Engineered products to system solutions
### Brochure Highlights

<table>
<thead>
<tr>
<th>Products</th>
<th>Mobile</th>
<th>Industrial</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spool Valve Hydraulic Motors</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Disc Valve Hydraulic Motors</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Valve-In-Star™ (VIS) Motors</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Delta Wheel Motors</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>HP30 Series Hydraulic Motors</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>ME Series Hydraulic Motors</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Hydromar Axial Piston Motors</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Hydro-MAC™ Piston Motor</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Vane Motors</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>Steering Control Units</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Series 5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Series 10</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Series 20</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Series 25</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Series 40</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>Vane Pumps</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VMQ</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>VS/Q*</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>VT10/20</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>VQ(H)</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td><strong>Open Circuit Piston Pumps</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X20 Open Circuit Piston Pumps</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>DuraForce HPR</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>PMV</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>PVQ</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>PVXS</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>PVWS</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td><strong>Closed Circuit Piston Pumps and Motors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy Duty Series 1 Axial Piston Pumps*</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Heavy Duty Series 2 Axial Piston Pumps</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Heavy Duty Axial Piston Motors – Fixed and Variable*</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Medium Duty Axial Piston Manual Pumps*</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Hydrokraft Axial Piston Pumps</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Duraforce Motors HVM, HMR, HMA and HMF</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Duraforce Pumps HPV</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td><strong>Light Duty Hydrostatics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Duty Transaxes</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Medium Duty Axial Piston Servo Pumps</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Medium Duty Hydrostatics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eaton Series 350</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Medium Duty Axial Piston Motors – Fixed and Variable</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Transmissions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Duty Transmissions</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Medium Duty Transmissions</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Gear Products</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S28/L2 Pumps and S26 Motors</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Power Units</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Units</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td><strong>Valves</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportional Control Valves</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Directional Control Valves</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

*Remanufactured product available

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3 Overview of Brands  
4 Mobile and Industrial Applications  
5-17 Mobile and Industrial Products  
18 Eaton Services
The Eaton Advantage

Whether your products move, turn, shape, mold, lift, dig, or haul, you can depend on Eaton’s hydraulics products to deliver the performance you need to stay competitive. Eaton’s unwavering dedication to leadership in mobile and industrial applications has made Eaton one of the world’s preferred suppliers of hydraulic solutions.

When The Job Calls For Hydraulic Muscle.
Eaton® hydraulic components, fluid conveyance and systems keep our customers one step ahead of the competition. On-road, off-road, agriculture, mining, marine, industrial, even on the lawn and in the garden — when the task requires reliable, efficient, cost-effective hydraulic muscle, Eaton’s hydraulics deliver engineered solutions you can count on, backed by service designed to ensure your complete satisfaction.

Call On The Ace Team For Custom Solutions.
Eaton’s Application and Commercial Engineering (ACE) team is a unique resource that works with your engineers to optimize a hydraulic solution with the exact flow, displacement, pressure, torque, speed, and control software required to meet your needs. From a single component to a complete system solution, Eaton and the ACE Team are ready to help you get the job done right the first time and every time.

Engineered Products Address Unique Needs.
When the need goes beyond our wide range of standard product offerings, Eaton can offer OEMs a customized solution with world-class global engineering centers.

Global Distribution Means Global Support.
Eaton supports your products with more than 12,000 distributor locations worldwide. Service, parts, experienced technicians, and instant access to Eaton’s hydraulic knowledge base and manufacturing resources are all as close as your local Eaton Hydraulics distributor.

World-Class Product Brands

You recognize the names because they are world-class leaders in their own right and integral parts of Eaton’s Hydraulics Business worldwide reputation for quality and performance in hydraulic components, systems, fluid conveyance, service, and support.

Aeroquip®
Hose, fittings, adapters, couplings and fluid connectors for all pressures in industrial, aerospace, and automotive applications.

Airflex®
Eaton Airflex Clutches and Brakes are designed for demanding applications that require high torque and horsepower absorption as well as precise control.

Boston®
Industrial hoses available in sizes 1/4” to 8” I.D. for chemical, petroleum, material handling, and food industry applications.

Char-Lynn®
Hydraulic steering units, general purpose motors, spool and disc valves, and Valve-In-Star™ (VIS) motors for both mobile and industrial applications.

Eaton®
Hydrostatic transmissions, valves, piston and gear pumps, and Valve-In-Star™ motors primarily focused on mobile equipment applications.

Hydro-Line®
Industrial cylinders in a range of sizes to meet the motion control needs of machine and equipment builders for products ranging from automobile production to large hydro-electric and off-shore drilling applications.

Synflex®
Lightweight, high pressure, abrasion and chemical resistant thermoplastic hoses and tubing for a range of industries including transportation, beverage dispensing, fluid power and specialty applications.

Vickers®
Vane and piston pumps, valves, cylinders and filtration products for industrial, aerospace, marine and defense applications.

Walterscheid®
Hydraulic tube connectors and fittings for the mobile and stationary markets.

Weatherhead®
Hydraulic hose, hose ends, assembly equipment, tube fittings, couplings and support accessories for construction, mining, agriculture, truck and bus applications.

Focus on Sustainability

Sustainability has always been at the heart of Eaton’s products. That heritage has become an advantage as customers seek to partner with us to develop more efficient – and innovative – products and services.
Solutions for Mobile and Industrial Applications

Eaton® pumps, motors, transmissions, valves, cylinders, controls, hose and fittings offer a unique combination of proven technology and innovative design that translates directly into reliable performance and enhanced uptime. Whether you need a single component, a custom-engineered solution, or anything in between, Eaton is the partner of choice for mobile and industrial applications.

Mobile Applications

Agricultural
Eaton has provided the technology to power agricultural equipment for over fifty years covering all types of machines and all types of functions. From innovative steering and sophisticated electro-hydraulic valves, tough hoses and fittings, to efficient pumps and motors, Eaton provides a full range of products to meet this market’s needs.

Construction
Eaton’s products provide compact, powerful products to meet the demanding needs of the construction market. Components with fast, accurate response help meet the challenges for this market.

Earthmoving
Eaton’s compact, powerful components help put the power where it’s needed. From propel motors and powerful drives to auxiliary work systems, Eaton has many solutions to the demanding requirements of earthmoving applications.

Forestry
Eaton provides rugged, long life hydraulic components for the demanding needs of the forestry market. Compact, powerful components help put the power where it’s needed.

Material Handling
Eaton’s product range for the material handling market is second to none. Whether for propel circuits, steering functions, or auxiliary work circuits, Eaton provides a full range of products to meet the demanding needs for these machines.

Truck and Bus
Eaton hose and fittings set the standard for truck and bus applications.

Utility/Vocational
Versatile, complete system solutions are available with the broad product range that Eaton provides. From innovative steering and sophisticated electro-hydraulic valves, tough hoses and fittings, to efficient pumps and motors, Eaton provides a full range of products to meet this market’s system needs.

Mining
Eaton is the preferred choice for many of the auxiliary systems on mining equipment. Eaton products can handle the harsh environments and the rigorous duty cycles, and can survive the tough applications.

Automotive
Eaton products are trusted and specified by the world’s leading automakers. You can count on Eaton aftermarket support anywhere in the world.

Machine Tools
Eaton products enable machinery to deliver high productivity and consistent accuracy for metal cutting machinery. High pressure and flow components – piston pumps, cylinders and cartridge valves, provide the muscle and control required for metal forming machinery.

Molding
Strong application support coupled with a full range of hydraulic products – wide range of cylinders, vane and piston pumps, cartridge valves and manifolds – provides you with a single source solution.

Oil and Gas
Eaton offers the most robust line of customized hydraulic solutions for both land and sea based oil and gas exploration, production and refinement platforms starting with our specialized rod coatings on large cylinders, heavy duty pumps, high pressure hose for subsea production and no leak tube fittings. From motion compensation systems, jack pumps, to top drives, blow out preventers, iron roughnecks, winches and crane systems when you need reliable performance, count on Eaton hydraulic systems.

Industrial Applications

Port Machinery
Eaton understands the fast paced action of dockyards. You can rely on Eaton components to provide high productivity with maximum efficiency.

Power Generation
Eaton provides the complete, rugged and customized hydraulic control systems for power generation plants of all platforms including wind power, hydropower and thermal power. Eaton has the specific solutions for the renewable energy industry that are environmentally friendly.

Primary Metals
Eaton high pressure pumps, cylinders and valves are the ideal components for delivering the muscle required in these rugged applications. We can handle the heat and provide long life in mill environments.
**Spool Valve Hydraulic Motors**

Spool valve motors are typically used where compact, economical solutions are most needed in low pressure applications. Spool valve motors use a spool to precisely time and control flow through the orbit gear set (Geroler or Geroler). Inlet flow is directed into and out of the orbit set via slots in the spool and passages through the motor housing. The result is a very cost-effective, compact package suited to many application requirements.

**Applications:** Harvester, augers.

**Specifications:**
- **Rated Speed:** Up to 1,000 rpm.
- **Torque Range:** Up to 565 Nm (5,000 lb-in).
  - Options: Variety of optional shafts, mounts, ports, and displacements.
- **Output Shafts:** Straight with woodruff key, splined, tapered or straight with cross holes.

**Disc Valve Hydraulic Motors**

The Disc valve motors include the 2,000 series, 4,000 series, 4,000 compact series, 6,000 series and the 10,000 series. They all come with standard mount, wheel mount or bearingless. The Char-Lynn range offers many displacements, output shafts, port configurations and a multitude of special options that makes this product line the most flexible product to apply in the industry. The Eaton quality continues to be unrivaled and our plants consistently deliver excellent products on time.

**Applications:** Swing motor, brush cutters and mowers.

**Specifications:**
- **Rated Speed:** Up to 900 rpm.
- **Torque Range:** Up to 3,390 Nm (30,000 lb-in).
  - Options: Wide variety of optional shafts, mountings, ports, displacements, speed sensors and bolt-on valves.
- **2-Speed Models:** Available in series 2,000 and 10,000.

**HP30 Series Hydraulic Motors**

The Char-Lynn® HP30 disc valve motor targets mobile off-highway applications requiring up to 3,389 Nm of intermittent torque and continuous operation with flow of 170 lpm at 310 bar, intermittent operation at 265 lpm and 345 bar and maximum inlet pressure of 400 bar.

**Applications:** Mobile off-highway vehicles.

**Specifications:**
- **Efficiencies of the Char-Lynn valving system include:**
  - **Rated Pressure:** Up to 420 bar (6,000 psi) intermittent, 30,000 in lbs of torque.
  - **Highest starting torque:** even compared to cam lobe motors, smooth two speed option with integrated shift under load (1:1.5 ratio) and integrated hydraulic brake option.

**Disc Valve Hydraulic Motors**

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**ME Series Hydraulic Motors**

These double swash plate, opposed-piston, low-speed, high torque hydraulic motors operate smoothly at low speed within the maximum ratings and cause very little torque ripple.

**Applications:** Swing drives, winches, top head drives, directional drilling machines and propel drives for large vehicles.

**Specifications:**
- **Rated Pressure:** 248 and 276 bar (3,600 and 4,000 psi).
- **Torque Range:** Up to 16,136 Nm (11,900 lb-in).

**Hydrokraft Axial Piston Motors**

Vickers® Hydrokraft™ axial piston motors are ideally suited for the most demanding industrial type applications, including the harsh environment found in the offshore and oilfield markets. These motors are designed with the largest shaft bearings available for full thru-drive capability and long life required for industrial applications. These motors are available with a wide range of controls for the variable displacement versions including full over-center capability. Hydrokraft products are able to operate on a wide range of fluids including water-glycol.

**Applications:** Steel mills and marine applications.

**Specifications:**
- **Displacement:** 66 cc–750 cc.
- **Rated Pressure:** Up to 350 bar (5,000 psi); intermittent to 420 bar (6,000 psi).
- **Rated Speed (Max.):** 2,800–1,800 rpm.

**Delta Wheel Motors**

The Char-Lynn® Delta wheel motor is designed to be an easy drop-in replacement for competitive wheel motors and offers several benefits. Char-Lynn’s all new Delta Wheel motor will fill the growing need for a 4,000 psi intermittent pressure wheel motor. The Delta wheel motor’s performance is based on proven disc valve technology with higher efficiencies and longer life through lower temperature operation.

**Applications:** Lawn and turf equipment, sweepers and scissor lifts.

**Specifications:**
- **Size Range:** 6.9–46 cid.

For complete specifications, view literature online: hydraulics.eaton.com/products/menu_main.htm

Note: Specifications are subject to change. Consult an Eaton Customer Representative for latest information.
**Motors**

**Hydre-MAC™ Piston Motor**

Eaton’s Hydre-MAC is a low-speed, high torque (LSHT) direct drive, radial piston motor — featuring a cam lobe design — for variable speed applications that use less energy to deliver more power when needed. The Hydre-MAC radial piston motor can deliver 900 kW of power and up to 280,000 Nm of torque at max pressures of up to 350 bar all while delivering over 94% efficiency. With a symmetrical, 18-piston/roller assembly design that eliminates side loading, and two inlet/outlet ports that reduce pressure drop at high power, the Hydre-MAC radial piston motor generates less heat and experiences less wear and tear.

**Applications:** Offshore, Marine, Metal Recovery, Mining, Pulp and Paper, and Off-Highway.

**Specifications:**
- Displacement: 12,000 cc/rev to 50,000 cc/rev.
- Power: up to 900kw.
- Max. Pressure: 350 bar.
- Rated Torque: 280,000 Nm.

**Vane Motors**

Vane motors are used in industrial and mobile applications. The proven reliability and the available cartridge kit designs make for uptime and easy serviceability. Additionally, a low break out force smooths out the start-up speed allowing for vane motors to be more forgiving to system pressure spikes. Vane motors offer an economical, efficient and economical means of applying variable speed, rotary hydraulic power and offer variable horsepower (constant torque) characteristics. They can be stalled or pinions when compactness of the application does not allow for direct mount sprockets or pinions when compactness of the application does not allow outboard bearings.

**Series 5**

The Series 5 Steering Control Units (SCU) are designed for low flow, low pressure applications. Series 5 units are available in two compact designs: square housing (mount) unit with side ports and round housing (mount) unit with end ports and can incorporate STC fittings. In addition to the installation flexibility, this family of products has best-in-class steering feel and provides crisp centering. These units also have better efficiency (lower pressure drop) than competitive units.

**Applications:** Lawn, garden and turf equipment, lift trucks, marine and compact utility tractors.

**Specifications:**
- Displacement: 31.5 (1.92 in³/rev)–146 cm³/rev (8.9 in³/rev).
- Rated Flow: 11–19 lpm 3–5 gpm.
- Rated Pressure (Max.): 140 bar (2,030 psi).

**Series 10**

The Series 10 Steering Control Unit (SCU) facilitates hydraulic fluid flow like no other unit on the market. This highly-engineered product is the ultimate SCU for mid-range flow applications. The Series 10 has an unprecedented, continuous pressure rating of 275 bar, making it ideal for heavy-duty equipment, such as construction and agricultural machinery. Its high-pressure rating reduces overall equipment costs, since smaller cylinder sizes can be assigned into the system. The Series 10 can incorporate proven Eaton technologies, including Q-Amp, Wide Angle, Versa Steer and Two-speed Steering.

**Applications:** Heavy-duty equipment, such as construction, forestry and agricultural vehicles.

**Specifications:**
- Displacement: 60–739 cm³/rev (3.6–45.1 in³/rev).
- Rated Flow: 3.8–76 lpm (1–20 gpm).
- Rated Pressure (Max.): 275 bar (4,000 psi).

**Series 20**

The Series 20 Steering Control Unit (SCU) continues Eaton’s tradition of innovative design and high quality. The Series 20 SCU provides much smoother steering function with Eaton’s patented wide-angle feature, minimizing jerk motion on articulated vehicles. The seal and centering spring designs provide positive, low-effort steering feel to ensure excellent vehicle control, an important feature for the vehicles for which these steering control units were designed.

**Applications:** Articulated vehicles, such as wheel loaders, forestry equipment and dump trucks.

**Specifications:**
- Displacement: 60–985 cm³/rev (3.6–60 in³/rev).
- Rated Pressure (Max.): 241 bar (3,500 psi).

**Series 25**

The Series 25 Steering Control Unit (SCU) includes two patented designs (Balanced Architecture and Wide Angle) that make it even more responsive, reliable and cost effective. Symmetrical valving provides passageways and valving that are equal in both directions and pressure areas that are staged for minimum leakage. Progressive valving makes it possible to produce the spool/sleeve valve in a way that assures reliability and reduces costs. Eaton’s high capacity gerotor assembly provides immense capacity in a small package.

**Applications:** Large articulated vehicles such as, loaders, mining trucks, graders, scrapers, haulers and transporters.

**Specifications:**
- Displacement: 490–1,560 cm³/rev (30–95 in³/rev).
- Rated Pressure (Max.): 241 bar (3,500 psi).

**Series 40**

The Series 40 Steering Control Units (SCU) is designed for the highest flow, highest pressure applications, and is the most capable steering control unit on the market. This SCU features patented Eaton technology and has design attributes that result in responsive, smooth, stable and cost effective steering.

**Applications:** Large articulated and fixed frame vehicles.

**Specifications:**
- Displacement: 40–630 cm³/rev (2.4–38.4 in³/rev).
- Rated Pressure (Max.): 241 bar (3,500 psi).

**Steering Control Units**

**Hydre-MAC™ Piston Motor**

**Series 5**

**Series 10**

**Series 20**

**Series 25**

**Series 40**

**Torque Generators (TG)**

Eaton Torque Generators (TG) have been redesigned to meet the needs of a changing marketplace. The TG provides power assist for steering, eliminating the large hand wheels on gate valves, and provides powerful rotary motion with effortless manual rotary input. They also are available with anti-friction needle bearings to allow for direct mount sprockets or pinions when compactness of the application does not allow outboard bearings.
XCEL45
The XCEL45 steering unit is an innovative steering platform that provides smooth and reliable steering. It is designed for mid-range flow applications and has a robust housing design which provides a system pressure capability bridge between Series 5 and Series 10. The XCEL 45 offers integral valve options along with Q-Amp or Dual Gerotor functionality and cylinder damping.
Applications: Harvesters, tractors, backhoe loaders, sprayers and forklifts.
Specifications:
Rated Pressure (Max.): 190 bar (2,755 psi).

Vane Pumps
VMQ Pumps
The Vickers® VMQ is the world leader in pressure capacity and noise levels and is available in a complete range of singles, doubles, triples and thrudrives. The unique wafer plate design of the VMQ allows for the increase in viscosity and pressure rise during cold start-up – something that competitors do not have. The Vickers VMQ 32nd design is the highest pressure, lowest noise fixed vane pump available.
Applications: Marine and railway winches, oil field and drilling equipment, earthmoving and construction equipment, high-pressure plastic injection molding machines, large press machines, trash compactors and large balers.
Specifications:
Rated Pressure: Up to 293 bar (4,250 psi). Rated Speed: Up to 3,000 rpm.

V10/V20 Pumps
The V10 and V20 pumps are designed for medium to low-pressure mobile and industrial applications. Time proven dependable, durable, quiet and most economical vane pumps. They are the premium fixed pump choice as the main system pumps for small industrial and mobile equipment or as pilot and auxiliary pumps for complex systems. They are also the standard steering pump technology for heavy duty trucks and interstate buses. Optional integrated flow control valves simplify system design and installation.
Applications: Use in less demanding applications. Power units, power steering, skid steerers, lift trucks and balers.
Specifications:
Displacement: 0.2 in³/rev (3.3 cc/rev) – 5.18 in³/rev (84.8 cc/rev). Using single and double pump combined flow.
Rated Pressure (Max.): Up to 175 bar (2,500 psi) continuous.
Rated Speed: Up to 4,800 rpm.

VQ(H) Pumps
The VQ Series pumps are designed for medium pressure mobile applications. Its 10-vane system is well tuned for higher pressure and higher speed mobile requirements. It has the industry-first intra-vane cartridge design that provides long operating life, outstanding volumetric efficiency and excellent serviceability. The superquiet 12-vane system is ideal for the indoor industrial environment. The 22nd design is well known for reliability and versatility, and is extensively used in industrial machinery all over the world.
Applications:
V Series – General industrial applications such as plastic injection molding machines, presses, material handling machines, industrial power units, aerial booms.
VQ Series – General mobile applications such as wheel loaders.
Specifications:
Rated Pressure (Max.): Up to 210 bar (3,000 psi) continuous. Rated Speed: Up to 2,700 rpm.
Open Circuit Piston Pumps

X20 Open Circuit Piston Pumps
Mobile equipment engineers around the world are experiencing increased power density made possible by Eaton® X20 open circuit piston pumps. The reliability, productivity and efficiency of these small, lightweight pumps makes them a heavy-duty solution for a wide range of medium-pressure mobile applications operating in harsh environments.

Eaton’s X20 open-circuit piston pumps includes the 220, 420, and 620 series all with sophisticated controls that enhance system efficiency and a compact design that delivers incredible power, the X20 portfolio empowers mobile machine operators to do more work in less time using less fuel.

Applications: Construction, agriculture, commercial vehicle, material handling.

Specifications: Rated pressure: 280 bar (4,000 psi) continuous, 320 bar (4,640 psi) intermittent. Rated Speed: Up to 2,650 rpm.

PVO
Based on the industrial versions of PVB and PVE open circuit piston pumps, the Q Series greatly improves operating noise levels.

The design of the PVO reduces sound levels by 4 dBA. The large number of control options provides for extreme flexibility in applications.

Applications: Factory automation, hydraulic power supplies, food processing machines and machine tools.

Specifications: Displacement: 10 cc–45 cc. Rated Pressure: Up to 210 bar (3,000 psi). Rated Speed: 1,800 rpm maximum.

PVSM
Displacement: 10 cc–45 cc. Rated Speed: 1,800 rpm maximum.
Rated Pressure: Up to 210 bar (3,000 psi).

PVSM

DuraForce® HPR
Extreme duty cycles, high pressure applications and heavy-duty equipment, sometimes the specs call for heavy lifting, and that’s when you need maximum muscle. Builders of some of the world’s most powerful equipment rely on DuraForce Pumps and Motors for the muscle and precision they need. Other equipment builders choose DuraForce products for the peace of mind that comes through reliable operation and extended machine life. The DuraForce name has come to mean best-in-class performance and rock-solid dependability.

Applications: Construction, mining, material handling, ag, oil & gas drilling and process industries.

Specifications: With displacements from 55 cc to 280 cc (3.57 to 17.1 cu in) at operating pressures up to 420 bar (6,100 psi), DuraForce HPR Series Pumps feature a flexible, modular design that enables interchangeability across many applications.

PVXSM

PVXSM
Displacement: 10 cc–45 cc. Rated Pressure: (5,000 psi) continuous.

PVMSM

PVWS
The Hydrokraft™ PVWS design pumps are high pressure (350 bar) axial piston pumps. These products are designed for industrial markets and have a perpendicular style control mechanism allowing tandem pump combinations with short lengths. These high displacement pumps have a very long list of optimized control options that allow operation in many unique customer applications.

Applications: Metal forming, tube bending, press, marine and offshore winches, chemical mixing grinding/shredding and hydraulic power supplies.


PVM
One of the quietest medium pressure pumps available on the market, with up to 10 dBA quieter than most dual usage pump products. Noise levels significantly lower than other pump brands. Reduces need for expensive sound enclosures or inline pulsation dampers. Features like gauge ports and adjustable displacement come standard with each pump.

Applications: Metal forming, tube bending, machine tools, precision sawing, factory automation, press, and hydraulic power supplies.

Specifications:
Closed Circuit Piston Pumps and Motors

Heavy Duty Series 1 Axial Piston Pumps
Series 1 Axial Piston Pump offers durability and high power density, plus a variety of options and controls.

Applications: Agricultural, transit mixer drum drives, industrial applications, lift trucks, timber harvesters, road rollers, wheel loaders and construction equipment.

Specifications:
Displacements (five): 64 cc/r (3.9 cir)–125 cc/r (7.62 cir).
Rated Pressure: Up to 430 bar (6,250 psi).
Rated Speed: Up to 4,160 rpm.

Heavy Duty Axial Piston Motors – Fixed and Variable
Our heavy duty Eaton® Model Series 1 fixed displacement piston motors and heavy duty Eaton Model Series 1 variable displacement piston motors are well known for exceptional quality and longevity. With many mounting options and control features, we have a heavy duty motor for your most demanding applications.

Applications: Agricultural, construction, lawn and turf, utility equipment.

Specifications:
Displacements (six): 64 cc/r (3.9 cir)–125 cc/r (7.62 cir).
Rated Pressure: Up to 430 bar (6,250 psi).
Rated Speed: Up to 4,160 rpm.

DuraForce® Motors
HMV, HMR, HMA and HMF Series fixed and variable motors: 500 bar peak pressure, compact packaging and consistent torque delivery are key characteristics of Eaton’s rugged and complete line of DuraForce motors. Our broad portfolio of control options enables their use in a wide variety of open and closed circuit applications.

Applications: swing and winch drives.

Specifications: Fixed and dual setting secondary valves optional.
Displacement Range: 35 cc to 280 cc (2.14 cu in to 17.1 cu in) Rated pressures: 420 bar (6,100 psi).

Medium Duty Axial Piston Manual Pumps
Different valve plate options provide a range of control efforts that can closely match your application needs. A square control shaft reduces control linkage wear. A flexible pump design, with single, tandem, and back-to-back versions available.

Applications: Agricultural, construction, lawn and turf, utility equipment.

Specifications:
Model 70160 –
Displacement (Max.): 23.6 cc (1.44 cid).
Rated Pressure (Max.): 345 bar (5,000 psi) intermittent;
210 bar (3,000 psi) continuous.
Rated Speed (Max.): 3,600 rpm.

Model 70360 –
Displacement (Max.): 40.6 cc (2.48 cid).
Rated Pressure (Max.): 345 bar (5,000 psi) intermittent;
210 bar (3,000 psi) continuous.
Rated Speed (Max.): 3,600 rpm.

Hydrokraft™ Axial Piston Pumps
Closed circuit X/W series pumps are closed loop axial piston pumps. Rated 350 bar continuous, 420 bar peak with advanced control options and through-drive for all heavy duty industrial and mobile applications. Hydrokraft TVX variable open circuit piston pumps: The TVX product line is available from 66 cc to 90 cc at pressures up to 350 bar. Hydrokraft TVW variable open circuit piston pumps: The TVW product line is available from 130 cc to 750 cc at pressures up to 350 bar.

Applications: Heavy duty industrial and mobile equipment.

Specifications:
Displacement: 66 cc to 90 cc at pressures up to 350 bar. 210 bar (3,000 psi) continuous. Rated Speed (Max.): 1,800 rpm.

Note: Specifications are subject to change. Consult an Eaton Customer Representative for latest information.

EATON Guide to Mobile and Industrial Hydraulics 9
**Light Duty Hydrostatics**

**Medium Duty Axial Piston Servo Pumps**
For ease of operation or electronic pump controls this product is the choice. A versatile, pump with many features and options. For example, five different charge pump displacements are available. A flexible design configured to meet your needs with many features and options.

Applications: Agricultural, construction, lawn and turf, utility equipment.

Specifications:
- Displacement (Max.): 49 cc (3.00 cid).
- Rated Pressure: 210 bar (3,000 psi) continuous.
- Pressure (Max.): 379 bar (5,500 psi) intermittent.
- Rated Speed (Max.): 3,600 rpm.

**Medium Duty Axial Piston Motors – Fixed and Variable**
Match these motors up with the appropriate pump for a robust hydrostatic transmission. They offer opposite, same and rear port configurations with many optional spline and keyed shafts. Available with shutle valve, back pressure valve for improved loop cooling and flushing. Also offer speed sensors and a through-shaft option for brake mounts. Variable motors are available with hydraulic destroke or servo control.

Applications: Agricultural, construction, lawn and turf, utility equipment.

Specifications:
- Displacements: 1.50, 1.80, 2.01, 2.48, 3.02 cu. in.
- Rated Pressure: 210 bar (3,000 psi) continuous.
- Pressure (Max.): 370 bar (5,400 psi) intermittent.
- Rated Speed (Max.): 3,600 rpm.

**Light Duty Transmissions**
The Model 6, 7 and 11 hydrostatic transmission consists of a variable displacement pump, a fixed radial ball piston hydraulic motor and a system of valves, all contained in one housing.

Applications: Lawn tractors (8-20 HP) and seeders, commercial mowers, golf course maintenance equipment, concrete saws, utility trucks, garden tractors and ZTR (zero-turn radius) mowers.

Specifications:
- Displacement – Pumps: 20 cc’s (1.24 cid) – 49 cc’s (3.00 cid).
- Displacement – Motors: 12 cc’s (0.75 cid) – 82.6 cc’s (5.04 cid).
- Rated Pressure (Max.): 350 bar (5,000 psi). Input Rated Speed (Max.): 4,000 rpm.

**Medium Duty Transmissions**
These transmissions combine a variable displacement piston pump and either a fixed displacement or variable displacement hydraulic motor.

Applications: Skid steer loaders, trenchers, golf course maintenance equipment, commercial mowers, pavers, compact wheel loaders, telehandlers, rough terrain fork lifts, aerial work platforms, windrowers, road rollers, boring machines and directional drills, crawlers, small sprayers, tub grinders, mini-backhoes, sweepers, special purpose vehicles.

Specifications:
- Displacement – Pumps: 20 cc’s (1.24 cid) – 49 cc’s (3.00 cid).
- Displacement – Motors: 12 cc’s (0.75 cid) – 82.6 cc’s (5.04 cid).
- Rated Pressure (Max.): 350 bar (5,000 psi). Input Rated Speed (Max.): 3,600 rpm.

**S26/L2 Pumps and S26 Motors**
SAE A and B mount aluminum pumps with many shaft and porting options. Meets SAE and Metric standards. Single and multiple sections available. Optional integral relief and flow valves simplify system design and installation. Easy field reversibility. SAE A Bi-directional gear motors made of a fixed bushing, pressure balanced die cast aluminum design. A rigid and compact structure that makes it possible to incorporate a number of functions in a limited space.

Applications: Garden and utility tractors, backhoes, combines, road graders, hay swathers, fan drive systems, vibratory machines and industrial power units.

Specifications:
- Displacement: 0.43 in3/rev (7 cc/rev) – 1.94 in3/rev (31.8 cc).
- Rated Pressure (Max.): 207 bar (3,000 psi). Rated Speed (Max.): 4,000 rpm.

**Gear Products**

For complete specifications, view literature online: hydraulics.eaton.com/products/menu_main.htm

Note: Specifications are subject to change. Consult an Eaton Customer Representative for latest information.
Power Units

The most complete line of industrial power units in the marketplace, including verticals, horizontal, Ls, overheads, JIC and custom configurations. We offer one of the industry’s leading ways to buy power units with the most flexible range of standard configurations. Eaton standard system products include simple power units, bar manifolds and pump/motor groups that are configurable with Eaton’s Packaged Systems Configurator (PSC2.0). In addition to engineered standards, Eaton’s Application and Commercial Engineering (ACE) Group can design, manage and help install custom power units for special applications. Eaton has a network of approved integrators specializing in different applications and requirements for Custom Systems. The network allows Eaton to provide the highest quality at minimal cost.

Applications: Civil projects, primary metals, metal forming, automotive, pulp and paper, wind power, entertainment and food and beverage.

Valves

Proportional Control Valves

Eaton’s Vickers® proportional valves have both product breadth and width consisting of onboard electronics (OBE) and non-OBE, full functionality, complete sizes, different performance levels to meet various customer demands in Industrial and Mobile markets. The KB family of proportional valves have integrated OBE with superior reliability and durability featuring digital electronics, IP658L, IP67 environmental protection, reduced power consumption, valve enable and ramp adjustment.

Applications: Metal forming, plastic machinery, wind power, primary metals, plus more.

Specifications:
- Rated Flow: Up to 700 lpm (185 gpm).
- Rated Pressure: Up to 350 bar (5,000 psi).
- Function: Direction, pressure, flow.
- Size: NG6-32 (D02-10).

Flow Controls – Adjustable

Temperature and pressure compensated flow controls allow precise volumetric control. Suitable for pressures up to 3,600 psi, flow controls are available with (bypass type) or without (restricter type) integral relief valves. Adjustable flow control valves are suited for applications requiring flow regulation without pressure compensation.

Applications: Multiple industrial applications.

Specifications:
- Rated Flow: Up to 106 lpm (28 gpm).
- Rated Pressure: Up to 250 bar (3,600 psi).

Directional Control Valves

Eaton’s Vickers® DG valves mount on industry standard surfaces and provide 3- or 4-way control in a broad range of applications, industrial and mobile. Their primary function is to direct fluid flow to a cylinder or to control the direction of rotation of a hydraulic motor. These valves can be actuated by solenoid, hydraulic or pneumatic pilot, lever, or mechanically. A full range of complementary pressure, flow and check valve functions are available in the Eaton SystemStak™ family of sandwich mounted valves. Eaton DG valves are available in 10 different frame sizes.

Applications: Multiple industrial applications.

Specifications:
- Rated Flow: Up to 680 lpm (180 gpm).
- Rated Pressure: Up to 350 bar (5,000 psi).

Pressure Control Valves

Pressure control valves perform pressure relieving, reducing, sequencing and unloading control. Both subplate and in-line mounting types are available with various control types including remote, multiple pressure and venting.

Applications: Multiple industrial applications.

Specifications:
- Rated Flow: Up to 680 lpm (180 gpm).
- Rated Pressure: Up to 350 bar (5,000 psi).

Screw-in Cartridge Valves

For over seventy years the Vickers® brand has been providing customers with quality products and innovative solutions for all of their power and motion control needs with the very best in screw-in cartridge valve technology. Eaton is committed to maintaining this position by offering the most comprehensive range of cartridge valves for on/off highway and stationary equipment.

Applications: Harvesters, refuse haulers, mobile and industrial applications.

Specifications:
- Rated Flow: Up to 560 lpm (150 gpm).
- Rated Pressure: Up to 420 bar (6,000 psi).

Note: Specifications are subject to change. Consult an Eaton Customer Representative for latest information.

EATON Guide to Mobile and Industrial Hydraulics
**DMV Mobile Valves**

The Eaton DMV mobile directional control valve is a versatile and modular design based upon the proven, industry-leading Vickers DG design. The DMV valve design is a closed center, parallel or series circuit that can also function as an open center circuit through the use of unloading inlet options. The DMV valve offers versatility and flexibility in system applications through a sectional design, allowing the use of up to six sections per bank assembly. The DMV valve can be configured to create custom, multi-functional circuits through the use of optional banking functions such as inlet and work port options.

Applications: Skid steer, excavators, tractors, harvesters, transit mixers, telehandlers.

Specifications:
- Rated Flow: 60 lpm (15.8 gpm), on/off 20 lpm (5.3 gpm).
- Rated Pressure: 350 bar (5,000 psi).

**AxisPro™**

The AxisPro proportional directional valve is designed specifically for machine control using on-board motion control, intelligent diagnostics, robust plug and play software and like-for-like replacement.

Built on the proven KB Servo Proportional Valve technology, Eaton's AxisPro proportional valve provides 4 levels of performance in a modular design. These four-way solenoid operated proportional valves enables them to be used in closed loop applications previously only possible using conventional servo valves.

Applications: Plastics molding, metal forming and primary metals manufacturing to pulp and paper milling, woodworking machinery and wind turbines.

Specifications: Level-1 valves can be configured via Eaton's Pro-FX™ Configure software tool for optional command signal: Voltage or current, as well as activating the "enable" pin. Level-2 and 3 valves can also have CAN bus activated and control modes selected and configured.

**Slip-in Cartridge Valves**

Typically associated with relatively high flows, i.e., 40 gpm (150 lpm) or higher, slip-in cartridge valves are targeted at more efficient, faster and more compact hydraulic systems. Eaton's cartridge valve system technology meets the changing needs of new generations of hydraulically operated machinery and equipment. Today's machines need controls that are exceptionally cost effective and energy efficient. Vickers cartridge valves fulfill these needs.

Applications: Metal forming, plastics machinery, primary metal, die casting machine.

Specifications:
- Rated Flow: 90 lpm (30 gpm).
- Rated Pressure: 240 bar (3,500 psi).

**Flow Divider Valves**

Eaton's flow dividers are available in priority, proportional, variable and load sensing versions with a wide range of standard flow ratings and relief settings. Eaton load sensing priority valves provide dependable flow on demand for load sensing steering, braking or other priority functions while allowing excess flow to be used for auxiliary functions.

Applications: Tractors, motor graders, lift trucks, and backhoe/ loaders.

Specifications:
- Priority Flow Rate: 96 lpm (25 gpm).
- Rated Pressure: 172 bar (2,500 psi); Proportional 113 lpm (30 gpm), 172 bar (2,500 psi); Variable Priority: 76 lpm (20 gpm), 172 bar (2,500 psi); Priority: 175 lpm (45 gpm), 195 bar (2,800 psi); Load Sensing Priority Valve: 240 lpm (63 gpm), 297 bar (4,300 psi).

**CMA Valves**

The CMA90 and CMA200 are advanced CAN-Enabled electro-hydraulic sectional mobile valves with independent metering that utilizes pressure and position sensors, on board electronics, and advanced software control algorithms. Where conventional mobile valves often compromise on precision or response, the CMA delivers both. The CMA offers high performance with sub-micron hysteresis, closed loop control over the spool position, and repeatable performance.

Applications: Concrete pump trucks, drill rigs, tele handlers, all-terrain cranes, agricultural harvesters, utility trucks.

Specifications:
- Rated Flow: Up to 75 lpm (20 gpm).
- Rated Pressure: 240 bar (3,500 psi).

**Self-leveling Valves**

These linear flow divider valves are used on skid steer or agricultural loaders, for automatic leveling of bucket or attachments. Available in single directions (raise only) or dual direction.

Applications: Skid steers, front end loaders.

Specifications:
- Rated Flow: Up to 75 lpm (20 gpm).
- Rated Pressure: 240 bar (3,500 psi).

**CLS Valves**

Eaton's new CLS Load Sensing Sectional Mobile Valve family is a pre and post compensated mobile valve with a highly versatile design-available in four models, CLS100, CLS180, CLS250 and CLS350. This CLS modularity is demonstrated through the availability of valve banks with up to 10 sections, a number of spool types and actuation options, mid-inlets, custom inlet manifolds and transition plates. With this flexibility, you can design your valve to meet the requirements of your machine. Unique to the CLS100 is the ability to install both pre and post compensated sections in the same valve bank; allowing you to prioritize work functions to accelerate productivity, improve machine efficiency, and enhance the safety characteristics of the machine.

Improve your machine performance with the newest load sensing valve family on the market.

Applications: Excavator, forestry, refuse truck, forklift, ag machinery, truck mounted cranes, and marine.
Cylinders

Heavy Duty Welded
Eaton’s Vickers® and Hydro-Line®
W-Series heavy duty welded cylinders are industrial grade products for the toughest applications. This robust product line has been designed to ensure the longest duty life and features an innovative sealing system design that eliminates leakage.

Applications: Huge range of applications including machine tools, balers, trash compactors, stationary material handling, and other general machinery.

Specifications:
Rated Pressure: Up to 207 bar (3,000 psi) for Hydraulic; 17 bar (250 psi) for Pneumatic standard products (higher capability in custom cylinders).
Available standard sizes: 102-305 mm (4-12") bore, to 7,620 mm (300") stroke, custom cylinders available.

Threaded
Eaton’s Vickers® and Hydro-Line®
T-Series threaded cylinders have been designed to provide robust capability in a compact envelope. These cylinders, ranging in size from 3/4” (20 mm) to 8” (200 mm) bore and to 180” (4.5M) stroke lengths, are sold to markets like waste processing and material handling.

Applications: Huge range of applications including machine tools, balers, trash compactors, stationary material handling, and other general machinery plus more.

Specifications:
Rated Pressure: Up to 70 bar (1,000 psi) for Hydraulic and 17 bar (250 psi) for Pneumatic standard products (higher capability in custom cylinders).
Available standard sizes: 19-203 mm (3/4-8") bore, to 4,572 mm (180") stroke, custom cylinders available.

Tie Rod
Eaton’s Vickers® and Hydro-Line®
G, N, I, and L-Series are a broad range of NFPA and ISO hydraulic, pneumatic, and electrohydraulic cylinders focused on industrial markets. This comprehensive line features a proven design coupled with the Eaton SureSeal™ system for improved performance and better service-ability. This line offers virtually unlimited options.

Applications: Presses, plastic blow and injection molding equipment, machine tools, packaging and material handling equipment, and food processing plus more.

Specifications:
Rated Pressure: Up to 207 bar (3,000 psi) for Hydraulic and 17 bar (250 psi) for Pneumatic standard products higher capability in custom cylinders).
Available standard sizes: 19-763 mm (3/4-30") bore, to 7,620 mm (300") stroke.

Mill (Flanged)
Eaton’s Vickers® and Hydro-Line®
M-Series mill duty cylinders are designed to meet the tough demands of primary metals customers. These cylinders, ranging in size from 2” (50 mm) – 16” (400 mm) bore and to 300” (8m) stroke, are sold into arc furnaces, slab casters, rolling mills, and coating lines. Our robust product design is more than tough enough to last in these demanding applications.

Applications: Primary focus is steel mill and other primary metals/ heavy industry applications.

Specifications:
Rated Pressure: Up to 207 bar (3,000 psi) for Hydraulic and 17 bar (250 psi) for Pneumatic standard products higher capability in custom cylinders).
Available standard sizes: 51-406 mm (2-16") bore, to 7,620 mm (300") stroke, custom cylinders available.

Custom Cylinders
From very small to extra-large scale (Hydrowa® XL-Series), Eaton offers the broadest range in the industry of custom cylinders. World-class base designs, advanced technology capability in coatings and seal systems, best-in-class simulation/modeling tools and processes, and decades of broad application expertise serve as the foundation for the custom cylinder business.

Applications: Huge range of applications varying from plastic molding equipment, presses, machine tools, primary metals, packaging and material handling, food processing, offshore, civil engineering and marine.

Specifications:
Rated Pressure: Up to 690 bar (10,000 psi) for Hydraulic and 17 bar (250 psi) for Pneumatic standard products higher capability in custom cylinders).
Available standard sizes: 19-763 mm (3/4-30") bore, to 22,000 mm (866") stroke.

For complete specifications, view literature online: hydraulics.eaton.com/products/menu_main.htm

Note: Specifications are subject to change. Consult an Eaton Customer Representative for latest information.
Brakes and Clutches

Airflex® Products
Heavy industrial clutches and brakes offering superior performance, long life and high quality. With products engineered for everything from the marine industry to braking applications on heavy-duty equipment, drum-style Eaton Airflex constricting clutches and brakes are available with a variety of torque capacities to meet the requirements of the most demanding jobs. Our water-cooled and air-cooled multi-disc brakes provide dynamic tensioning, static holding and emergency stopping. Expanding and Constricting Clutches and Brakes, Air-Cooled and Water-Cooled Clutches and Brakes, Torque Limiting Coupling, Caliper Disc Brakes, Spring Applied Drum Brakes and Combination Clutch/Brake Packages.

Applications: Oil & gas, mining, grinding/processing, marine propulsion, hoisting/Winching, paper/textile, metalworking, can manufacturing, laundry, logging and commercial fishing.

Hose and Fittings

High Pressure Spiral Hose and Fittings
Eaton offers a wide variety of spiral hose constructions for all types of applications. These 4 and 6-wire hoses are well suited for a vast array of both industrial stationary and on-off highway mobile applications. Our Spiral hoses are designed to meet the most demanding applications providing maximum durability and long-lasting performance. Featuring Dura-Seal® patent-pending O-Ring seal that ensures class 0 cool-down leak free assemblies, as well as Dura-Kote® anti corrosion plating technology that protects and extends the life of the fittings when used in adverse conditions.

Applications: Hydrostatic drives, oil rigs, construction equipment, mobile and industrial systems.

Specifications: Available in a broad range of cover materials and sizes that work in a variety of applications. Our hoses meet or exceed EN/DIN, Mil-spec and SAE specifications.

Thermoplastic
The versatility of thermoplastic and the experience of Synflex® combine to offer the best hoses for hydraulic, truck, sub-sea and specialty applications. Thermoplastic hose is compatible with Z-Series when using the crimp sleeves.

Applications: Off-shore oil and gas drilling, forklifts and agricultural equipment.

Specifications: Hose with I.D.’s that range from 1/8” thru 1”
Rated Pressure: Up to 690 bar 10,000 psi.

Low Pressure Hose
Choose from a full range of low pressure hose including high temperature AQP abrasion resistant covers for demanding service life and color covered hose for installation identification. Use with Eaton’s Socketless hose fittings.

Applications: Size Range: 1/4” I.D. through 2” I.D. Not recommended for hydraulic impulse applications). Ranging from low pressure machine tools, fuel, oil, air and water.

Medium Pressure Braided Hose and Fittings
Medium pressure braided hose and fittings represent the largest market and widest variety of hydraulic applications.

Applications: General hydraulic systems, mobile equipment, industrial equipment.

Specifications: A range of hose styles and sizes that meet a variety of EN/DIN, Mil-spec and SAE specifications. Certifications include ABS, DNV, MSHA, DOT/ FMVSS and many more.

Teflon® Hose
Teflon hose for very high temperature applications as well as low temperature where a broad range of chemical resistance, low coefficient of friction, flexibility and non-aging is required. A broad range of hose and matched fittings are available for use in a wide variety of applications.

Applications: Truck, chemical, hot melt, paper and pulp, hot presses, steam, packaging, paint and machinery.

Specifications: Meet SAE 100R14A and B specifications.
Rated Pressure: Up to 350 bar (5,000 psi).

Teflon® is a registered trademark of DuPont.

Specialty Hose and Fitting Products

Industrial Hose
From low pressure air and water to hazardous chemical transfer. Eaton offers a variety of hoses to meet the exact needs of an application. These products range from 1/4” to 8” I.D. in size and many are available in either spiral or braided construction.

Applications: Air, water, cleaning, material handling, food, chemical, petroleum, steam hoses and specialty service.

Specifications: RMA Class A tube and cover materials, MSHA approved covers, FDA approved and NSF-51 certified food and beverage products.

For complete specifications, view literature online: hydraulics.eaton.com/products/menu_main.htm

Note: Specifications are subject to change. Consult an Eaton Customer Representative for latest information.
Specialty Hose and Fitting Products

A/C and Transportation Products
Engineered components and assemblies for a wide range of A/C and refrigeration systems. Hose materials range from barrier to nylon veneer. Hoses such as GH134 “Refresh” offering the lowest permeation for a multirefrigerant hose, to reduce greenhouse emissions.
Applications: Hose and fittings for air conditioning and refrigeration. Truck, bus, agriculture and construction.
Specifications: Products are tested to SAE J2064.

Marine/Military
Wide variety of hose, fittings and adapters that meet many marine, military and government specifications. Aeroquip Marine/ Military... there is no equal!
Applications: Hydraulics.
Specifications: A detailed catalog specifically listing the Mil Spec part numbers is available for the customer’s use.

Quick Disconnect Couplings
A broad range of products encompassing the simple, air couplings, to the complex, hydraulic applications, to the most complex, self-contained breathing apparatuses (SCBA).
Applications: Hydraulic, Pneumatic and Specialty.
Specifications: Full range of pneumatic, hydraulic, fluid transfer and DOT fittings. Couplings meet a variety of SAE and ISO specifications.

Silicone Hose
Eaton’s new line of silicone hose products excel in extreme temperatures and high vibration situations – can be used in coolant and high temperature applications. The hose products are available for turbo and charge air coolers in straights and in formed hoses for diesel and gas powered engines.
Applications: Heavy duty truck and bus engines, and diesel engines. Aramid reinforced configuration for fatigue-resistance at high temperatures in turbocharger applications. Compensates for misalignment and offsets vibration
Specifications: Resistant to extreme temperature conditions up to 500°F. Available in straight lengths, 45 degree, and 90 degree elbows. Heater and Coolant hose are SAE J20 R3 and SAE J20 R1 certified. Color coded for application use.

STC® EZ-Torque
Eaton’s STC® EZ-Torque is the solution to simplifying your fluid conveyance connections. STC EZ-Torque eliminates the need for port adapters while minimizing operator-dependent leak paths. This next generation connector also reduces hose installation time with a simple “push and torque” assembly feature. STC EZ-Torque opens opportunities for both mobile and stationary applications. STC EZ-Torque will be available for connection with SAE, Metric and BSP ports in sizes -6 to -16.
Applications: General hydraulic systems, mobile equipment, industrial equipment.
Specifications: A variety of connections are offered in 3/8” up to 1”

E-Z Clip™ – Field Assembly
Eaton’s E-Z Clip connector system, used with GH134 and GH134W hose, offers our customers the best value in assemblies for A/C and refrigeration systems, in the most demanding applications. In addition, the E-Z Clip system is qualified with a wide variety of refrigerants. Trust Eaton experience, with more than 4 million E-Z Clip connections already used.
Applications: This connection is common to air conditioning systems, both in vehicle and commercial applications.
Specifications: E-Z Clip exceeds the performance requirements of SAE J2064.
Specialty Hose and Fitting Products

**Metric Tube Fittings**

Walterscheid™ tube fittings are available in a multiple of sizes and configurations. Eaton’s Walterscheid tube fitting systems consist of the following:

- WALPro®
- WALRing®
- WALForm®
- Flared
- Flared Flange

Across the globe, Eaton’s Walterscheid tube fitting systems offer superior performance, as well as lower assembly and operating costs.

**Applications:** In-plant industrial equipment, mobile on/off highway equipment and general hydraulic system use.

**Specifications:**

Sizes: 4 mm to 42 mm. Additional sizes available upon request. ISO 8434-1/DIN 2353/ISO 6162, DIN 3949, DIN 912 and others.

**DOT Quick-Connect Air Brake™**

Leave air leaks behind with Eaton’s 217 series, composite Quick-Connect Air Brake (Q-CAB) fittings. To reduce vehicle weight, many OEM’s are replacing all brass-air connections with a combination brass and composite design. Even though lighter, the Eaton composite Q-CAB fittings, meet and exceed all of the industry requirements called out in D.O.T.

**Applications:** Medium and heavy duty truck, bus and mobile off highway, and air brake systems.

**Specifications:**

FMVSS 571.106-106, SAE J1131 and SAE J2494-3. A full line of brass Q-CAB is also available.

**Brass Adapters**

Eaton’s brass adapter product line benefits from SAE compliant designs, as well as extensive use of CA360 brass. Noted for its extruded design, it can have up to 2X the strength of competitive forged brass products.

**Applications:** Air Brake Systems on heavy duty trucks with DOT tubing. In-plant instrumentation lines with Eaton industrial tubing SAE 45° and inverted flare connectors. Liquid and gas transfer including natural gas, and refrigerants. Instrumentation, packaging, food plants, paper plants. Ag sprayers, construction, truck, bus, and engines.

**Crimp Machines**

A wide variety of crimp machines are available for every requirement (low and high volume hose assembly), for both distributors and OEMs. Select from a complete line of popular crimp machines.

**Applications:** Crimp machines for virtually any area of the shop.

**Specifications:**

Ability to crimp hose of all sizes (1/8” up to 1-1/4”).

**Swivels**

Offering compact and robust designs while offering a wide variety of end configurations with the flexibility to perform in many dynamic hydraulic applications.

**Applications:** Hose reels, scissor lifts.

**Specifications:**

Can be used in a full range of pneumatic, hydraulic and fluid transfer applications.

**Accessories**

Eaton offers a world-class range of clamps, protective sleeves and hose cleaning services that are compatible with hose and metal products of all sizes.

**Applications:** Wide range of applications and markets, such as: construction, forestry, lift trucks, utility vehicles, agriculture, truck and bus.

**Specifications:**

Able to be used with all sizes of hose and metal products.

For complete specifications, view literature online: hydraulics.eaton.com/products/menu_main.htm

Note: Specifications are subject to change. Consult an Eaton Customer Representative for latest information.
Specifications:
control, shock absorption, pulsation dampening, surge

Applications:
Energy storage, and charging and gauging units. shut-off blocks, clamps, repair kits, maintenance, including safety

Eaton also offers sure ratings to provide optimum materials, port configurations and pres-

Eaton offers a full range of Vickers® hydraulic filters for industrial and mobile applications with flows to 1,700 lpm (450 gpm) and pressures to 420 bar (6,000 psi).

Filtration

Filtration Products
Desired hydraulic system cleanliness can be achieved by incorporating Eaton's “Systemic Contamination Control” process. This process is based on proper selection of Eaton filters to meet the targeted cleanliness level and periodic sampling of fluid cleanliness to ensure compliance to the target.

Eaton offers a full range of Vickers® hydraulic filters for industrial and mobile applications with flows to 1,700 lpm (450 gpm) and pressures to 420 bar (6,000 psi).

Specifications:
32-bit Processor, 4.3 to 70 inch. WVQA Sunlight Viewable, IP66, IP67 rated both front and back. The high performance VFX range of displays is designed to provide an operator interface for on and off-highway mobile applications. This HMI features a powerful processor, bright sunlight viewable optically bonded LCD assembly, configurable CAN channels and flexible I/O to meet the needs of a variety of demanding applications. Programmed with Eaton Pro-FX Control Software.

Applications: Excavators, forestry, telehandlers, utility vehicles, cranes, ag machinery, and paving.

Specifications: VFX is available in 4.3” and 7” screens sizes with 2 CAN ports.

CCS 4 Contamination Control System
The mobile CCS 4 contamination control system determines the solid contamination particle size distribution, water saturation and fluid temperature.

The system can be used both in pressurized operating modes and for unpressurized sampling (such as from a tank).


Accumulators
Eaton offers bladder, piston and diaphragm-type accumulators in a wide range of sizes, bladder mate-

rials, port configurations and pressure ratings to provide optimum design flexibility. Eaton also offers a complete line of accessories needed for proper installation and maintenance, including safety shut-off blocks, clamps, repair kits and charging and gauging units.

Applications: Energy storage, pulsation dampening, surge control, shock absorption.

Specifications:
From 1 to 54 liters (1 US qt. to 15 US gal.)
Rated Pressures: 210 bar (3,000 psi) and 345 bar (5,000 psi).

Pro-FX® Control Software
IEC 61131-3 compliant, graphical and textural programming languages, common programing tool for both controllers and displays.

Whatever your application requires, Pro-FX™ Control is a robust solution for programming specifically customed user inter-

faces and functionalities. Featuring industry-standard CANopen and J1939 protocols, this software development tool is based on the latest version of CODESYS and comes with Eaton’s full library of pre-developed function blocks and advanced graphics.

For use with VFX Displays and the HFX Controllers.

HFX Micro Controllers–Pro-FX®
32-bit Processor, scalable I/O, 3 CAN Interfaces, IP67, IP69k rated.

The high-performance HFX range of controllers are designed for electronic control of all system functions for on and off-highway mobile equipment. This control unit features a powerful processor, configurable CAN channels and a flexible I/O approach to meet the needs of a variety of demanding applications. Programmed with Eaton Pro-FX Control Software.

Applications: Excavators, forestry, telehandlers, utility vehicles, cranes, ag machinery, and paving.

Specifications: The HFX controllers 32-bit processors come in 4 sizes with 3 interfaces.

LifeSense® Hydraulic Hose Condition Monitoring System
The LifeSense hydraulic hose condition monitoring system is a revolutionary monitoring system that detects impending hydraulic hose failure and alerts operators and maintenance crews so they can schedule maintenance and plan downtime. Instead of waiting for a hose to fail or replacing it long before the end of its useful life – both of which are costly – the LifeSense system continuously monitors hose condition via electrical signals and generates an alert when the hose starts to experience internal fatigue.

Applications: CNC machining, plastic injection molding, mining, metals and minerals, off-highway dump trucks, steel mill furnaces, aerial work platforms, telehandler, rail material handling, food in-plant processing, refuse trucks.

Specifications: Wired and Wireless options are available in sizes -02–1/8” to -16–1”.

Note: Specifications are subject to change. Consult an Eaton Customer Representative for latest information.
Application and Commercial Engineering

World-class products and systems need world-class design and engineering support, which is exactly what the Eaton Application and Commercial Engineering (ACE) teams deliver. Working with your engineers and designers, an ACE team augments the technical capabilities of Eaton’s distribution and OEM partners to provide assistance in:

• Product selection for complex applications
• System architecture definition and design
• Prototype technical support
• New product launches
• Development of application aids and education Recognizing the unique needs of our customers and applications, the ACE teams are specialized by:
  • The ACE Industrial team specializes in the automotive, primary metals, metal forming, civil, and marine/off-shore sectors as well as electrohydraulics and project-based power unit solutions.
  • The ACE Mobile team focuses on off-road mobile applications with additional technical expertise in hydrostatics, work circuits, fan drives, steering and electro-hydraulics.

For more information
For more information on how to put an ACE team to work meeting your challenges, contact your Eaton sales representative.

Eaton’s Hydraulics Training Services

At Eaton, we don’t just talk about training, we deliver. With over 30 technical and product courses, we also offer numerous training aids including manuals, multimedia, and hands-on equipment. The investment made in training today can pay off with significant results for the future.

Experience

For over 60 years, with a combined 140 years in fluid power and education experience, our instructors have made Eaton’s Hydraulics Training Services the educational standard for the industry. We are the first choice of many customers for their fluid power training needs. Eaton’s Hydraulics Training Services offers both product and technology courses that cover a wide array of fluid power related topics. Our courses suit the needs of anyone involved in the industry, from newcomers to application specialists.

Improve productivity

Whether for hydraulic repair personnel, supervisors, engineers, sales or purchasing, Eaton’s Hydraulics Training will solidify hydraulic knowledge and aid increased job performance. Our technical training instructors are Fluid Power Society Certified, Fluid Power Specialists and Fluid Power Accredited Instructors, ensuring a consistent and high quality experience for our students.

Facilities

Located in Maumee, Ohio (Toledo area) is our state-of-the-art training facility. The 18,000 square foot facility can accommodate all training offerings. Along with the Eaton training facility in Eden Prairie, Minnesota, both sites are fully equipped to serve training classes.

Customized on-site training

Eaton’s Hydraulics Training Services offers specialized, custom-tailored training at one of our facilities or your location. We provide simulators, cut-aways, take-aparts and other training materials that may be required. On-site training is quoted individually and based on the number of course days, lab exercises and number of students.

Contact information

Call us at 800-413-8809 to obtain additional information or a quote. hydraulicstraining@eaton.com Register for courses or order training products on-line at: www.eatonhydraulics.com/training

Field Services

Application of Eaton products, even by well trained users can sometimes result in unexpected and unplanned results, or system performance. On these occasions, Eaton’s highly experienced Field Service staff is available for onsite support and system problem resolution. Field Service provides onsite support, which can include:

• System Start Up – PID Loop tuning – Hydraulic pump set up
• Machine or System Diagnostics – Optimize circuit performance – Shock and pressure spike reduction or elimination – Address repeated component failure
• Prototype and new application – Full evaluation of Eaton product in a new system or application
• Utilization of the most up-to-date instrumentation equipment – Up to ten channels of high speed data acquisition – Monitor pressure, flow, temperature, current, and voltage – PC based data capture, transferable for Engineering analysis
• System maintenance and other consulting services

Eaton Hydraulics Field Service Technicians have vast product and application experience, with a history of solving the most complex system problems. Field Service is a one stop support on all hydraulic and electrohydraulic product issues. As part of Technical Services organization that includes the ACE group, Field Service works directly with the ACE and Product Engineers to get, or keep, a hydraulic based machine or system running. Contact your Eaton sales representative to discuss how you can best utilize Eaton Hydraulics Field Service staff with your system and application requirements.
Visit eaton.com/hydraulics for additional tools and detailed product information.