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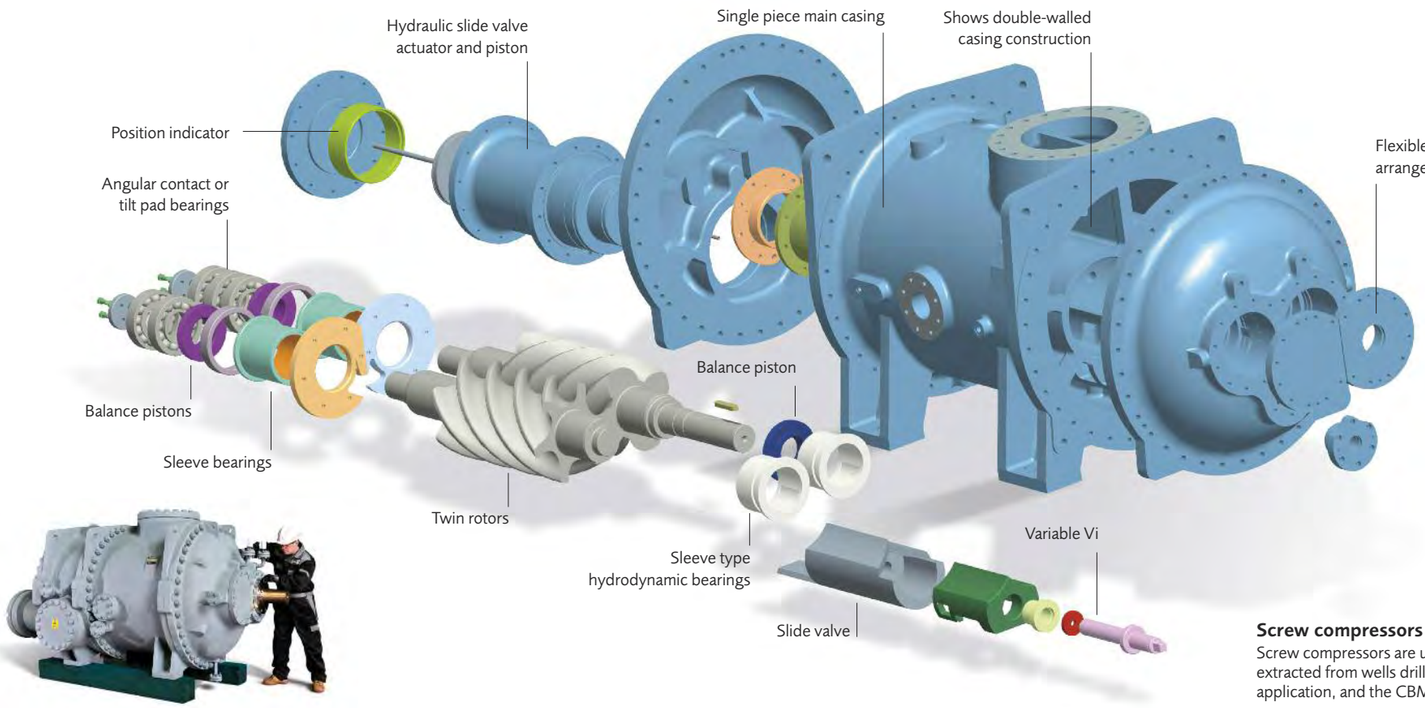
Howden

ROTARY TWIN SCREW COMPRESSORS

FOR **COAL BED METHANE** AND OTHER PROCESS AND INDUSTRIAL APPLICATIONS

HOWDEN IS A GLOBAL LEADER IN THE ENGINEERING DESIGN, MANUFACTURE, SUPPLY AND SUPPORT OF **OIL INJECTED AND OIL FREE ROTARY TWIN SCREW COMPRESSORS**.

Exploded view of a typical Howden WRV Oil Injected Screw Compressor.



VERSATILE OIL INJECTED SCREW COMPRESSOR RANGE FOR ALL APPLICATIONS.

WRV 163 WRV 204 WRV 255 WRV 321 WRV 365 WRV 510

XRV	Model 127	1 L/D Ratio – direct drive and 3 gear drives
XRV/ WRV	Model 163	2 L/D Ratios
XRV/ WRV	Model 204	4 L/D Ratios
WRV	Model 255	6 L/D Ratios
WRV	Model 321	4 L/D Ratios
WRV	Model 365	2 L/D Ratios
WRV	Model 510	3 L/D Ratios
GTV	Model 228	
Operating Speeds		1,000 – 4,500 rpm
Capacity Range		200 – 16,000 m³hr
Pressure Ratio		20/1 (Single Stage)
Max Discharge Pressure		61 bar g
Max Discharge Temperature		115°C
Materials Casings		Cast Iron, Nodular Iron, Carbon Steel, LT Carbon Steel

Screw compressors for Coal Bed Methane (CBM)

Screw compressors are used in CBM applications to extract, collect, and compress this gas, which is extracted from wells drilled deep into the coal deposits. This is a low suction pressure gas gathering application, and the CBM is then compressed and transported through to major gas transmission pipelines.

Screw compressor applications for CBM:

- Nodal compression stations
- Wellhead gas boosting
- Gas cooling at terminal
- Gas fracturing.

Howden designs, manufactures and supplies one of the most extensive and versatile ranges of oil injected and oil free screw compressors in the industry, providing high reliability and efficient gas compression solutions to meet the technical challenges of coal bed methane applications.

World pioneers

Howden's experience in the field of screw compressors is unique. We were there when they were invented.

In the 1930s, Howden worked in co-operation with Professor Lysholm of Svenska Rotor Maskiner (SRM) to pioneer the first experimental screw compressors. In the 1940s, it was Howden that brought the technology to a viable reality and took out the first commercial licence.

Today, Howden is an industry leading compressor OEM, manufacturing and packaging systems that are renowned for their efficiency and reliability. Howden has supplied over 35,000 screw compressors worldwide, which are used in oil & gas applications (including Coal Bed Methane), petrochemical, power generation and industrial refrigeration plants.

Choose Howden for:

- Advanced technology compressors.
- Reliability and efficiency.
- Bare shaft supply or fully custom-designed systems.
- API Standard.
- Full aftermarket services.
- Lifetime commitment.
- Worldwide engineering reputation.

Engineering expertise

From ongoing development and improvement of our range of bare shaft screw compressors, to working with our customers to understand their specific compression needs, Howden's engineering design team supports Howden at the forefront in rotary screw compressor design and application.

Key markets and applications: Oil & Gas (including Coal Bed Methane), Petrochemical, Power Generation, Offshore Platforms, FPSO Vessels, Industrial Refrigeration

Manufacturing excellence

We are committed to manufacturing the highest quality compressors in the industry. We employ state of the art machine tools to attain the highest possible accuracy and tolerances so as to produce compressors with high efficiency and outstanding reliability.

Lifetime quality and care

Our twin screw compressors are designed to match the exacting specifications required by our customers. They comply with International standards and codes, e.g., API 619. Howden Compressors holds triple certification* for quality, environmental, heath and safety management.

Testing: At Howden's extensive test facilities in the UK, comprehensive testing to standards such as API 619, gives confidence that each compressor unit will perform reliably throughout its life.

Aftersales: We provide a lifelong aftercare service, from supplying original Howden spare parts to maintenance service and engineering troubleshooting, delivered through our global network.

*TRIPLE CERTIFICATION to international standards:
Quality management: ISO 9001:2008
Environmental management: ISO 14001:2004
Health & Safety management: OHSAS 18001

Howden Oil Injected Screw Compressors

Principle operating characteristics

- High stage compression ratios.
- Integral step-less capacity control 10%-100%.
- High capacity output – compact, lightweight – non pulsating flow.
- Fully rotary – few moving parts – low vibration and maintenance.
- Effective/efficient temperature control – long component life.
- Versatile and accommodating – flexible operation across a wide range of operating conditions.
- Oil injection benefits including low noise and vibration.
- High availability and minimal down time.
- Variable Vi – optimised efficiency.

Key features (WRV)

- Double casing construction.
- Sleeve bearings, chrome journals.
- Thrust bearings – long life.
- Variable Vi.
- Shaft seal options.
- Discharge pressures to 28 bar g CI casings and 61 bar g SGI/cast steel casings.
- Slide valve capacity control.

Special features available:

- Forged steel rotors
- Copper free bearings
- Casings manufactured from Grey Iron /SG Iron/Steel
- NACE compliant materials.

Condition monitoring options include:

- Casing mounted accelerometers
- Axial proximity probes – condition of thrust bearings
- Journal bearing temperature sensors, embedded thermocouples or RTD's.

Why use Howden oil injected screw compressors?

- Simple construction – great reliability – minimal maintenance.
- High pressures ratios per stage – fewer stages.
- Long life with high efficiency and availability.
- Efficient capacity control with related power saving.
- Low operating noise – due to double wall casing.
- Robust construction – able to operate in difficult environments.

Requirements for skid mounted units

- Minimal on-site installation requirements.
- Compressor fully balanced – minimal foundations required.
- Hook-up requirements minimal.
- Easily relocated – good portability.

Howden Oil Free Screw Compressors

Howden also manufactures and packages a range of Oil Free Screw Compressors.

Operating Speeds: 2,000 – 15,000 rpm
Capacity Range: 1,000 – 26,000 m³hr
Max Discharge Pressure: to 15 bar g

WORLD PIONEERS OF ROTARY TWIN SCREW COMPRESSORS

SINCE PIONEERING THE FIRST TWIN SCREW COMPRESSOR IN THE 1930'S, HOWDEN COMPRESSORS HAS MANUFACTURED AND SUPPLIED OVER 35,000 OIL INJECTED AND OIL FREE ROTARY TWIN SCREW COMPRESSORS WORLDWIDE.

Setting the industry standard for both gas and refrigeration applications, Howden-designed and manufactured screw compressors are used for a variety of demanding process gas compression and industrial refrigeration duties.

Choose Howden Screw Compressors for:

- ADVANCED TECHNOLOGY
- OIL INJECTED AND OIL FREE
- PROVEN RELIABILITY AND DURABILITY
- MANUFACTURING EXCELLENCE
- BUILT TO API STANDARD
- GLOBAL SUPPORT
- LIFETIME COMMITMENT

Global network of packagers and suppliers

Our versatile range of bare-shaft screw compressors are supplied globally through our network of compressor packaging customers. This allies our engineering expertise with local knowledge, enabling strong support to be provided to end-user clients.

< Example of a typical packaged process gas compression system incorporating a Howden twin screw compressor.

ENGINEERING EXCELLENCE WORLDWIDE

With over 150 years of engineering excellence, Howden designs, engineers, supplies and maintains air and gas handling equipment, including industrial fans, process gas compressors and rotary heat exchangers, for use in the power, oil and gas, petrochemical and other industries throughout the world.

Operating globally, Howden has around 4,000 employees with companies in 17 countries. Our equipment may be found in virtually every industry but particularly in those such as in power generation, petrochemicals, mining, steelmaking and cement manufacture where the most arduous air and gas handling duties are to be found.

We have introduced many innovations, from the forced draught system and the invention of the diaphragm compressor to the commercialisation of the rotary heat exchanger and the screw compressor. Our products are known throughout the world for their high levels of performance, reliability and state-of-the-art technology. We are constantly investing resources in product development to provide market-leading products that make our customers' processes more effective and more profitable.

We provide customer support when and where it is needed. Combining our knowledge with our extensive applications experience gained by our engineers on sites throughout the world allows us to support our customers, not just from initial project inception but throughout the entire operating life of the plant.

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