



photo: atlas copco

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



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Global Mining Solutions

Dedicated Products and Systems



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ENGINEERING YOUR SUCCESS.

Parker Hannifin Corporation

ENGINEERING YOUR SUCCESS.



Parker Hannifin is your trusted single source partner for all your motion and control solutions.

aerospace
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At Parker Hannifin, we understand the concerns facing our mining customers. We know that safety is your number one priority and have the products and services to ensure your team gets the job done safely. We know that reducing downtime and increasing your throughput are also keys to your success. Whether it's a single product, sub-assembly or total turnkey system, we have the solution that aligns with your needs. So whether you're working in a dragline or high wall surface mine, conventional underground or longwall mine, Parker is your first choice to engineer your success.

A global Fortune 300 company with customers in 48 countries, Parker is the world's leading supplier of hydraulic, pneumatic, and electromechanical systems and components. Customers rely on Parker for engineering excellence, world-class manufacturing and outstanding customer service to provide comprehensive application solutions that are second to none.

- **More than \$12 billion in sales**
- **287 plants worldwide**
- **12,000 distributors**
- **427,000 customers**
- **Serving 1,200 distinct markets**



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Let Parker become part of your design team. Whether you need to develop new products, redesign existing applications, or design completely new systems, Parker offers unparalleled engineering expertise.

As the leader in the motion and control industry, Parker strives to be our customers' trusted partner. These relationships are cultivated by listening closely to our customers and repeatedly providing them with value measured in real dollars: saved time, reduced waste, gained efficiency, expanded output and increased profitability.



MINING

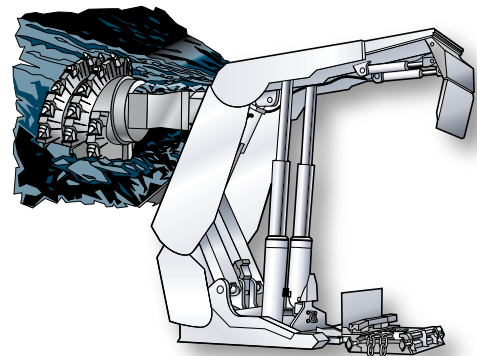


Energy

It's the single largest issue facing today's global economy. While there are efforts underway around the world to develop alternative sources of energy, coal will remain a primary resource for years to come. The world consumption of coal has increased 30 percent over the last six years. In the future, coal production by countries like China, India and Russia could surpass that of the rest of the world combined. This will continue to fuel the needs for companies to be able to mine coal faster and more efficiently by using larger, more sophisticated equipment. This increase in demand will push miners and their machinery to their limits.

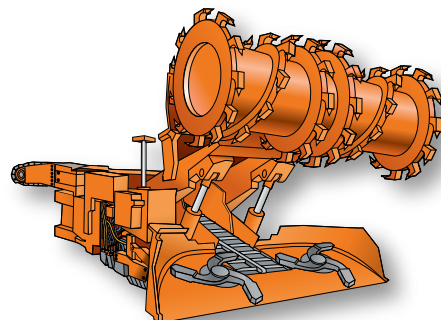
Longwall

Longwall mining accounts for about 50 percent of underground production and has a 60-100 percent coal recovery rate. Parker components and systems can be found on the main shearer, pan line, conveyors and the hydraulic roof supports. From supplicated machine controls to leak-free hoses and fittings, Parker is there to increase productivity and safety.



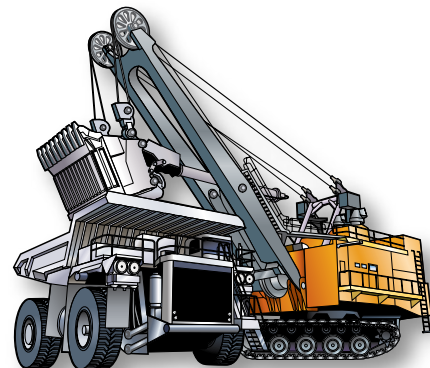
Continuous Miners

Continuous miners account for roughly 45 percent of underground coal production. Primarily used in room and pillar mines, these massive machines can remove coal from the seam at a rate of five tons a minute. Keeping these machines up and running requires motion and control products that are durable, environmentally friendly and readily available. Parker products meet or exceed MSHA and MDG41 industry requirements.



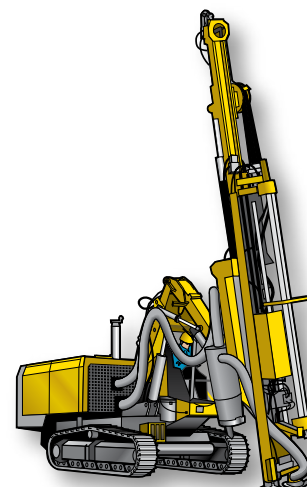
Surface Mining

Machinery used in surface mining varies widely from the equipment used in underground mining. The types of machinery used in strip, contour, open pit, and mountain top removal mining are similar to those used on typical construction sites around the world. Excavators, loader backhoes, dump trucks and power shovels are all at the heart of the action. Wherever the mine is, Parker is there with the people, products and services needed to address your concerns and keep you up and running.



Rock Drilling

Used primarily for placement of explosives, the rock driller utilizes high impulse vibrations to penetrate hardened materials. Parker provides compatible products for drive trams, drill feed circuits and drill rotate functions as well as jacks, dust collectors, blowers, tower raising cylinders and break out wrenches. Durable Parker products mean less downtime and more productivity.



Safety First

Parker believes that the safety of people and property is of paramount importance. To that end, Parker designs, engineers and manufactures its products to the highest standards. Wherever mandated, Parker complies with all industry standards and regulations. Additionally Parker products are both lab and field tested to ensure product integrity and safety.

Parker's commitment to safety goes well beyond the product. Parker is the recognized industry leader in product training that includes hydraulic, pneumatic and fluid connector technologies. Parker supports major safety initiatives including SafetyWorks and the Circle of Safety.



SafetyWorks training promotes awareness of the importance of following proper practices and maintaining safe conditions with regard to fluid systems. The program is offered by Parker and its authorized distributors to help prevent injury to people and damage to property from escaping fluids and component failures.

SafetyWorks is a series of three 20-30 minute long modules that are designed to help individuals to:

- **Avoid injection injuries and understand the importance of timely treatment should an injection injury occur.**
- **Follow proper hose assembly and routing guidelines to help prevent premature failures**

Safety Tips for Mining Equipment

- Always wear proper eye, hand and head gear
- Maintain safe distance from moving parts
- Let machinery cool down before doing maintenance
- Relieve pressure prior to working on a hydraulic system
- Be sure to block, chain, pin or otherwise secure raised cylinders
- Constantly inspect hoses and fittings for leaks, cover abrasion cracks, bent or kinked hoses, oily wet hose covers and blisters and replace as needed
- Never place hands or any other part of your body on or near a suspected leak while system is pressurized
- Shield anyone who might be within 3 ft (1m) of a hose assembly
- Do not perform any modification to equipment without approval of manufacturer
- Perform regularly scheduled preventive maintenance
- Repair personnel should be trained in safety specific to hydraulics

- **Implement a product-selection process for safe and efficient fluid-system design and use**

Instructional materials include a workbook for each module as well as additional support materials such as videos and product samples.

Safety is a commitment. The SafetyWorks program is part of Parker's commitment to helping people in all types of jobs to learn, understand and follow safe practices.

Parker: Your Partner in Promoting Safety.

To get more information on injection injuries, go to: www.handsurgery.org/ or www.assh.org/.





Parker's Industrial Hose Division's Circle of Safety program is designed to provide selected distributors with products, training, and specialized equipment that would produce industrial hose assemblies that meet or exceed the working pressure of Parker industrial hoses and fittings. The Circle of Safety program is based on exceeding NAHAD Guidelines for industrial hose assembly procedures.



“Unless you have seen a hydraulic hose rupture under 5,000 PSI, you have no idea what kind of potential energy is there.”

Parker industrial hose distributors who are Circle of Safety certified are trained in selecting the proper combination of industrial hose and fittings that meet tough mining

requirements. Additionally, the industrial hose assembly meets or exceeds Parker's strict crimp/burst pressure specifications.

The Circle of Safety program protects industrial users from accidents, unplanned downtime and increased liability associated with failed industrial hose assemblies by providing a single reliable source backed by a Fortune 300 company.



Customer – Driven Solutions



Parker is in the “solutions business,” offering our mining customers the widest array of solutions and services available. Customers can be assured that no one knows surface or underground mining like Parker’s staff of highly qualified application and design engineers, innovation teams, and our systems-solutions specialists. By partnering with Parker, our customers can reduce their number of vendors without compromising integrity.

And buying from a single source saves both time and money while enabling easier ordering and faster delivery.

The following pages provide a brief overview of some of the innovative products, solutions and services that Parker provides the mining industry. Keep in mind that while Parker manufactures over one million products at 135 divisions worldwide, our focus and commitment to mining is second to none.



P1 & P2 Piston Pumps

Medium & heavy duty variable displacement, axial piston pump for mobile applications featuring compact, quiet and efficient control.

- High operating efficiency
- Lower power consumption
- Reduced heat generation
- Long-lasting, reliable
- Flexible/ convertible control options



Custom Manifolds

Parker’s custom manifolds can be designed to meet the requirements of the most demanding applications. Additionally, these custom zinc plated steel manifolds are 95/5 microemulsion capable and can also integrate a full selection of other Parker products.

- Reduce costs
- Reduce leak points
- Improve assembly time
- Provide ease of service
- Unlimited design alternatives
- Full integration with all Parker products



IQAN Electronic Control Systems

IQAN is a unique, totally electronic approach that replaces mechanical and electromechanical systems for controlling and monitoring hydraulics in mobile machines.

- Design customized software without advanced programming skills
- Flexible functions
- Quickly program and optimize sophisticated applications
- Complete machine management
- Reduces development time & expense
- Robust operation & compatibility with mobile hydraulic equipment
- Meets industry & government standards for operation in severe conditions





Coalmaster Hose

Parker's Coalmaster™ hose and system Steck-O® mining products provide complete, reliable hydraulic packages to connect and support underground mining equipment. Coalmaster hose features:

- Hoses from ¼" to 3" I.D.
- Pressures up to 6500 psi
- Temperatures from -40° to +125°C (-40° to 212°F)
- Available in IronClad, Tough Cover (TC) and Super Tough Cover (ST) abrasion covers for longer life

The Parker Mining Coalmaster program provides total system integrity and compatibility. The Coalmaster system offering includes:

- Coalmaster mining hose
- Hose end couplings and adapters
- Ball valves
- Steel pipelines
- Rotary couplings
- Auxiliary valves
- Manifolds
- Dust suppression spray nozzles
- Hose protection sleeving
- Filtration



Trap-Seal™

Parker's patented Trap-Seal™ design ensures reliable leak-free hydraulic connections by eliminating the possibility of full or partial O-ring pop out. The seal's trapezoidal shape leads to improved retention within Seal-Lok's™ O-Ring Face Seal (ORFS) groove and virtually eliminates costly leakage and/or time consuming pre-assembly handling.

- Improved seal retention
- Reduced risk of seal damage or leakage
- Compatibility with standard SAE J1453 half-dovetail groove
- Same material and hardness as Parker's standard O-ring (90 Durometer Nitrile)



Universal Push-to-Connect (UPTC) Assembly

Parker's patented UPTC hose and fitting assembly lets you achieve reliable leak-free hydraulic connections in just seconds without special assembly/disassembly tools. Simple global sourcing is achieved with a standard O-Ring Face Seal (ORFS) adapter and a universal male hose nipple configuration.

- Decreased assembly/serviceability time
- No special assembly tools
- Assured proper connection using visual and tactile indicators
- Standard fitting bodies
- Suited for hydraulic hose (rubber/thermoplastic) and tube (inch/metric)

Case Study

Situation: Oil leaks in hose assemblies

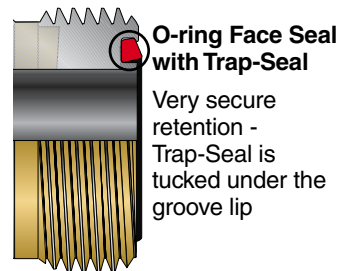
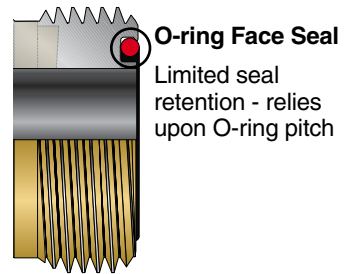
Results: Leaks shut down machinery and puts oil on the job site. Lost time, repair, clean up and money.

Problem: O-ring was missing or pinched in connection causing leaks.

Solution: Parker trapezoidal-shaped O-ring that creates consistent positive retention in O-ring face seal groove. Prevents O-ring from falling out or getting pinched.

Benefit: O-ring stays put and will form a leak free seal.

PROBLEM SOLVED!



Less Downtime and Increased Throughput



photo: atlas copco

At the end of the day, Parker's contribution to the mining industry is measured by the success and profitability of its customers. In short, in order for Parker's mining customers to be successful, Parker must deliver solutions that cut directly to the customer's bottom line. That means products and service have to work longer, produce more output with less downtime, be more efficient and save energy while being ever mindful of the environment.



12 Series Proportional Valves

Parker's new series of -12 size proportional valves expand the already wide array of proportional valve options. The new series of valves is available for Flow, Pressure and Directional Control, allowing for a complete family of valves for thorough circuit design.

- IP69K rated "Super Coil" for rugged weather and water resistance
- E/H proportional with relief
- Manual flow control with detent adjustments
- Easily applied in custom Steel Integrated Circuit Manifolds



Pulsar Proportional Load Sense Valves

The VP/VPO and VPL Series valves use a unique digital pilot solenoid that provides exceptionally fine metering. They have patented individual pressure compensation with Pressure Limiting to provide simultaneous control without affecting function speeds due to load changes.

- Explosion proof approvals (MSHA, CSA, NEMKO, ATEX)
- Integrated manifolds for a compact solution
- Transition plates available to combine both series
- Flexible in design to reduce inventory
- Electric, hydraulic and manual control
- Manual operator standard on every section
- Intrinsically Safe & Explosion Proof solenoids for hazardous environments



STINGER™ II Mine Air & Water Hose

Stinger II hose is a very durable hose manufactured to handle the severe service requirements of underground mine spray service.

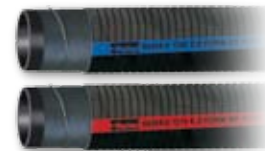
- Bright yellow MSHA cover is flame, oil and abrasion resistant
- Excellent choice for high pressure air and washdown service



Rock Dust Hose - MSHA

This hose is for rock dust service in underground mines.

- Very light, flexible and durable
- Cover is flame resistant
- Tube is static conductive
- Hose has a helix wire that reduces kinking at sharp bends



E-Z Form GS Hose E-Z Form MP Hose

Parker's new E-Z Form hose provides extreme flexibility for tight-bend applications while retaining full-flow performance. Valuable to original equipment manufacturers, equipment users and distributors.

- Used where formed hoses are required
- Can bend tightly without kinking
- Two versions of the hose are available; a Multi-Purpose (MP) and a General Service (GS)
- Suitable for use with oil-based fluids as well as water-based fluids





HP8 Gear Pump

The HP8 Series has the largest displacement in a production hydraulic gear pump. The range is 7.83 cid - 16.38 cid, with pressures to 4000 PSI and pump flows that can only be matched by higher cost vane or piston pumps.

- Operates multiple pumps off same drive shaft
- Available in lightweight aluminum construction
- Clockwise or counter-clockwise rotation
- Ideal for weight consideration applications



HLB Remote Grease & Lubrication Hose

The HLB remote grease hose makes it easy to perform quick & effective preventative maintenance on all types of industrial, mobile and transportation equipment. These lines connect grease port locations to a service access panel to distribute grease throughout the machine.

- Properly lubricate multiple points in less time than one isolated point
- Saves money per zerk connection in unnecessary adapter costs
- Compact hoses save waste by eliminating "in-line" grease



Filters and Elements

Extend machine life with Parker Filtration. Parker offers filtration that can be installed both at the OEM and by end users. Clean fluids provide greater machine efficiency and longer life.

- Increases safety
- Increases production
- Reduces downtime
- Reduces maintenance costs
- Lowers total mine cost



ServiceJunior™ Digital Pressure Gauge

Captures momentary pressure spikes that are "invisible" to liquid filled gauges. Uses Parker's diagnostic test port couplings.

- Simple to operate four-key menu
- Easy to connect with test port couplings
- Minimum & maximum graphic display shows peak pressure
- Measures PSI, bar, mPa, kPa with one gauge

Parkrimp™ Hose Crimpers



The Parkrimp family consists of seven different crimping machines, from the 35-pound portable

Minikrimp™ to the fully capable bench-mounted Parkrimp 2. The Parkrimp system is ideal for applications ranging from high-volume factory production to on-site assembly. Parkrimp crimpers enable users to create safe, reliable, leak-free, cost effective, factory quality hose assemblies consistently with minimum time and effort.

- Bottom-loading operation makes it easy to handle long hose assemblies
- No gauges to set
- Exclusive Parkalign™ feature positions the fitting in the dies perfectly every time
- Dies are color-coded by size for easy identification and reduced set-up time



Adjustable Hose Crimpers

Parker offers a variety of bench-mounted adjustable hose crimpers. These reliable and versatile crimpers are fast and easy to use and will crimp 1/4" to 4" large bore hose. These crimpers can be used with industrial, wire braided, 4-wire spiral and 6-wire spiral hose.

- Easy & accurate crimp adjustment
- Reliable and versatile
- Minimal number of dies required
- Same dies cover multiple hose/fitting combinations

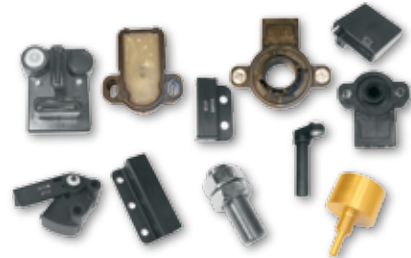


Increasing Performance and Productivity



photo: atlas copco

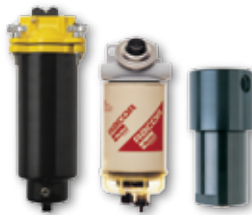
For today's customer, an outstanding total experience and the commitment to provide exceptional value is the benchmark by which many suppliers to the mining industry are evaluated. Parker delivers tangible and measurable benefits that are designed to reduce your total cost while increasing performance and productivity, eliminating your frustrations and improving your profitability.



Sensors

Parker's innovative sensors and switches for mobile applications contain proven, reliable technologies along with unique electro-magnetic circuits, all in one economical, environmentally sealed package.

- Compact and lightweight
- Enhance equipment productivity and profitability
- Excellent stability under a wide range of operating conditions
- Fully protected against shock, vibration and electro-magnetic interference (EMI)



Racor

Filtration and water separation is critical to efficient diesel and alternative fuel engine operation. Racor Division has become the leader in filtration technology, partnering with engine manufacturers to design and produce innovative systems. Racor filter vessels offer economy, versatility, unparalleled high efficiency, and low maintenance solutions to many fuel delivery and industrial filtration applications for any fuel and any flow rate.

- High dirt holding capacity and water removal efficiency
- Filtration from day tanks to fuel tanks
- High flow equipment filtration
- Integrated system solutions
- Providing clean and dry fuel down stream



Spiral Guard

Spiral Guard is the superior solution for mining operations. It excels in abrasion protection, and is used for bundling, organizing and protecting hose and cable. Spiral Guard is available in an MSHA approved FRAS version for underground mining and a standard version for surface applications not requiring fire-resistant, anti-static properties.

- Exceptional anti-crush performance
- Excellent bend radius
- Can be installed/replaced without removing hose from equipment
- Self-lubricating interior minimizes wear on hose
- Low profile, does not require clamping



Vane Pumps

Parker's high performance T-Series fixed displacement vane pumps are specially designed to provide high flows within a small envelope. They can be used in mining & blast hole drill rigs to provide oil for auxiliary functions.

- Contamination resistant, reliable pump
- Low noise
- One piece shaft
- SAE or ISO standards
- One inlet
- 32 porting orientations available
- High power to weight ratio





Low Speed, High Torque Hydraulic Motors

Torqmotor™ Series motors provide rotary power from under 5 to over 65 horsepower. Pressures to 4500 PSI provide torques to nearly 2000 lb ft.

- Robust construction brings long life, less downtime
- Accurate timing means precise control of load
- High efficiency saves horsepower, fuel
- Unique valving provides ultra-smooth low speed operation
- Extra-heavy bearings allow heavy side loads



Gold Cup™ Hydrostatic Transmissions

These transmissions are rugged, heavy duty variable displacement pumps and motors. Rated to 5000 PSI continuous pressure and continuous duty. A unique internal servo-replenish feature affords the fastest and most stable control strategy available.

- Easy to service/replace
- Versatile controls
- More stable, faster & quieter than other designs
- No lost motion, zero backlash, better control
- No linkages to wear out
- Fastest compensator response
- Variable motors with reverse available for multiple speed ranges



Cylinders

A reliable source providing the best solutions for our customers' most challenging applications, with products such as Shear cylinders on Continuous Miners to heavy duty Longwall applications.

- Extended life sealing packages which reduce equipment downtime
- Exceptional corrosion protection utilizing the latest technologies to provide the best solutions
- Maximized performance while focusing on safety and control
- Extended cylinder life with superior wear resistance (Hardened Pin-eye Bushings)
- Improved serviceability (Head Gland Dust Seal)



FEM Series Non-Spill Quick Couplings

FEM Series meets or exceeds the stringent design and pressure requirements of ISO 16028 to provide a common interface for global interchangeability. Typical applications include construction, utility, and agricultural equipment where hydraulic attachments are connected and disconnected.

- Push to connect operation
- Flush face eliminates hydraulic spillage and air inclusion
- Available in body sizes ¼" to 1"
- Female pipe or straight threads and male bulkhead configurations



Rotary Actuators

The HRT is a hydraulic rack and pinion rotary actuator in a compact package providing high power at low rotational speed.

- Gearing and cylinders are self-contained and protected against contamination
- Heavy duty bearings support large external applied shaft loads
- Torque to 67,791 Newton Meter (600,000 inch lbs)
- Standard and custom rotations to any increment and 5 revolutions



Accumulators

Parker offers a complete range of piston, bladder and diaphragm type accumulators, as well as shock suppressors, gas bottles and other accessories. Offering pressures from 3000 to 15,000 PSI. Available in steel or optional stainless steel.

- ASME, CE and many more certifications
- Low-cost, non-repairable piston accumulators available
- Plating options available on steel versions
- Custom designed to meet your requirements

Improving the Work Place and Saving Energy



photo: atlas copco

Parker is fully engaged in finding ways for the mining industry to increase productivity and profitability and also totally committed to improving the work environment and reducing energy costs.

Parker products are designed and manufactured to prevent fluid leaks, reduce noise and heat, improve fluid cleanliness and condition and remove inert

dangerous mine gases. Parker's fan drive technology consistently delivers increased engine performance with significant reductions in fuel usage.

When you need a partner to supply machine productivity and safety along with products that enhance work environments and save energy, Parker should be your first and only choice.



photo: atlas copco



PGP640 Gear Pump

The PGP640 is the newest addition to the Gear Pump line of products featuring a displacement range of 30cc - 80cc, with pressures to 4500PSI. It has a compact two-piece design with patented interlocking flange and robust cast iron construction.

- High power through-drive capability
- Operates multiple pumps off same drive shaft
- Ideal for Fan Drive applications
- Integral valving options available



Hydraulic Component Rebuild Program

At Parker, we believe service is key. The Hydraulic Component Rebuild Program offers quality rebuilds for a full range of products including cylinders, valves, pumps and motors - rebuilt to OE specifications.

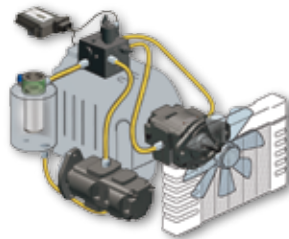
- Cost effective, quality alternative to component replacement
- Innovative solutions to improve reliability
- Maximize component life using collaborative, data driven problem solving
- Complete machine shop with integrated CAD,CAM, CNC and CMM
- State-of-the-art testing equipment
- Dedicated Engineering Staff and Certified Technicians



Fluid Condition Monitoring

Parker offers proven and leading-edge fluid condition monitoring products functioning as early warning tools to help prevent catastrophic failures in critical systems.

- Certification of fluid cleanliness levels
- Immediate results with laboratory accuracy
- Identification of a fluid's saturation point and/or water content
- Continuous monitoring for water contamination



Hydraulic Fan Drive

Parker fan drive systems de-couple the fan from the engine by utilizing efficient hydraulic motors. Fan and radiator assembly can be placed anywhere on the vehicle.

- Independent of engine revolutions
- Cooling-on-demand and accurate temperature control
- Lower operating costs
- Increased fuel economy
- Minimized noise, heat and particle emissions
- Multiple system control (fan, power steering, A/C and alternator)



Nitrogen Gas Generators

There are two very important uses of nitrogen in mining applications: 1) to inert worked-out or abandoned areas of the mines that have inadequate seals that can leak dangerous gases, and 2) to extinguish coal mine fires by reducing oxygen content below limit of explosion levels (LEL).

Parker's containerized nitrogen generator with integral membrane dryers allows the mine operator to have an in-house, cost effective, capability to inject nitrogen anywhere it's needed in the mining complex. Parker nitrogen generators avoid the transportation logistics and costs associated with cryogenic-based N2 supplies. Additionally, Parker's totally self-contained N2 system allows the mines to continue production while abandoned areas are inerted per industry recommendations.



Metal & Plastic Multitube Bundles

Bundled tubing is an ideal alternative for applications where multiple lengths of tubing are currently being installed independently. Standard jacketing material is 105 °C (221°F) rated, flame resistant PVC.

- Saves space
- Reduces overall installation cost
- Offers protection to individual tubes
- Multiple color tubing



Parker's Global Coverage



photo: atlas copco

Commercial mining takes place in over 50 countries throughout the world. Parker's global commitment means that wherever the mine is located, Parker can provide complete product and technical support to ensure your machines stay on-line and producing.

Parker enjoys one of the largest field sales organizations in the industry. These highly trained and dedicated men and women are just as comfortable in hard hats and overalls at the job site as they are working in an office environment with your design teams. These field sales engineers can be your single point contact to tap the resources of Parker's world wide network.

Parker's ultimate competitive advantage in serving mining customers has been our global network of 12,000 distributors that can provide Parker products and services virtually anywhere, anytime. Parker's distributors are committed to providing local inventory to ensure customers fast delivery and reduced downtime.

HOSE DOCTORS®: On the Job, Around the Clock

Parker HOSE DOCTORS are a global network of independently-owned, mobile service technicians built around the commitment to identify and replace hose assemblies wherever their customers need them, with the fastest response times possible. HOSE DOCTORS are an extension of the worldwide Parker distribution network, coupling their service commitment with Parker products--the highest quality hoses and fittings available in the market today.



Parker BOX®: Workshop and Storage to Go

The Parker BOX (Build, Overhaul, Exchange) program brings additional product storage and fabrication capability to our customer's doorstep, wherever that may be. Ideally suited for remote locations or facilities where space is at a premium, Parker BOX provides an ergonomically designed workshop and ample storage for a wide range of products and tooling, all within the footprint of a 20 foot ISO shipping container. The BOX comes pre-wired with quick connect drops for generator or building power. It can be trailer mounted for transport and features fork pockets and lifting lugs for easy jobsite positioning.



ParkerStores™

ParkerStores are a worldwide network of industrial retail stores that provide technical expertise, product training, troubleshooting and other system solutions designed to keep hydraulic and pneumatic equipment users up and running. Each ParkerStore offers the convenience of a local service provider 24/7/365; with an extensive inventory of Parker fluid power system replacement solutions for end-users, such as specialty hoses, hose assemblies, fittings, filters, valves and pumps.



Action Directory

Innovative Products and System Solutions



www.parker.com

When it comes to mining components and solutions, no company offers more than Parker. Listed below are ways for you to receive additional information or to speak directly with the industries most knowledgeable professionals.

Sales
Call 1-800-C-PARKER
(1-800-272-7537)

Distributor Locator
Call 1-800-C-PARKER
Online: www.parker.com/distloc

Literature
Call 1-800-C-PARKER
e-mail: c-parker@parker.com
Online:
www.parker.com

Training
For Hydraulics software and training programs:
Call 1-216-896-2495
Online: www.parker.com/training

For SafetyWorks:
Call 1-330-296-1418
Email: safetyworks@parker.com

For Circle of Safety:
Call 1-440-268-2120



WARNING - USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

OFFER OF SALE

The items described in this document are hereby offered for sale by Parker-Hannifin Corporation, its subsidiaries or its authorized distributor. This offer and its acceptance are governed by the provisions stated in the detailed "Offer of Sale" elsewhere in this document.



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