

SINGLE-STAGE, GENERAL PURPOSE REGULATORS (MODELS SSD, SSE)

General purpose single-stage regulators are designed for use in noncorrosive gas service. They are recommended for general laboratory use where inlet pressure does not vary greatly (such as liquefied gases) and where high purity is not a consideration.

STANDARD FEATURES

- Filter in Seat Assembly traps foreign matter, extends regulator life and reduces maintenance.
- Neoprene Diaphragm permits accurate delivery pressure settings.
- Outlet metering valve provides flow control.

OPTIONAL FEATURES

- Relief Valve protects regulator components from the effects of overpressurization.

SPECIFICATIONS

Maximum Inlet Pressure:

- Model SSD: 3000 psig
- Model SSE: 300 psig

Inlet Pressure Gauge (dual scale):

- Model SSD: 0–4000 psig/0–275 bar
- Model SSE: 0–400 psig/0–27 bar

Delivery Pressure Range: See Tables

Delivery Pressure Gauge: See Tables

Gauge Size: 2" Dial

Operating Temperature Range:

- Regulators with Flowmeters: +32°F to +165°F
- Regulators without Flowmeters: -40°F to +165°F

Flow Coefficient:

- Regulator: Cv = 0.18
- Outlet Valve: Cv = 0.4

Inlet Connection:

- Model SSD: CGA 296, 320, 326, 346, 350, 540, 580, 590 or 660 as ordered
- Model SSE: CGA 300, 510 or 660 as ordered

OPTIONAL EQUIPMENT

Equipment	Part No.
Relief Valves:	
for SSD-15, SSE-15	RV5572-25i
for SSD-50, SSE-50, SSD-600 Series and SSE-600 Series	RV5572-90i
for SSD-125 and SSE-125	RV5572-140i
for SSD-250 and SSE-250	RV5572-300i

Outlet Connection:

- 1/4" NPT male (on outlet valve)
- 1/8" NPT female (on flowmeter)

Optional Relief Valve Vent Connection:

- 1/4" NPT male

Supply Pressure Effect: 1.0 psi per 100 psi

Approximate Weight: 4 lbs

MATERIALS OF CONSTRUCTION

Body: Brass Bar Stock

Outlet Valve and Gauges: Brass

Bonnet: Painted Zinc

Other Metal Parts Exposed to Gas:

- Brass and Stainless Steel

Seat and Seals: Teflon®

Diaphragm: Neoprene

Flowmeter: See Series 50 Flowmeter, Model FM4350 (page 50)



SSD Regulator



SSD Regulator with Flowmeter

TABLE I, Regulators with Metering Valves

Part No. Model SSD	Part No. Model SSE	Delivery Pressure		
		Range (psig)	Gauge (dual scale) (psig)	Gauge (dual scale) (bar)
SSD-15-(CGA)	SSE-15-(CGA)	2–15	0–30	0–2
SSD-50-(CGA)	SSE-50-(CGA)	4–50	0–100	0–7
SSD-125-(CGA)	SSE-125-(CGA)	10–125	0–150	0–10
SSD-250-(CGA)	SSE-250-(CGA)	20–250	0–400	0–27

TABLE II, Regulators with Flowmeters

All regulators with flowmeters have a delivery pressure range of 4–50 psig and are equipped with 0–100 psig pressure gauge on the delivery side.

Part No. Model SSD	Part No. Model SSE	Flowmeter Range, Air at 70°F and 14.7 psia
SSD-600-(CGA)	SSE-600-(CGA)	8–50 sccm
SSD-601-(CGA)	SSE-601-(CGA)	5–85 sccm
SSD-602-(CGA)	SSE-602-(CGA)	40–440 sccm
SSD-603-(CGA)	SSE-603-(CGA)	100–950 sccm
SSD-604-(CGA)	SSE-604-(CGA)	0.2–1.8 slpm
SSD-605-(CGA)	SSE-605-(CGA)	0.4–3.6 slpm
SSD-606-(CGA)	SSE-606-(CGA)	0.5–7.0 slpm
SSD-607-(CGA)	SSE-607-(CGA)	1–13 slpm
SSD-608-(CGA)	SSE-608-(CGA)	6–24 slpm
SSD-609-(CGA)	SSE-609-(CGA)	4–44 slpm

Where “(CGA)” is indicated in Tables I and II, insert appropriate Compressed Gas Association connection number to complete the part number. Example: SSD-15-580 or SSD-600-580. Order by complete number.

TWO-STAGE, GENERAL PURPOSE REGULATORS (MODEL TSD)

General purpose two-stage regulators are designed for use with noncorrosive gases or gas mixtures. They are recommended for general laboratory use where high purity is not a consideration, and where constant delivery pressure is desired.



TSD Regulator

STANDARD FEATURES

- Two-Stage Regulator Design ensures constant delivery pressure over varying inlet pressures.
- Filter in Each Seat Assembly traps foreign matter, extends regulator life and reduces maintenance.
- Neoprene Diaphragm in Second Stage permits accurate delivery pressure settings.
- Outlet metering valve provides flow control.

OPTIONAL FEATURES

- Relief Valve protects regulator components from the effects of overpressurization.

Optional Relief Valve Vent Connection:

1/4" NPT male

Supply Pressure Effect: 0.04 psi per 100 psi

Approximate Weight: 5 lbs

MATERIALS OF CONSTRUCTION

Body: Brass Forging

Outlet Valve and Gauges: Brass

Bonnet: Painted Zinc

Other Metal Parts Exposed to Gas:

Brass and Stainless Steel

Seat and Seals: Teflon®

Diaphragms: Neoprene

Flowmeter: See Series 50 Flowmeter, Model FM4350 (page 50)



TSD Regulator with Flowmeter

SPECIFICATIONS

Maximum Inlet Pressure: 3000 psig

Inlet Pressure Gauge (dual scale):
0–4000 psig/0–275 bar

Delivery Pressure Range: See Tables

Delivery Pressure Gauge: See Tables

Gauge Size: 2" Dial

Operating Temperature Range:

Regulators with Flowmeters:
+32°F to +165°F

Regulators without Flowmeters:
-40°F to +165°F

Flow Coefficient:

Regulator: Cv = 0.15

Outlet Valve: Cv = 0.4

Inlet Connection: CGA 296, 320, 326, 346, 350, 540, 580, 590 or 660 as ordered

Outlet Connection:

1/4" NPT male (on outlet valve)

1/8" NPT female (on flowmeter)

OPTIONAL EQUIPMENT

Equipment	Part No.
Relief Valves:	
for TSD-15	RV5572-25i
for TSD-50 and TSD-750 Series	RV5572-90i
for TSD-125	RV5572-140i
for TSD-250	RV5572-300i

TABLE I, Regulators with Metering Valves

Part No. Model SSD	Delivery Pressure		
	Range (psig)	Gauge (dual scale) (psig)	(bar)
TSD-15-(CGA)	2–15	0–30	0–2
TSD-50-(CGA)	4–50	0–100	0–7
TSD-125-(CGA)	10–125	0–150	0–10
TSD-250-(CGA)	20–250	0–400	0–27

TABLE II, Regulators with Flowmeters

All regulators with flowmeters have a delivery pressure range of 4–50 psig and are equipped with 0–100 psig pressure gauge on the delivery side.

Part No.	Flowmeter Range, Air at 70°F and 14.7 psia
TSD-750-(CGA)	8–50 sccm
TSD-751-(CGA)	5–85 sccm
TSD-752-(CGA)	40–440 sccm
TSD-753-(CGA)	100–950 sccm
TSD-754-(CGA)	0.2–1.8 slpm
TSD-755-(CGA)	0.4–3.6 slpm
TSD-756-(CGA)	0.5–7.0 slpm
TSD-757-(CGA)	1–13 slpm
TSD-758-(CGA)	6–24 slpm
TSD-759-(CGA)	4–44 slpm

Where "(CGA)" is indicated in Tables I and II, insert appropriate Compressed Gas Association connection number to complete the part number. Example: TSD-15-580 or TSD-750-580. Order by complete number.

SINGLE-STAGE, HIGH PURITY REGULATORS FOR NON-CORROSIVE GASES (MODEL LABD)

These metal diaphragm single-stage regulators are specially designed for laboratory applications requiring both high reliability and diffusion resistance. They are recommended for high purity non-corrosive gases where inlet pressure does not vary greatly (such as liquefied gases), or where periodic readjustment of delivery pressure setting does not present a problem.



LABD Regulator

STANDARD FEATURES

- Stainless Steel Diaphragm minimizes diffusion of air into regulator and eliminates “off gassing” associated with elastomeric diaphragms, thus maintaining gas purity.
- High Purity Regulator Design permits vacuum purging of regulator.
- Diaphragm Seal Outlet Valve maintains gas purity.
- Chrome-Plated Surfaces provide polished appearance and ease of cleaning.
- Cartridge (Encapsulated) Seat Assembly provides for ease of maintenance and repair.
- Filter in Seat Assembly traps foreign matter, extends regulator life and reduces maintenance.

OPTIONAL FEATURES

- Relief Valve protects regulator components from the effects of overpressurization.

SPECIFICATIONS

Maximum Inlet Pressure: See Table I
 Inlet Pressure Gauge: See Table I
 Delivery Pressure Range: See Table I
 Delivery Pressure Gauge: See Table I

Filter: 10 micron
 Gauge Size: 2" Dial
 Operating Temp. Range: -40°F to +140°F
 Flow Coefficient:
 Regulator: Cv = 0.18
 Outlet Valve: Cv = 0.17
 Inlet Connection: CGA 296, 320, 326, 346, 350, 540, 580, 590, or 660 as ordered
 Outlet Connection:
 1/4" NPT female (on outlet valve)
 Optional Relief Valve Vent Connection:
 1/4" NPT male
 Supply Pressure Effect: 1.0 psi per 100 psi
 Approximate Weight: 3 lbs.

MATERIALS OF CONSTRUCTION

Body: Chrome-Plated Brass Bar Stock
 Gauges: Chrome-Plated Brass
 Bonnet: Chrome-Plated Zinc
 Filter: Nickel-Plated Sintered Bronze
 Other Metal Parts Exposed to Gas:
 Brass and Stainless Steel
 Seat and Seals: Teflon® in Regulator
 Diaphragm: Type 304 Stainless Steel
 Outlet Valve:
 Body: Nickel-Plated Brass Bar Stock
 Seat: PCTFE
 Diaphragm: Type 316L Stainless Steel

OPTIONAL EQUIPMENT

Equipment	Part No.
Relief Valves:	
for LABD-x-15 Series	RV5573-25i
for LABD-x-50 Series	RV5573-90i
for LABD-x-125 Series	RV5573-150i
for LABD-x-250 Series	RV5573-300i

TABLE I

Part No.	Inlet Pressure			Delivery Pressure		
	Maximum (psig)	Gauge (dual scale) (psig)	Gauge (dual scale) (bar)	Range (psig)	Gauge (dual scale) (psig)	Gauge (dual scale) (bar)
LABD-3-15-(CGA)	3000	0-4000	0-275	2-15	-30" Hg-0-30	-1-0-2
LABD-3-50-(CGA)	3000	0-4000	0-275	4-50	-30" Hg-0-100	-1-0-7
LABD-3-125-(CGA)	3000	0-4000	0-275	10-125	-30" Hg-0-200	-1-0-14
LABD-3-250-(CGA)	3000	0-4000	0-275	20-250	0-400	0-27
LABD-2-15-(CGA)	800	0-1000	0-69	2-15	-30" Hg-0-30	-1-0-2
LABD-2-50-(CGA)	800	0-1000	0-69	4-50	-30" Hg-0-100	-1-0-7
LABD-2-125-(CGA)	800	0-1000	0-69	10-125	-30" Hg-0-200	-1-0-14
LABD-2-250-(CGA)	800	0-1000	0-69	20-250	0-400	0-27
LABD-1-15-(CGA)	300	0-400	0-27	2-15	-30" Hg-0-30	-1-0-2
LABD-1-50-(CGA)	300	0-400	0-27	4-50	-30" Hg-0-100	-1-0-7
LABD-1-125-(CGA)	300	0-400	0-27	10-125	-30" Hg-0-200	-1-0-14
LABD-1-250-(CGA)	300	0-400	0-27	20-250	0-400	0-27

Where “(CGA)” is indicated above, insert appropriate Compressed Gas Association connection number to complete the part number. Example: LABD-3-15-580. Order by complete part number.

TWO-STAGE, HIGH PURITY REGULATORS FOR NON-CORROSIVE GASES (MODEL LABE)

These metal diaphragm two-stage regulators are specially designed for laboratory applications requiring both high reliability and diffusion resistance. Recommended for high purity non-corrosive gases or gas mixtures, they provide constant outlet pressure regardless of changes in cylinder (inlet) pressure.



LABE Regulator

STANDARD FEATURES

- Stainless Steel Diaphragms minimize diffusion of air into regulator and eliminate “off gassing” associated with elastomeric diaphragms, thus maintaining gas purity.
- High Purity Regulator Design permits vacuum purging of regulator.
- Diaphragm Seal Outlet Valve maintains gas purity.
- Two-Stage Regulator Design ensures constant delivery pressure over varying inlet pressures.
- Chrome-Plated Surfaces provide polished appearance and ease of cleaning.
- Cartridge (Encapsulated) Seat Assemblies provide for ease of maintenance and repair.
- Filter in Each Seat Assembly traps foreign matter, extends regulator life and reduces maintenance.

OPTIONAL FEATURES

- Relief Valve protects regulator components from the effects of overpressurization.

OPTIONAL EQUIPMENT

Equipment	Part No.
Relief Valves:	
for LABE-3-15 Series	RV5573-25i
for LABE-3-50 Series	RV5573-90i
for LABE-3-125 Series	RV5573-150i
for LABE-3-250 Series	RV5573-300i

SPECIFICATIONS

Maximum Inlet Pressure: 3000 psig
 Inlet Pressure Gauge (dual scale):
 0–4000 psig / 0–275 bar
 Delivery Pressure Range: See Table I
 Delivery Pressure Gauge: See Table I
 Filters: 10 micron
 Gauge Size: 2" Dial
 Operating Temperature Range:
 -40°F to +140°F
 Flow Coefficient:
 Regulator: Cv = 0.15
 Outlet Valve: Cv = 0.17
 Inlet Connection: CGA 296, 320, 326, 346,
 350, 540, 580, 590, or 660 as ordered
 Outlet Connection:
 ¼" NPT female (on outlet valve)
 Optional Relief Valve Vent Connection:
 ¼" NPT male
 Supply Pressure Effect: 0.04 psi per 100 psi
 Approximate Weight: 5 lbs.

MATERIALS OF CONSTRUCTION

Body: Chrome-Plated Brass Forging
 Gauges: Chrome-Plated Brass
 Bonnets: Chrome-Plated Zinc
 Filters: Nickel-Plated Sintered Bronze
 Other Metal Parts Exposed to Gas:
 Brass and Stainless Steel
 Seat and Seals: Teflon® in Regulator
 Diaphragms: Type 304 Stainless Steel
 Outlet Valve:
 Body: Nickel-Plated Brass Bar Stock
 Seat: PCTFE
 Diaphragm: Type 316L Stainless Steel

TABLE I

Part No.	Delivery Pressure		
	Range (psig)	Gauge (dual scale) (psig)	(bar)
LABE-3-15-(CGA)	2–15	-30" Hg–0–30	-1–0–2
LABE-3-50-(CGA)	4–50	-30" Hg–0–100	-1–0–7
LABE-3-125-(CGA)	10–125	-30" Hg–0–200	-1–0–14
LABE-3-250-(CGA)	20–250	0–400	0–27

Where “(CGA)” is indicated above, insert appropriate Compressed Gas Association connection number to complete the part number. Example: LABE-3-15-580. Order by complete part number.

SINGLE-STAGE REGULATORS FOR ULTRA HIGH PURITY NON-CORROSIVE GASES (MODEL APD)

The Model APD brass bar stock regulators are designed to regulate ultra high purity non-corrosive gases commonly used in analytical instrument applications. These regulators are specially suited for use in gas delivery systems requiring high leak integrity and minimal internal volume for maintaining guaranteed gas purity levels.

These single-stage regulators are recommended for use with gases where inlet pressure does not vary greatly (such as liquefied gases), or where periodic readjustment of delivery pressure setting does not present a problem.



APD Regulator

STANDARD FEATURES

- Type 316L Stainless Steel Diaphragm minimizes diffusion of air into regulator and eliminates "off gassing" associated with elastomeric diaphragms, thus maintaining gas purity.
- High Purity Regulator Design permits vacuum purging of regulator.
- Low Internal Volume facilitates purging and reduces contamination potential.
- Diaphragm Seal Outlet Valve maintains gas purity.
- Cartridge Seat Assembly provides for ease of maintenance and repair.
- Filter in Seat Assembly traps foreign matter, extends regulator life and reduces maintenance.
- Threaded Holes in Rear of Regulator permit front panel mounting.
- 1/8" NPT Female Bonnet Vent Port allows bonnet to be connected to a vent line or disposal system as a precaution in the unlikely event of a diaphragm failure.

OPTIONAL FEATURES

- Mounting Ring permits regulator to be panel mounted
- Internal (Inboard) Helium Leak Test and Test Report determines inboard leak rate of gas from regulator to atmosphere; test report certifies leak rate of less than 2×10^{-8} sccs air equivalent.
- External (Outboard) Helium Leak Test and Test Report determines outboard leak rate of gas from regulator to atmosphere; test report certifies leak rate of less than 5×10^{-7} sccs air equivalent.

SPECIFICATIONS

Maximum Inlet Pressure:

- APD-3: 3000 psig
- APD-2: 800 psig
- APD-1: 300 psig

Inlet Pressure Gauge: See Table I

Delivery Pressure Range: See Table I

Delivery Pressure Gauge: See Table I

Filter: 10 micron

Gauge Size: 2" Dial

Operating Temp. Range: -40°F to +140°F

Flow Coefficient: Regulator: $C_v = 0.08$

Outlet Valve: $C_v = 0.17$

Internal Volume:

Regulator (body only): 5.0 cc

Inlet Connection: CGA 296, 320, 326, 346, 350, 510, 540, 580, 590, or 660 as ordered

Outlet Connection: 1/4" NPT female

Supply Pressure Effect: 1 psi per 100 psi

Approximate Weight: 3 lbs.

MATERIALS OF CONSTRUCTION

Body, Bonnet and Outlet Valve:
Brass Bar Stock

Gauges: Brass

Filter: Nickel-Plated Sintered Bronze

Other Metal Parts Exposed to Gas:
Brass and Stainless Steel

Seats: PCTFE

Seals: Teflon®

Diaphragms: Type 316L Stainless Steel

TABLE I

Part No.	Inlet Pressure		Delivery Pressure		
	Gauge (dual scale) (psig)	(bar)	Range (psig)	Gauge (dual scale) (psig)	(bar)
APD-3-30-(CGA)	0-4000	0-275	2-30	-30" Hg-0-60	-1-0-4
APD-3-75-(CGA)	0-4000	0-275	4-75	-30" Hg-0-100	-1-0-7
APD-3-150-(CGA)	0-4000	0-275	10-150	-30" Hg-0-200	-1-0-14
APD-3-300-(CGA)	0-4000	0-275	20-300	0-400	0-27
APD-3-500-(CGA)	0-4000	0-275	30-500	0-600	0-34
APD-2-30-(CGA)	0-1000	0-69	2-30	-30" Hg-0-60	-1-0-4
APD-2-75-(CGA)	0-1000	0-69	4-75	-30" Hg-0-100	-1-0-7
APD-2-150-(CGA)	0-1000	0-69	10-150	-30" Hg-0-200	-1-0-14
APD-2-300-(CGA)	0-1000	0-69	20-300	0-400	0-27
APD-2-500-(CGA)	0-1000	0-69	30-500	0-600	0-34
APD-1-30-(CGA)	0-400	0-27	2-30	-30" Hg-0-60	-1-0-4
APD-1-75-(CGA)	0-400	0-27	4-75	-30" Hg-0-100	-1-0-7
APD-1-150-(CGA)	0-400	0-27	10-150	-30" Hg-0-200	-1-0-14

Where "(CGA)" is indicated above, insert appropriate Compressed Gas Association connection number to complete the part number. Example: APD-3-30-580. Order by complete part number.

OPTIONAL EQUIPMENT

Equipment	Part No.
Panel Mounting Ring*	0202-3116
Inboard Helium Leak Test and Test Report	HT1000
Outboard Helium Leak Test and Test Report	HT1001
Compression Fittings* (male connectors)	
1/4" NPT male x 1/8" compression	SG6703
1/4" NPT male x 1/4" compression	SG6704
Safety Mounting Brackets*	See page 86

* If selected, these items are not installed on the regulator. They are shipped as separate items.

TWO-STAGE REGULATORS FOR ULTRA HIGH PURITY NON-CORROSIVE GASES (MODEL APE)

The Model APE brass bar stock regulators are designed to regulate ultra high purity non-corrosive gases commonly used in analytical instrument applications requiring both high reliability and diffusion resistance. The two-stage design provides constant pressure control regardless of changes in cylinder (inlet) pressure.



APE Regulator

STANDARD FEATURES

- Type 316L Stainless Steel Diaphragms minimize diffusion of air into regulator and eliminate “off gassing” associated with elastomeric diaphragms, thus maintaining gas purity.
- High Purity Regulator Design permits vacuum purging of regulator.
- Diaphragm Seal Outlet Valve maintains gas purity.
- Cartridge (Encapsulated) Seat Assemblies provide for ease of maintenance and repair.
- Filter in each Seat Assembly traps foreign matter, extends regulator life and reduces maintenance.
- 1/8" NPT Female Bonnet Vent Ports allow bonnets to be connected to a vent line or disposal system as a precaution in the unlikely event of a diaphragm failure.

Inlet Connection: CGA 296, 320, 326, 346, 350, 540, 580, 590, or 660 as ordered

Outlet Connection: 1/4" NPT female (on outlet valve)

Supply Pressure Effect: 0.04 psi per 100 psi

Approximate Weight: 5 lbs.

MATERIALS OF CONSTRUCTION

Body, Bonnet and Outlet Valve: Brass Bar Stock

Gauges: Brass

Filter: Nickel-Plated Sintered Bronze

Other Metal Parts Exposed to Gas: Brass and Stainless Steel

Seat: PCTFE

Seals: Teflon®

Diaphragms: Type 316L Stainless Steel

OPTIONAL FEATURES

- Mounting Ring permits regulator to be panel mounted
- Internal (Inboard) Helium Leak Test and Test Report determines inboard leak rate of gas from regulator to atmosphere; test report certifies leak rate of less than 2×10^{-8} sccs air equivalent.
- External (Outboard) Helium Leak Test and Test Report determines outboard leak rate of gas from regulator to atmosphere; test report certifies leak rate of less than 5×10^{-7} sccs air equivalent.

SPECIFICATIONS

Maximum Inlet Pressure: 3000 psig

Inlet Pressure Gauge (dual scale): 0–4000 psig / 0–275 bar

Delivery Pressure Range: See Table I

Delivery Pressure Gauge: See Table I

Filters: 10 micron

Gauge Size: 2" Dial

Operating Temperature Range: -40°F to +140°F

Flow Coefficient:

Regulator: Cv = 0.06

Outlet Valve: Cv = 0.17

TABLE I

Part No.	Delivery Pressure		
	Range (psig)	Gauge (dual scale) (psig)	(bar)
APE-3-30-(CGA)	2–30	-30" Hg–0–60	-1–0–4
APE-3-75-(CGA)	4–75	-30" Hg–0–100	-1–0–7
APE-3-150-(CGA)	10–150	-30" Hg–0–200	-1–0–14
APE-3-300-(CGA)	20–300	0–400	0–27
APE-3-500-(CGA)	30–500	0–600	0–34

Where “(CGA)” is indicated above, insert appropriate Compressed Gas Association connection number to complete the part number. Example: APE-3-30-580. Order by complete part number.

OPTIONAL EQUIPMENT

Equipment	Part No.
Panel Mounting Ring*	0202-3116
Inboard Helium Leak Test and Test Report	HT1000
Outboard Helium Leak Test and Test Report	HT1001
Compression Fittings* (male connectors)	
1/4" NPT male x 1/8" compression	SG6703
1/4" NPT male x 1/4" compression	SG6704
Safety Mounting Brackets*	See page 86

* If selected, these items are not installed on the regulator. They are shipped as separate items.