

# Hydraulic System Support



**Caterpillar. The difference counts.™**

**CATERPILLAR®**

# Hydraulic System Support

## There is a difference in hydraulic system components and services.

The decisions you make about your equipment's hydraulic systems have a direct impact on your bottom line. Reliable, efficient, well-maintained hydraulics help you do more work each day, while keeping costs in line.

As your Cat® Dealer, we provide the quality hydraulic components, system management expertise and fast, dependable service you need to keep those systems running at peak efficiency.

We are uniquely skilled and equipped to help you manage and maintain your equipment's hydraulics—which can make all the difference in achieving maximum machine productivity at the lowest possible cost.

Caterpillar. The difference counts.™

Cat Dealers define world-class product support. We offer you the right parts and service solutions, when and where you need them.

The Cat Dealer network of highly trained experts keeps your entire fleet up and running to maximize your equipment investment.

**CATERPILLAR**®



### HOSES

#### Designed and manufactured by Caterpillar

Cat Hoses disprove the notion that "a hose is a hose." Since Caterpillar began manufacturing its own hose products in the late 1960s, Cat Hose and Couplings have become the standard for superior performance and reliability.

#### Exceeding industry requirements

Many Cat Hose standards exceed industry norms, helping to assure top performance and value. For example, Cat XT-3™ ES Hoses are impulse tested to 1 million cycles—twice the industry requirements.

### COUPLINGS

#### System matched for top performance

Cat Couplings are designed along with the hose as a complete system to yield maximum performance in a wide range of applications.

#### Reusable design for lower costs

Caterpillar's exclusive two-piece coupling option for XT Hoses allows reuse of the most expensive parts of a hose assembly—over and over.

### CYLINDERS

#### Bore skived and roller burnished for optimum sealing performance

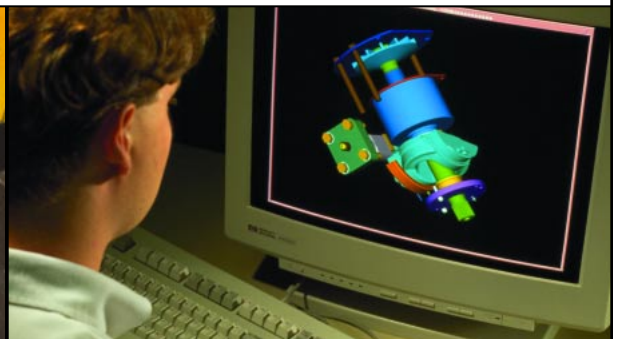
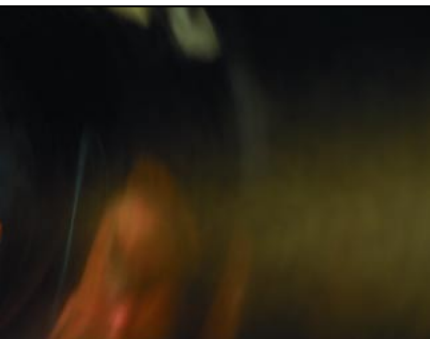
These manufacturing processes produce a highly symmetrical bore with a surface finish that provides long seal life.

#### Thick tube walls for more service lives

Thick tube walls often permit Cat Cylinders to be honed oversize. This feature, when combined with exclusive Cat Oversize Seals, can extend cylinder life in many applications.

#### Seals matched to the application

Cat Cylinder Seals feature proprietary materials and continuously improving designs matched to Cat Hydraulic System needs.



## **RODS**

### **Inertia welded for added strength**

The critical rod-eye joint on most new and Cat Reman Rods is a continuous weld produced by friction heat.

### **Induction-hardened, chrome-plated material**

Most new and Cat Reman Rods are fabricated from induction-hardened, chrome-plated steel to provide the optimum balance of strength, surface finish and impact resistance.

## **PUMPS AND MOTORS**

### **Precision manufactured for peak system performance**

Cat Pumps and Motors are built to tight tolerances and are 100% tested to match stringent Cat Hydraulic System performance and endurance requirements.

### **Designed for maximum value**

Caterpillar uses leading-edge gear and piston products designed to provide faster and lower-cost repair options.

## **VALVES**

### **Precision machining**

Caterpillar® Valves are precision machined to tight tolerances, allowing Cat machines to deliver superior performance and operator control.

## **FILTERS**

### **A clean system enhances component life**

System cleanliness is critical to hydraulic component life and performance—and no filters clean systems better than Cat Standard and High Efficiency Filters.

## **OIL**

### **Additives improve performance**

The industry's most advanced additive blend helps Cat Hydraulic Oil deliver the best performance and longest life for hydraulic system components.

# Hydraulic System Support



## Expert System Management

Effective management of your hydraulic systems helps keep machines at peak productivity while minimizing downtime and controlling repair and maintenance costs. To help you manage hydraulic systems for peak efficiency, Caterpillar offers a range of integrated management services in three primary areas: Contamination Control, S•O•S<sup>SM</sup> Services and Technical Inspections.



We can help you set up a regular maintenance program, including S•O•S Services and “kidney looping” as recommended to extend oil change intervals.

## Hydraulic System Management Tips

- Fix leaks promptly.
- Follow recommended oil/filter change intervals.
- Sample and “kidney loop” hydraulic oil regularly.
- Use High Efficiency Filters after any system invasion.
- Use clean, capped lines and nozzles when transferring oil.
- Use barrel covers to protect stored oil.
- Keep parts in packaging until installation.



### Contamination Control

Next to having a good preventive maintenance program and following established Caterpillar guidelines, keeping hydraulic oil clean is the best way to enhance hydraulic system efficiency and lower operating costs. Industry studies show fluid contamination causes 75-85% of all hydraulic component failures.

Today's highly productive and more precise systems use higher pressures and tighter metal-to-metal clearances. That means contamination control is more crucial than ever.

Dirt, water and other contaminants harm today's hydraulic systems by:

- Reducing component life
- Slowly diminishing system efficiency
- Breaking down the oil's physical properties

A disciplined approach to contamination control is critical. Ask for a copy of our Hydraulic System Management Guide (PEGP6028). It discusses methods for minimizing contamination during oil storage and transfer, equipment operation, parts storage, oil and filter selection, hose assembly, attachment changes and general maintenance.

### Technical Inspections

Even the most experienced operators can't detect hydraulic system efficiency loss until it reaches 16-20%. To protect against such losses, Caterpillar recommends hydraulics-intensive machines undergo a Custom Hydraulic Service inspection every 12 months or 2,000 hours.

This inspection is performed on-site by one of our technicians. It includes engine and hydraulic system performance tests, hydraulic oil sampling and a walkaround inspection. All results are compared against new machine specs and a report is issued with recommendations for corrective action.



### S•O•S Services

Cat S•O•S is the best method for detecting and measuring contaminants in a hydraulic system. Regular sampling can help catch problems early and head off major repair expenses.

Caterpillar engineers and chemists have developed oil analysis tests to evaluate not just the oil, but also the condition of your hydraulic components. Our skilled technicians interpret the findings and can quickly diagnose problems more accurately than independent oil labs.

Our standard oil analyses include:

- Wear Rate Analysis
- Oil Cleanliness Analysis (Particle Count)
- Oil Condition Analysis
- Oil Contamination Analysis

Test results and recommendations are usually available within 24 hours of receiving the sample. Often they can be made quickly available via the web on our Dealer StoreFront.

# Hydraulic System Support

## Fast, Dependable Service

No matter how well built or well managed, your hydraulic system will eventually wear out. When your system needs service, we offer the repair options, trained technicians and proper tools—backed by the industry's best parts availability—to get your machine up and running quickly and reliably.



## Hose Service

When you need a replacement hose, contact our hose shop. In most cases, we can build the hose you need quickly from our large inventory of Cat high-, medium- and low-pressure hose, and special-application hose products. We take pride in offering these forms of quality assurance with each hose assembly we make:

### “Certified Clean”

State-of-the-art tooling allows our assemblers to remove contaminant particles that traditional cleaning methods leave inside the hose. Once this cleaning—which involves blasting a foam projectile through the assembly—is complete, we cap the ends to keep assemblies clean until installation.

### “Certified Crimp”

Permanent couplings must be crimped to exacting tolerances, and our assemblers pay close attention to this critical part of the assembly process.

Interested in assembling hoses yourself? We'll be glad to discuss how we can provide tooling, training and stocking assistance.



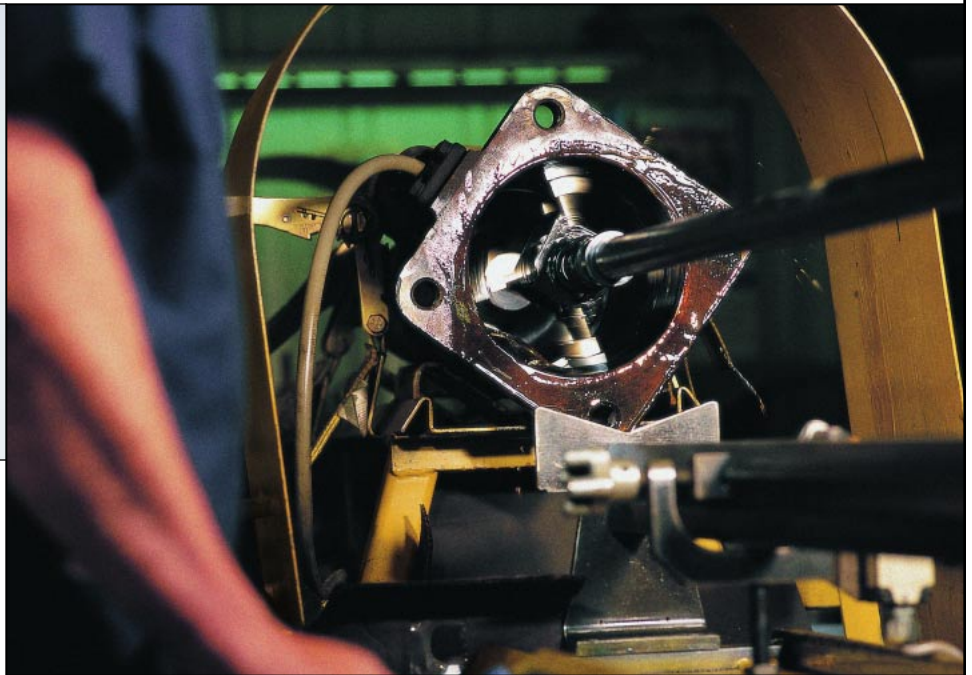
Foam projectile shown before and after use.





## Exchange/Reman

When quick turnaround time is critical, exchange may be the best option. Cat exchange offerings include a broad selection of Reman Cylinders and Rods, including front suspension rods for off-highway trucks. Each is fully remanufactured to like-new condition, backed by a new parts warranty and priced at a fraction of new.



## Cylinder Service

When you need service for Cat Cylinders and Rods, we can provide you with a range of competitively priced repair options that keep your costs and downtime to a minimum. Additional repair options may be available at some dealers.

### Reseal with Light Honing

Our standard reseal service includes light honing. This relatively quick procedure, performed in our shop, repairs scratches and other minor cylinder bore damage that can accelerate piston seal wear and create leaks inside the system.

### Oversize Honing

When cylinder bore damage is deeper than what light honing can correct, exclusive Caterpillar Oversize Seals allow many cylinders to be honed to .030" oversize for extended life.

### Cylinder Washing & Testing

After honing, cylinders are thoroughly cleaned to remove contaminants. Reassembled cylinders are pressure tested to make sure they're free of external and internal leaks.

### Seal Kits

Caterpillar Seal Kits are available off the shelf for most Cat applications. Cat Standard and Oversize Seal Kits package all the genuine Cat Seals for a reseal or repair under one part number for easy ordering—and they're priced less than the individual seals sold separately.



## Mixed Fleet?

Many Cat Dealers also offer hose and cylinder service for other brands of mobile equipment.

# Hydraulic System Support



## Cat Classic Pumps

If you operate older Cat equipment, Cat Classic Gear Pumps may be just what you need. These new pumps offer a quality alternative when the age, application or utilization of your machine calls for a less expensive repair.

## Pump & Motor Service

Our comprehensive pump and motor service includes expert repair, rebuild and testing. All repairs are fast and economical—with options that let you match the repair to your situation.

### Piece Parts and Section Kits

In addition to piece parts, we stock cartridges for vane pumps, rotating groups for piston pumps and motors, and section kits for gear pumps that permit quick replacement of high-wear items.

### Exchange Components

When machine availability is critical, exchange components—including Cat Reman products—can get you back on the job and lower your repair expense.

Cat Reman products for pumps and motors include complete groups and piece parts for piston-type products and cartridges for vane-type products.



## Mixed Fleet?

Many Cat Dealers also offer hydraulic parts and service for other brands of equipment.

## Committed to Service and Support

We're committed to helping you maximize your productivity and lower your costs. We're committed to your success.

Ask how a Customer Support Agreement can help us work together to achieve the results you want.

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