



Hydraulics & Controls for the Entertainment Industry



HYDRAULIC SYSTEMS AND COMPONENTS FOR THE ENTERTAINMENT INDUSTRY

Hydraulic Systems have always played a major role in entertainment industries. With the development of flexible electronic controls, these powerful systems have attained a level of utility and flexibility that permits their use in a wide range of demanding and creative applications.

Rexroth combines over 40 years of technical and manufacturing expertise to provide the most cost-effective, reliable control solutions.

From high-performance servo systems to turn-key central power and distribution systems, Rexroth provides a unique, single point of supply for all your motion control needs.

SYSTEMS

Rexroth has earned an unequalled reputation for delivering reliable, affordable systems in the most challenging applications throughout the world.

- concept validation through the use of state-of-the-art computer simulation tools
- design assistance for “what if...” problems
- the most complete line of servo and proportional valves
- custom controls and software
- full CAD support
- turn-key systems
- digital motion controls

THEATER & STAGE TECHNOLOGY

Rexroth is a world leader in this demanding specialty market, where high expectations for reliability, safety and low maintenance are the norm. Typical applications require design techniques developed over many years and scores of successful installations.

- low noise
- high performance & repeatability
- high power/heavy lift capabilities
- designed for demanding packaging or envelope requirements
- zero downtime
- low maintenance
- knowledgeable, responsive technical and service support

Applying the lessons learned in our many industrial applications and listening to the special needs of the entertainment industry has led to a dramatic growth in our business to this area.

Rexroth supplies Hydraulic Power Units of every size and description, commonly with fire-resistant and environmentally safe fluids.

Operator controls can range from simple on/off pushbuttons to custom PLC controls providing full sequence, diagnostic and facility/ride interface. Our services frequently include complete installation and verification of the field piping and distribution system for an entire attraction.



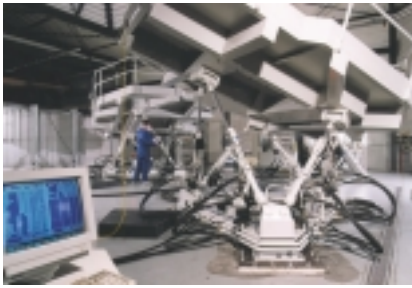
Revolving stage with control layout for table lowering



Central Hydraulic Systems

MOTION SYSTEMS

Building on our success in supplying motion systems for professional training and research application, Rexroth Hydraudyne has become an established name in complete three, four and six degree-of-freedom, hydraulic and electric motion platforms for ride and show simulators with payloads from 500 to 30,000+ lbs. High fidelity motion in an ultra low-height package is a specialty.



6DOF Motion System for a Driving Simulator

PROPORTIONAL / SERVO VALVES & ELECTRONICS

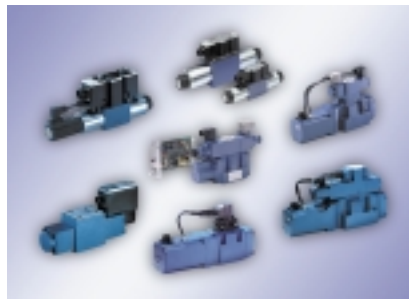
Rexroth's broad line of servo and proportional valves provide the means to solve your most formidable control problems, within your budget.

Advanced digital, analog and hybrid controllers lend flexibility and reliability to any design. Our digital controllers can be programmed from your PC as a stand-alone axis controller, or work in concert with other computers, PLC's and controllers. An on-board look-up profile can be generated by a self-contained "teach" function using actual loop hardware, via joysticks or a graphic interface on your PC.

All valves and controllers are readily configured to meet your fail-safe design requirements.

Among the many available features of these servo systems & controllers are:

- compliant control for multi-axis animations (position control with force override)
- complete loop closure on the driver card
- positive overlap and deadband compensation for fail-safe operation of proportional valves
- electronic linearization of proportional valve flow characteristics
- cylinder gain matching
- digital tuning for fast, safe loop setup, available from the front panel

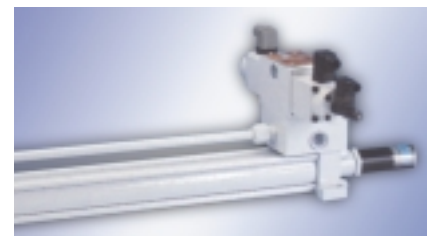


Proportional / Servo Family

CYLINDERS & SERVO CYLINDERS

Rexroth has a standard line of NFPA and Metric tie-rod and mill-type cylinders for almost every application. Our Application Based Standard and custom designs are available to meet the needs of the entertainment industry:

- high cycle speeds
- long life
- self-adjusting cushions (mill-type only)
- corrosion resistant ceramic-coated rods
- low friction seals (for servo systems)
- integral mounted valve (optional)
- external gland drains
- integral transducers for a variety of feedback options
- special materials
- bores up to 5 ft.; strokes to over 78 ft.

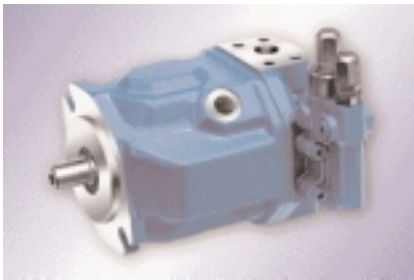


Linear Positioning Cylinder with Integrated Valves and Transducers

PUMPS & MOTORS

Rexroth's medium and high pressure pumps offer outstanding features to simplify your hydraulic power system:

- super quiet
- high power density
- the widest selection of control options
- broad range of sizes
- up to 61 in.3/rev.

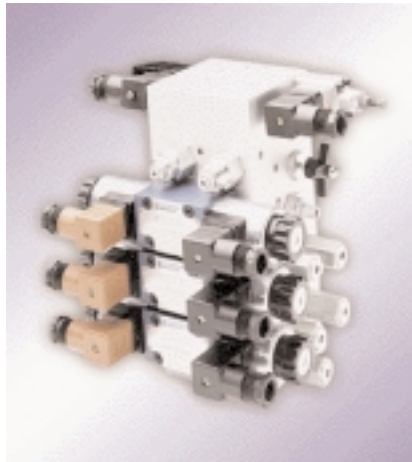


AA10VSO Axial Piston Pump

MANIFOLDS

Designed and manufactured in our facility, Rexroth manifolds allow the highest degree of integration with Rexroth hydraulic components and controls. Compact, leak-free designs are a specialty.

- custom designed to optimize performance and space utilization
- maximize design flexibility



Custom Manifolds

HYDRAULIC ANIMATION CYLINDERS

Competitively-priced cylinders specifically designed to survive in tough, animated figure applications feature:

- available bores:
1/2" (12 mm)
3/4" (18mm)
1" (25mm)
- available strokes:
1/2" bore: 1/2", 1", 1-1/2"
3/4" bore: 1", 2", 3"
1" bore: 1", 2", 3"
- operating pressure to 3000 psi (210 bar)
- integrated inductive position feedback transducer standard in all bores and strokes. Cylinders without feedback available as an option
- steel body construction, plated for protection
- one piece stainless steel rod and piston to resist corrosion
- large area rod bearing for high load capacity and low wear
- hydraulic SAE fitting or hose system for robust, low profile connections. Fittings can be rotated 90° and 180° for mounting flexibility
- threaded body construction disassembles easily for service



Animation Cylinder with Feedback

APPLICATION-SPECIFIC DIGITAL CONTROLLERS

Controllers for entertainment and animation applications offer the following features:

- Compliant control (position with force damping and limiting), utilizing load cells or dual pressure transducers
- Two axes per controller, with compliance
- Digital feedback capability
- On-card input keys, display and test jacks for setup, diagnostics and troubleshooting
- Advanced 32 bit controller with 2 mS control update
- Two independent motion playback tables, each with 18 minute storage capacity at 30 Hz playback
- Motion storage via "Teach", graphic programming, or from data file
- Optional SMPTE time code playback synchronization
- RS-232 and RS-484 ports interface ports
- DeviceNet port for connection to PLCs and other smart devices, with optional CanOpen support
- Interface to a wide range of proportional and servo valves, with valve linearization and cylinder gain matching

- Linearized operation with overlapped spool proportional valves for high safety fail-safe applications
- Programmable I/O to match any application



Dual-axis Digital Compliant Controller

SERVICE & TRAINING

Proper commissioning and maintenance are crucial to achieving safe, profitable operations of any hydraulic system. Rexroth is always there to help with a trained, knowledgeable service staff. Based in Bethlehem, PA, they are supplemented by nine Regional Technical Offices and a Distributor network of more than one hundred locations in the United States and Canada. So, no matter where you are, you are never far from a helping hand.

Our training centers have become an indispensable tool for our customers, distributors and employees. The latest developments from our R & D labs are continually incorporated into our training courses and seminars. As new trends in the marketplace evolve, these will be

brought into the training curriculum to provide the most up-to-date theoretical and hands-on learning experience possible.



Inside Service, Rexroth Hydraulics Division, Industrial



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