Mobile Actuators and Accumulators

Premium Quality Hydraulic Cylinders, Rotary Actuators and Accumulators for Mobile Applications








Meeting the challenge

On farmland, in forests, on construction sites... the challenges for mobile hydraulics are wide ranging and varied – yet the demands never change. Total reliability, whatever the conditions. Optimum performance, from start up to shut down.

When you're a long way from the nearest workshop, hydraulic systems have to work first time – and keep working, in the harshest environments, through long service intervals.

A single component failure can mean the crops miss their peak, the timber misses the boat, the development misses the deadline.

It's in conditions like these that your choice of components and suppliers is critical. At Parker, we've built our reputation on premium quality products and premier customer service. Our hydraulic cylinders, rotary actuators and accumulators are specified by many of the best-known names in mobile equipment – people who know that choosing Parker is their guarantee of reliability.

Our products are tested and proven in the toughest environments so that your products will meet your customers' highest expectations. With Parker as your partner, your reputation is in safe hands.

A major force in mobile hydraulics

Parker is the world's leading manufacturer of motion and control technologies and systems. Our policy of continuous high investment has given us an unparalleled breadth of operations, experience and products.

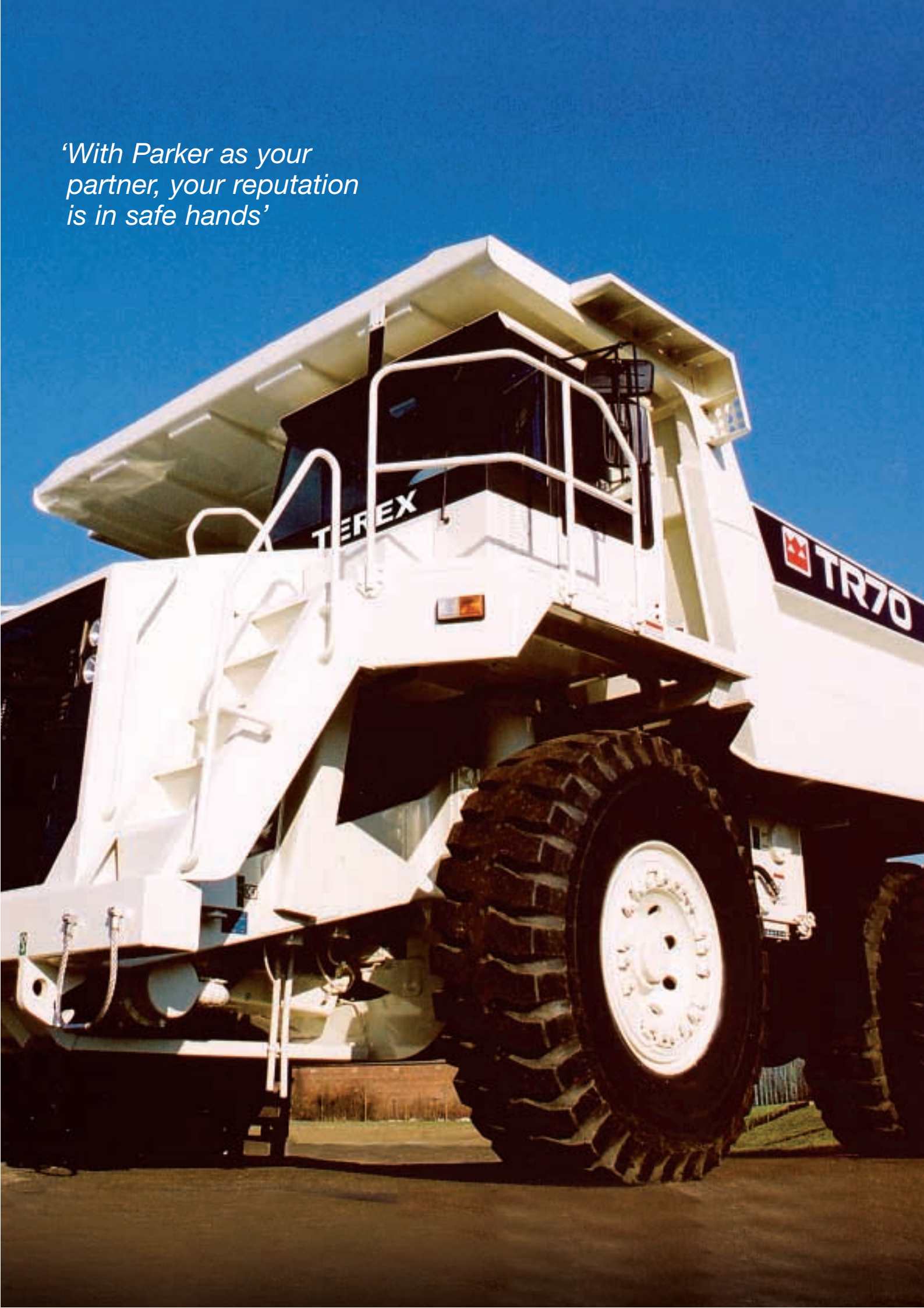
From a single cylinder to a sophisticated electro-hydraulic system, Parker's proven engineering expertise and technical leadership is ready to help.

For you, working in partnership with Parker means peace of mind. Wherever in the world your equipment is in use, it's never far from the expertise and premier customer service that have made us Number One in motion and control technology.

The Parker Partnership enables you to source a huge range of products, services and systems from a single supplier, reducing your supplier base, simplifying administration and helping to control costs.

Whether your need is for hydraulic, pneumatic or electro-mechanical solutions, the Parker Partnership places an unequalled resource at your disposal. From design and manufacture to training and maintenance, our aim is to support your business. Your reputation depends on it – and so does ours.

'Wherever in the world your equipment is in use, it's never far from our premier customer service'



'With Parker as your partner, your reputation is in safe hands'

Hydraulic cylinders

Parker's expertise in mobile hydraulics is second to none. Our standard single stage and telescopic hydraulic cylinders are available in a vast range of sizes and mounting styles, with the options you need to tailor the designs to your own specification. And where a standard cylinder can't meet the spec, our engineers will work with you, drawing on our unmatched experience to design and build a cylinder which meets your requirements. Precisely.

Standard Cylinders

	pressure (bar)	bore (mm)	stroke (mm)	rod end	single/double acting
Single stage	250	50-200	4000	threaded or spherical bearing	double
Single stage	160	32-200	4000	threaded or spherical bearing	double

Custom Cylinders

	pressure (bar)	bore (mm)	stroke (mm)	stages	rod end	single/double acting
Telescopic	250	≤250	•	≤6	•	single/double
Single stage	350	•	•	1	•	single/double

• = to customer specification

Accumulators

Reduced shock loads, lower noise levels and a drop in energy consumption are among the first benefits you'll notice from specifying an accumulator in a hydraulic system. Smaller pumps, motors and reservoirs save installation space and cost, while the inherent fail-safe performance of a piston accumulator provides safe operating margins for braking and steering systems. Longer term, reduced operator fatigue and extended maintenance intervals all add up to lower ownership costs and a boost to your productivity.

Accumulator series

	type	pressure (bar)	volume (l)	bore (mm)	max flow (lpm)	approval
A & ACP	piston	250-350	0.1-38	40-150	3,100	CE
ABE	bladder	350	1.0-48.5	n/a	900	CE
Custom	piston	•	•	•	•	various

• = to customer specification

Rotary actuators

Parker's rack and pinion rotary actuators deliver constant high torque, whatever the angle of rotation. Full enclosure of moving parts cuts down on vulnerable linkages and pinch points, reducing the need for guarding. High capacity, tapered roller bearings make external bearings unnecessary, simplifying installation. With no exposed sealing surfaces to wear, service life is exceptionally high – so whole-life costs are exceptionally low.

Actuator series

	type	pressure (bar)	max torque (Nm)	rotations	single/double rack
HTR	rack & pinion	210	68,000	90º, 180º, 360º	Both
Custom	rack & pinion	•	•	1,800º+	Both

• = to customer specification

Accumulators in materials handling

Picture courtesy of JCB Ltd

Load retention, traction and operator comfort are critical issues for the productivity of vehicles such as telescopic handlers – among the most versatile vehicles in materials handling today.

Equally at home on the road or on the rough, the cycle times of these vehicles are directly related to the ability of their suspension systems to absorb shock and control out of balance forces.

When carrying extended loads, the moment of the boom is amplified, increasing the risk of spillage or damage to the load.

JCB worked closely with Parker's engineers to develop their Smooth Ride System (SRS) which governs the movement of the boom on the JCB Loadall range of telescopic handlers.

SRS is a development of the acclaimed load suspension system used on the company's popular backhoe loaders. The Smooth Ride System improves operator comfort and load retention in the bucket, by damping out the forces imposed on the machine by movement of the loader arms as the machine travels over rough terrain.

The system uses two piston accumulators in the lift ram circuit, which allow the boom to move independently of the machine. These accumulators cushion the load when travelling over rough surfaces.

The result – vehicles which are safer, more comfortable and more productive.

Accumulators in construction

Minimising cost per tonne is at the heart of all decisions concerning transport for the construction industry.

Performance and reliability are key – which is why Terex Equipment Ltd. came to Parker when developing the braking systems for their TA range of trucks. TA articulated dump trucks have gross weights of up to 160 tonnes, can achieve speeds of 40 mph and frequently work on steep gradients. Optimizing material transfer times means relying on your braking system.

Terex articulated dump trucks use a combination of dry disc brakes on the front axle and oil-cooled multiple discs at the rear. Each independent circuit incorporates a Parker A Series piston accumulator to store energy which is available regardless of fluctuations in hydraulic pressure and provides for continued fail-safe application in the event of a loss of hydraulic power.

The space-efficient design of the A Series piston accumulator uses a lightweight dished-profile piston for rapid response and extra gas capacity, and provides a high usable volume of hydraulic fluid. Parker's unique five bladed V-profile O-ring seal ensures total separation of gas and oil, even under the severe operating conditions of a construction site. And because Parker's piston accumulators can be mounted in any position, attaching them to the truck chassis is made easy.

The result – a proven accumulator which contributes to Terex' reputation for reliability, performance and safety.

Picture courtesy of Terex Equipment Ltd

Cylinders in mining and quarrying

From bench drilling to grading/crushing and on-site transportation, hydraulics provides massive, reliable power at the point of delivery.

Parker cylinders are proven to keep on delivering optimum performance in conditions of dust, abrasion and impact damage – which is why they're the first choice of leading manufacturers of rock drills, crushers, loaders and trucks.

Our mobile cylinders provide optimum bearing length within the cylinder envelope, resisting side loading and minimizing wear, while tough, durable sealing systems protect critical rod surfaces to prolong component life.

Working continuously at full capacity in quarries and open pit mines, surface crawler drilling rigs have to achieve high levels of productivity while meeting tough standards for stability, reach and safety. High productivity relies on rapid set-up and manoeuvring, straight hole drilling, quick penetration and efficient flushing to achieve the lowest cost per tonne produced.

Parker's rugged, efficient hydraulics help many of the world's leading manufacturers of mining and quarrying machinery to deliver class-leading performance, with designs that optimize maintainability and productivity.

Cylinders in vehicle building

Picture courtesy of OA Opbyg

Today's sophisticated braking, steering and suspension systems are being developed against a background of stringent safety legislation, higher loads and faster road speeds.

The OA Opbyg steering system chosen by Volvo trucks uses Parker steering cylinders to deliver reliable performance, mile after mile.

Engineers from OA Opbyg and Parker worked together to develop a unique cylinder for this exceptionally challenging application. With clean external lines, tough painted or plated surfaces and no unprotected threads, the result is a steering cylinder on which corrosion has no starting point – even in the exposed mounting positions required for steering gear.

For the fleet operator, the choice of Parker cylinders means low operating costs and faster journey times on the road.

For the maintenance engineer, a simple check on fluid levels and the condition of gaiters adds up to a faster journey through the workshop.

Picture courtesy of Volvo Truck Corporation

Cylinders in forestry

Picture courtesy of Gremo AB

By definition, forestry harvesting and forwarding take place in some of the most remote, rugged landscapes on earth, often in extremes of climate. Like all commercial applications of mobile hydraulics, productivity is the number one issue for operators but, deep in the forests, it's run a close second by reliability.

Hydraulic systems are the lifeblood of forestry machines, providing drive through hydrostatic transmissions as well as loading, cutting and handling functions by boom-mounted grapples and harvester heads.

Forestry equipment has to be powerful, yet gentle on the environment on which it depends, moving among stands of timber with the minimum of damage and disruption to their ecosystems.

Parker contributes to this environmental sensitivity, with quiet-running systems, low emissions controlled by efficient filtration, and leak-free fittings.

Our sealing systems are designed around bio-degradable fluids, making maintenance easier and safer and prolonging component life for maximum machine utilization.

Our concern for the environment and our commitment to productivity gains through technological advances make Parker a natural partner for Gremo AB's range of forwarders and harvesters.

Parker mobile cylinders provide the moving force that helps Gremo's forestry vehicles bring the timber in, whatever the conditions.

Cylinders in materials handling

Fork lift trucks present exceptional challenges for the design engineer. Working within a footprint of a few square metres, the designer has to create a vehicle which can raise a load of perhaps 50,000kg to a height of eight metres or more.

It must be capable of withstanding the powerful dynamic forces generated by heavy loads with extended load centres, by positioning the mast to compensate for height, movement and surface variation.

Parker's engineers worked with Linde to develop the special hydraulic tilt cylinders used in the Linde Torsional Support (LTS) system, which moves the load's centre of gravity as the load height changes.

By mounting the hydraulic cylinders above the overhead guard, mast deflection is minimised and operator visibility is maintained.

Picture courtesy of Linde AG

The cylinder design has to accommodate exceptionally high peak pressures induced by load oscillation. Working in partnership with Parker, Linde's engineers achieved a solution which is both practical and cost-effective.

Rotary actuators in access systems

Picture courtesy of Böcker GmbH

Telescopic access platforms demonstrate the real strengths of mobile hydraulics – a compact, self-contained power source; smooth, progressive power delivery and the inherent safety of the non-compressible fluid medium.

Levelling and stabilising the platforms of access systems is frequently carried out using a parallelogram structure incorporating a hydraulic cylinder but, for their truck-mounted access platforms, Böcker chose a Parker HTR Series rack and pinion rotary actuator.

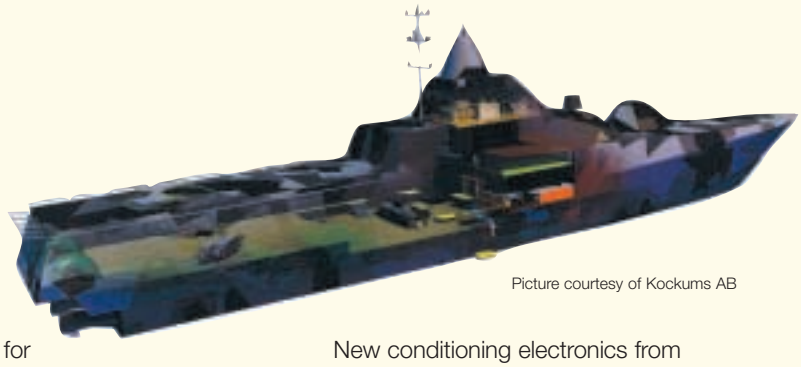
The double rack configuration chosen for this application provides exceptionally high torque from a compact envelope, maintaining the horizontal attitude of the platform under all operating conditions and ensuring that the operator feels secure during positioning and while working.

Under full proportional control, adjustments to the position of the platform are rapid and smooth. Lock valves hydraulically lock the rack and pinion assembly, preventing any loss of attitude in operation.

Health and safety issues are minimized as the fully enclosed design of the rotary actuator avoids the exposed dynamic surfaces and pinch points associated with linear actuators close to the operator area. Using Parker's HTR Series rotary actuators delivers savings in design and manufacture, allowing Böcker to engineer a superior solution without conventional platform support bearings, stabilising linkages and protective covers.

The reduced maintenance requirement from fewer pivot points delivers improved up-time and productivity to the platform operator as well – a win-win situation from Parker.

Electro-hydraulics... technology in control



Picture courtesy of Kockums AB

Pressure for ever-higher productivity has led to a rapid growth in the application of electro-hydraulic control systems to mobile hydraulics.

Under sophisticated electronic control, closed loop systems direct the precise movement, speed and position of hydraulic actuators to ensure that exactly the right amount of material is delivered where it's required, at the precise moment it's needed – while the operator may be far away, operating equipment by remote control.

Parker offers a full range of transducers and conditioning electronics for use with servo and proportional valves in mobile applications. Magnetostrictive, inductive and resistive devices, operating over stroke lengths from a few millimetres to well over a metre in length, provide accurate, reliable positioning solutions for some of the toughest mobile applications around.

At Parker, we're in the forefront, developing technically advanced solutions for the most challenging applications. As reliance on electro-hydraulic systems grows, issues such as EMI – electro-magnetic interference – shielding are critical.

New conditioning electronics from Parker ensure that radiation emitted by control systems is contained, while external EMI cannot disrupt performance – electronics so sophisticated that the Swedish shipbuilder Kockums uses Parker cylinders and conditioning electronics for its new generation of 'stealth' frigates.

Committed to our customers

With six ISO-certified actuator and accumulator manufacturing plants in Europe and an extensive network of sales offices, we aim to be close to our customers. Our reputation is founded on the strong relationships we've built with customers like JCB, Caterpillar and Case New Holland, working with them to meet the challenges of modern engineering with solutions that are timely, cost-effective and soundly engineered.

Engineering
Solid modelling, finite element analysis, simulation programmes… Parker has the resources and expertise to respond to the most challenging applications, from single projects to series production. Our worldwide engineering data management system gives our designers instant access to global project data, so we can respond quickly to your changing needs without reinventing the wheel. The result – tailored solutions that optimise your investment.

Manufacturing
Continuous high-level investment in machine tool technology keeps Parker at the forefront of productivity. With full ISO certification of manufacturing, administration and control systems, we have the power to respond to the large-scale production demands of our customers, European and world-wide.

Training
We offer full training support, from classroom-based courses with purpose-built training equipment for hands-on teaching, to on-site training on your Parker mobile hydraulic systems. Regular in-house training courses are held at centres throughout Europe, covering all levels from beginner's hydraulics up to the design of sophisticated electro-hydraulic systems.

Project Management and Logistics
With today's compressed development timescales, project management takes on a critical significance. Working with our project engineers frees up your resources, bringing in expertise that we've developed through working with some of the biggest names in the mobile market. Parker has the experience and resources to manage every stage of a project, from conception and design through to delivery and support logistics.


Parker

In addition to mobile actuators and accumulators...

Parker manufactures a vast range of hydraulic, pneumatic and electro-mechanical motion and control products, which are distributed worldwide. For more information about Parker products, please contact your nearest sales office, or visit us at www.parkers.com

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