Gas Handling **Equipment**

for industrial laser applications

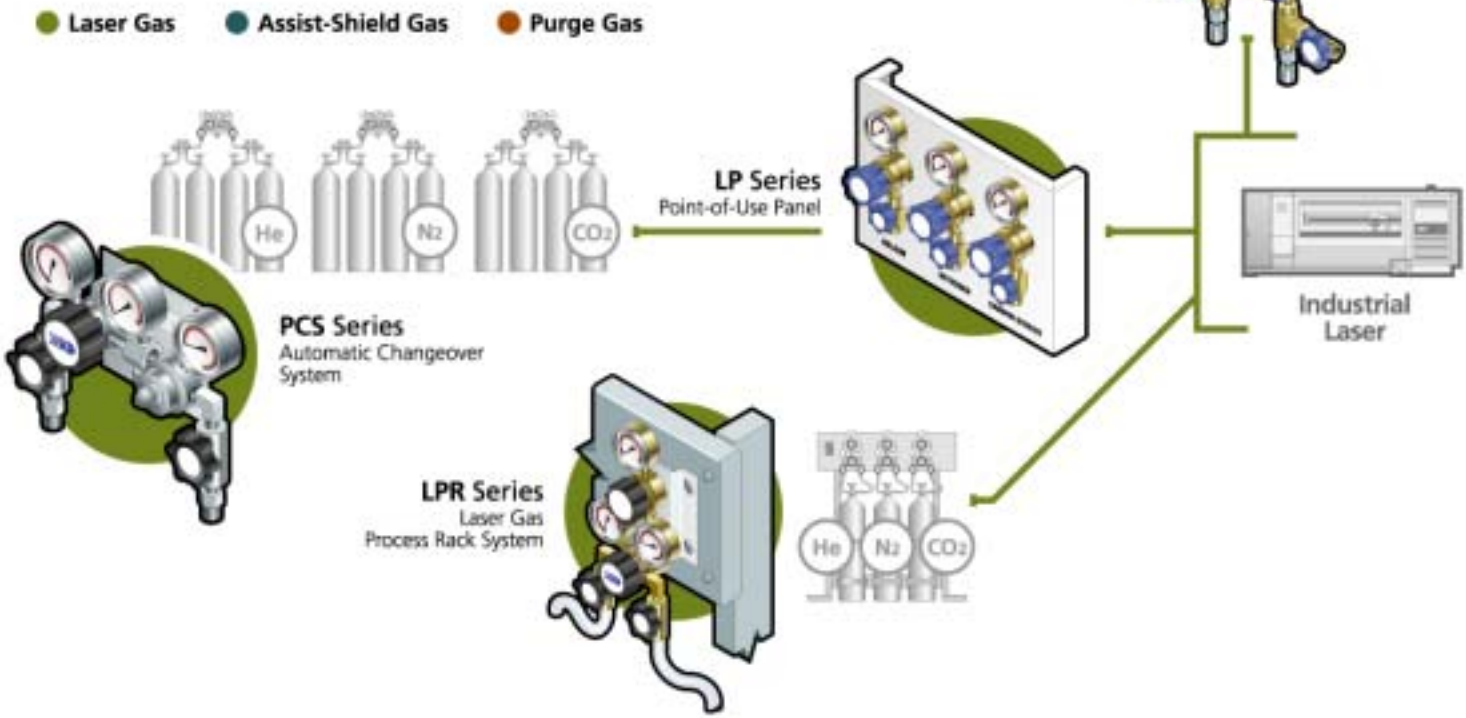
ASGE

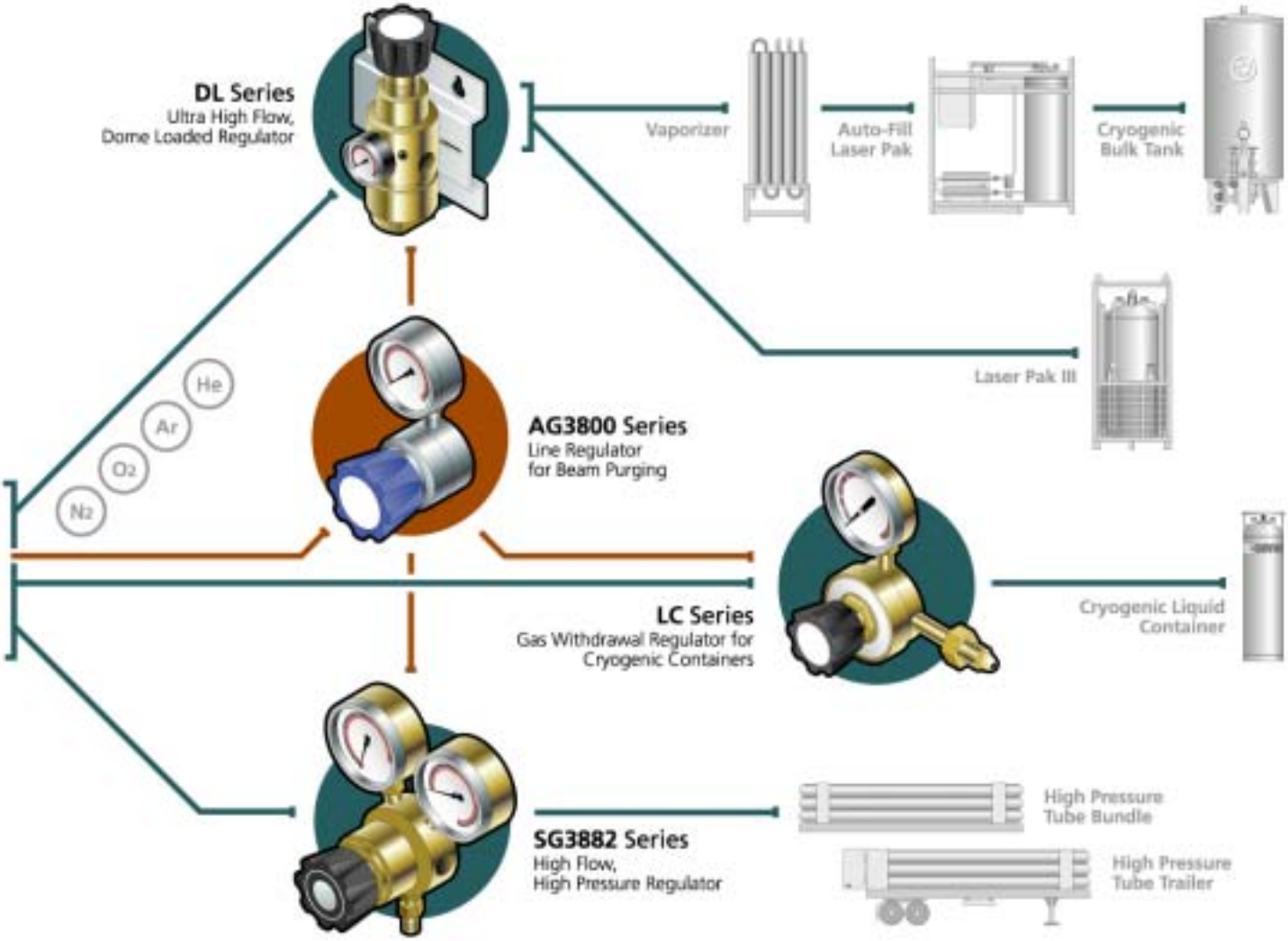
ADVANCED SPECIALTY GAS EQUIPMENT

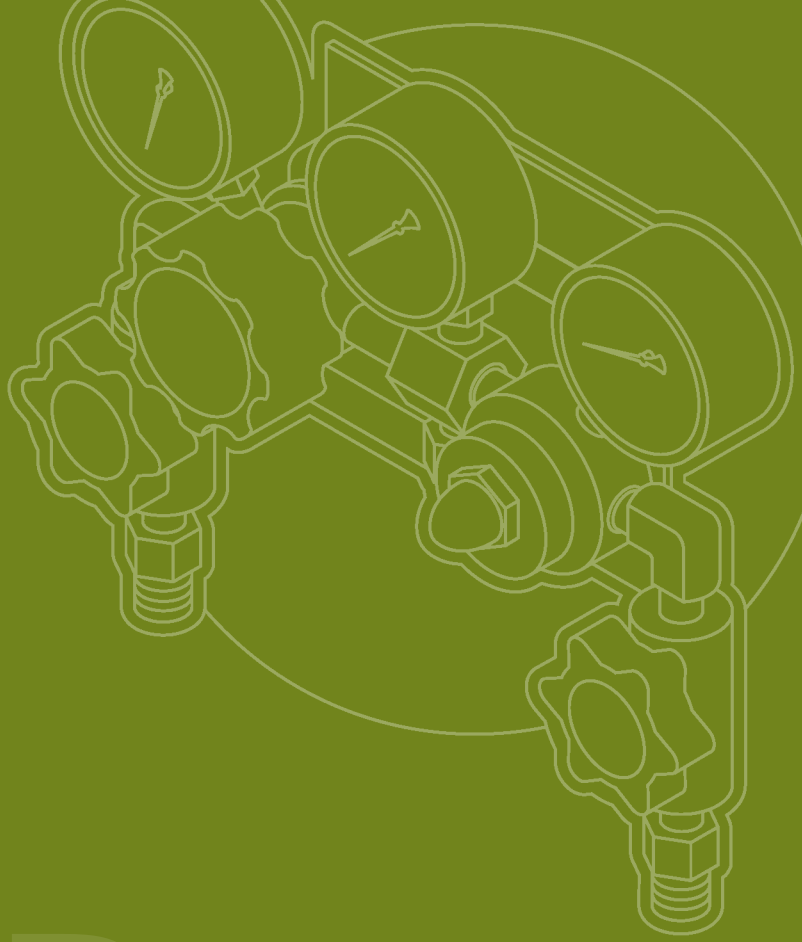
Gas Delivery Options for Industrial Lasers

High powered CO_2 lasers are increasingly used in metal fabrication applications. To function properly, they require gases at various flow rates, pressures and purity levels. Gases used in industrial laser applications can be classified into three categories: Laser Gases, Assist-Shield Gases and Purge Gases.

This brochure will help you select equipment best suited for your laser gas delivery system. The flow diagrams show recommended equipment along with typical gas source and location within a distribution system. The introduction page to each color-coded section provides additional information to guide your selection process.




DL Series
Ultra High Flow,
Dome Loaded Regulator
Vaporizer
Auto-Fill
Laser Pak
Cryogenic
Bulk Tank
Laser Pak III
He
Ar
O2
N2
AG3800 Series
Line Regulator
for Beam Purging
LC Series
Gas Withdrawal Regulator for
Cryogenic Containers
Cryogenic Liquid
Container
SG3882 Series
High Flow,
High Pressure Regulator
High Pressure
Tube Bundle
High Pressure
Tube Trailer



Laser Gases are used to generate the laser beam within the resonator. High-purity grades of carbon dioxide, nitrogen and helium are the most commonly used gases. They can be delivered to the user premixed or in component form. Maintaining a high level of purity while providing constant pressure and uninterrupted supply are the most critical requirements when selecting equipment for a lasing gas delivery system.

Manual changeover systems are suitable for use in applications where gas consumption is low. Laser gas process racks with automatic changeovers are recommended when gas consumption is moderate. For high gas consumption applications, distribution systems that include automatic changeovers mounted in the cylinder storage area, with remote line regulators and control panels at the point-of-use provide the most efficient gas delivery.

LASER

LMW Series

Manual Changeover System

The LMW Series Manual Changeover is an economical ultra high-purity laser gas delivery system for installations that do not require automatic changeover. The LMW Series system is designed with a two-stage brass bar stock regulator for two cylinder banks that can be manually switched from an in-service to a reserve bank. When the in-service bank is exhausted, it can be shut off and the reserve bank can be manually opened to replenish the supply. Isolation and vent valves allow the exhausted bank to be replaced and purged without any interruption of gas supply to the laser.

Part Number	Delivery Pressure Range psig	Gauge (dual scale) psig	bar
LMWB-2F-CV-(CGA)	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: LMWB-2F-CV-580. Order by complete part number.

Optional Equipment	Part No.
Outlet Filter (installed)	SG6113-I
Relief Valve (installed)	RV5572-175i

LMW Series
Manual Changeover System
with Optional Filter

PCS, CRS Series

Automatic Changeover Systems

Designed to provide a continuous supply of laser gas from two or more high-purity cylinders, these systems allow the user to deplete gas in a cylinder without gas outages and wasting unused gas as a result of premature changeouts. Available in either brass or stainless steel, they are supplied installed on a stainless steel panel providing convenient, wall-mounted installation where space is at a premium.

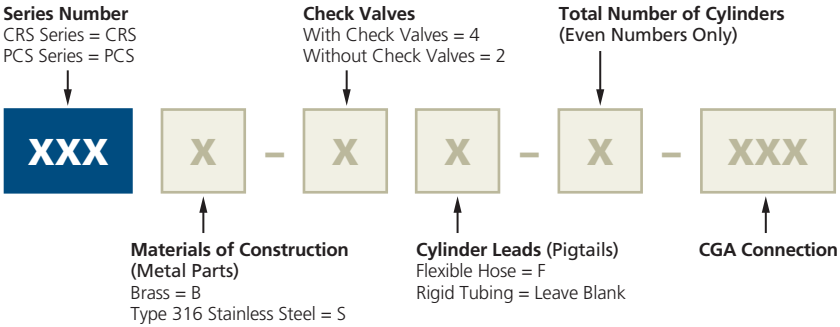
The PCS Series Primary Changeover provides single-stage pressure regulation and is designed for systems incorporating downstream line regulation. The LP Series Point-of-Use Panel is optional for downstream application.

The CRS Series Changeovers provide two-stage constant delivery pressure control to the laser by incorporating an adjustable outlet line regulator in a compact design. Downstream line regulation is not necessary unless various distribution point pressures are required.

CRS Series Changeover

PCS Series Changeover

Part Number Key – PCS and CRS Changeover Systems



CRSL Series

Automatic Changeover System with Pressure Switch Gauges

The CRSL Series Changeover regulates pressure and provides uninterrupted gas flow of laser gases. The CRSL utilizes the same mechanical design principals as the CRS Series. It incorporates two pressure switch gauges and an optional wall mountable annunciator to provide visual and audible alarms to alert the user of a changeover. The stand-alone annunciator can be located next to the changeover or mounted remotely to provide warning where personnel are present.

Part Number Key – CRSL Changeover System

Model Number

Check Valves
With Check Valves = 4
Without Check Valves = 2

Annunciator
With Annunciator = A
Without Annunciator = Leave Blank

CRSL X – X X – X – XXX

Materials of Construction (Metal Parts)
Brass = B
Type 316 Stainless Steel = S

Vent Valves
With Vent Valves = V
Without Vent Valves = Leave Blank

CGA Connection

CRSL Series
Automatic
Changeover System
and Annunciator

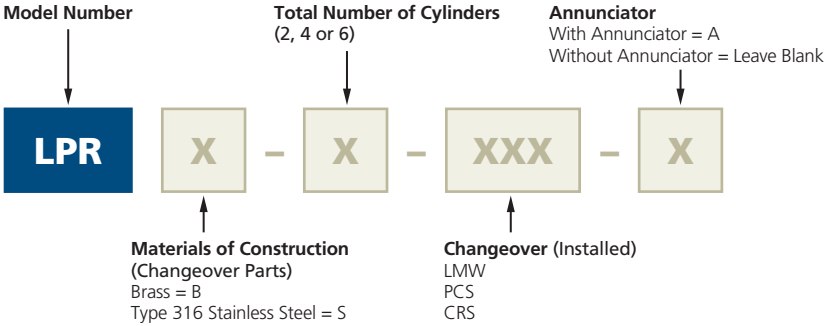
LPR Series

Laser Gas Process Rack Systems

LPR Series Laser Gas Process Rack Systems provide a solution for installations having minimal wall space for laser gas supply. These free-standing control stations provide a safe, efficient and uninterrupted supply of high-purity laser gas. Each system integrates a stationary cylinder process rack, changeover system and alarm for ease of shipping, assembly and use.

LPR Series racks are constructed of 11-gauge steel and finished in chemical resistant epoxy. Polypropylene straps with non-slip spring catches safely secure gas cylinders to racks. These made-to-order systems can be configured for use with 2, 4 or 6 premix or pure component laser gas cylinders. By choosing the number of cylinders, type of changeover and optional alarm from the part number key, a control station can be configured to perfectly satisfy any lasing requirement.

Part Number Key – LPR Process Rack System



Note: When ordering, specify gas service and CGA for each changeover (from left to right).

LPR Series Laser Process Rack with
CRS Series Changeovers and Annunciator

LP Series

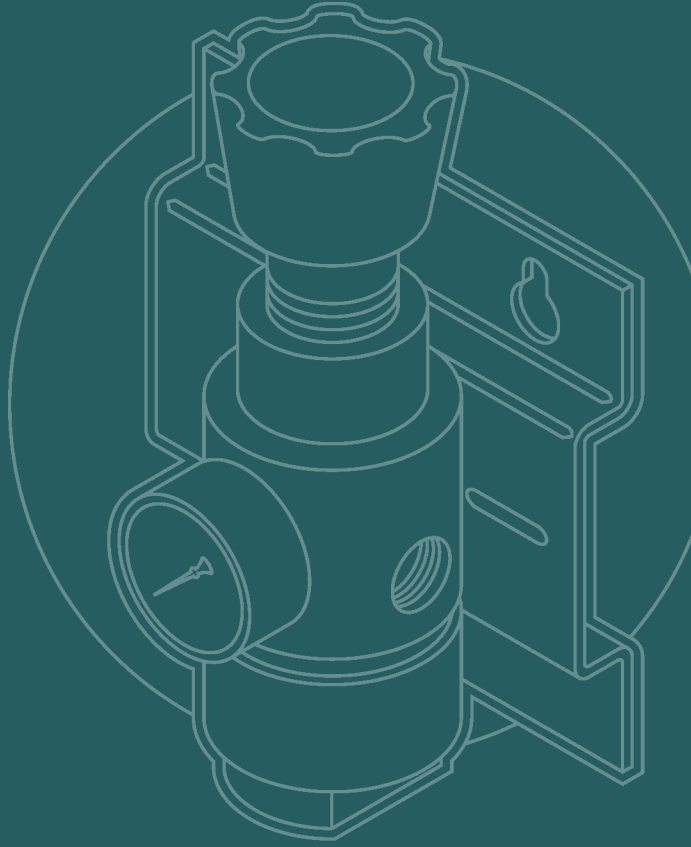
Point-of-Use Panels

LP Series Point-of-Use Panels provide a convenient way to regulate pressure and control helium, nitrogen and carbon dioxide at the laser. Each panel features three separate pressure regulators and on/off valves. The LP Series panel can be modified to include a fourth regulator for beam purge gas control.

The panel utilizes AGR3800 Series back entry line regulators with 1/4" tube connectors installed through the panel. This conceals unsightly inlet tubing and connections. Each panel is labeled for helium, nitrogen and carbon dioxide.

LP Series
Point-of-Use Panels

	Part Number	Delivery Pressure Range psig	Gauge (dual scale) psig	bar
BRASS	LPB-30	4–30	0–60	0–4
	LPB-100	10–100	0–200	0–14
	LPB-300	20–300	0–400	0–27
	LPB-500	30–500	0–600	0–41
STAINLESS STEEL	LPS-30	4–30	0–60	0–4
	LPS-100	10–100	0–200	0–14
	LPS-300	20–300	0–400	0–27
	LPS-500	30–500	0–600	0–41



Assist-Shield Gases are supplied to the laser nozzles to assist with cutting or shield in welding, cladding or marking applications. Nitrogen and oxygen supplied by a cryogenic source or compressed gas cylinders are commonly used gases for cutting applications. Shielding gases such as Argon and Helium are used in welding applications.

Selecting equipment that can provide high flow capacity and constant pressure with varying flow demands is the most important criteria when selecting equipment used in assist-shield gas delivery systems.

Gas withdrawal regulators are recommended for liquid cylinders. High flow, high pressure regulators are recommended for tube trailers. For liquid bulk delivery systems a dome loaded regulator is recommended.

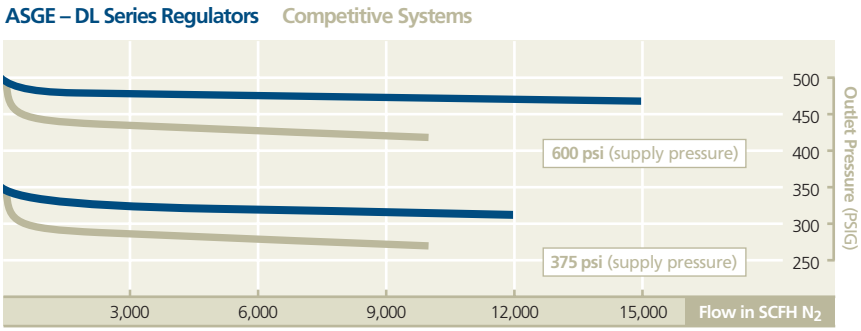
ASSIST

DL Series

Ultra High Flow, Pilot-Dome Loaded Regulator

The DL Series regulator is designed for direct installation in cryogenic vaporizer systems to provide ultra high downstream flows while maintaining constant delivery pressure control to the laser head. Unique unibody construction with integral porting eliminates external tubing and connections common in other regulator designs. The DL Series regulator is supplied installed on a stainless steel panel that allows for convenient, wall-mounted installation.

The flow vs. pressure drop performance characteristic of the DL Series as compared to competitive brands can be viewed by the curve below.



Part Number	Delivery Pressure Range psig	Gauge (dual scale) psig	kg/cm²
DLB-0–500	100–500	0–1000	0–70

DL Series
Dome Loaded
Regulator

SG3882, SG3883 Series

High Flow, High Pressure Regulator

SG3882 and SG3883 Series piston-sensed regulators are designed for pressure control of laser assist gases supplied from high pressure (up to 3750 psig) manifold or tube trailer sources. High flow design with 1/2" NPT inlet and outlet porting allows flows in excess of 6000 scfh.

A large piston sensor gives excellent sensitivity while the balanced stem design minimizes effect of changes in inlet pressure on delivery pressure settings. A large handknob provides fast low-torque pressure settings. The regulator can be panel mounted by ordering an optional panel mounting ring.

SG3882 Series Regulator

	Part Number	Delivery Pressure Range psig	Gauge (dual scale) psig	bar
BRASS	SG3882-350	30–350	0–400	0–27
	SG3882-500	40–500	0–600	0–41
STN STL	SG3883-350	30–350	0–400	0–27
	SG3883-500	40–500	0–600	0–41

Note: The SG3883 Series is not recommended for oxygen service.

Optional Equipment	Part No.
Panel Mounting Ring	PM3804

LC Series

Gas Withdrawal Regulator for Cryogenic Containers

LC Series Regulators are specially designed for use on the gaseous withdrawal port of cryogenic liquid containers. These stainless steel diaphragm, single-stage regulators are ideal for applications requiring both medium flow (up to 1500 scfh) and diffusion resistant pressure regulation.

LC Regulators accept a maximum inlet pressure of 3000 psig, allowing them to be used on high-pressure compressed gas cylinders as well. In addition to the high inlet pressure feature, delivery pressure ranges of 350 psig and 500 psig are available for special laser cutting applications.

LC Series Regulator

Part Number	Delivery Pressure Range (psig)	Gauge (psig)
LC125-(CGA)	10–125	0–200
LC350-(CGA)	20–350	0–500
LC500-(CGA)	20–500	0–600

Where (CGA) is indicated above, insert appropriate Compressed Gas Association connection number to complete the part number. Example: LC500-580. Order by complete part number.

Optional Equipment	Part No.
Relief Valves (installed)	
for LC125	RV5572-175i
for LC350	RV5572-450i
for LC500	RV5572-575i

Purge Gases are commonly used to ventilate the beam path of the laser. The nitrogen supplied to the assist gas delivery system often meets the required purity levels and can be a convenient source for a purge gas.

A line regulator linked to the assist gas delivery system is an economical way to provide purge gas to the laser. This line regulator should be piped between any of the assist-shield gas pressure control regulators and the industrial laser itself.

PURGE

AG3800, AG3810 Series

Line Regulators for Beam Purging

AG3800 and AG3810 Series regulators control pressure of purge gases commonly used to ventilate the beam path of the laser. These regulators can be installed to tap off an assist-shield gas supply to provide a convenient and economical purge gas to the laser. An optional diaphragm seal outlet valve can be installed to provide flow shut-off while maintaining gas purity.

AG3810 Series Regulator

	Part Number	Delivery Pressure Range psig	Gauge (dual scale) psig	bar
BRASS	AG3800-30	4–30	0–60	0–4
	AG3800-100	10–100	0–200	0–14
	AG3800-300	20–300	0–400	0–27
	AG3800-500	30–500	0–600	0–41
STAINLESS STEEL	AG3810-30	4–30	0–60	0–4
	AG3810-100	10–100	0–200	0–14
	AG3810-300	20–300	0–400	0–27
	AG3810-500	30–500	0–600	0–41

Optional Equipment	Part No.
Outlet Valve (installed)	
for AG3800 Series	SG5460N-i
for AG3810 Series	SG5480N-i

Accessory Equipment

Request a copy of our catalog, or visit our web site for our complete line of accessories, including: electric high flow heaters, filters, relief valves, purifiers, traps and flexible hoses.

Contact us today at 888-999-2743 (ASGE) or laserlink@asgemail.com.

Gas or Equipment Supplier

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