

# H<sub>2</sub> COMPRESSORS FOR INDUSTRIAL APPLICATIONS

Engineered for Safety,  
Efficiency, and Reliability

Hydrogen's potential as a clean energy source comes with complex handling challenges—high flammability, rapid diffusion, and material compatibility. Corken's hydrogen compressors are purpose-built to address these demands, delivering safe, efficient, and reliable performance across critical industrial applications.



## Key Challenges

**High Flammability & Diffusivity:** With a wide flammability range, low ignition energy, and high deflagration index, hydrogen leaks can disperse rapidly and ignite easily making leakage control critical.

**Material Compatibility:** Hydrogen-rich streams often contain corrosive elements and condensates, requiring specialized materials of construction to ensure long-term reliability.

**Operational Efficiency:** To justify ROI, hydrogen systems must deliver energy efficiency, extended part life, and minimal downtime.

**Safety & Automation:** Stringent safety standards demand remote operation and minimal human interaction, emphasizing the need for intelligent, automated systems.

## Corken Solution

Corken's hydrogen compression solutions are not just engineered—they're purpose-built to meet the rigorous demands of hydrogen handling, safety, and performance. Here's how Corken delivers unmatched reliability and precision:

### 01 Vertical Orientation for Natural Gas Separation

Corken's compressors are designed with a vertical orientation, a strategic choice for hydrogen applications. Since hydrogen is lighter than most gases, it naturally rises, allowing heavier gas components to settle. This orientation enhances gas separation efficiency during compression, especially in mixed-gas or recycle applications.

### 03 Integrated Purge Kits for Safety and Compliance

To further enhance safety, Corken compressors can be equipped with purge kits that safely dispose of residual oil and gas carryover to a flare or safe area. This setup:

- Allows each distance piece to be independently purged, pressurized, or vented, depending on application needs.
- Ensures oil-free, virtually leak-free compression—critical for maintaining hydrogen purity.

### 05 Versatility in Cooling and Compression Staging

Corken offers a wide range of configurations to match your process needs:

- **Cooling Options:** Choose between air-cooled or water-head cooled systems.
- **Pressure Range:** Suitable for low to high-pressure applications.
- **Staging:** Available in single-stage or double-stage designs based on the required compression ratio and gas characteristics.

### 07 Scalable Automation for Safety and Control

Recognizing the need for minimal human interaction in hazardous environments, Corken offers:

- Customizable automation levels based on your site's control philosophy.
- Compressor skids that integrate seamlessly with remote monitoring and control systems, enhancing safety and operational efficiency.



### 02 Advanced Leakage Control with Distance Piece Designs

Hydrogen's small molecular size makes it prone to leakage. Corken addresses this with:

#### **D-style compressors:**

Featuring a single distance piece with two sets of packing.

#### **T-style compressors:**

Equipped with a double distance piece and three sets of packing for maximum containment.

These configurations use Positive Seal Piston V-Ring packings, Segmental packings, or combination of both to ensure precision leakage control, minimizing fugitive emissions and maintaining gas purity.

### 04 Corrosion-Resistant Construction for Harsh Environments

Hydrogen-rich gas streams often contain moisture, condensates, and corrosive elements. Corken combats this with:

- Surface-treated wetted parts for corrosion resistance.
- Customizable O-rings, gaskets, and piping materials to suit specific gas compositions. This makes Corken compressors ideal for recycle gas recovery and reactor off-gas handling.

### 06 Designed for Operational Ease and Low TCO

Corken compressors are built with the user in mind:

#### **Modular, break-and-build design**

Featuring a single distance piece with two sets of packing.

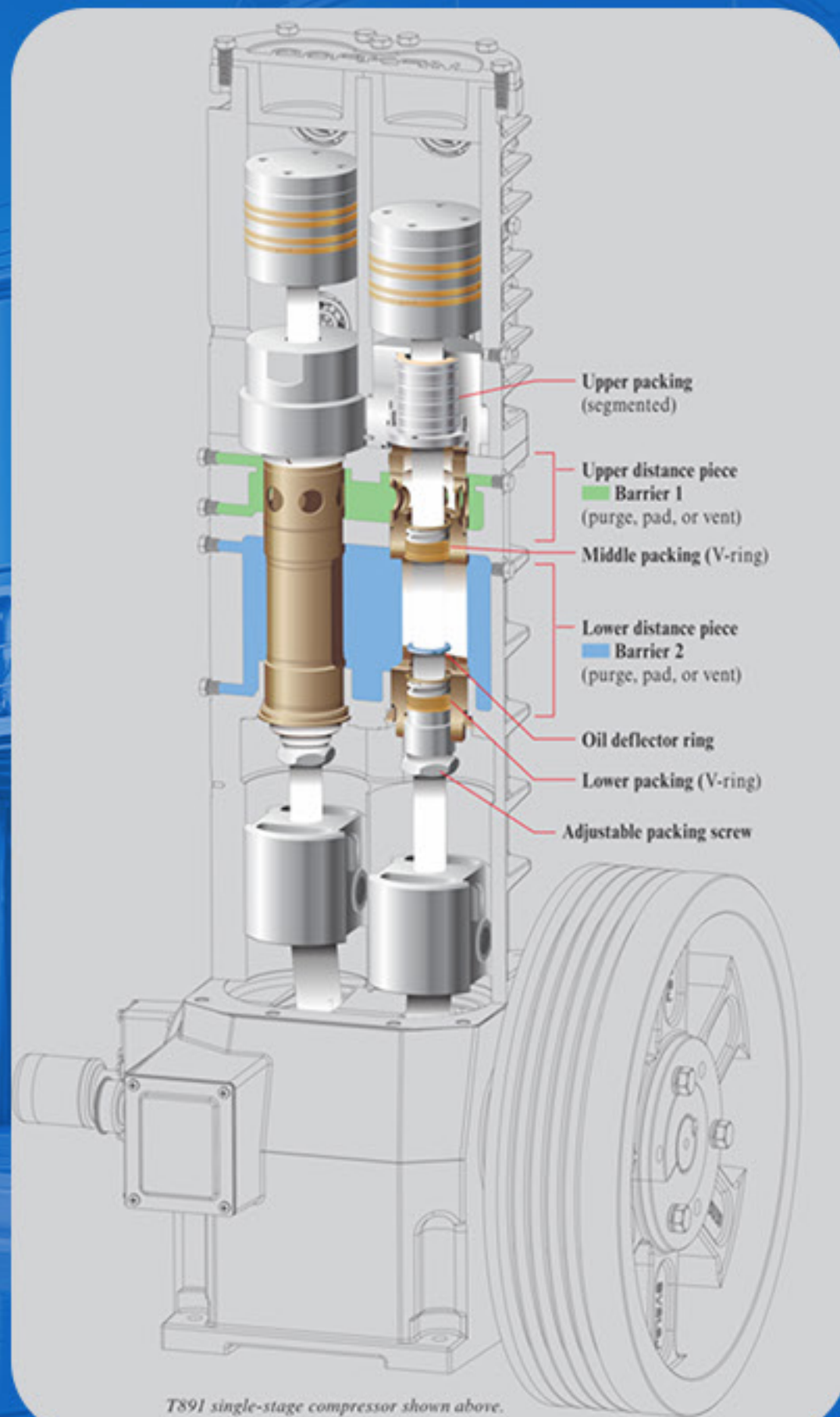
#### **Interchangeable parts**

to reduce inventory and service complexity.

#### **User-friendly interfaces**

that boost operator confidence and reduce training time.

This results in a minimum Total Cost of Ownership (TCO)—a key metric for ROI in hydrogen infrastructure.



T891 single-stage compressor shown above.

## Corken Compressors in Critical Hydrogen applications:

Corken compressors are trusted across the various H<sub>2</sub> applications in the industry:

- **Process Gas Boosting:** Elevating hydrogen to higher pressures for downstream use.
- **Recycle Gas Recovery:** Recovering hydrogen from reactor off-gases with precision.
- **Ammonia Cracking:** Supporting hydrogen extraction for fuel cells and industrial use.
- **Steam Methane Reforming (SMR):** Enabling both grey and blue hydrogen production with efficiency and safety.

## Conclusion

Corken combines proven engineering with hydrogen-specific design to ensure safe, low-maintenance, and high-performance compression. From process boosting to gas recovery, Corken is the trusted choice for hydrogen compression across the value chain.

To know more drop us an email on [marcomindia@idexcorp.com](mailto:marcomindia@idexcorp.com)

Mumbai Office IDEX India Pvt. Ltd. First Floor, Solitaire Corporte Park, 167, Guru Hargovindji Marg, Chakala, Andheri (East) Mumbai - 400 093