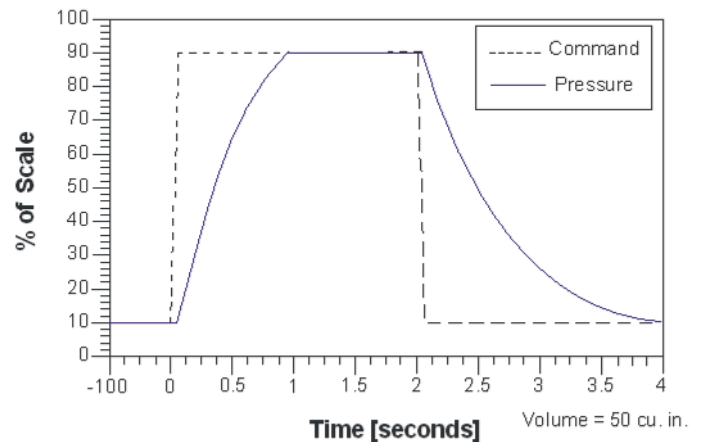


## Linearity



Linear characteristics for a QB3 when given a ramp signal from 0-10 volts. Characteristics would be similar for 4-20mA units.

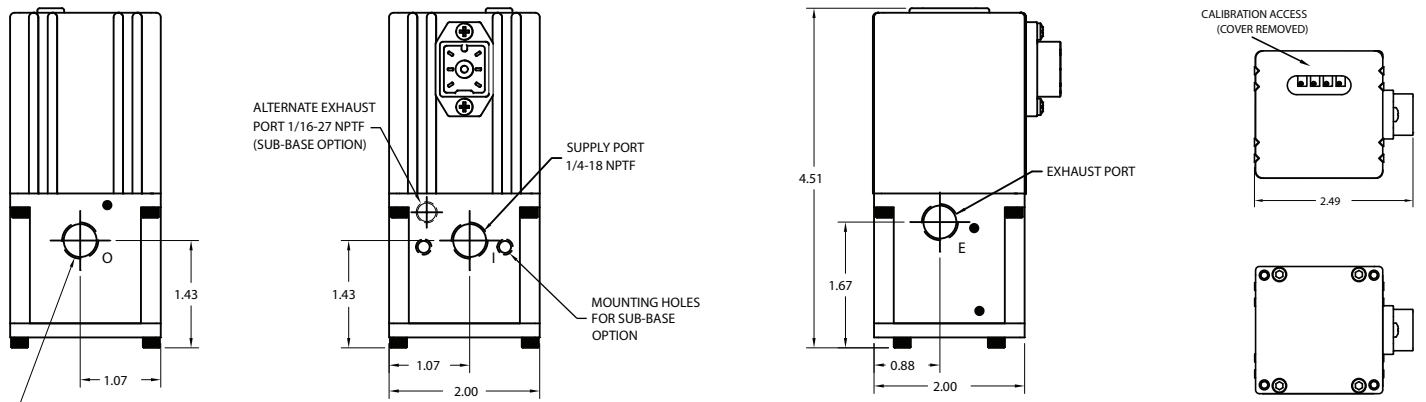
## Response to Step Input



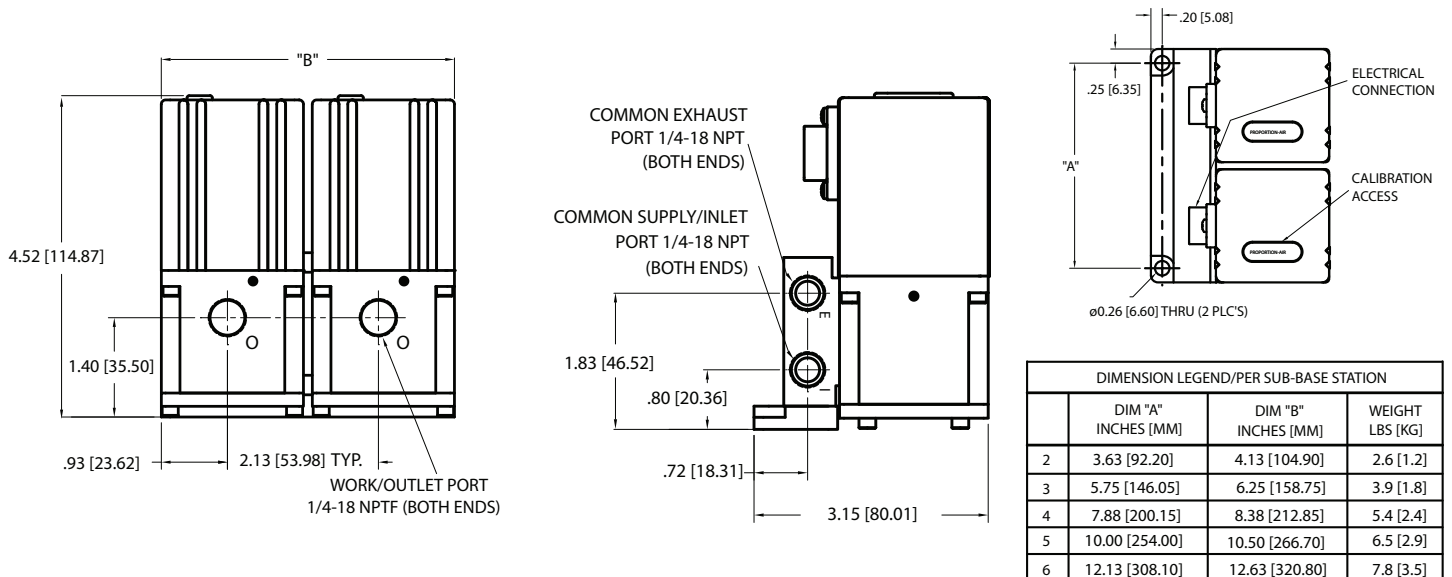
Times for QB3 to fill/exhaust a closed chamber. Time is determined by difference between command signal and pressure achieved.

# Dimensions

## Single Valve

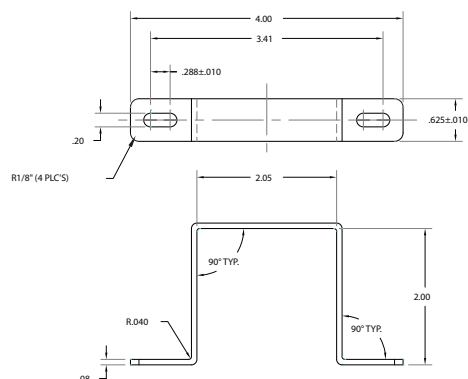


## Manifold Mounting

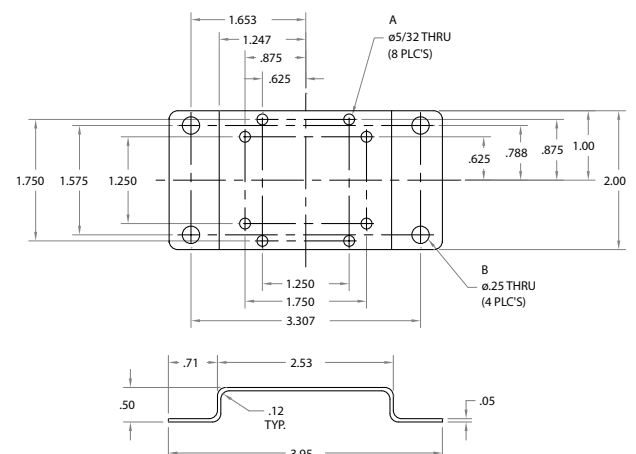


## Mounting Brackets

### QBT-01 Wrap-Around



### QBT-03 Foot Mount



# Configuration

## 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 100 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 one (1) year 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.

THE WARRANTY IS GIVEN IN-LIEU OF, AND BUYER HERBY EXPRESSLY WAIVES, WARRANTIES OR LIABILITIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING WITHOUT LIMITATION ANY OBLIGATION OF PROPORTION-AIR WITH REGARD TO CONSEQUENTIAL DAMAGES, WARRANTIES OF MERCHANTABILITY, DESCRIPTION AND FITNESS FOR A PARTICULAR PURPOSE.

QB3		ACCURACY		±0.5% F.S.		PRESSURE		Full Vac to 150 PSIG (10 Bar)					
		PORT SIZE		1/4"		MAX FLOW		30 SCFM (850 SLPM)					
Example Part Number													
Section ->		1	2	3	4	5	6	7	8	9	10	11	OPTIONS
QB	3	T	A	N	E	E	Z		P	90	PS	G	TF

1	Type
T	-14.7 to 150 psi

2	Manifold Material
A	Nickel-Plated Aluminum
B	Nickel-Plated Brass*
*Includes O2 Cleaning	

3	Thread Type
N	NPT
P	BSPP

4	Input Signal Range
E	0 to 10 VDC
I	4 to 20 mA DC
K	0 to 5 VDC
V	1 to 5 VDC*
N	Ethernet/Proportion-Air <sup>1</sup>
A	Modbus RS232 Input* <sup>1</sup>
B	Modbus RS485 Input* <sup>1</sup>
P	P2 Profiler (Integrated)
*Requires V for Monitor Signal (#5)	
*Requires X for Monitor Signal (#5)	

5	Output Signal Range
X	No Analog Monitor
E	0 to 10 VDC
K	0 to 5 VDC*
V	1 to 5 VDC* <sup>1</sup>
C	4 to 20 mADC (Sinking)
S	4 to 20 mADC (Sourcing)
*Requires E, I or K for Input Signal Range (#4)	
*Requires V for Input Signal Range (#4)	

6	Zero Offset
N	0% Pressure is Below Zero
P	0% Pressure is Above Zero
Z	0% Pressure is Zero (Typical)

7	Zero Offset Pressure
Typical is 0% - If greater than 30% of full scale pressure (#9 below), please consult factory.	
*If Z for Zero Offset, Please Leave this Section (#7) Blank	

8	Full Scale Pressure Type
N	100% Pressure is Below Zero
P	100% Pressure is Above Zero
Z	100% Pressure is Zero

9	Full Scale Pressure
Must be less than or equal to 150 psig*	
*If Full Scale Pressure is ≤ 15" H <sub>2</sub> O. Please add \$150	

10	Pressure Unit (no additional fee - all)		
PS	PSI	Inches Hg	IH
MB	Millibars	Inches H <sub>2</sub> O	IW
BR	Bar	Millimeters H <sub>2</sub> O	MW
KP	Kilo-pascal	Kilograms/cm <sup>2</sup>	KG
MP	Mega-pascal	Torr (Requires A for Unit of Measure #11)	TR
MH	Millimeters Hg	Centimeters H <sub>2</sub> O	CW
PA	Pascal		

11	Pressure Unit of Measure
A	Absolute Pressure
G	Gauge Pressure