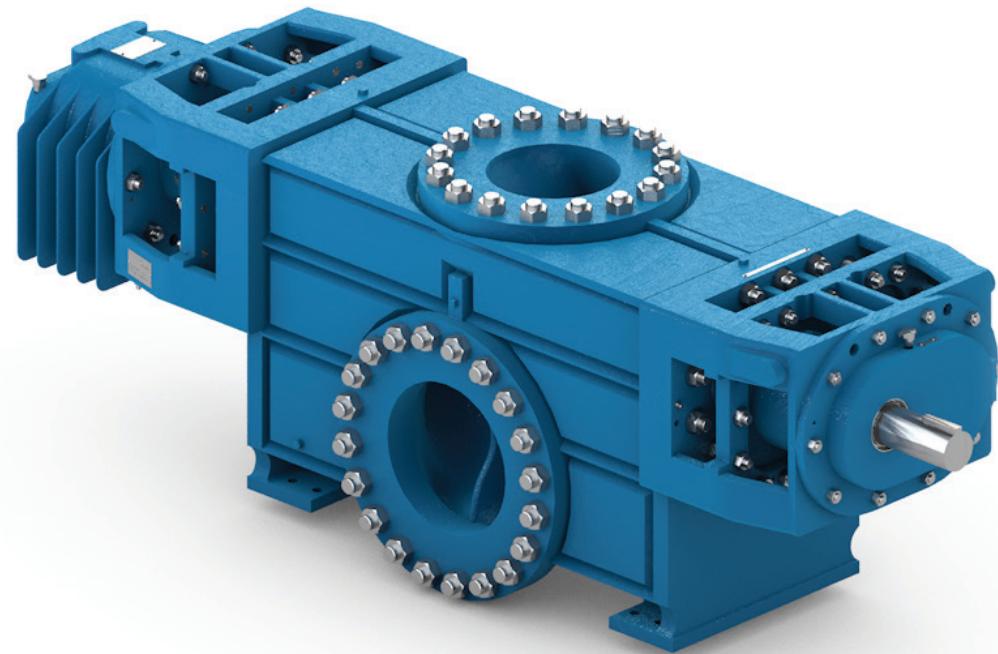


TWIN-SCREW PUMPS

HOUTTUIN™ AND WARREN®
A CENTURY OF TRUSTED PERFORMANCE



HOUTTUIN™ WARREN®



SETTING THE STANDARD

OUR TWIN-SCREW PUMPS ARE BUILT ON A REPUTATION OF DEPENDABILITY, EFFICIENCY AND PERFORMANCE

You may not be able to judge a book by its cover, but you can definitely judge a Twin-Screw pump by the company behind it. And at CIRCOR International, our Houuttuin™ and Warren® brands have been the industry standard when it comes to Twin-Screw technology for over a century.

From the state-of-the-art methods we use to test our pumps, to the exacting standards we hold them to, our reputation is one we continue to build on.

Whether it's our uncompromising quality, our innovative engineering or the unmatched expertise of our support teams, no one's better at delivering reliable, customized solutions to companies just like yours.

AN UNBEATABLE PUMP IN UNBEARABLE APPLICATIONS

OUR TWIN-SCREW PUMPS ARE BUILT TO EXCEL IN THE MOST DIFFICULT OF APPLICATIONS AND ENVIRONMENTS

Twin-Screw pumps are designed to convey fluid without any metal-to-metal contact. It allows the pump to handle a wider variety of fluids and a wider variety of conditions, including multiple phases, intermittent dry operation and extreme temperatures. And no one knows this technology like CIRCOR.

TWIN-SCREW PUMPS ARE USED FOR A VARIETY OF APPLICATIONS:

- › Bilge/Ballast Pumps
- › Bottoms/Waste Removal
- › Charge Pumps
- › Crude Oil Gathering
- › Fuel Forwarding/Injection
- › Hydraulic System Pumps
- › Lube Oil System Pumps
- › Loading & Unloading (Tank, Truck, Railcar, Ship, etc.)
- › Mixing/Blending
- › Pipeline Transport
- › Stripping
- › Vapor Recovery
- › Wellhead Pressure Control

TYPICAL FLUIDS:

- › Acids
- › Additives
- › Adhesives
- › Animal Fats
- › Asphaltenes
- › BS&Ws
- › Bitumen
- › Condensates
- › Crude Oil
- › Distillation Fractions
- › Fuel
- › Fuel Oils
- › Glycerine
- › Hydraulic Oil
- › Lube Oil
- › Margarine
- › Naphtha
- › Paint
- › Paper Pulp
- › Paraffine
- › Polyethylene
- › Polymers
- › Residuums
- › Soaps
- › Slops & Slurries
- › Water
- › Seawater

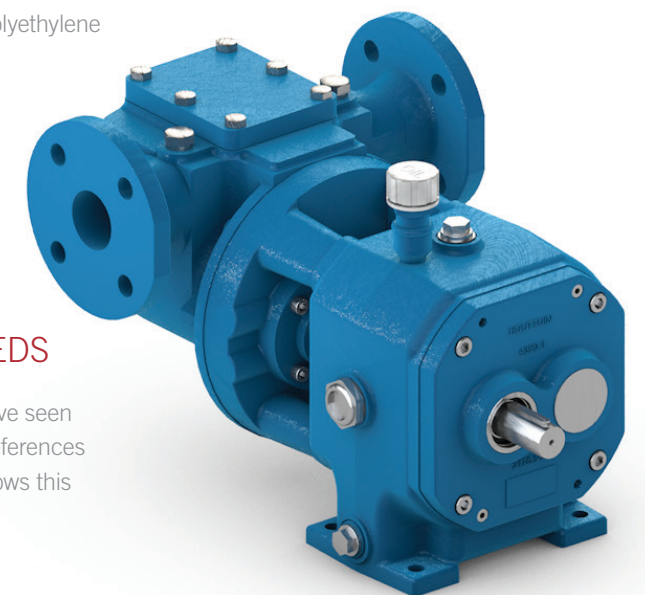
NOT JUST OFFERING BETTER SOLUTIONS, OFFERING MORE OF THEM

OUR EXTENSIVE PORTFOLIO ALLOWS US TO CUSTOMIZE A SOLUTION TO YOUR SPECIFIC NEEDS

With over 150 years of experience and tens of thousands of installations, we've seen and overcome nearly every challenge you can throw at us. Our history and references prove our ability to engineer and design the best solution for you. No one knows this technology like CIRCOR.

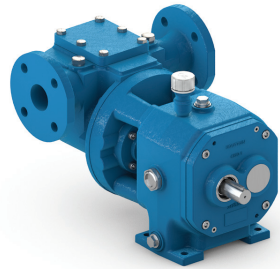
THE BEST TEAM IN THE BUSINESS

At CIRCOR, our experienced teams offer unparalleled product and industry knowledge, and we've streamlined our system to ensure we're able to get you solutions and answers quicker than ever. So you can be sure you're getting the right system or pump for your specific needs.



FEATURED PRODUCTS

OUR PUMPS ARE ALL TESTED WITH STATE-OF-THE-ART METHODS AND ARE DESIGNED AND MANUFACTURED TO INDUSTRY LEADING STANDARDS



HOUTTUIN 136 SERIES

This single-entry, Twin-Screw pump is self-priming and horizontally rotating. Built to handle contaminated or slightly abrasive, lubricating and non-lubricating liquids at either low or high viscosity, the Houttuin 136 Series is ideal for food and beverage, soap and fat, paint and lacquer or polluted water.

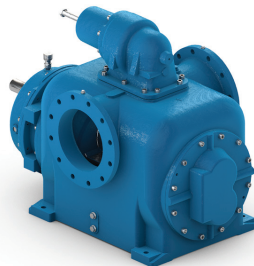
- › Offers continuous, nearly pulsation-free pumping
- › Highly efficient
- › Casing available in cast iron, cast steel, cast stainless steel
- › Optional spring loaded relief valve protects against overload
- › Non-contacting, timed rotor set can pass solid and gas content



HOUTTUIN 211/231 SERIES

This series of double entry, vertically rotating, self-priming Twin-Screw pumps can handle contaminated, slightly abrasive, lubricating and non-lubricating liquids at a wide range of viscosities. Its optional corrosion-proof materials make it perfect for industries that transport chemicals, petrochemicals, soaps and grease, paints and lacquers or food and beverages.

- › High pumping efficiency
- › Able to handle a range of viscosity from 0.6 to 5,000 cSt
- › Provides constant axial flow and incredible suction power



HOUTTUIN 216 SERIES

Designed for low pressure applications and for both clean and abrasive fluids, the 216 Series offers both unmatched reliability and features that make maintenance easier. The 216 is suited for a host of duties within process and transport applications for oil and gas, petrochemical, power, shipbuilding, food and beverage, and other general industries.

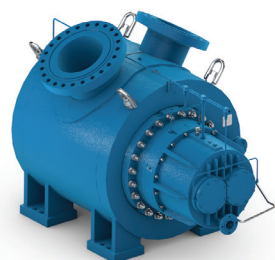
- › Features non-contacting rotors for abrasive handling
- › Field replaceable liner and 'pop-out' access for easier maintenance
- › Available in a variety of materials, including cast and stainless steel
- › Comes in a variety of arrangements to meet your installation needs



HOUTTUIN 236 SERIES

These time-tested self-priming Twin-Screw pumps are suitable for a wide range of process and transport applications in chemical, food and beverage, oil and gas, petrochemical, shipbuilding and other general industries.

- › Rugged design stands up to the harshest environments
- › 'Pop out' rotor access reduces inspection and maintenance time
- › Optional customizable alignments match your design needs
- › Available in a variety of materials



HOUTTUIN MR SERIES

Capable of handling a wide range of liquids, gas, pressures and temperatures, the MR Series Multiphase Pump, an API 676 3rd edition pump, excels in wellpad, platform or central production facility systems. Its ability to reduce wellhead pressure, increase production and boost a full well stream mixture of oil, water and gas make it a huge asset to oil and gas operations.

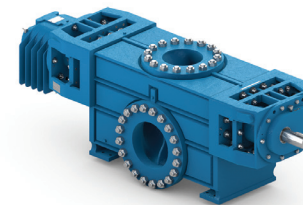
- › Suitable for handling 0-100% gas
- › Handles wide range of pressures and temperatures
- › Manufactured under rigorous standards
- › Available in less common materials like Super Duplex
- › Can meet NACE requirements



HOUTTUIN TT SERIES

The new Houttuin TT brings terminals, tank farms, refineries, and other storage operators a high flow, low pressure, low NPSH pump for their loading, unloading and transfer operations. It offers best-in-class NPSHR performance and a streamlined package. It is suitable for the wide variety of applications and fluids found in oil and gas, chemical and petrochemical processes.

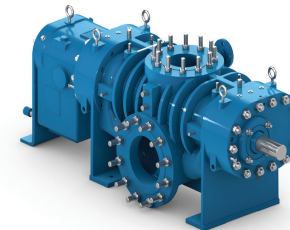
- › Reduced size and parts improve both footprint and reliability
- › Assembled rotors allow matching materials to the application
- › Large, finned gearbox for ambient cooling
- › Compliant with API 676



WARREN JAGUAR SERIES

Flexible, durable and efficient, the Warren Jaguar Series is a heavy-duty Twin-Screw pump built to perform and handle differential pressures up to 800 psi. Its adaptability makes it a perfect fit for a wide range of applications including chemical processing, petroleum refining, power generation, food handling or barge unloading.

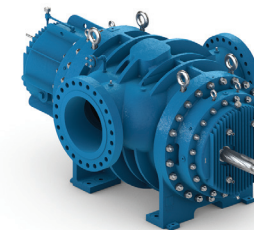
- › Hopper style suction available for extremely low NPSHr
- › Accommodates most seal designs
- › Capable of handling shear sensitive fluids
- › Available in a number of materials
- › Body designed for weld-on steam jacket



WARREN FSXA SERIES

Highly efficient and built to last, these heavy-duty, high pressure Twin-Screw pumps deliver efficient performance year after year and are perfectly suited for a wide range of applications in the oil and gas industry.

- › Available in a variety of materials, including cast iron and stainless steel
- › Integral rotors eliminate assembly failure points
- › Keyless timing gears and easy 'pop out' rotor access means easier maintenance
- › Rugged design stands up to harshest environments
- › Double helical timing gears reduce noise and vibration



WARREN FSXB SERIES

The next generation of the FSXA series, the FSXB series Twin-Screw pumps are built for high pressure applications and high compliance with API 676 3rd edition. Like the FSXA, the FSXB series excels in a wide variety of applications in the oil and gas industry.

- › Field replaceable liner
- › Keyless timing gears and coupling with tapered shaft for easier maintenance
- › In-line suction and discharge flanges for easy installation
- › Increased suction handling capabilities



TWIN SCREW SMART TECHNOLOGY PACKAGE

CIRCOR's Twin-Screw Smart Technology Package automatically adjusts flow in real time to operating conditions protecting the pump from cavitating, while maintaining the highest capacity possible.

- › Programmable sensor, controls and drive to ensure pump runs at optimum, changing speeds with cavitation-free performance
- › Customizable input and output
- › Turndown capabilities in poor suction conditions to avoid dry running
- › Easy, fast and more predictable transfers due to automation

OUR SUCCESS STORIES CONTINUE TO GROW

OUR CUSTOMIZED TWIN-SCREW PUMP SOLUTIONS ARE DELIVERING REAL RESULTS ALL OVER THE WORLD

DECREASE UNLOADING INEFFICIENCIES BY 35%

Houttuin's Twin-Screw pumps helped a large refiner in North America meet delivery deadlines by reducing the production time of unloading cargo by 35%.

TOUGH ENVIRONMENTS ARE A JAGUAR'S NATURAL HABITAT

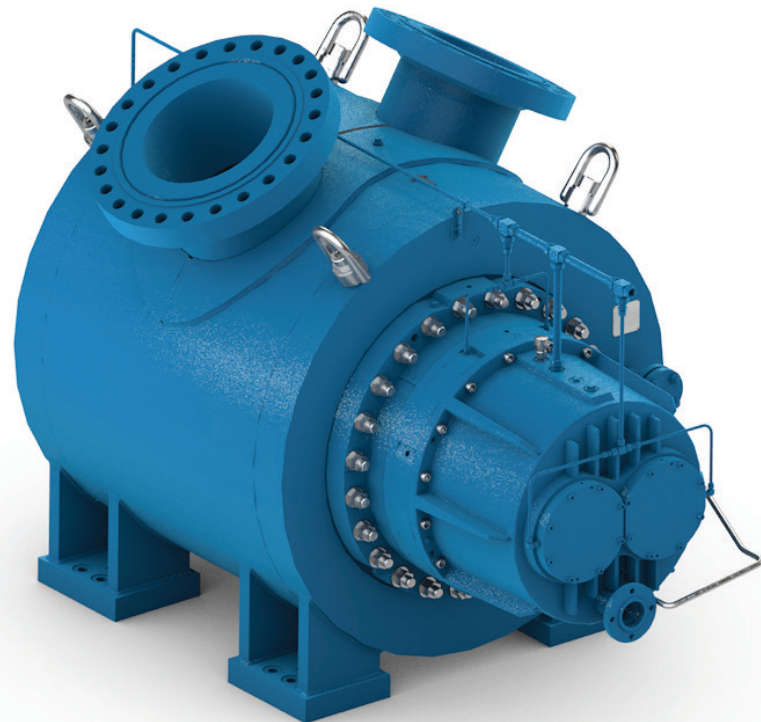
When a major Middle Eastern oil company needed to maintain the smooth operation of its propane deasphalting (PDA) unit, they turned to Warren's Jaguar Pumps. Despite extremely difficult operating conditions, our engineered solution has been performing flawlessly for 15 years and counting.

BREATHING NEW LIFE INTO MATURE WELLS

By reducing wellhead pressure, Houttuin's Multiphase Pump System was able to jumpstart oil production in a mature field in the Caspian Sea by 70% while cutting the amount of gas lift required in half.

KEEPING SAND-LADEN CRUDE OIL FROM CREATING A DOWNTIME-LADEN PIPELINE

When heavy sand-laden oil was causing a Venezuelan oil producer to lose capacity in its transfer pumps, they turned to CIRCOR's expertise for a solution. By replacing the company's current Twin-Screw pumps with easy-to-maintain Warren Twin-Screw pumps, they cut downtime dramatically.



WE ENGINEER RELIABILITY INTO EVERYTHING WE DO

At CIRCOR we know what downtime can mean to an operation and how important efficiency is to your bottom line. It's why we never stop improving our products or looking for new and better solutions.

No company offers the combination of expertise, innovation and dependability you'll find at CIRCOR. Our extensive product line along with our knowledgeable team allow us to help you create a system that will both meet your specifications and exceed your expectations.

LET'S GET STARTED

If you'd like to learn more, schedule an appointment or talk to a representative, go to circorindustrial.com/two-screw-pump or contact CIRCOR at service@circor.com or +1 704-291-2040 (International).

REDEFINING GLOBAL SOLUTIONS

CIRCOR maintains regional engineering and manufacturing facilities, along with a global network of distributors, to support you around the world and around the clock.

- ★ CIRCOR International HQ
- ★ CIRCOR Industrial Headquarters
- CIRCOR Manufacturing Locations
- CIRCOR Sales/Service Locations





CIRCOR is a market-leading, global provider of integrated flow control solutions, specializing in the manufacture of highly engineered valves, instrumentation, pumps, pipeline products and services, and associated products, for critical and severe service applications in the oil and gas, power generation, industrial, process, maritime, aerospace, and defense industries.

Excellence in Flow Control

Asia | Europe | Middle East | North America | South America

Warren Pumps LLC
82 Bridges Avenue
P.O. Box 969
Warren, MA 01083-0969
USA
+1(413) 436-7711

CIRCOR Industrial Americas
1710 Airport Rd
Monroe, NC 28110
USA

Allweiler India Pvt. Ltd.
CIRCOR
Plot No. 1, 22, 23, 653/1,
Somnath Co-op.
Indl. Soc. Ltd.,
Somnath-Kachigam Road,
Daman, 396 210. India



HOUTTUIN™ WARREN®