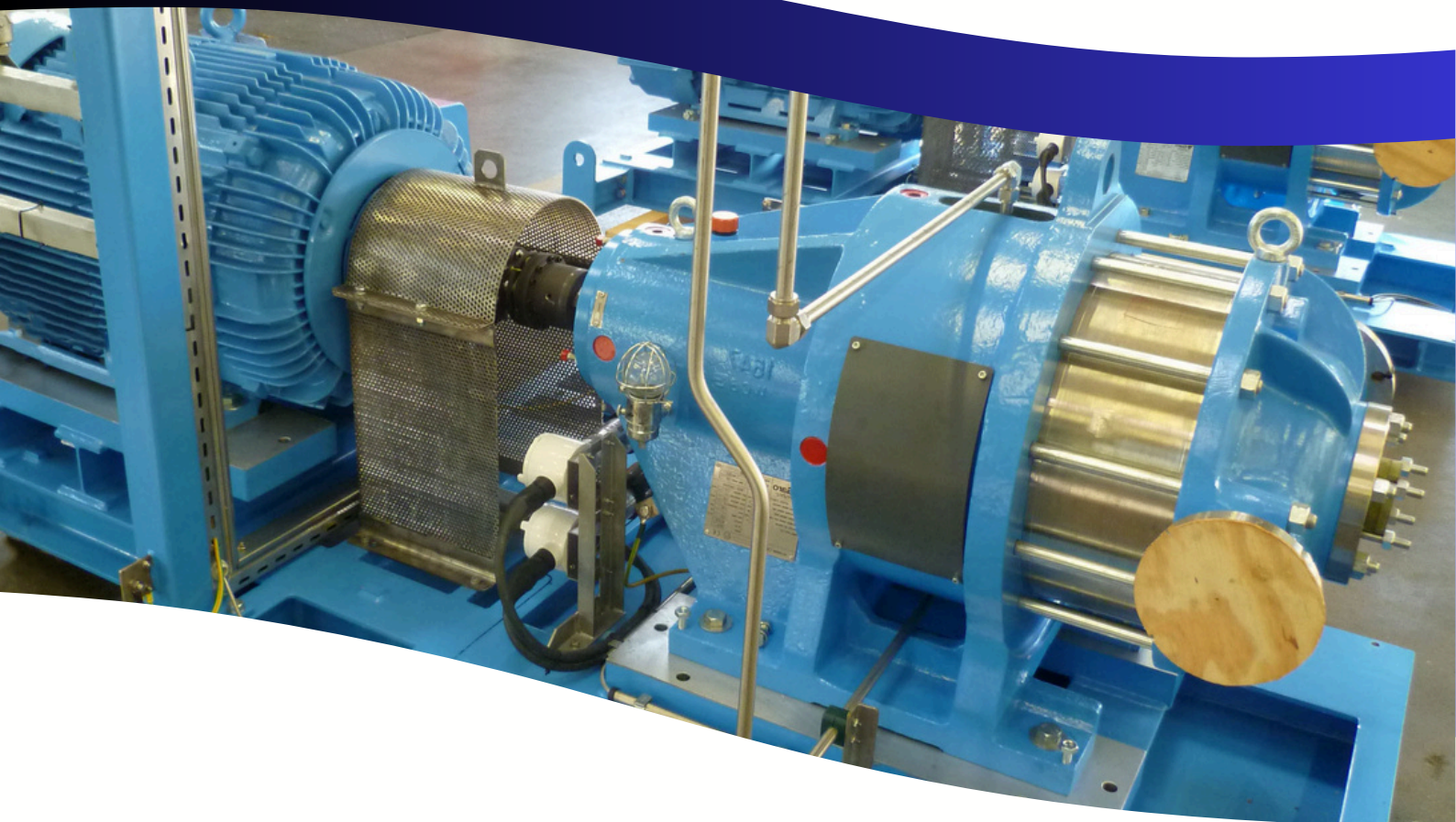




An Ingersoll Rand Business

LIQUID RING COMPRESSORS

AM, ASM & AB Series

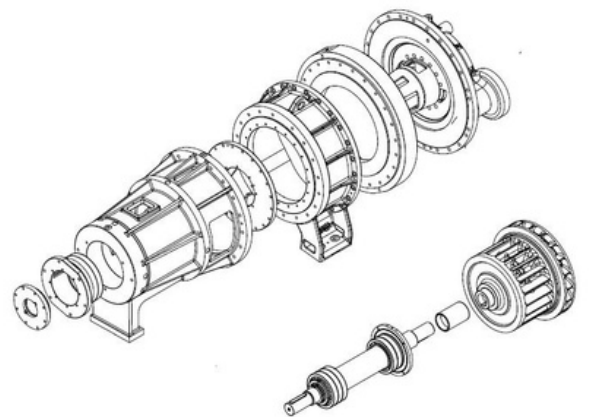
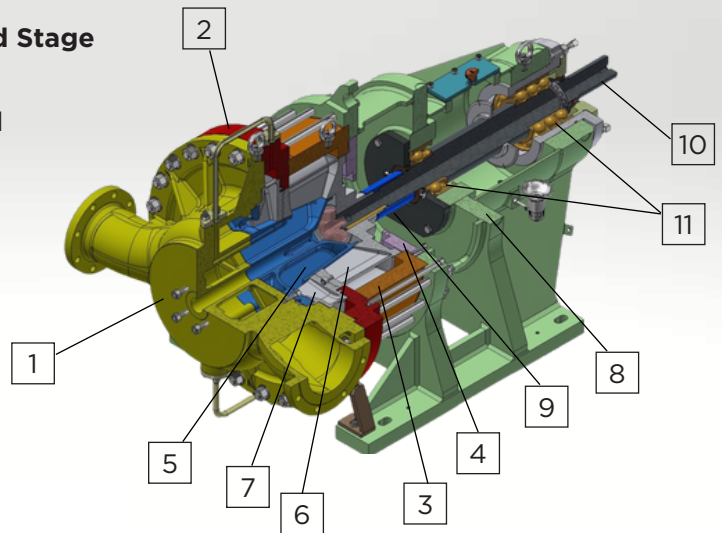
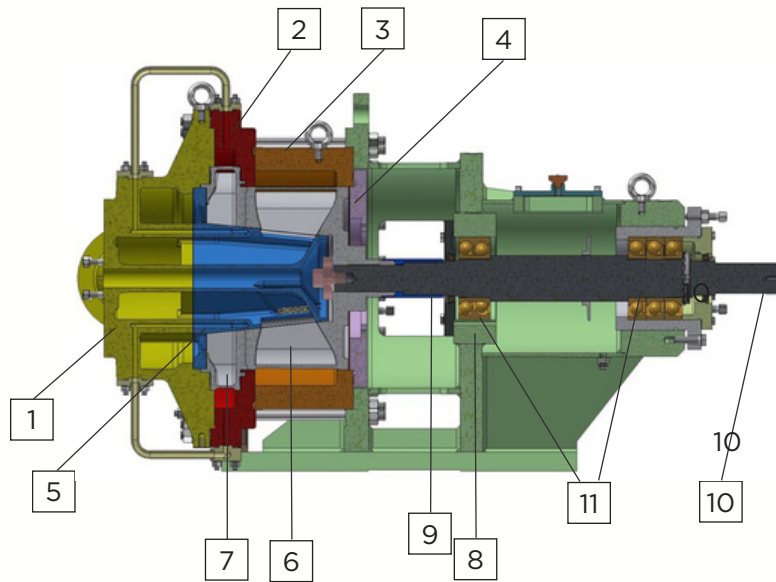


GARO® Single Stage & Two Stage Liquid Ring Compressors

Since 1947, Garo has designed and manufactured Liquid Ring Compressors. Found primarily in petroleum refineries and production sites or chemical and petrochemical plants, this rugged and reliable technology handle highly toxic, explosive and corrosive gases in applications such as flare gas recovery, vapor recovery, chlorine, and Vinyl Chloride Monomer (VCM) recovery. The GARO compressors line, in single and two stage designs, is available in carbon steel, stainless steel, spheroidal cast iron, duplex stainless steel, and super duplex stainless steel. Exotic materials like High Nickel-based Alloy or Titanium are also available on select models.

LIQUID RING COMPRESSOR DESIGN

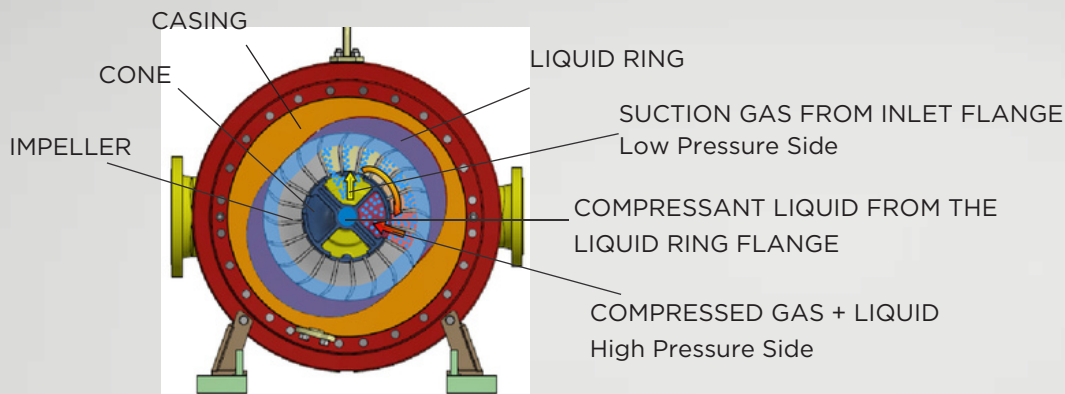
- | | |
|-------------------------------|--------------------------------|
| 1 Compressor Head | 7 Impeller Second Stage |
| 2 Casing Second Stage | 8 Bearing Frame |
| 3 Casing First Stage | 9 Mechanical Seal |
| 4 Blackplate | 10 Shaft |
| 5 Cone | 11 Bearings |
| 6 Impeller First Stage | |



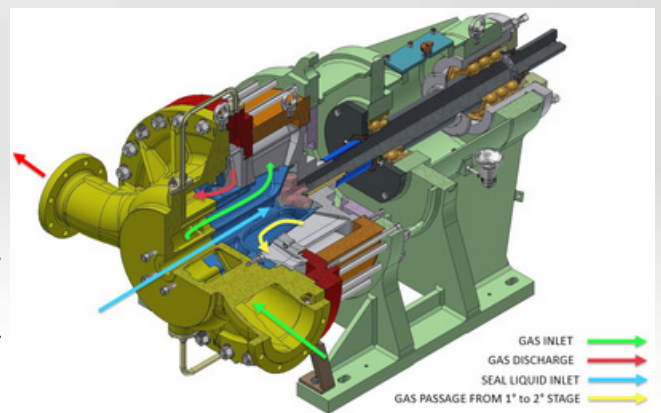
INDUSTRIES | Oil & Gas | Chemical & Petrochemical |
APPLICATIONS | Flare Gas Recovery | Vapor Recovery | Chlorine | VCM Recovery | Delayed Coker |
 | H₂S Gas Sweetening | Condensable & Non-condensable Gases |

LIQUID RING COMPRESSOR

INTERNAL DESIGN & WORKING PRINCIPLES



- Seal liquid is fed into the machine and, by centrifugal acceleration, forms a moving cylindrical ring, which takes the shape of the double lobe eccentric casing.
- This liquid ring creates a series of seals in the space between the impeller vanes forming compression chambers.
- The gas is fed into the machine by a distribution cone.
- Gas compression is achieved by the rotation of the impeller inside the seal liquid.



LIQUID RING COMPRESSOR

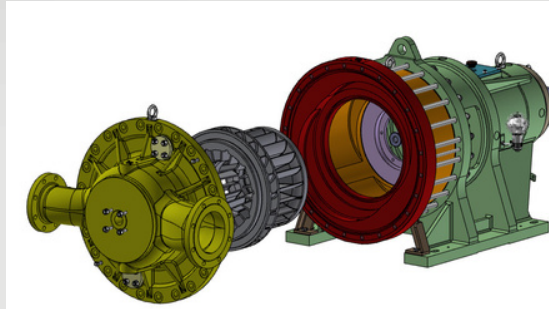
MAIN DESIGN FEATURES

With their rugged design, GARO compressors offers optimum performance and low maintenance. They meet design specs while maintaining a simple design and rugged construction. With GARO Liquid Ring Technology, the effects of erosion, corrosion, vibration and noise are minimized.

- **Casing with Double Eccentricity** - Allows for perfect balancing of radial forces on the rotor.
- **Front Pull Out** - Reduced maintenance.
- **Conical Distribution** - The circulation of the seal liquid is by pressure differential - No recirculation pump is required.
- **Axial Regulation of the Rotor** - Easy check and adjustment of the impeller clearance.
- **Tailor Made Design** - Optimized efficiency and performance through modifications to the conical distributor, casing and/or impeller.
- **Simple Design** with Few Mechanical parts.

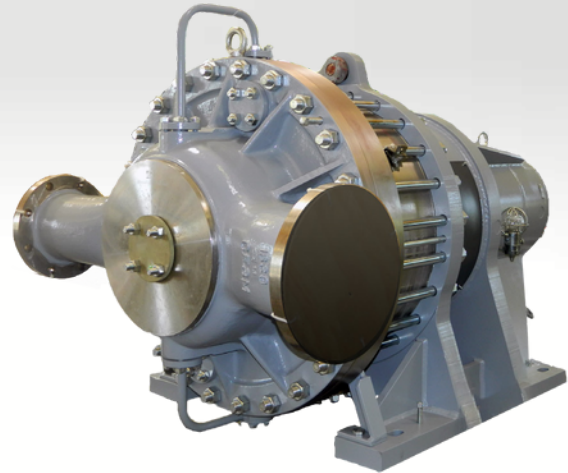
GARO® Liquid Ring Compressors for Easy Maintenance

Garos Overhung Impeller Design provides a unique advantage - Low maintenance and easy service. Garo compressors require only one mechanical seal, consequently reducing maintenance needs and time.



GARO® Liquid Ring Compressors Advantages

- Oil-free service
- Cool running - ideal for handling corrosive gases, vapor recovery and other temperature-sensitive applications
- Near to isothermal compression
 - Intrinsically safe
- Low working speed
- Low vibration and noise
- Reduced Maintenance - no internal lubricant required
- Wear-free performance - no metal to metal contact
- Minimal process upset - compressor handles carryovers even in severe applications



QUALITY SUSTAINABLE SOLUTIONS

Garo is committed to providing sustainable solutions that help your company comply with safety and environmental regulations while lowering total cost of ownership. Our products and systems reduce resource consumption, while operating reliably with minimal maintenance requirements. Together we build more sustainable and profitable chemical & petrochemical production.

SPECS COMPLIANT

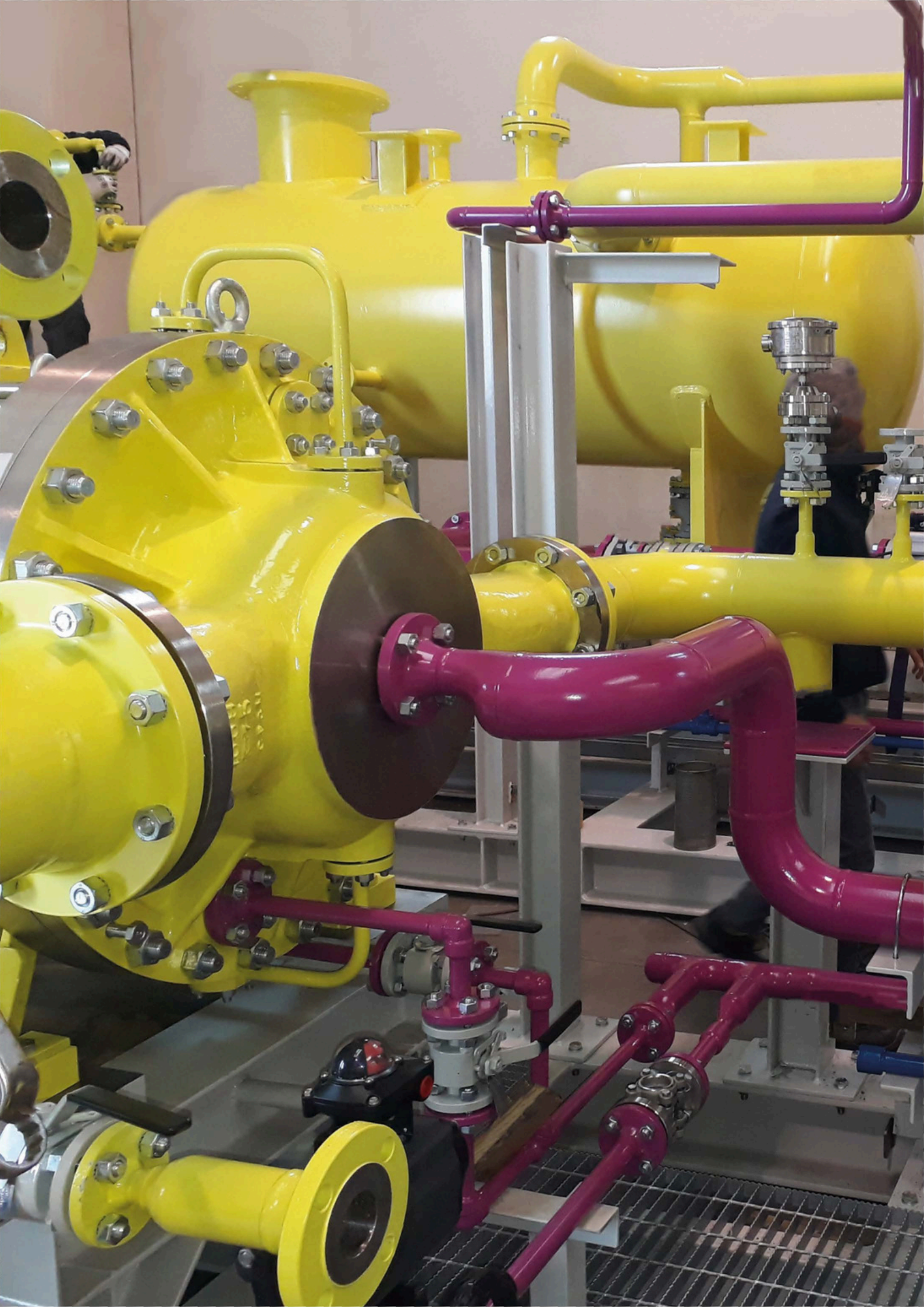
GARO products comply with specific customer requirements and International Standards. The isothermal compression characteristic of our compressors enable GARO products to minimize material corrosion.

ISO CERTIFICATION

In our ongoing effort to provide quality, sustainable solutions, our manufacturing & service facilities are ISO 9001:2008, ISO 14001:2004, and OHSAS 18001 certified.

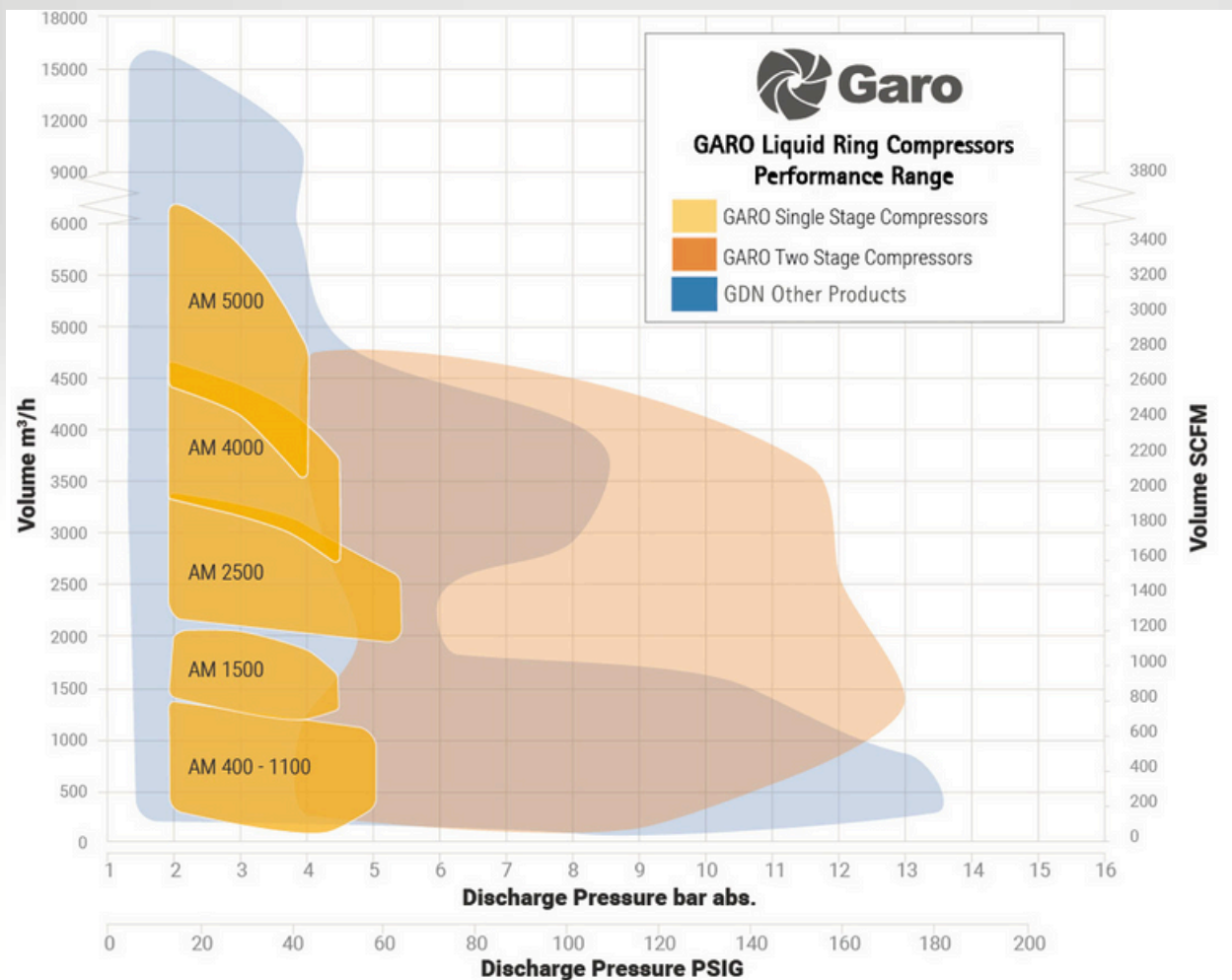
API 681

GARO products comply with API 681 requirements. The isothermal compression characteristic of our compressors enable GARO products to run cooler than any other technology.



GARO® Single Stage Liquid Ring Compressors AM/ASM Models

GARO Single Stage compressors deliver reliable, proven performance especially for Chemical and Petrochemical process applications. With a discharge pressure up to 6 bar abs. (72 psig), GARO offers efficient, OEM compressors with low maintenance requirements. With a suction capacity ranging from 100 to 5,000 m³/h (60 to 2,900 CFM), Single Stage models are indicated for demanding process applications like chlorine, Vinyl Chloride Monomer (VCM), and Steamer Off Gas.

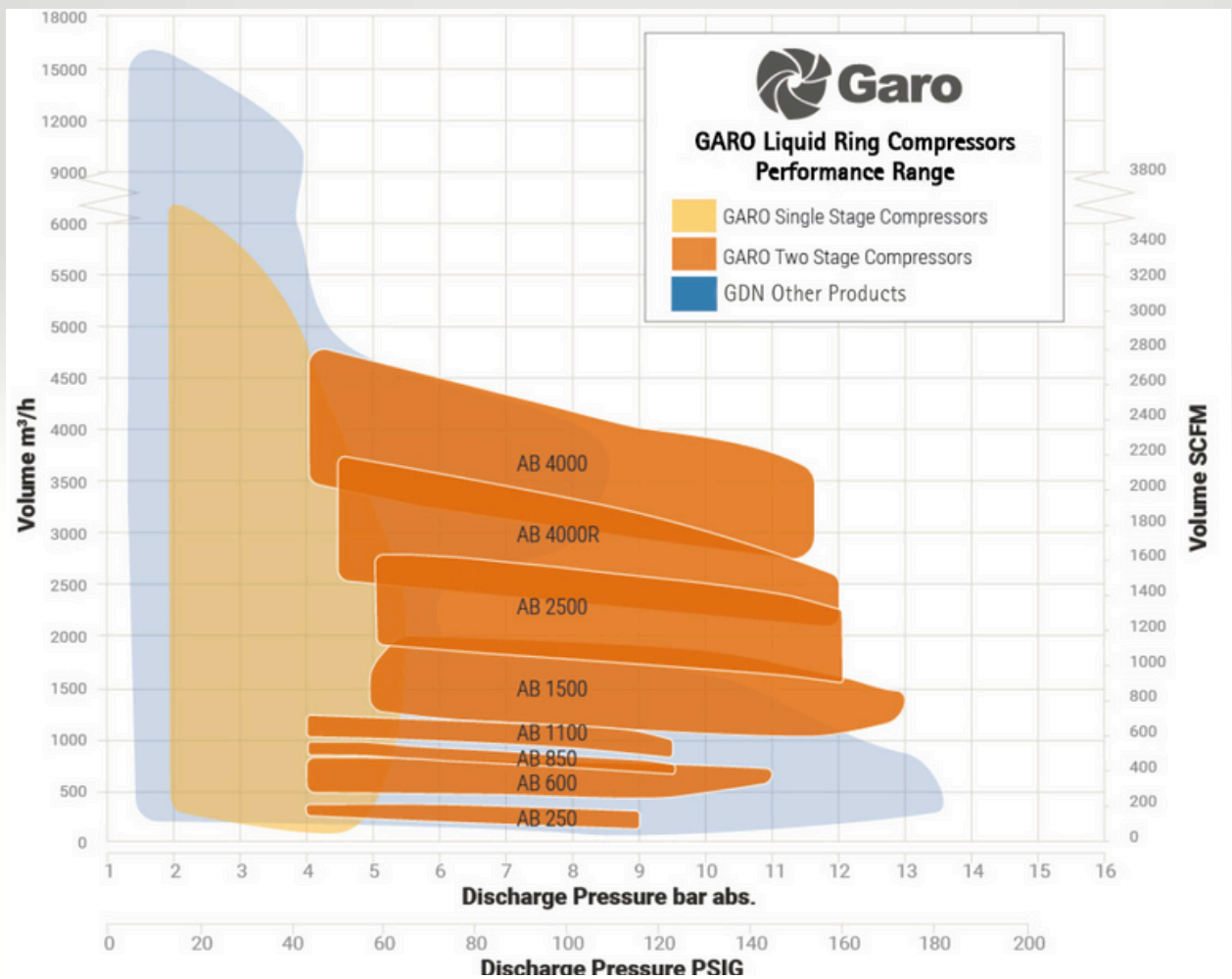


The AM and ASM liquid ring compressor series are ideal for demanding process applications in petroleum refining and chemical plants. ASM models are specifically engineered for handling chlorine compression.



GARO® Two Stage Liquid Ring Compressors AB Models

GARO Two Stage compressors deliver reliable, proven performance especially for Oil & Gas, Chemical and Petrochemical process applications. With a discharge pressure up to 13 bar abs. (175 psig), GARO offers efficient, OEM compressors with low maintenance requirements. With a suction capacity ranging from 100 to 4,000 m³/h (60 to 2,350 CFM), Double Stage models are indicated for demanding process applications like Flare Gas Recovery, or Vapor Recovery.



The AB liquid ring compressor series are ideal for demanding process applications in oil & gas, chemical, and petrochemical plants.



Garro Products & Systems



GARO® Liquid Ring Compressors

GARO Liquid Ring Compressors are ideal for demanding process applications in petroleum refining and chemical plants and reach pressures up to 12 bar g abs (174 psig).



GARO® Centrifugal Compressors

GARO Centrifugal Compressors are custom designed for special applications for handling critical gases. GARO Centrifugal Compressors reach pressures from 1.0 up to 12.0 bar g.



GARO® Packaged Solutions

Every industry has unique challenges - and Garro is ready to solve them. Our customized package solutions offer complete systems designs, built around reliable GARO liquid ring technology.



GARO® Service & Support

Our team of factory-trained technicians, global service centers, and available inventory of OEM parts are available to restore performance and efficiency



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