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for Less Cost p32

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# Hydraulics & Pneumatics®

THE AUTHORITY ON FLUID POWER TECHNOLOGY

JANUARY/FEBRUARY 2019 hydraulicspneumatics.com

# ACCUMULATORS

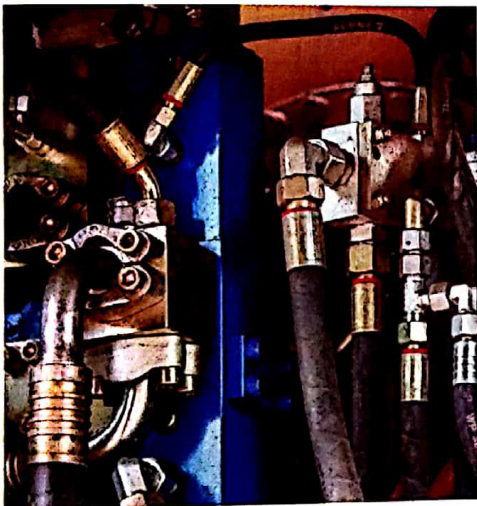
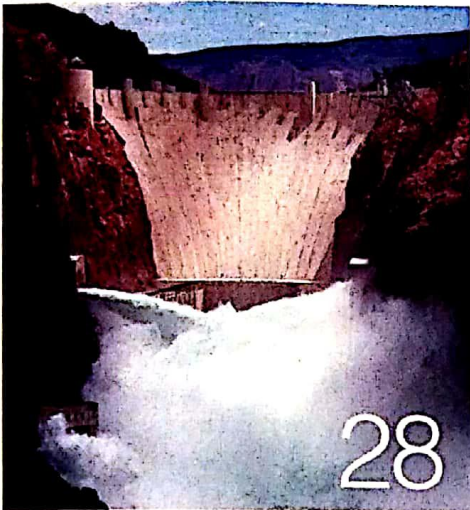
Upgrade Hoover Dam  
p28



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## FEATURES

- 28 Accumulators Help Upgrade Hoover Dam**  
Hoover Dam generates electricity for millions of homes and businesses across the southwest, and it's a constant challenge to keep the vital power source running smoothly. Recently, a team of innovative engineering experts wrapped up a massive multi-year retrofitting and refurbishing project to make the dam safer and more operationally efficient.
- 32 Zoned Approach Simplifies Functional Safety of Designs**  
Zoned Safety design establishes multiple independent safety zones within a single pneumatic manifold system. Air and power are disabled only to those components controlling equipment in the operator's vicinity, allowing the rest of a machine to remain in operation.
- 38 Your Connection is Only as Good as its O-ring**  
Hydraulic fittings incorporating O-rings were introduced decades ago to wage war on the battle against leaks. They have lived up to the task, but because O-rings provide such a simple solution, many designers and technicians take them for granted and may even ignore common sense when using O-ring fittings.
- 42 Show Yourself!**  
Fluid power professionals have much to gain by showing themselves before customers and vendors participating in three key shows and conferences coming up in March and April.
- 46 2019 Fluid Power Manufacturers Index**  
Contact information for hundreds of manufacturers and service providers in the fluid power industry.

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THE FPDA  
MOTION & CONTROL NETWORK



**ON THE COVER:**  
Photo of the Hoover Dam courtesy of Getty Images.

ISSN 0018-814X  
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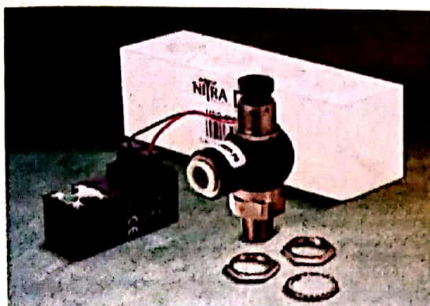
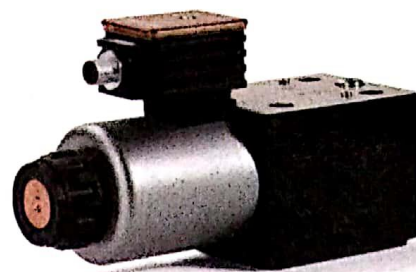
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## Useful Products

### Digital Valve Drivers Feature Easy Installation

**MODEL E-MI-AS** digital valve drivers are designed for use with proportional direction-, flow-, and pressure-control valves with the advantages of digital technology within the small confines of an IP 65-rated plastic box. They mount directly onto the solenoids of proportional valves with no transducer through a standard plug-in DIN43650 connector for simple in-field operations. They can drive single- or double-solenoid valves and are programmed through infrared communication interface to access functional parameters settings and diagnostic functions, plus other valuable features.

**ATOS SpA.**, (717) 840-7814, [www.atos.com](http://www.atos.com)



### Miniature Solenoid Valves & Manifolds for Low Flows

**NITRA GVP SERIES** pneumatic miniature solenoid valves for low-flow requirements have two- and three-port configurations for on-off flow control. These 12- or 24-V dc valves are available in 10- and 15-mm widths and in 2-way or 3-way normally closed configurations. Latching solenoid valves are available in 3-way normally closed configuration and will stay open after being momentarily energized to conserve power. Momentary reverse polarity closes valve. These valves can be used with company's GM-3 series compact machined manifolds, available in single to six stations for 10-mm manifolds and in single to four stations for 15-mm manifolds.

**AUTOMATIONDIRECT**, (800) 633-0405, [www.automationdirect.com/mini-solenoid-valves](http://www.automationdirect.com/mini-solenoid-valves)

### Gauges for Low-Light Conditions

**COMPANY'S 1009, 1209, 1259, 1279, 1377, 1379** and T5500/T6500 pressure gauges are now available with DuraVis yellow-green dials for enhanced readability in low light. The gauge faces are made of retroreflective sheeting, which reflects applied light back toward the light source with minimal dispersion. In diminished natural light or poorly lit areas, these bright dials enable operators to locate and read the gauge with flashlights.

**ASHCROFT INC.**, (203) 385-0635, [www.ashcroft.com](http://www.ashcroft.com)

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