



THREE-SCREW PUMP SOLUTIONS

INDUSTRY-LEADING TECHNOLOGY FOR GLOBAL CHALLENGES



ALLWEILER® IMO®



REDEFINING WHAT'S POSSIBLE

In your world, getting things done requires having the right resources in place – people you can count on, products you need and service when you need it. That's why we're building our business around the same things that drive yours.

At CICOR, you get more than just another product off the shelf. You get 150 years of application experience, technology that's relied on to move more than 4.5 million barrels of oil every day worldwide and a team of product and service specialists tasked with maximizing the uptime and efficiency of your operation – from upstream process to downstream refining.

PEOPLE YOU CAN COUNT ON FROM START TO FINISH

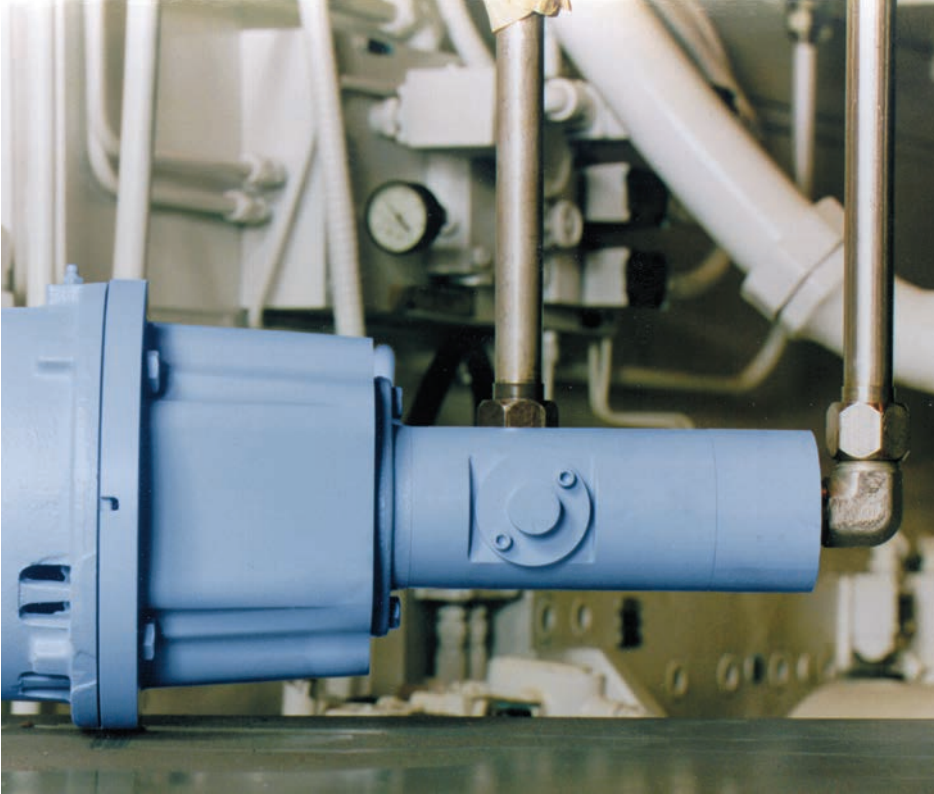
When you choose CIRCOR, you get passionate experts working for you – and with you. From upfront guidance, collaboration and engineering to post-production testing and training, we've redefined the industry standard for project success.



A REDEFINED APPROACH TO PROJECT SUCCESS

NINE ELEMENTS WORKING TOGETHER TO EXCEED YOUR EXPECTATIONS

1. **PROJECT REVIEW** – Application experts collaborate with you with the knowledge and experience necessary to deliver the right answers for your specific challenges.
2. **PROJECT MANAGEMENT** – The engine that makes things go, your project manager is assigned to keep things on track all the way through your project.
3. **QUALITY CONTROL ASSURANCE** – Your quality control experts help ensure quality not just at the production stage but from procurement through design, manufacturing and delivery.
4. **ENGINEERING EXPERTS** – Providing the engineering resources you can't afford to spare, CIRCOR oil and gas engineers turn ideas into reality. Complex computer modeling helps ensure the solution you need matches your exact performance specifications.
5. **MANUFACTURING** – Our global facilities use state-of-the-art production equipment to build to exacting specifications in the location that best suits your needs.
6. **TESTING AND VERIFICATION** – Courtesy of our 6,000-square-foot, 4,500 hp/3,310 kw test facility, your products and systems can be proven before they reach your final location.
7. **LOGISTICS CONTROL**– Whether across the country, across your continent or around the world, we help to ensure your equipment arrives safely and efficiently when promised.
8. **EDUCATION AND TRAINING** – Get the knowledge and confidence you need to pull the very most from your equipment. We have educated and trained more than 4,000 industry professionals like you and your team in over 20 different countries.
9. **POST-INSTALL SUPPORT** – The support you need extends well beyond installation. We help keep you up and running with service facilities in 23 countries with 24/7 technical assistance.



HIGH PERFORMANCE PUMPING SOLUTIONS

No matter what market or industry you serve, or where you are in the world, CIRCOR is redefining what's possible with three-screw pumping solutions that are engineered, manufactured, installed, serviced and supported to meet the unique demands of your business.

AT CIRCOR, WE SURROUND YOU WITH:

- › People: a team of engineering and application experts, fluent in all languages, with the knowledge and experience you need to meet your biggest business challenges.
- › Products: a comprehensive portfolio of technologies, products and systems, from the names you know and trust, that increases the reliable, cost-efficient performance of your operations.
- › Services: a commitment to provide you with quick response and support before, during and after the sale, around the clock and around the world.

LEADING TECHNOLOGY TO SOLVE YOUR TOUGHEST CHALLENGES

CIRCOR owns and operates the leading three-screw pumps and systems technology brands in the pump industry today – Imo® and Allweiler®. You get all the advantages that matter most to you: longer life, lower pressure ripple, lower contamination sensitivity and maximum energy savings, which results in the highest Total Savings of Ownership across the entire life cycle of your pumping equipment solution.

PRODUCTS & APPLICATIONS

| PUMP SERIES | APPLICATIONS | | | | | | | QUICK REFERENCE GUIDE | | | |
|-------------|--------------|------|------|-----------|-----------|------------------------------------|-----------------|------------------------|------------|----------------------------|---------|
| | TRANSFER | FUEL | LUBE | CRUDE OIL | HYDRAULIC | HIGH PRESSURE MACHINE TOOL COOLANT | CORROSIVE WATER | APPROXIMATE FLOW RANGE | | MAXIMUM DISCHARGE PRESSURE | |
| | | | | | | | | (USGPM) | (L/MIN) | (PSIG) | (BAR-G) |
| | | | | | | | | | | | |
| ACE | • | • | • | | | | | 3-44 | 11-166 | 150 | 10 |
| 3E | • | • | • | | | | | 1-100 | 4-379 | 150 | 10 |
| UCF | • | • | • | | | | | 120-800 | 454-3028 | 175 | 12 |
| 3G | • | • | • | | | | | 2-210 | 8-795 | 250 | 17 |
| UCG | • | • | • | | | | | 30-280 | 14-1060 | 250 | 17 |
| C323F | • | • | • | • | | | | 400-3300 | 1514-12491 | 300 | 21 |
| 3D | • | • | • | • | • | | | 5-400 | 19-1514 | 500 | 34 |
| C324A | • | • | • | • | | | | 50-900 | 189-3407 | 500 | 34 |
| SN | • | • | • | | | | | 300-1000 | 1136-3800 | 500 | 34 |
| T324 | • | • | • | • | • | | | 300-800 | 1136-3028 | 700 | 48 |
| 4VKC | | | • | | • | | | 21-258 | 83-978 | 1160 | 80 |
| EMTEC | | | | | | • | | 4-260 | 15-984 | 1300 | 90 |
| 4SFC | | | • | | • | | | 2-15 | 8-57 | 1450 | 100 |
| 6D | • | | • | • | • | | | 5-400 | 19-1514 | 1500 | 103 |
| 4T | | | • | | | | | 10-200 | 38-757 | 1500 | 103 |
| 8L | • | | • | • | | | | 100-1100 | 379-4164 | 1500 | 103 |
| 12D | • | | • | • | • | | | 5-400 | 19-1514 | 2200 | 152 |
| 6T | | | • | | • | | | 5-200 | 19-757 | 2500 | 172 |
| 6U | | | • | | • | | | 5-200 | 19-757 | 2500 | 172 |
| 12L | • | | • | | • | | | 10-100 | 38-379 | 4500 | 310 |



REAL WORLD THREE-SCREW TECHNOLOGY BENEFITS FOR UNPARALLELED PERFORMANCE YOU CAN COUNT ON

CIRCOR three-screw pumps from Allweiler and Imo have a simple design with only three rotating parts, pulse-free flow with extremely low vibration and noise levels, and high-pressure boost capabilities, even when handling low-viscosity fluids.

SMOOTH OPERATION

The pumping element geometry for CIRCOR three-screw pumps provides virtually pulsation-free flow. This eliminates the requirement for pulsation dampeners often found in systems employing other pumping technologies. Pulsation-free flow allows output condition management that's critical to a variety of applications, such as precision hydraulic controls and fuel metering for gas turbine atomization.

LONG SERVICE LIFE

Non-contacting pumping elements by means of hydrostatic and hydrodynamic fluid films, axially balanced rotors and top notch metallurgy are just a few of the factors contributing to the unparalleled service life of our three-screw pumps.

HIGH CONTAMINATION TOLERANCE

Three-screw pumps are highly resistant to wear from particulate contaminants that are often present in synthetic or petroleum-based fluids. We even offer special pump versions that incorporate proprietary bi-metal materials expressly designed for contaminated services, such as for pumping crude oil and heavy fuel.

LOW NOISE

The rotor profile in the screw pump provides a smooth and continuous output flow that greatly reduces pressure pulsations. The result is lowered air borne, fluid borne and structure borne noise, typically less than 75 db(A).

EXCELLENT SUCTION LIFT

The small peripheral diameter of the rotors and low axial velocity of the fluid provide excellent suction lift performance compared to other pump designs with similar output flows. This gives the three-screw pump an inherent advantage in negative suction pressure applications, allowing the pumping of higher viscosity fluids at much higher speeds than other pumping technologies.

LOW HORSEPOWER CONSUMPTION

The small peripheral diameters of the rotors and low fluid axial velocities also reduce fluid shearing within the pump, resulting in a reduction of horsepower consumption while operating on high viscosity fluids.

THREE-SCREW ROTARY PUMPS PROVEN DESIGN FOR PRECISION, LONG LIFE AND MAXIMUM ENERGY EFFICIENCY

Our three screw pumps from Imo and Allweiler incorporate a positive displacement rotary design consisting of a housing, which envelops the drive screw (power rotor) and the sealing screws (idler rotors).

The intermeshing of the threads of these rotors, along with the close fit of the surrounding housing, creates a moving labyrinth seal, which captures the valuable fluid and transports it axially.

The enclosed area containing the fluid is referred to as a fluid closure (see Figure A). The pumping element does not pre-compress the fluid, but rather transports it from the suction side of the pump to the discharge port in a smooth, continuous manner. It is the fluid closure concept that provides the three-screw pump with its positive displacement capability.

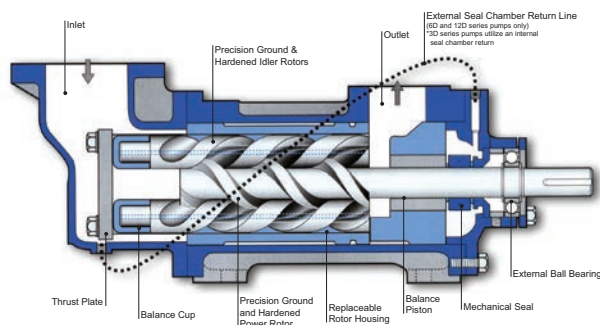
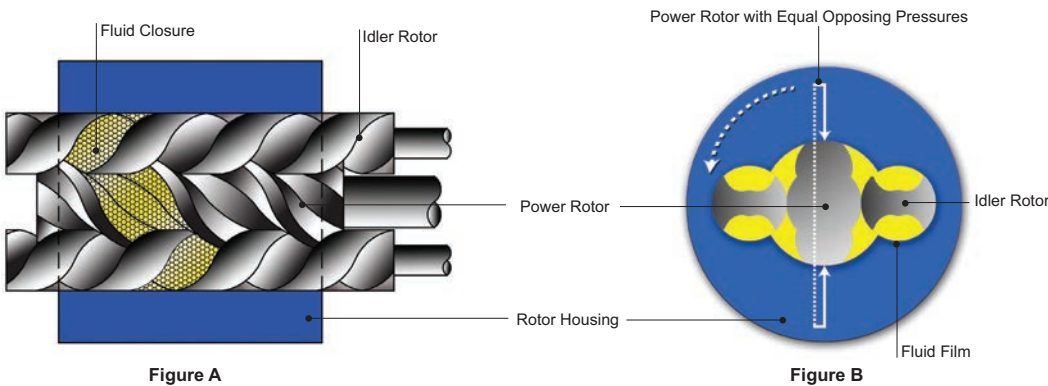
Symmetrical pressure loading on the power rotor eliminates the need for bearings to absorb radial forces. The idler rotors generate a hydrodynamic film, which provides radial support similar to journal bearings (see Figure B). Axial loads on the power rotor and idler rotors, created by differential pressure, are hydrostatically balanced. This dramatically increases the life of the pump.

Strengths of the three-screw pump technology:

- › High pressure boost capabilities, even when handling low viscosity fluids
- › One of the highest overall efficiencies when handling heavy crude 3
- › Simple pump design with only three rotating parts and one shaft seal
- › Designs available to the latest edition of API 676

The proven three-screw pump technology delivers literally millions of gallons of fluid per day all over the world in a wide variety of demanding applications:

- › Crude oil transport
- › Power generation
- › Hydraulic elevator
- › Fuel oil transport and burner service
- › Machinery lubrication
- › Refinery processes
- › Chemical processing



3D series



3E Series



REDEFINING WHAT'S POSSIBLE A PARTNER IN YOUR SUCCESS

You can trust CIRCOR. We understand the challenges you face, respect the high stakes of mission critical equipment and stand ready to deliver the solutions you need to meet your toughest challenges. You can turn to us with confidence for a broad portfolio of technologies, products, systems and services from names you know and trust, like Allweiler and Imo. We're committed to helping you redefine what's possible for your business



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 sever service applications in the oil and gas, power generation, industrial, process, maritime, aerospace, and defense industries.

Excellence in Flow Control

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