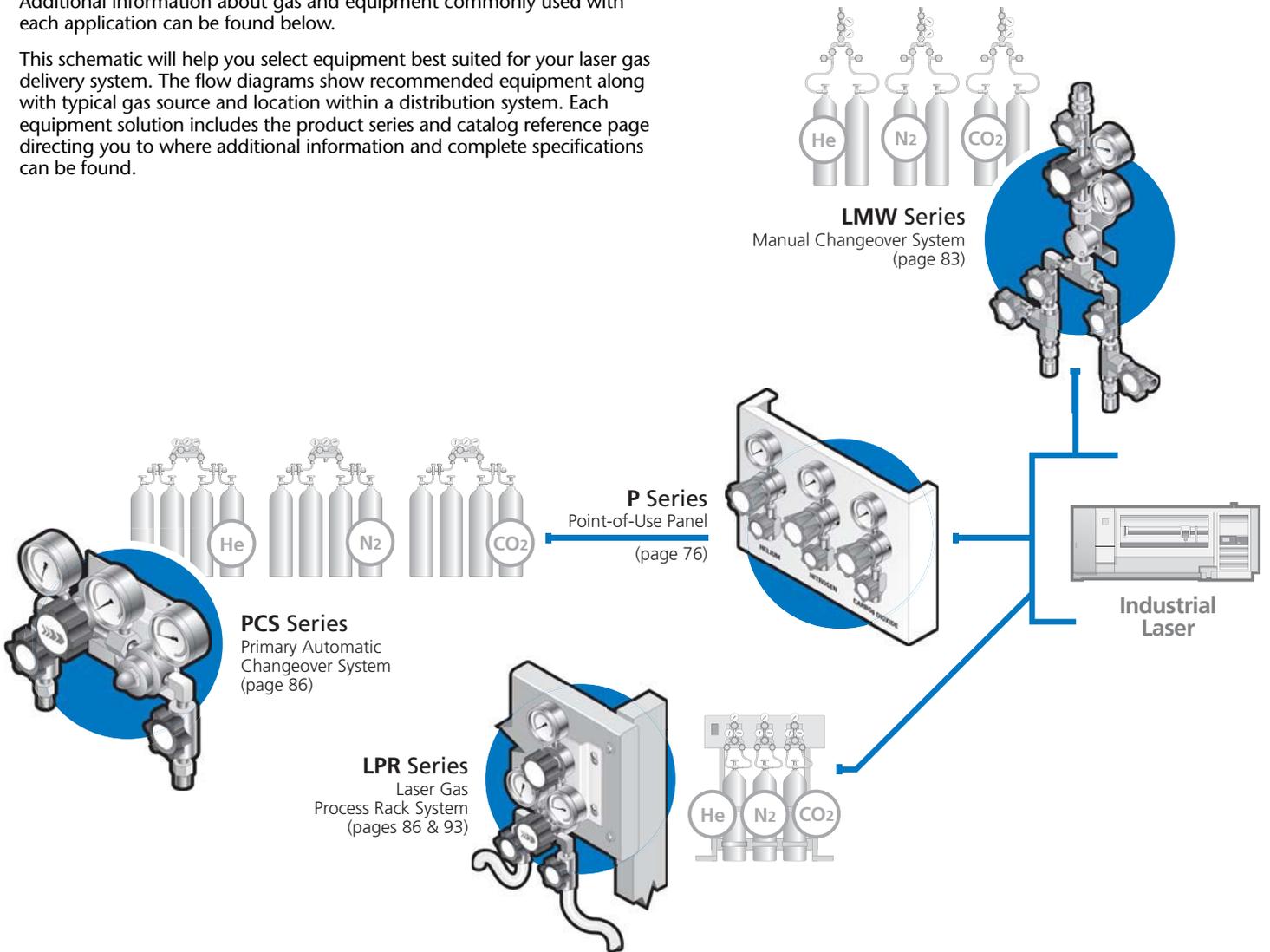


Gas Delivery Equipment for Industrial Lasers

High powered CO₂ 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. Additional information about gas and equipment commonly used with each application can be found below.

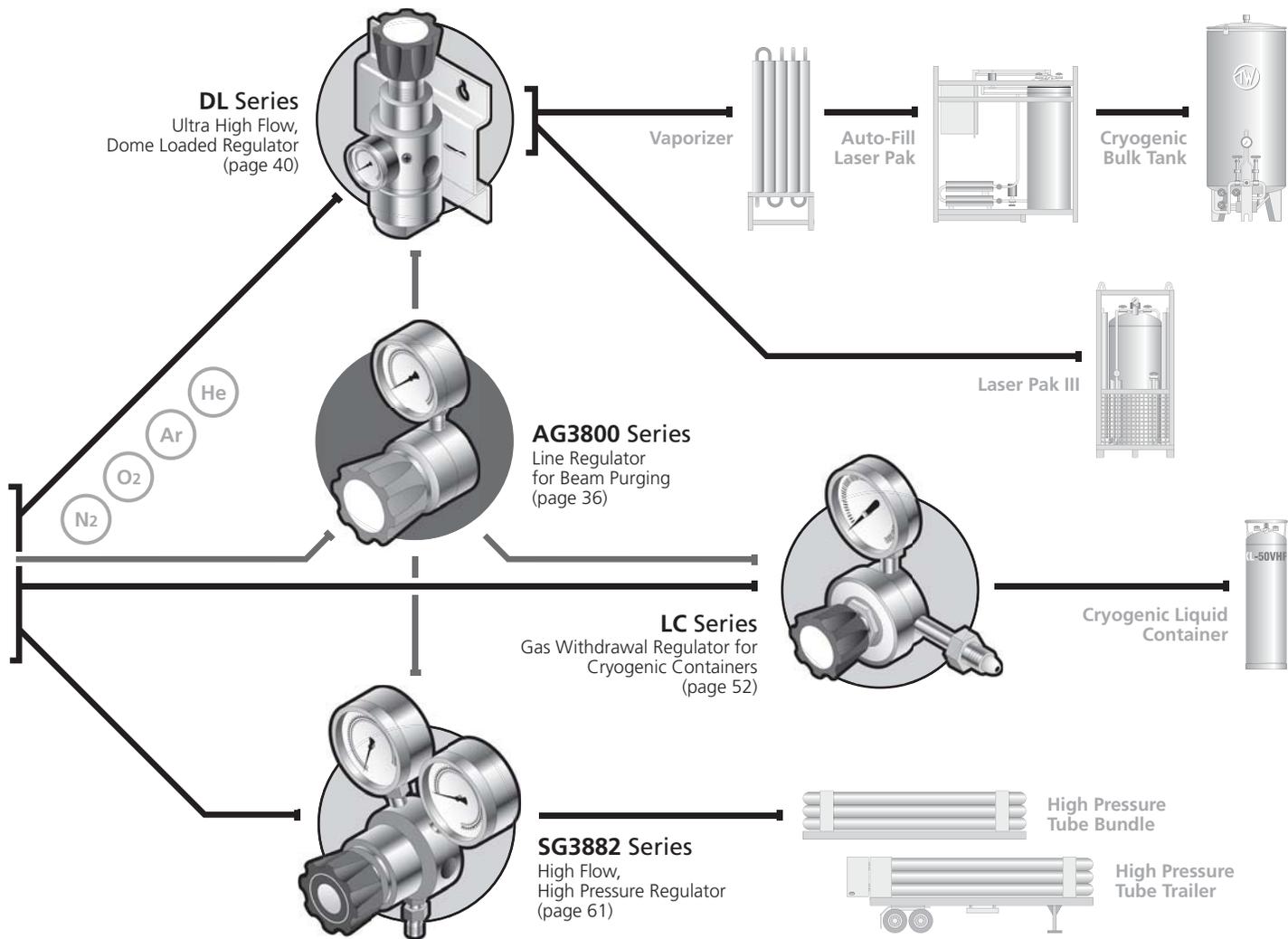
This schematic will help you select equipment best suited for your laser gas delivery system. The flow diagrams show recommended equipment along with typical gas source and location within a distribution system. Each equipment solution includes the product series and catalog reference page directing you to where additional information and complete specifications can be found.



● Laser Gases

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

Manual changeover systems are suitable 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.



SPECIAL APPLICATIONS

● **Assist-Shield Gases**

These gases are supplied to the laser nozzles to assist with cutting or shield in welding, cladding or marking applications. Nitrogen and oxygen supplied by cryogenic sources or compressed gas cylinders are commonly used 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 for 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.

● **Purge Gases**

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.