AIR PREPARATION UNITS
FILTERS, LUBRICATORS AND REGULATORS

FRL'S SERIES

www.hydrorex.com - Houston Texas USA - sales@hydrorex.com - Tel. 832.277.1182

Pressure Shop Store

FEATURES

- Size from 1/4" up to 1".
- Filter element size up to 5 micron.
- Working pressure up to 200 psi.
- Different configurations available.



APPLICATIONS

- Industrial pneumatic circuits.
- Laboratories.
- Automotive industry.

OPERATING SPECIFICATIONS

- The FRL's will reduce the possibility of damage to the pneumatic equipment.
- The FRL's consist of a three components unit. Components can be ordered separately.
- The filter cleans the compressed air of condensation and dirt particles.
- The regulator maintains steady operating pressure, despite fluctuations on the pneumatic line.
- The lubricator adds a precise quantity of oil to the filtered air.
  The oil mist mantains proportional to the air flow, and oil can be added during operation.

	MODELS	SPECIFICATIONS
Low pressure models	AF, AR, AL, AW, AC	Maximum inlet pressure up to 145 psi (maximum working pressure 120 psi)
High pressure models	OF, OR, OL, OFR, OU	Maximum inlet pressure up to 235 psi (maximum working pressure 200 psi)
Size	(AF, AR, AL, AW, AC, OF, OR, OFR and OU-MINI) 2000 - 02	1/4" NPT
	(AF, AR, AL, AW, AC) 3000 - 03	3/8" NPT
	(AF, AR, AL, AW, AC and OU-MIDI) 4000 - 04	1/2" NPT
	(AF, AR, AL, AW, AC) 4000 - 06	3/4" NPT
	(AF, AR, AL, AW, AC) 5000 - 10	1" NPT
Body	Low pressure models	Aluminum die casting
	High pressure models	Zinc die casting
Container material	All models	Polycarbonate
Ambient temperature	Low pressure models	41 - 140 Fahrenheit
	High pressure models	32 - 140 Fahrenheit
Filter element size	Low pressure models	25 Micron standard (5 and 50 micron available)
	High pressure models	40 Micron standard (5 micron available)
Standard nominal flow rate (Gallons per min.)	AC-2000-02	132.09
	AC-3000-03	528.34
	AC-4000-04	1056.69
	AC-4000-06	1188.77
	AC-5000-10	1320.86
	OU-MINI-NPT	369.84
	OU-MIDI-NPT	898.19

*** SPECIAL REQUEST**
Please contact factory for special dial artwork and ranges.

Houston Texas USA
www.hydrorex.com
sales@hydrorex.com
Tel. 832.277.1182

ORDERING INFORMATION

LOW PRESSURE SERIES	**AF** Air Filter **AR** Air Regulator	**AL** Air Lubricator **AW** Air Filter and Regulator	**AC** Three component unit (filter, regulator and lubricator)
HIGH PRESSURE SERIES	**OF** Air Filter **OR** Air Regulator	**OL** Air Lubricator **OFR** Air Filter and Regulator	**OU** Three component unit (filter, regulator and lubricator)
CONNECTION SIZE (LOW PRESSURE SERIES)	**2000-02** 1/4" NPT **3000-03** 3/8" NPT **4000-04** 1/2" NPT	**4000-06** 3/4" NPT **5000-10** 1" NPT	CONNECTION SIZE (HIGH PRESSURE SERIES) **MINI** 1/4" NPT **MIDI** 1/2" NPT
FILTER ELEMENT SIZE (LOW PRESSURE MODELS)	**25 Micron standard** (5 and 50 micron available)		FILTER ELEMENT SIZE (HIGH PRESSURE MODELS) **40 Micron standard** (5 micron available)
ACCESSORIES (LOW PRESSURE SERIES)	**IBRA14** 1/4" Bracket **IBRA38** 3/8" Bracket **IBRA12** 1/2" Bracket **IBRA34** 3/4" Bracket **IBRA100** 1" Bracket	**02D** (Self-draining for 1/4"only) **04D** (Self-draining for 1/2"only) **G1** 160 psi pressure gauge	ACCESSORIES (HIGH PRESSURE SERIES) **IBRA38MINI** 3/8" Bracket **IBRA34MIDI** 3/4" Bracket **G2** 200 psi pressure gauge
EXAMPLE	• Select series code ..... AC • Select size ..... 4000-04 • Select filter element size ..... 25 Micron • Accessories G1		**AC-4000-04-25-G1**

OUTLINE DIMENSIONS

LOW PRESSURE - FILTERS

AF-4 / AF-2000-02



1 | 1.57" (40 mm)
2 | 1.33" (34 mm)
3 | 2" (51 mm)
4 | 0.39" (10 mm)

AF-6 / AF-3000-03



1 | 2.04" (52 mm)
2 | 1.61" (41 mm)
3 | 2.87" (73 mm)
4 | 0.70" (18 mm)

AF-8 / AF-4000-04



1 | 2.75" (70 mm)
2 | 2.04" (52 mm)
3 | 3.81" (97 mm)
4 | 0.66" (17 mm)

AF-12 / AF-4000-06



1 | 2.95" (75 mm)
2 | 2.20" (56 mm)
3 | 3.77" (96 mm)
4 | 0.70" (18 mm)

AF-16 / AF-5000-10



1 | 3.50" (89 mm)
2 | 2.75" (70 mm)
3 | 2.36" (60 mm)
4 | 3.77" (96 mm)
5 | 0.66" (17 mm)

MADE IN USA
WWW.HYDROREX.COM

HYDROREX

AIR PREPARATION UNITS

FILTERS, LUBRICATORS AND REGULATORS

LOW PRESSURE - REGULATORS

AR-4 / AR-2000-02



1 | 1.10" (28 mm)
2 | 1.88" (48 mm)
3 | 1.61" (41 mm)
4 | 1.49" (38 mm)

AR-6 / AR-3000-03



1 | 1.45" (37 mm)
2 | 2.16" (55 mm)
3 | 2.55" (65 mm)
4 | 2" (51 mm)

AR-8 / AR-4000-04



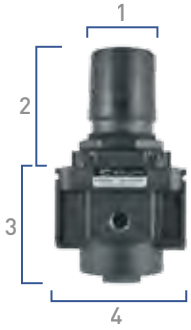
1 | 1.81" (46 mm)
2 | 2.83" (72 mm)
3 | 2.87" (73 mm)
4 | 2.63" (67 mm)

AR-12 / AR-4000-06



1 | 1.77" (45 mm)
2 | 2.79" (71 mm)
3 | 3.03" (77 mm)
4 | 2.91" (74 mm)

AR-16 / AR-5000-10



1 | 1.81" (46 mm)
2 | 3.22" (82 mm)
3 | 3.54" (90 mm)
4 | 3.46" (88 mm)

LOW PRESSURE - LUBRICATORS

AL-4 / AL-2000-02



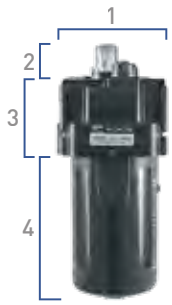
1 | 1.53" (39 mm)
2 | 1.69" (43 mm)
3 | 2.44" (62 mm)
4 | 0.82" (21 mm)

AL-6 / AL-3000-03



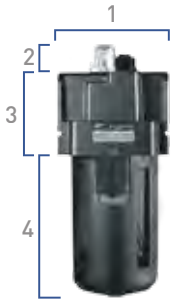
1 | 1.02" (26 mm)
2 | 1.57" (40 mm)
3 | 2.91" (74 mm)
4 | 2" (51 mm)

AL-8 / AL-4000-04



1 | 2.59" (66 mm)
2 | 0.90" (23 mm)
3 | 2" (51 mm)
4 | 3.85" (98 mm)

AL-12 / AL-4000-06



1 | 2.79" (71 mm)
2 | 0.74" (19 mm)
3 | 2.20" (56 mm)
4 | 3.85" (98 mm)

AL-16 / AL-5000-10



1 | 3.54" (90 mm)
2 | 5.66" (144 mm)
3 | 3.85" (98 mm)
4 | 2.12" (54 mm)

Houston Texas USA

www.hydrorex.com
sales@hydrorex.com
Tel. 832.277.1182

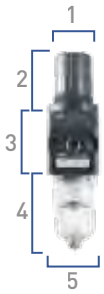
HYDROREX

AIR PREPARATION UNITS

FILTERS, LUBRICATORS AND REGULATORS

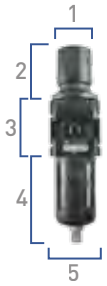
LOW PRESSURE - REGULATOR FILTER

AFR-4 / AW-2000-02



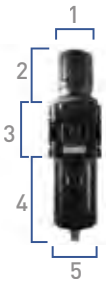
1	1.10" (28 mm)
2	1.85" (47 mm)
3	1.88" (48 mm)
4	2.40" (61 mm)
5	1.57" (40 mm)

AFR-6 / AW-3000-03



1	1.25" (32 mm)
2	2.20" (56 mm)
3	2.32" (59 mm)
4	3.54" (90 mm)
5	2.04" (52 mm)

AFR-8 / AW-4000-04



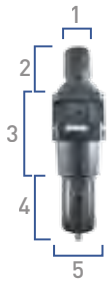
1	1.77" (45 mm)
2	2.75" (70 mm)
3	2.71" (69 mm)
4	4.44" (113 mm)
5	2.83" (72 mm)

ARF-12 / AW-4000-06



1	1.77" (45 mm)
2	2.79" (71 mm)
3	2.87" (73 mm)
4	4.40" (112 mm)
5	2.83" (72 mm)

ARF-16 / AW-5000-10



1	1.77" (45 mm)
2	3.22" (82 mm)
3	5.43" (138 mm)
4	4.37" (111 mm)
5	2.08" (53 mm)

LOW PRESSURE - AIR PREPARATION UNITS

AFRL-4 / AC-2000-02



1	5.35" (136 mm)
2	4.76" (121 mm)

AFRL-6 / AC-3000-03



1	7.20" (183 mm)
2	6.18" (157 mm)

AFRL-8 / AC-4000-04



1	9.76" (248 mm)
2	7.20" (183 mm)

AFRL-12 / AC-4000-06



1	10.07" (256 mm)
2	7.63" (194 mm)

QFRL-16 / AC-5000-10



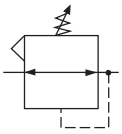
1	12.08" (307 mm)
2	10.82" (275 mm)

Houston Texas USA

www.hydrorex.com
sales@hydrorex.com
Tel. 832.277.1182

Dial-Air™ Regulator R21

= "Most Popular"



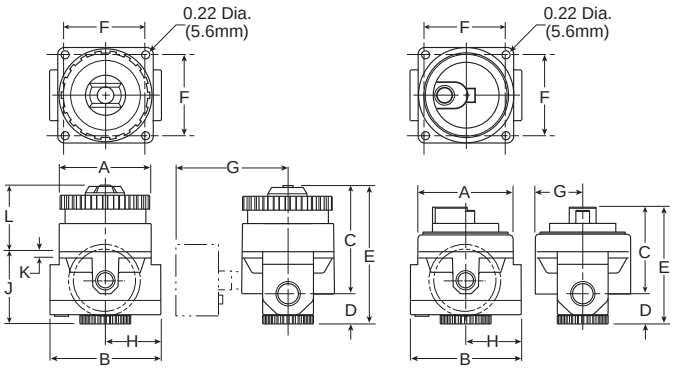
Relieving



R21-02-000

Features

- Balanced Valve Design
- Non-Rising Pressure Adjusting Dial
- High-Relief Flow (3/16" Relief Orifice)
- Two 1/4" NPT Gauge Ports, Usually Used for Additional Outlets
- Piston Operated



Remote Operated

NOTE: Panel mounting requires (2) 11/16" (69mm) diameter holes and (4) 7/32" (5.5mm) screw holes. Unit can be mounted on material up to 1-1/4" (32mm) thick.

Specifications

Flow Capacity*	1/4	117 SCFM (55 dm^3/s)
	3/8	180 SCFM (85 dm^3/s)
	1/2	195 SCFM (92 dm^3/s)
	3/4	220 SCFM (103 dm^3/s)
Adjusting Range Pressure		0 to 40 PSIG (0 to 2.8 bar) 0 to 160 PSIG (0 to 11 bar)
Bleed Rate		0.05 SCFM (0.024 dm^3/s)
Gauge Port (2 ea.)	NPT / BSPT-Rc	1/4
Maximum Supply Pressure		300 PSIG (20.7 bar)
Operating Temperature		32° to 150°F (0° to 65.5°C)
Port Size	NPT / BSPP-G	1/4, 3/8, 1/2, 3/4
Remote Pilot Port Size		1/4
Weight	lb. (kg)	2.3 (1.04)

* Inlet pressure 100 PSIG (6.9 bar). Secondary pressure (1/4, 1/2 & 3/4) 90 PSIG (6.2 bar); (3/8) 80 PSIG (5.5 bar).

Materials of Construction

Body	Zinc
Bonnet	Zinc / Brass
Piston	Acetal
Seals	Nitrile
Springs	Steel
Valve Assembly	Brass / Nitrile / Acetal

⚠ WARNING

Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:

REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.

For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Dimensions

Models (Inches (mm))	A	B	C	D	E	F	G	H	J	K	L
Standard Unit R21-XX-000	2.60 (66)	3.19 (81)	3.14 (79.8)	.95 (24)	4.09 (104)	2.20 (55.9)	— —	1.61 (41)	2.08 (52.8)	.18 (4.6)	2.07 (52.6)
With Gauge (order separately) R21-XX-XXX	2.60 (66)	3.19 (81)	3.14 (79.8)	.95 (24)	4.09 (104)	2.20 (55.9)	2.70 (68.5)	1.61 (41)	2.08 (52.8)	.18 (4.6)	2.07 (52.6)
Remote Operated R21-XX-R00	2.60 (66)	3.19 (81)	2.24 (56.9)	.95 (24)	3.19 (81)	2.20 (55.9)	1.33 (33.8)	1.61 (41)	2.08 (52.8)	.18 (4.6)	1.11 (28.2)

= "Most Popular"

Replacement Kits

Adjustment Dial Knob RRP-16-024-000

Conversion Kit (Series A to Series B) RRP-95-766

Cover Kit (Remote) –
Bonnet and Nitrile, O-ring (Series B) RRP-95-910
Bonnet and Fluorocarbon, O-ring (Series B) RRP-95-911

O-ring, Repair Kit GRP-95-260

Piston, Bottom and O-ring Seal RRP-95-192

Spring, Regulating, Belleville Washer –
2 to 40 PSIG (0.1 to 3 bar) RRP-95-906
5 to 160 PSIG (0.4 to 11 bar) RRP-95-905

Valve, Main with U-cup Seal RRP-95-151

Valve, Main with U-cup Seal and Bottom Plug –
Nitrile Elastomers RRP-95-914
Fluorocarbon Elastomers RRP-95-915

Valve, Main (Remote) with U-cup Seal RRP-96-952

Valve, Main (Remote) with U-cup Seal and Bottom Plug –
Nitrile Elastomers) RRP-95-912
Fluorocarbon Elastomers RRP-95-913

Valve, Pilot with O-ring and Valve Spring RRP-96-934

Accessories

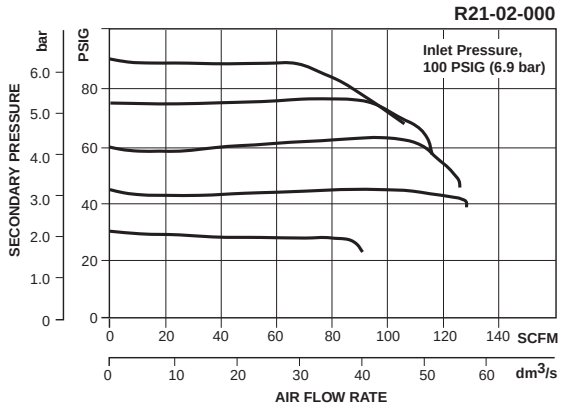
Wall Mounting Bracket, Gauge Port Adapter,
1/4" NPT RRP-95-590

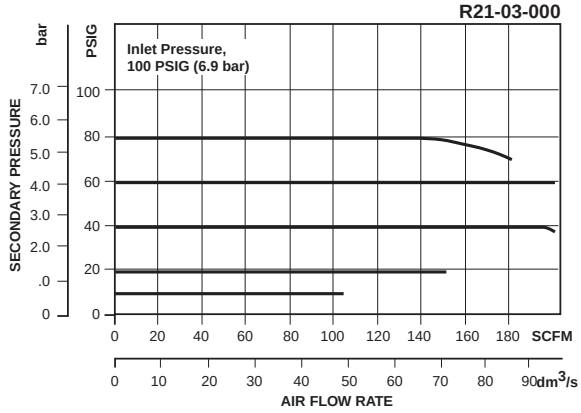
Gauge, Pressure –
0 to 60 PSIG (0 to 4 bar), 2" Dial Face,
1/4" NPT, CBM K4520N14060

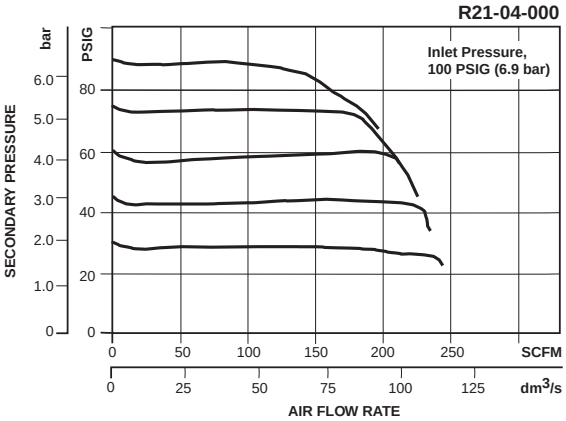
0 to 160 PSIG (0 to 11 bar), 2" Dial Face,
1/4" NPT, CBM K4520N14160

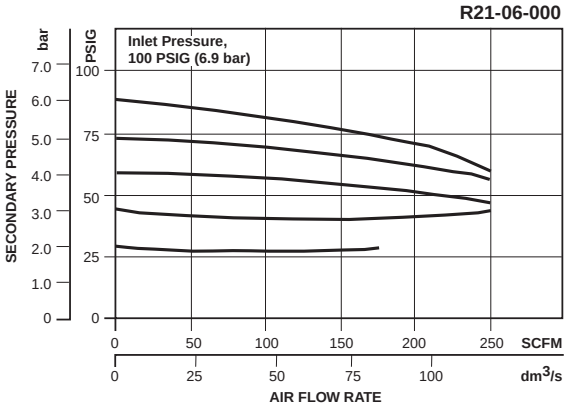
0 to 160 PSIG, 1-3/4" Digital Round,
1/4" NPT K4517N14160D

Tamper Resistant Kit RRP-95-585









Ordering Information

Model Type	Port Size	High Flow 5 to 160 PSIG (0.4 to 11 bar)	Low Pressure 2 to 40 PSIG (0.1 to 3 bar)	Remote 5 to 160 PSIG (0.4 to 11 bar)
Relieving	1/4	R21-02-000	R21-02-L00	R21-02-R00
	3/8	R21-03-000	R21-03-L00	R21-03-R00
	1/2	R21-04-000	R21-04-L00	R21-04-R00
	3/4	R21-06-000	R21-06-L00	R21-06-R00

Options - To order an option supplied with the unit model, add the appropriate coded suffix letter in the designated position of the model number.

HYDROREX

Parker

IR4000 Series

Single-Stage, General Purpose Gases-Nitrogen Pressure Regulator

Internal Threadless • Stainless Steel



Value Proposition:

The IR4000 Series regulator offers high pressure capability with an inlet pressure up to 4,000 psig. Its large, convoluted Hastelloy® C-22 diaphragm provides stable pressure control and corrosion resistance. Close tolerances and tight alignment of moving components minimize hysteresis and improve cycle life.

Product Features:

- Unique compression member loads the seal to the body without requiring a threaded nozzle or additional seals
- Internally threadless design reduces particle generation; low internal volume reduces purge times
- Positive upward and downward stops increase cycle life by preventing over stroking of the diaphragm
- Selection of seat materials for media compatibility and temperature applications

Specifications:

Functional Performance	
Design	
Burst Pressure	12,000 psig (828 barg)
Proof Pressure	6,000 psig (414 barg)
Flow Capacity	
C_V Options	C_V 0.06 (std), C_V 0.02, C_V 0.15
Leak Rate: Internal	Bubble Tight
Leak Rate: External	Bubble Tight
Supply Pressure Effect	Based upon C_V Option
0.02 C_V	0.23 psig/100 psig (0.016 barg/7 barg)
0.06 C_V	0.6 psig/100 psig (0.04 barg/7 barg)
0.15 C_V	1.5 psig/100 psig (0.1 barg/7 barg)
Internal Volume	40cc without fittings
Approximate Weight	1.5 lbs. (0.7 kg)
Operating Conditions	
Maximum Inlet	Refer to Range Table for specific information
Outlet Options	0 - 10 psig (.7 barg), 1-30 psig (2 barg) 2 - 60 psig (4 barg), 3-100 psig (7 barg) 10-250 psig (17 barg) 20 - 500 psig (35 barg)
Temperature	Metal Knob required for temperature above 150°F
PCTFE	-40°F to 150°F (-40°C to 66°C)
PEEK™	-40°F to 275°F (-40°C to 135°C)
Vespel®	-40°F to 500°F (-40°C to 260°C)
Self-Relieving Option	-40°F to 150°F (-40°C to 66°C)

Material of Construction	
Wetted	
Body Options	316L Stainless Steel (std). (Contact Factory for Alloyed body material availability)
Compression Member	Inconel® 625
Diaphragm	Hastelloy® C-22
Poppet	Hastelloy® C-22
Poppet Spring	Inconel® X750
Seat Options	PCTFE (std) Vespel® or PEEK™
Carrier Options	316L Stainless Steel (std) or Hastelloy® C-22
Washer Backup Options	316L Stainless Steel (std) or Hastelloy® C-22
O-Ring Backup Options	FKM (std) or PTFE
Inlet Screen/Filter	316 Stainless Steel (std) (60µm mesh screen, 10µm filter) (Contact Factory for Alloyed body material availability)
Self Relieving Seat	PEEK™
Non-Wetted	
Cap Options	Nickel Plated Brass or Stainless Steel
Nut	316L Stainless Steel
Knob Options	ABS (std) (ambient temperature) or Aluminum

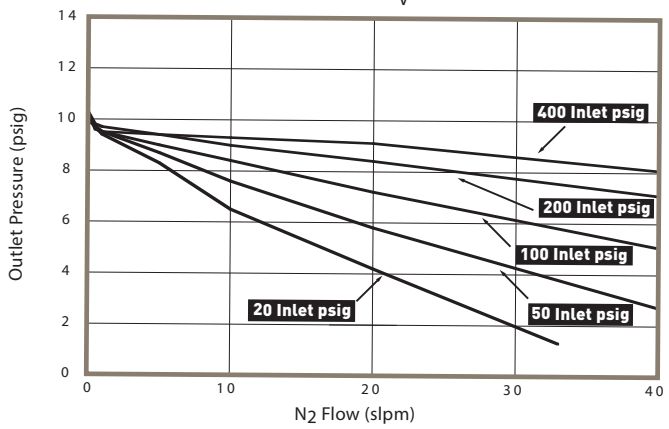
For additional information on materials of construction, functional performance and operating conditions, please contact factory.

Hastelloy® is a registered trademark of Haynes International, Inc.
PEEK™ is a trademark of Victrex plc.
Vespel® is a registered trademark of DuPont Performance Elastomers L.L.C.
Inconel® is a registered trademark of Special Metals Corporation

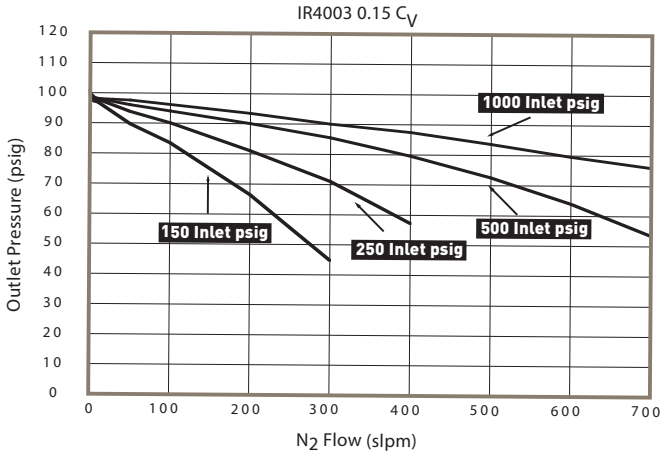
IR4000 Series

Flow Curve:

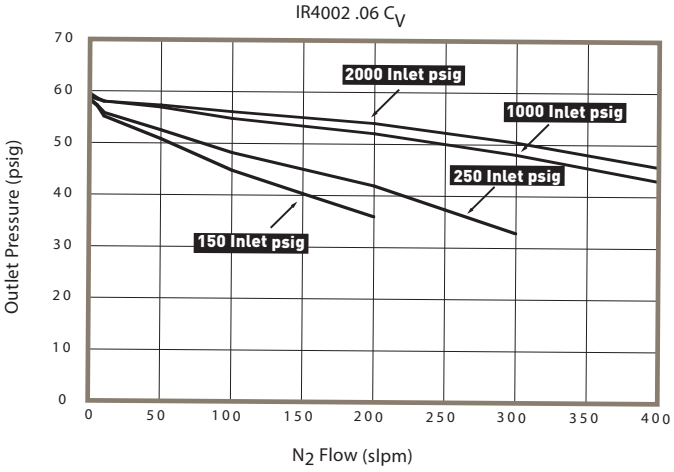
IR4000 .06 C_V



IR4003 0.15 C_V



IR4002 .06 C_V



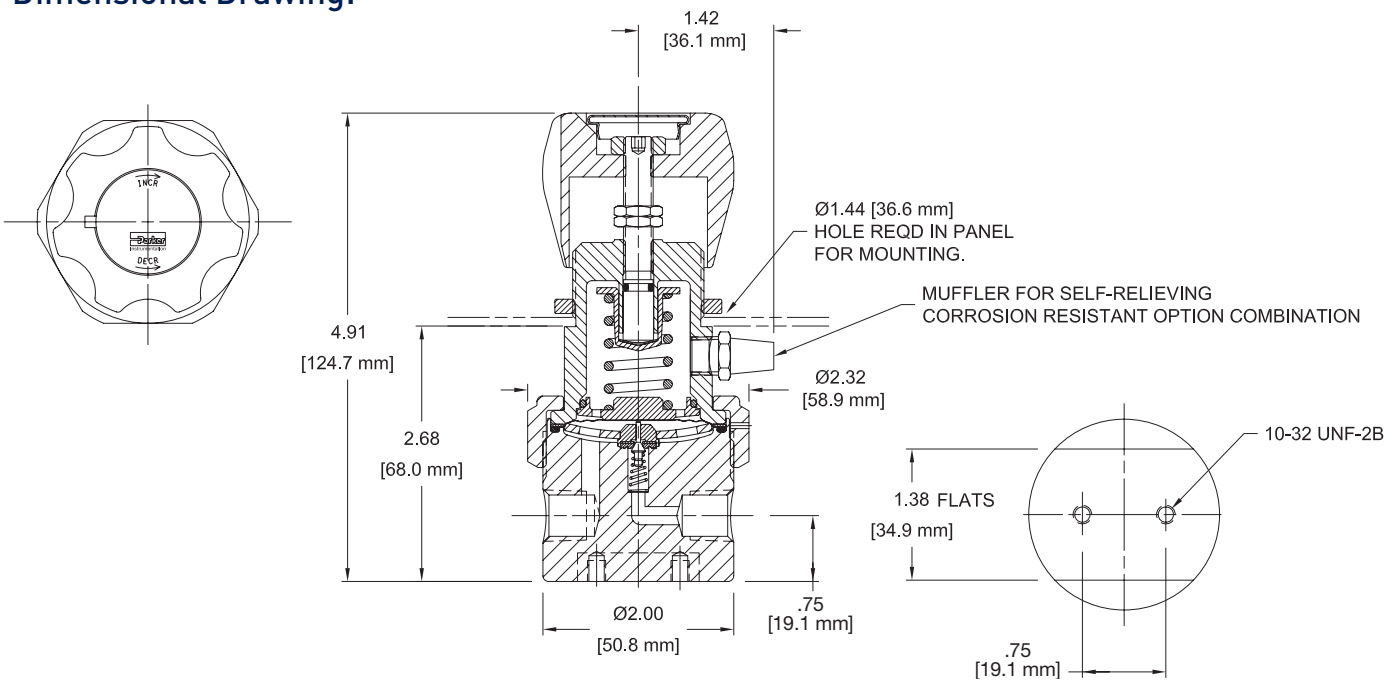
RANGE TABLE			
Basic Model	Maximum Inlet PSIG		
	0.02 Cv	0.06 Cv	0.15 Cv
IR4000	400	400	400
IR4001	4,000	4,000	1,250
IR4002	4,000	4,000	1,250
IR4003	4,000	4,000	1,250*
IR4004	4,000	4,000	1,250
IR4005	4,000	4,000	1,250

*1,250 max. pressure for PEEK and Vespel seats

When setting the delivery pressure, ensure that the maximum outlet pressure of the regulator is not exceeded for any operating condition including increases in delivery pressure due to flow shutoff and supply pressure effect. Supply pressure effect will result in a significant rise in outlet pressure as the inlet pressure decreases.

The stop settings will be adjusted to accommodate typical inlet and outlet pressure ranges. Please contact the factory if specific stop settings are required.

Dimensional Drawing:



IR4000 Series

Ordering Information:

Building a Part Number: *Example:* IR4002SK4P01304B

Example Part Number:	IR40	02	S		K	4P	01	30	4	B	
Ordering Parameters/Options:	Regulator	Basic Series	Body Material	Flow Capacity	Seat Material	Porting	Outlet Gauge	Inlet Gauge	Port Style	Port Mounting	Optional Features
Table Reference: (see below)	A	B	C	D	E	F	G	H	I	J	K

A - Regulator	
IR40	IR4000 Series Regulator

B - Basic Series (Range / Outlet Gauge)	
00	0-10 psig / 0-30 psig
01	1-30 psig / 0-60 psig
02	2-60 psig / 0-100 psig
03	3-100 psig / 0-200 psig
04	10-250 psig / 0-400 psig
05	20-500 psig / 0-600 psig

C - Body Material (1)	
S	316L Stainless Steel (Consult factory for Alloy Material options and availability)

D - Flow Capacity	
	0.06 C_V (std)
1	0.02 C_V
2	0.15 C_V

E - Seat Material	
K	PCTFE
P	PEEK™
V	Vespel®

F - Porting	
2P	2 Ports (No X required for gauges, inlet and outlet ports only)
3P	3 Ports (One X for gauge ports)
4P	4 Ports (Two X for gauge ports)
4PB	4 Ports (One X for gauge ports)
5P	5 Ports (Two X for gauge ports)

Note: Ports may be plugged for NPT threaded product.

G - Outlet Gauge / Basic Series	
03	0-30 psig / IR4000
OL	0-60 psig / IR4001
01	0-100 psig / IR4002
2	0-200 psig / IR4003
4	0-400 psig / IR4004
6	0-600 psig / IR4005
X	No Gauge

H - Inlet Gauge	
X	No Gauge
30	3,000 psig (std)
4	400 psig (with 10 psig range)

I - Port Style	
4	1/4" NPT Female (All Gauges ports are 1/4" NPT Female)

J - Port Mounting	
B	0.75 (19.1 mm) port height with 0.75 (19.1 mm) mounting (std)

K - Optional Features (This section can have multiple options)	
C	Corrosion Resistant External (Stainless Steel Cap)
G	Tamper Proof (Not available with D or M option)
M	Metal Knob (Black: Not available with D or G option, required for temps. above 150° F)
L	PTFE Backup O-Ring (PCTFE and PEEK™ Seats only)
S	Self Relieving (Temperature rating -40°F to 150°F (-40°C to 66°C))

Note:

Panel Mount Option: Order Panel Mount Nut Ring (PN: IR4-Panel-Nut-B-NP) as separate line item
Vent Muffler Option: Vent Muffler (PN: Muffler-2F-Bronze) as separate line item.
Vent Muffler is standard for the Self Relieving (S), Corrosion Resistant (C) option combination.

Parker Instrumentation Products Division reserves the right to plug NPT ports