



EAT•N

Guide to Mobile & Industrial Hydraulics



**Engineered products
to system solutions**

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Why Eaton Hydraulics?

Eaton Hydraulics is the largest business segment of the Eaton Fluid Power Group and a direct result of Eaton's dedication to leadership in hydraulics for both mobile and industrial applications. Eaton produces not only some of the world's best hydraulic products, but also the best and most complete world-class hydraulic services, systems, and solutions.

From off-road to industrial.

Eaton provides hydraulics to large on-road and off-road mobile OEMs in the agriculture, construction, mining, marine and lawn and garden markets. Eaton is also a major force in providing hydraulic components and systems to leading industrial OEMs.

From world-class engineering capabilities in system design assistance to comprehensive service and technical support after the sale, Eaton Hydraulics is committed to one clear objective – complete satisfaction with all Eaton products and systems, for both industrial and mobile users.

Designed to your exacting specifications.

Eaton supports the needs of design engineers with products that meet a range of specifications. According to the functional needs of the vehicle or machine, your engineers can consult with Eaton to determine the exact flow, torque and displacement needs of the required components.

Global distribution.

With distribution through 2000 distributors with 4000 locations worldwide, Eaton meets your needs for ongoing support as well as easy availability of replacement parts. The Eaton distribution network is ideal for meeting the system and component needs of smaller OEMs, too.

So whether your designs require hydraulics that help turn, shape, mold, lift, dig, or haul, Eaton products and systems are engineered for reliable, continuous performance in the world's most demanding and rigorous applications.

Remanufactured Products.

Eaton also offers an extensive line of Remanufactured parts and components that meet the same exacting standards as the original products, including:

- Eaton brand medium-duty and heavy-duty piston pumps and motors
- Vickers brand vane cartridge kits for pumps and motors
- Vickers brand piston rotating groups and complete units

We are your source for **authentic** reman products. Our ISO 9001:2000 certified Reman facility stands ready to meet your aftermarket needs.

World-class brands.

Eaton Hydraulics is comprised of seven key brands:

Aeroquip, Boston, Char-Lynn, Eaton, Hydro-Line, Vickers, and Weatherhead, each with well-established reputations around the world:

Aeroquip®

Aeroquip brand products serve the industrial, aerospace, and automotive marketplaces. Products include all pressure ranges of hose, fittings, adapters, couplings and other fluid connectors.

Boston®

Boston brand products include a wide variety of transfer hoses used in diverse markets including the chemical, petroleum, material handling, and food industries. Boston also offers coupling and assembly equipment for most hose applications up to 2"; inside diameter.

Char-Lynn®

Char-Lynn brand products have continued the tradition of being a well-respected line of hydraulic steering units and general-purpose motors; Char-Lynn is also known for its spool-valve, disc-valve, and high performance motors.

Eaton®

Eaton products are known for their excellence in engineering and production and include hydrostatic transmissions, valves, piston and gear pumps and Valve-In-Star™ motors. Eaton brand products are generally more heavily used on mobile equipment.

Hydro-Line®

Hydro-Line industrial cylinder products complement the Hydraulics cylinder business by making available to customers a broader selection of single-source products that can be easily integrated into a complete Eaton system. Industrial cylinders are used by machine and equipment builders to transfer and apply fluid power in applications that range from automobile production to large hydro-electric projects and off-shore drilling platforms.

Vickers®

Vickers has long been a pioneer in providing systems and components including vane pumps, piston pumps, valves, cylinders and filtration products to the industrial, aerospace, marine and defense industries.

Weatherhead®

Weatherhead brand products consist of hydraulic hose, hose ends and assembly equipment, tube fittings, and a full range of support accessories. Weatherhead products are supplied to users in industries including construction, mining, agriculture, and truck and bus.

Aeroquip®

Boston®

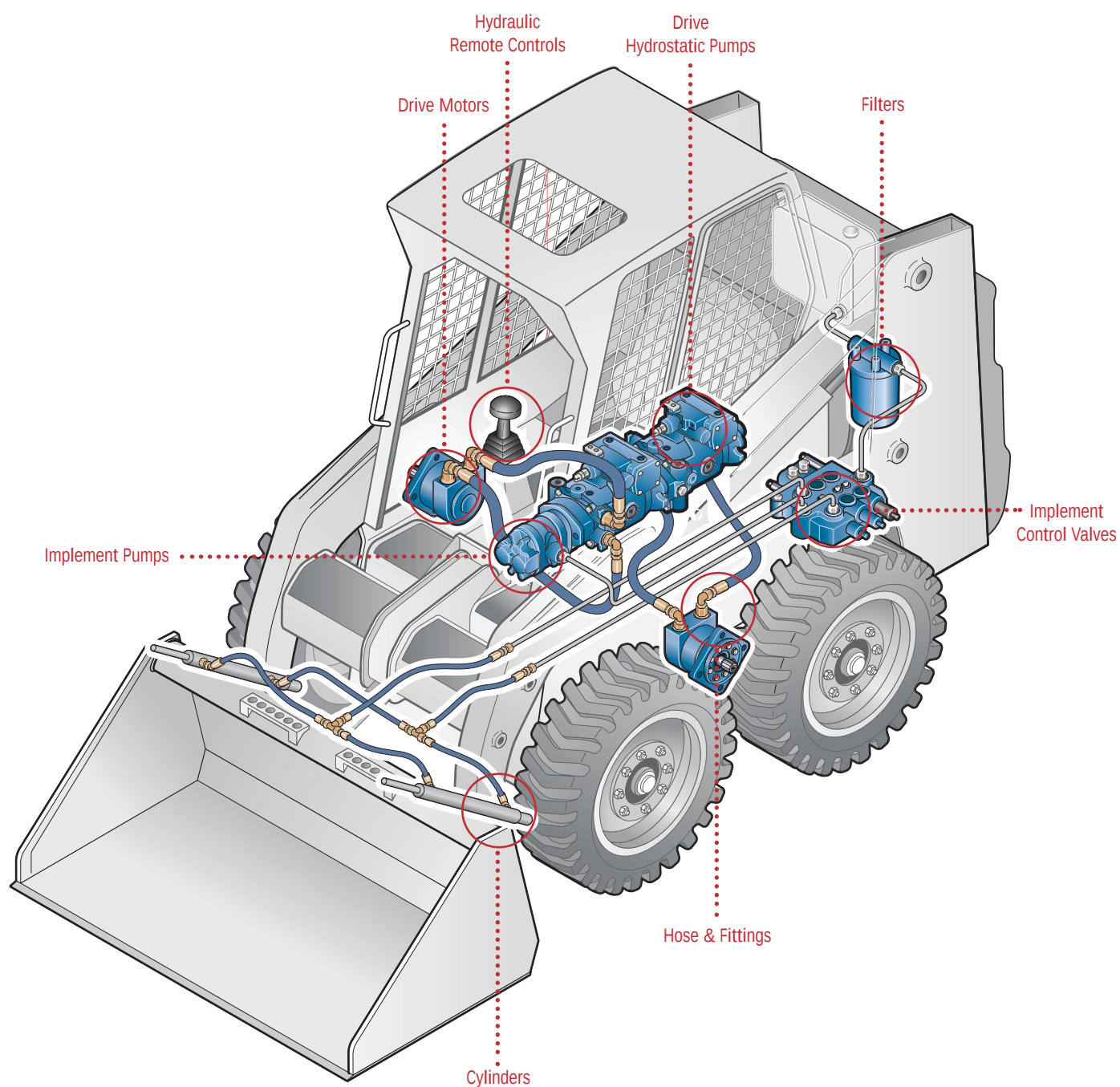
Char-Lynn®

Eaton®

Hydro-Line®

Vickers®

Weatherhead®



Lift. Dig. Haul...day in and day out. This is the work of Eaton Hydraulics products and systems. Engineered for reliable, continuous performance in the world's most rigorous applications.

Long recognized as a global leader, today Eaton is more powerful than ever. Now with an even wider range of reliable world-class products to serve virtually any mobile vehicle.

So whether you're specifying a single product, or an entire hydraulic system, make Eaton your global source for the fluid power products that'll move your world.



Mobile Applications

Agricultural

Eaton pumps, motors, transmissions, valves, cylinders, and controls, as well as hose and fittings, are ruggedly designed, and provide reliable performance in agricultural environments.

Construction

In demanding construction applications – where uptime is of major importance – Eaton hydraulic components provide the necessary functionality and durability.

Material Handling

Eaton hydraulic systems provide precise control and the solutions required for material handling use.

Utility

With a large range of products and solutions, Eaton is the desired supplier of hydraulic components and hydraulic systems to a large range of utility vehicles.

Forestry

In forestry applications, one of the most extreme applications around, Eaton hydraulics are the reliable answer for control, power, and durability.

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.

Earthmoving

From propel motors and swing drives to auxiliary work systems, Eaton has many solutions to the demanding requirements of earthmoving applications.

Truck and Bus

Eaton hose and fittings and Eaton fan drive systems set a standard for truck and bus applications.

Highlights



Remanufactured Products

- We offer a complete line of Eaton remanufactured medium and heavy-duty pumps and motors to provide cost effective replacement options.
- Our remanufactured products must meet the same rigid specifications as our new products.
- Don't take chances by using look-alike replacement parts. Keep your vehicles running with authentic Eaton Remanufactured product from the original source – Eaton.



STC® Connectors

- Broadest range of threadless connectors in the industry!
- Eaton patented Snap-To-Connect™ technology has been extremely successful in various rigorous mobile applications.
- Direct porting options reduce number of connections.
- STC fittings or formed design for tube applications.



Series 5 Steering Control Unit

- Compact design and installation flexibility.
- Offering a variety of choices in mounting, port locations, configurations, and valve functionality.
- Provides lower pressure drop than competitive units.



420 Series Open Circuit Piston Pumps

- Eaton brand medium pressure pumps for mobile applications.
- Compact design provides high flow options in smaller package.
- Simple two-piece housing allows easy conversion of pump rotation.
- Four displacements in a common package allow optimized flow from the same size pump.
- Mounting and shaft options conform to SAE B and C specifications.
- SAE and Metric Porting provided in Tube and Flange styles.
- Thru-drive SAE A & SAE B rear pads allow tandem combinations with fixed or variable pumps.

Aeroquip®

Boston®

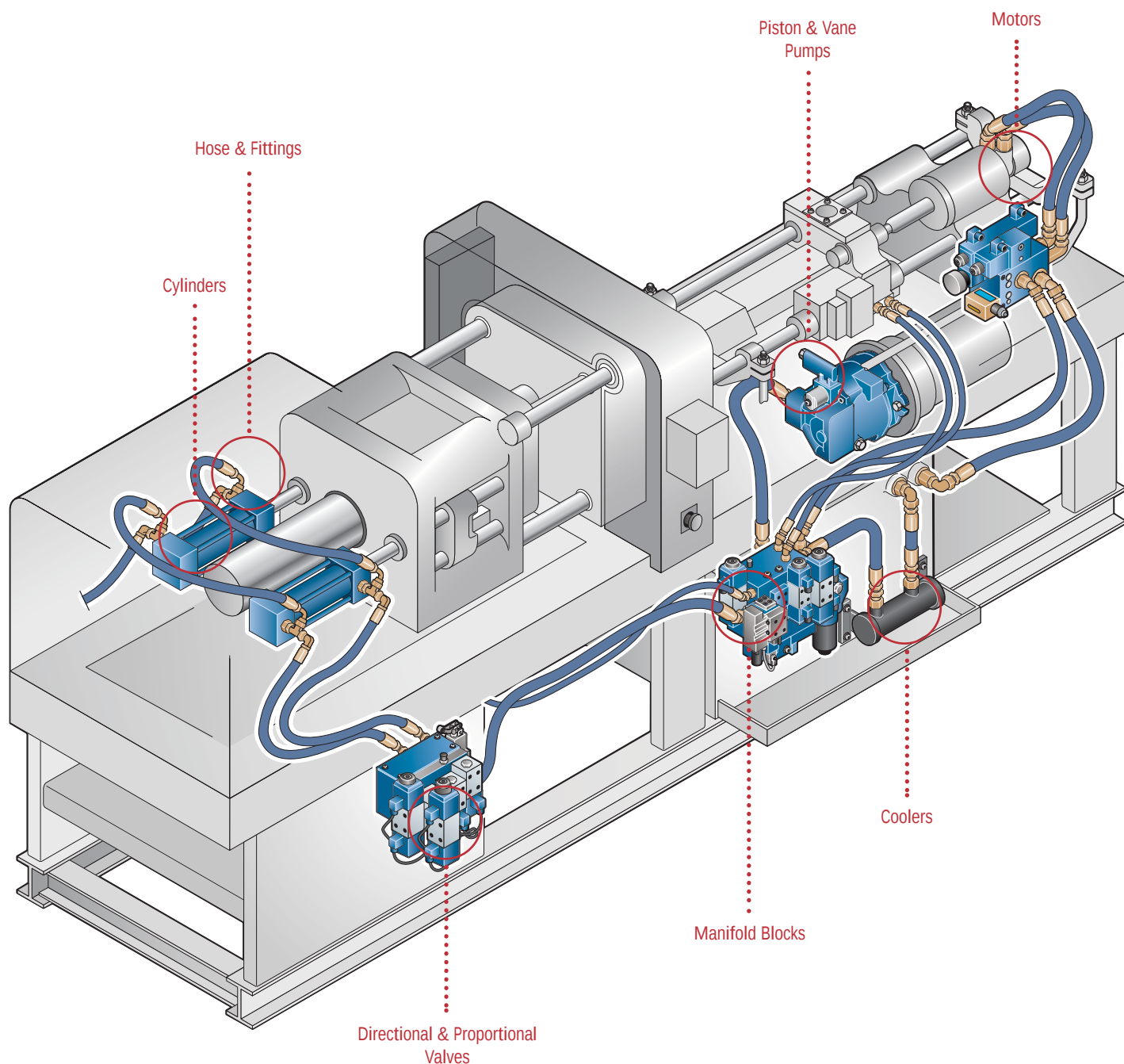
Char-Lynn®

Eaton®

Hydro-Line®

Vickers®

Weatherhead®



Cut. Groove. Bore...day in and day out. This is the work of Eaton Hydraulics products and systems. Engineered for reliable, continuous performance in the world's most demanding applications.

Long recognized as a global leader, today Eaton is more powerful than ever. Now with an even wider range of reliable world-class products to serve virtually any industrial application.

So whether you're specifying a single product, or an entire hydraulic system, make Eaton your global source for the fluid power products that'll keep you up and running.



Industrial Applications

Machine Tools

Metal Cutting and Metal Forming

Eaton Hydraulics 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

Plastics Injection, Rubber, Blow and Die Cast

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.

Primary Metals

Steelworks

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.

Automotive

Engine and Transmission Plants

Eaton products are trusted and specified by the world's leading automakers.

You can count on Eaton aftermarket support anywhere in the world.

Power Generation

Thermal, Hydro and Wind

Eaton specialized products provide reliable operation with minimal routine maintenance.

Whether you build hydro-electric plants or wind turbines, Eaton has the specific solution for your needs.

Port Machinery

Ship to Shore Cranes and Container Handlers

Eaton understands the fast paced action of dockyards.

You can rely on Eaton components to provide high productivity with maximum efficiency.

Entertainment

Motion Systems

Eaton Hydraulics provide a natural look and feel to amusement park creature motions.

High masses and inertias developed on rides, are controlled with accuracy and simplicity.

Highlights

Open Circuit Piston Pumps

PVM

- Designed as a quiet, medium pressure pump for industrial applications.
- The cradle swashplate design pumps were created with low noise in mind.
- Design features reduce both the structure-borne and fluid-borne noise levels to market leading levels.



Remanufactured Products

- We offer a broad selection of the most popular Vickers remanufactured vane cartridge kits and piston units and rotating groups to provide cost effective replacement options.
- Our remanufactured products must meet the same rigid specifications as our new products.



- Don't take chances by using look-alike replacement parts. Keep your machines running with authentic Eaton Remanufactured product from the original source – Eaton.

Vane Pumps

VMQ

- The latest state-of-the-art Vickers VMQ fixed displacement vane pumps.
- Set new standards of performance and efficiency for both industrial and mobile applications.
- Features design enhancements in all areas, resulting in a unique combination of higher pressure capabilities and outstandingly low noise levels.



V Series Pumps

- Most popular fixed displacement vane pumps for medium pressure industrial applications.

- Lead in operating life, reliability, efficiency and quietness.
- Complete displacement range and pump configuration.

Filtration

Pro Guard Series

- Vickers filters handle flows to 475 USgpm (1800 l/min.) and pressures to 6090 psi (420 bar).
- A wide range of port sizes, bypass valves, pressure drop indicators and media grades facilitate filter installation and achievement of desired system cleanliness levels.
- Inch or metric ports are available.
- Reservoir vent filters feature a visual indicator and corrosion-resistant housing.
- In addition to particle control, these filters also feature water/moisture control.



Motors



Spool Valve Hydraulic Motors

Spool valve motors transmit high torque at low speeds by means of a cylindrical valve and a gerotor or Geroler®, which are special drive members that turn the output shaft.

Applications: Machine tools, drilling and tapping machines, seed drills, augers, conveyors, textile machinery, sweepers, fans, scissors lifts and commercial mowers.

Specifications: Speed Range: Up to 1000 RPM. Torque Range: Up to 565 Nm (5000 lb-in).
Options: Variety of optional shafts, ports, mountings and displacements. Output Shafts: Straight with Woodruff key, splined, tapered or straight with cross holes.

Disc Valve Hydraulic Motors

Disc valve hydraulic motors operate similarly to spool valve motors but use Gerolers® exclusively. They are designed with a flat, disc-shaped valving system and are reversible. These products are effective at very low speeds.

Applications: Conveyors, augers, screws, spreaders, mixers, grinders, winches, reel drives, sweepers and various propel applications.

Specifications: Speed Range: Up to 900 RPM. Torque Range: Up to 3390 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 2000 and 10000.



Motors



Valve-In-Star™ (VIS) Hydraulic Motors

High performance VIS 30, 40 and 45 motors deliver high torque in a compact envelope, plus superior volumetric and mechanical efficiencies. Patented design reduces leakage by incorporating a flexible, pressure-balanced wear plate. VIS design helps extend the performance life of the motor.

Applications: Skid steer loaders, crop sprayers, grape harvesters, specialty harvesting equipment, construction equipment, compactors, augers, forestry equipment, road rollers and trenchers.

Specifications: Speed Range: Up to 500 RPM. Torque Range: Up to 5085 Nm (45,000 lb-in).

ME Series Hydraulic Motors

Double swash plate, opposed-piston, low-speed, high-torque hydraulic motors. These motors operate smoothly at low speed within the maximum ratings and cause very little torque ripple. Available with a brake, counter-balance valve, two speeds and geared motor options.

Applications: Swing drives, winches and propel drives for large vehicles.

Specifications: Pressure Range: 248 and 276 bar (3600 and 4000 psi). Torque Range: Up to 16136 Nm (11,900 lb-ft).



Hydrostatic Power Steering Units



Series 5

The Series 5 steering control unit (SCU) features a compact design and installation flexibility. These units offer a variety of choices in mounting, ports (now available with Snap-To-Connect, STC® direct ports), port locations, configurations and integral valve functionality. Balanced architecture provides smooth, best-in-class steering feel and crisp centering. Series 5 SCUs are affordably designed for low flow, low pressure applications and are more efficient than competitive units.

Applications: Lawn, garden and turf equipment, lift trucks, golf course maintenance equipment and compact utility tractors.

Specifications: Displacement: 31.5-120 cm³/r (1.92-7.33 in³/rev). Flow: 11-19 l/min (3-5 gpm). Pressure (max.): 140 bar (2030 psi).

Series 10

The new Series 10 SCU facilitates hydraulic fluid flow like no other unit on the market. Offering an unprecedented, continuous pressure rating of 275 bar (4000 psi). Its robust design, balanced architecture and many options, offer increased performance during transient pressure and high standby conditions. Several optional features and technologies, such as STC® direct ports, Q-Amp, cylinder damping and the new VersaSteer™ (dual “metered” and “quick” steering modes), result in an improved steering experience and reduce system cost.

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

Specifications: Displacement: 60-739 cm³/r (3.6-45.1 in³/rev). Flow: 3.8-45 or 8.0-76 (Q-Amp) l/min (1-16 or 2-20 gpm). Pressure (max.): 275 bar (4000 psi).



Hydrostatic Power Steering Units



Series 20

The Series 20 SCU continues Eaton's tradition of innovative design and high quality that began with the first Char-Lynn fluid linked power system. The balanced and robust design provides, stability and positive low effort steering feel to ensure excellent vehicle control. Available with optional STC® direct ports, Q-Amp, Wide Angle, cylinder damping and the new VersaSteer™ (dual “metered” and “quick” steering modes) which reduce system cost, improve productivity and increase operator satisfaction.

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

Specifications: Displacement: 60-985 cm³/r (3.6-60 in³/rev). Flow: 38-125 l/min (10-33 gpm). Pressure (max.): 241 bar (3500 psi).

Series 25

The Series 25 SCU includes several optional features and technologies, such as STC direct ports, Q-Amp and Wide Angle, that make it even more responsive, reliable and cost effective. Symmetrical valving provides uniform steering and a high capacity gerotor assembly provides a lot of capacity in a compact package. The Series 25 offers a higher flow rating and lower pressure drop than any competitive unit on the market.

Applications: Large articulated and fixed frame vehicles.

Specifications: Displacement: 490-1230 cm³/r (30-75 in³/rev). Flow: 95-151 l/min (25-40 gpm). Pressure (max.): 241 bar (3500 psi).



Hydrostatic Power Steering Units



Series 40

The Series 40 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 vehicles such as, loaders, mining trucks, graders, scrapers, haulers and transporters.

Specifications: Displacement: 1230-3030 cm³/r (75-185 in³/rev). Flow: 151-227 l/min (40-60 gpm). Pressure (max.): 241 bar (3500 psi).

Steering Accessories

Eaton offers a complete line of steering columns and wheels to fit every need. Both feature the latest technology that result in superior performance in even the most rugged applications.

The f Series fixed column family features a robust design, increased durability, rugged construction and hundreds of versions. The high performance and ergonomic i Series tilt and telescoping column family provides infinite adjustment and large telescoping travel distance for reduced driver fatigue.

Eaton now also offers a complete line of stylish yet robust Eaton Char-Lynn steering wheels.

In addition to the broad standard offering, we will customize to fit your specific application.



Vane Pumps



VMQ

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 thru-drives. 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: Displacements: From 10 cc/rev (.60 in³/r) to 463 cc/rev (28.2 in³/rev) using triple pump combined flow. Pressure Range: Up to 4250 psi (293 bar). Speed Range: Up to 3000 r/min.

V/VQ Vane Pump

The V/VQ series vane pumps are the pioneers of cartridge-design vane pumps. They are well known for long operating life, outstanding efficiency, flexible configuration and easy serviceability. The quiet 12-vane V series pumps are the most popular medium pressure industrial fixed pumps in the world.

For mobile equipment, the unique flex plate in the VQ pumps adds superior start-up capability in cold and harsh outdoor work environment. That's why the VQ series pumps are widely adopted by world's leading mobile OEMs.

Specifications: Max. continuous pressure up to 3000psi/210 bar. Displacement up to 11.8in³/rev[194cc/rev]. Speed up to 2700rpm. Available in single, double, triple and thru-drive pump frames.



Vane Pumps



V10/V20

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.

Specifications: Max. continuous pressure up to 2500psi/175 bar. Displacement: Up to 2.59in³/rev[42cc/rev]. Speed Range: Up to 4800rpm.

VVS/VVP

The VVS and VVP series variable vane pumps are cost effective solutions for low to medium pressure industrial applications where a flexible flow and low noise is required. A full range of control options are available from basic pressure compensator to load sensing, torque limiting control. The pumps are designed for long operating life thanks to hydrodynamic lubrication of bearings. You can find them in many high-end sophisticated machine tools.

Specifications: Max. continuous pressure up to 2300psi/160 bar. Displacement up to 6.1in³/rev[100cc/rev]. Speed up to 1800rpm.



Open Circuit Piston Pumps



420

Eaton's new mobile equipment piston pump design sets the standard for high power in a compact envelope. This cradle swashplate style pump provides key performance enhancements over older designed pumps. The mounting, porting and thru-drive options allow extended flexibility for modern mobile equipment applications.

Applications: Refuse Trucks, Utility Boom Trucks, Ag. Tractors, Skid Steer Loaders, Rough Terrain Fork Lifts, Wheel Loaders, Backhoe Loaders, Construction Equipment, Earth Moving Equipment, Hydraulic Generator Drives, Hydraulic Fan Drive Systems.

Specifications: Displacements: 41cc, 49cc, 62cc & 80cc. Speed Range: Up to 2650 rpm. Pressure rating 280 bar continuous, 320 bar intermittent.

PVB

One of the most widely known industrial open circuit piston pumps on the market. The large number of control options provides for extreme flexibility in applications.

Applications: Factory automation, hydraulic power supplies, and small mobile equipment auxiliary circuits.

Specifications: Displacements: From 10cc to 94cc, 1800 RPM maximum and up to 210 bar.



Open Circuit Piston Pumps



PVQ

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 PVQ 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: Displacements range from 10cc to 45cc, 1800 RPM maximum and up to 210 bar (3000 psi).

PVE

The PVE Open Circuit Piston Pump was designed with mobile hydraulics in mind. The robust design often exceeds the life requirements of the machines it is applied in.

Applications: Farm tractors, agriculture equipment, utility vehicles, construction equipment, and many other mobile applications.

Specifications: Displacements range from 25cc to 45cc, 3000 RPM maximum and up to 210 bar (3000 psi).



Open Circuit Piston Pumps



PVH

The H Series Open Circuit Axial Piston Pumps provide power for a wide range of mobile and industrial applications meeting customer requirements for performance. These cradle type swashplate pumps have rapid response to hydraulic circuit dynamics.

Applications: Mobile: wheel loaders, graders, scrapers, utility vehicles, dozers, forestry harvesting machines, and rock drills. Industrial: metal-forming equipment, hydraulic power supplies, press, factory automation, and machine tools.

Specifications: Displacements from 57cc to 141cc, speeds up to 2600 RPM and pressures up to 250 bar (3600 psi) continuous.

PVM

The M Series Piston Pump family was designed as a quiet, medium pressure pump for industrial applications. The cradle swashplate design pumps were created with low noise in mind. Design features reduce both the structure-borne and fluid-borne noise levels to market leading levels.

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

Specifications: Full 280 bar (4000 psi) continuous, 320 bar (4600 psi) intermittent pressure. Electric motor speeds. Mineral-oil-based and fire-resistant fluid compatibility. Displacements from 18cc to 141cc. Pressure compensation and pressure/flow compensation controls.



Open Circuit Piston Pumps



PVXS

The Hydrokraft™ PVXS design pumps are high pressure (350 bar) axial piston pumps designed for industrial markets. The PVXS pumps are widely used where their range of specialized pump controls can optimize circuits.

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

Specifications: Full 350 bar (5000 psi) continuous pressure. Electric motor speeds. Mineral oil based and fire resistant fluid compatibility. Displacements from 66cc (4.0 in³) to 250cc (15/2 in³).

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 off-shore winches, chemical mixing grinding/shredding, and hydraulic power supplies.

Specifications: Full 350 bar (5000 psi) continuous pressure. Electric motor speeds. Mineral oil based and fire resistant fluid compatibility. Displacements from 250cc (15.2 in³) to 750cc (45.7 in³).



Closed Circuit Piston Pumps & Motors



Heavy Duty Series 2 Axial Piston Pumps

Series 2 pump meets the market's demands for compact, quiet hydrostatic power. The power-dense, axial-piston design and wide range of controls are suited for mobile and industrial applications. Series 2 offers durability and high power density, plus a variety of options and controls.

Applications: Agricultural, crop sprayers, lift trucks, timber harvesters, road rollers, wheel loaders, road building, construction equipment and industrial applications.

Specifications: 430 bar (6250 psi), 5 displacements from 54 to 105cc. Speeds up to 4510 RPM. Integral charge pumps. A, B, B-B, C auxiliary through-drives.

Bent Axis Motors - Fixed & Variable

Eaton's family of Bent Axis Motors offer greater flexibility than ever before. Capable of operation in open or closed circuits, these motors are well suited to a wide range of stationary and mobile applications. Configurations include fixed and variable displacements, flange or gearbox mounts. Can be tailored with controls, ports, and valving to optimize productivity, efficiency, and cost effectiveness.

Applications: Earthmoving machines and construction equipment, agricultural and forestry vehicles, marine and off-shore equipment, industrial conveying, mixing and other stationary in-plant uses.

Specifications: Eleven fixed displacement options from 11cc (.66 cir) to 225cc (13.73 cir). Five variable displacement options from 55cc (3.34 cir) to 225cc (13.73 cir). Rated pressure 350 bar (5100 psi), peak pressure to 450 bar (6500 psi). Speeds up to 5590 RPM.



Closed Circuit Piston Pumps & Motors



Heavy Duty Series 1 Axial Piston Pumps

Series 1 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: Six displacements from 54 cc/r (3.34 cir) to 125 cc/r (7.62 cir). Speeds up to 4510 RPM.

Heavy Duty Axial Piston Motors - Fixed & Variable

Eaton offers a complete line of piston motors for all types of hydrostatic drives. Product range includes fixed and variable displacement, axial and bent axis designs. Complete families of control, shaft, valve block, mounting and porting options offer unparalleled flexibility to systems designers.

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

Specifications: Six displacements from 54 cc/r (3.34 cir) to 125 cc/r (7.62 cir). Pressure up to 430 bar (6250 psi). Speeds up to 4510 RPM.



Closed Circuit Piston Pumps & Motors



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. When your application calls for a robust, manually controlled pump this product is the choice.

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

Specifications: Model 70360 – Displacement (Max.): 20,3 cc (1.24 cid). Speed (Max.): 3600 RPM. Continuous Rated Pressure: 210 bar (3000 psi). Intermittent Pressure (Max.): 345 bar (5000 psi). Model 70160 Displacement (Max.): 40,6 cc (2.48 cid). Speed (Max.): 3600 RPM. Continuous Rated Pressure: 210 bar (3000 psi). Intermittent Pressure (Max.): 345 bar (5000 psi).

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.): 40,6 cc (2.48 cid). Speed (Max.): 3600 RPM. Continuous Rated Pressure: 210 bar (3000 psi). Intermittent Pressure (Max.): 379 bar (5500 psi).



Light Duty Hydrostatics



Medium Duty Axial Piston Motors – Fixed & 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 shuttle 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 manual, hydraulic destroke or servo control.

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

Specifications: Displacement Range: 1.50, 2.01, 2.48, 3.02 cu. In. Speed (Max.): 3600 RPM. Continuous Rated Pressure: 210 bar (3000 psi). Intermittent Pressure (Max.): 370 bar (5400 psi).

Light Duty Transaxles

Eaton manufactures Models 751, 771, 778 and 851 transaxles with integral ball piston pumps, motors and axle with planetary gears. This design provides a strong and durable compact drive package. Several gear reduction ratios are available.

Applications: Lawn tractors, utility vehicles and ZTR mowers.

Specifications: Output Speeds (Max.): Model 751--110 RPM (@ 3600 RPM Input), Model 771--153 RPM (@ 3600 RPM Input), Model 778--121 RPM (@ 3600 RPM Input), Model 851 -- 112 RPM (@ 3200 RPM Input).



Light Duty Hydrostatics



Light Duty Transmissions

These transmissions combine a variable displacement, radial-ball-piston, and hydraulic pump with a fixed displacement, radial-ball-piston, and hydraulic motor 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: Models 6 & 7 – Speeds (Max.) Input 3600 RPM, Output 2150 RPM. Torque Output: Continuous, 14 Nm (120 lb-in), Intermittent, 20 Nm (180 lb-in), Peak, 27 Nm (240 lb-in). Model 11– Speeds (Max.): Input 3600 RPM, Output 0 - 1950 RPM. Torque Output: Continuous, 41 Nm (360 lb-in), Intermittent, 61 Nm (540 lb-in), Peak, 81 Nm (720 lb-in).

Gear Pumps

Gear Pumps

SAE AA, A, and B mount aluminum pumps in displacements ranging from .2cid [33cc] to 3.4cid [55cc]. A wide range of mount, shaft, and porting options meeting SAE, Metric, and NPTF standards are available.

Applications: Garden and utility tractors, backhoes, combines, road graders, hay swathers and industrial power units.

Specifications: Speed Range (Max.): 2250 to 4000 RPM. Rated Pressures: 207 – 241 bar (3000 to 3500 psi).



Valves



Screw-in Cartridge Valves

Screw-in cartridge valves provide many advantages over traditional hydraulic valves. While offering the same control functions as traditional hydraulic valves, screw-in cartridge valves are compact, reliable, and economical. Combining multiple valves in a common manifold offers the user substantial cost-saving advantages that cannot be achieved with traditional valving. Vickers ToughCoil™ have been designed to provide industry leading environmental protection and solenoid performance in a compact package. The best in class, one-piece, shell encapsulated, design meets the most stringent environmental requirements for mobile and industrial applications.

Specifications: Pressure: Up to 6000 psi. Flow: Up to 150 USgpm.

Slip-in Cartridge Valves

Typically associated with relatively high flows, i.e. 40 USgpm or higher, slip-in cartridge valves are targeted at more efficient, faster and more compact hydraulic systems. Eaton 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: Compatible with computer or programmable controls via electrically modulated pressure and flow control models. Simple on-off solenoid pilot controls, as well as air operated types, are also available.

Specifications: Rated pressure 5000 psi (350 bar) ; rated flow up to 1300 USgpm (5000 l/min).



Valves



Directional Control Valves

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.

Specifications: Rated pressure up to 5000 psi (350bar); rated flow up to 290 USgpm (1100 l/min).

Flow Controls – Adjustable

Temperature and pressure-compensated flow controls allow precise volumetric control. Suitable for pressures up to 3600 psi, flow controls are available with (bypass type) or without (restrictor type) integral relief valves. Adjustable flow control valves are suited for applications requiring flow regulation without pressure compensation.

Specifications: rated pressure up to 3600 psi (250 bar); rated flow up to 28 USgpm (106 lpm).



Valves



Flow Divider Valves

Priority-type, pressure-compensated flow divider valves are made in adjustable and non-adjustable models up to 379 L/Min. (100 GPM).

Pressure Control Valves

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

Specifications: Rated pressure up to 5000 psi (350 bar); rated flow up to 180 USgpm (680 lpm).



Valves



Proportional Control Valves

Proportional control valves include directional, flow, and pressure controls driven by separate amplifier/control cards, or on-board amplifier. Directional control valves have three performance levels, standard, high (main stage feedback), and servo performance (two stage feedback).

Specifications: Rated pressure up to 5000 psi (350 bar); rated flow up to 190 USgpm (680 lpm).

Self-Leveling Valves

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

Specifications: Rated Flow: 20gpm (75 lpm). Rated Pressure: 3500psi (240 bar).



Valves



Servovalves

These two-stage, four-way, flapper nozzle valves provide system closed loop control with exact positional accuracy, repeatable velocity and predictable force or torque regulation.

Specifications: rated pressure up to 5000 psi (350 bar); rated flow up to 40 USgpm (151 lpm).

SystemStak™ Modular Valves

These compact hydraulic systems feature modular valves that are “sandwich” mounted between a directional control valve and a standard mounting surface. All circuit flow paths are contained within the control valve and modules. These valves provide a compact hydraulic circuit at a reduced cost, eliminating interconnecting piping. Each valve “stack” can be configured to provide the specific system functions.

Specifications: Rated pressure up to 4500 psi (315 bar); rated flow up to 90 USgpm (340 lpm).



Valves



HRCs – Hydraulic Remote Controls

Low effort, precise control means less operator fatigue and more productivity. Excellent pressure metering capability allows precise control and less wear-and-tear. Freedom of system design means single-station control of widely placed directional valves can be readily achieved. In a vehicle, an HRC is easily mountable in the cab or elsewhere because it is compact and eliminates the cumbersome mechanical linkage found in many applications. HRCs are now available with STC Direct Port Options for fast, reliable, one-hand connections.

Applications: Wheel loaders, skid steer loaders, backhoeloaders, excavators, cranes, lift trucks and forestry machines.

Specifications: Rated Flow: 5.3 gpm (20 lpm). Rated Pressure: 1450psi (100 bar).

CMX Sectional Valves

CMX sectional valves provide hydraulic or electrical actuation, allowing generous flexibility for location and installation in a vehicle. Phasing between meter-out and meter-in can be pre-selected to easily match valve metering to type of load and cylinder area ratio and permit lowering without using pump flow. Pressure compensated meter-in provides good metering when two or more functions are operated simultaneously and permits priority to be accomplished in pilot circuit.

Applications: Forestry equipment, wheel loaders, rough terrain lift trucks and boom man lifts.

Specifications: Rated Flow: 26 ans 42gpm (98 & 159 lpm). Rated Pressure: Up to 5075psi (350 bar) depending on port configuration.



Valves



Monoblocks™ – 5 & 15 GPM

Excellent monoblock design results in fewer leakage paths. Hardened and plated spools provide superior impact and corrosion resistance. Two-point mounting prevents spool binding.

Applications: Trenchers, sweepers/scrubbers, stand-up lift trucks, aerial work platforms, small ag loaders, garden tractors, golf course maintenance equipment and highway mowers.

Specifications: Rated Flow: 5 and 15gpm (19 & 56 lpm). Rated Pressure: 2500-3000psi (172-207 bar).

Hydraulic, Pneumatic & Electrohydraulic Cylinders

A broad range of single and double acting cylinders is available for industrial and mobile markets, with standard and custom design and manufacturing capability to meet every need.

Applications: Applications include plastic blow and injection molding equipment, machine tools, steel mills, tube benders, packaging and material handling equipment, food processing, off-shore, planters and pickers.

Specifications: Rated Pressures to 4,600 psi (320 bar) Standard, to 10 ksi Custom. Available Sizes: 3/4 to 60 inch (20 to 1500 mm) bore sizes. 5/16 to 50 inch (8 to 1270 mm) rod sizes. Strokes to 65 feet (20 meters).



Filtration



Filtration

Vickers filters handle flows to 475 USgpm (1800 l/min) and pressures to 6090 psi (420 bar). A wide range of port sizes, bypass valves, pressure drop indicators and media grades facilitates filter installation and achievement of desired system cleanliness levels. Inch or metric ports are available. Reservoir vent filters feature a visual indicator and corrosion-resistant housing. In addition to particle control, these filters also feature water/moisture control.

Packaged Systems

The most complete line of Industrial Power Units in the marketplace, including verticals, horizontals, L's, overheads, and JIC. Available in gear, vane and variable piston pump options with flows from 1 gpm to 57 gpm and standard reservoir sizes from 3 gallons up to 150 gallons. Custom Configurations are available upon request.



Hydraulic Hose Products



High Pressure Spiral Hose and Fittings

Eaton offers spiral hose and fittings exhibiting Best-In-Class longevity and breadth of product line designed to perform in a wide variety of hydraulic applications.

When coupled with our Global Spiral fittings, featuring micro-alloy steel and no-braze technology, our assemblies provide superior lifecycle performance.

Applications: hydrostatic drives, oil rigs, construction equipment, mobile & industrial systems.

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

Medium Pressure Braided Hose and Fittings

Medium pressure braided hose and fittings represent the largest market and widest variety of hydraulic applications. Our unsurpassed line of products ensures you can always find the right hose for your application.

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.



Hydraulic Hose Products



Thermoplastic

Choose from a full line of hydraulic thermoplastic hose. The versatility of thermoplastics allows for non-conductive hose to be used on utility truck applications.

Applications: Forklifts and agricultural equipment.

Specifications: Hoses with ID's that range from 1/8" thru 1". Pressures: Up to 10000 psi.

MatchMate Plus™

Aeroquip's MatchMate Plus "3 Minute Crimp Hose Assembly System" is tailor made for high-speed assembly processes. Hoses are color-coded for the ease of identification. An error-free selection exists for fittings – the number of rings on the fitting sockets matches-up with the number of rings on the hose laylines.

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

Specifications: 6 hose styles; 1/4" thru 2" size range that meet a variety of EN/DIN and SAE specifications.



Specialty Hose Products



PTFE

A broad range of hose and matched fittings are available for use in a wide variety of applications. PTFE fits the bill when high temperature meets the entire spectrum of fluid pressures.

Applications: Ranging from self-contained breathing apparatus to high temperature engine hose.

Specifications: Meet SAE 100R14A and B specifications. Pressures: Up to 5000 psi.

A/C & Transportation Products

Engineered components and assemblies for a wide range of fluid power systems. Hose materials range from high temperature AQP® to PTFE to nylon veneer products for A/C applications.

Applications: Hose and fittings for air conditioning and refrigeration, fuel and lube oil, engine and transmissions, oil cooler lines, airbrake, and power steering applications.

Specifications: A/C = multi-refrigerant; Transportation = truck hose for every application.



Specialty Hose Products



Performance Products

High performing hose, fittings and adapters for discriminating motorsport enthusiasts and professionals around the world. Aeroquip Performance Products...There is a difference!

Specifications: Fuel, oil, coolant, gauge, and brake lines.

Marine/Military

Wide variety of hose, fittings and adapters that meet many marine, military and government specifications. Aeroquip Marine/Military...there is no equal!

Specifications: Lube, fuel, water, and air. A detailed catalog specifically listing the Mil spec part numbers is available for the customer's use.



Specialty Hose Products



Fluid Transfer

From low pressure air and water to hazardous chemical transfer, Boston offers a variety of products to meet the exact needs of an application. These products range from 1/4" to 8" ID 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.

Low Pressure Hose

Choose from a full range of low pressure hose with push-on connections, including hi-temperature AQP, abrasion resistant covers for demanding service life and color-covered hose for installation identification. A low temperature MIL-DTL-13444 hose is included in the product offering.

Applications: Ranging from low pressure machine tools, fuel, oil, air and water. The size range is 1/4" ID through 3/4" ID. (not recommended for hydraulic impulse applications).



Metal



Adapters and Tube Fittings

Offering a variety of standard and non-standard configurations to meet every need. Available in steel, brass and stainless steel. Tube fittings are designed for both inch and metric tubing, including the Eaton Walterscheid tube fitting systems. Numerous end-styles are available — ISO, BSP, DIN and NPT to name a few popular standards.

Applications: In-plant Industrial Equipment, Mobile On/Off Highway Equipment, and General Hydraulic System use.

Specifications: SAE J512, J513, J518, J1926, J1453 / DIN 2353 / ISO 8434, 6162 and others. Sizes: 1/8" to 2" & 4mm to 42mm. Additional sizes available upon request.

Couplings

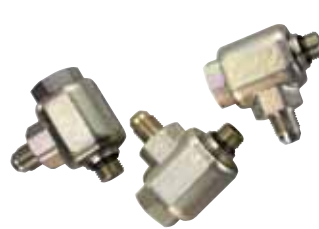
A broad range of products encompassing the simple (air couplings) to the complex (hydraulic applications) to the most complex (SCBA).

Applications: Hydraulic attachments, SCBA.

Specifications: Full range of pneumatic, hydraulic and fluid transfer. Couplings meet a variety of SAE and ISO specifications.



Metal



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.

STC®: Snap-To-Connect

The broadest range of threadless connectors in the industry! Eaton patented technology has been extremely successful in various rigorous mobile applications.

Applications: Truck/bus platforms and construction/agricultural equipment.

Specifications: Connections are offered in 3/8" up to 1". Pressures: Up to 345 bar (5000 psi).



Crimp Machines and Accessories



Tools & 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.

Specifications: Ability to crimp hose of all sizes (1/8" up to 2").

Accessories

A full range of clamps, protective sleeves, hose cleaning services and hose routing aids.

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



Learn from the hydraulics experts with Eaton Fluid Power Training.

Knowledge is power. And nowhere can your team strengthen its knowledge more effectively than with Eaton Fluid Power Training.

Attendees can save their company significant costs by reducing unplanned downtime and maximizing the effectiveness of planned downtime. Each year, more than 2,500 people attend training at Eaton Fluid Power Training Centers in Eden Prairie, Minnesota, Maumee, Ohio, and Wehrheim, Germany, or through customized on-site programs, worldwide.

Our field and industry specialists combine 140 years of experience in fluid power and education, with the impressive legacy of Vickers and Aeroquip Training. Along with the recent addition of Eaton's 18,000 square foot state-of-the-art, world-class training facility in Maumee, Ohio, USA, our training team delivers valuable, practical insight about design,

contamination and troubleshooting of hydraulic and pneumatic circuits. The Maumee facility is furnished with two fully equipped labs, which are complemented by two innovative classrooms for a thoroughly integrated learning experience.

Eaton Fluid Power Training offers more than 15 top-line, hands-on courses for industrial and mobile applications – with other programs and resource materials available for home study. Eaton Fluid Power Training is ideal for maintenance personnel, supervisors, engineers, and even purchasing agents.

With Eaton Fluid Power Training, you can benefit from:

- Immediate access to Eaton experts

- Focused and consistent training
- Two fully-equipped training facilities
- Small class sizes for focused instruction
- Multi-lingual training and worldwide resources
- INVEST, an electrohydraulics home-study program
- Easy-to-read professional publications



Two full-size classrooms and two hands-on instruction labs certify our Maumee facility as one of most highly respected hydraulics training facilities in the world. For an up-to-date class schedule and list of training materials, visit www.eatonhydraulics.com/training or call 800-413-8809 (US), or 49 (0)6081 103344 (Germany).

Courses

- Industrial Hydraulics
- Mobile Hydraulics
- Troubleshooting
- Systemic Contamination Control
- Circuit Design
- Pneumatics
- Electrohydraulics
- Cartridge Valves
- Proportional Valves

- Customized training at your location
- Product Training

Materials

Manuals:

- Industrial Hydraulics
- Mobile Hydraulics
- Electrohydraulics
- Contamination Control

Videos:

- Aeration/Cavitation Demonstration
- Introduction to Hydraulic Technology Set
- Test and Repair Series

Cut-aways:

- Pumps
- Valves
- Motors

Simulators

- FPT-4e: Double-sided workstation, accommodates 4–6
- Desktop: Self-contained, compact
- Electrohydraulic: Single-sided workstation, accommodates 3–4

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