Solving the world’s greatest engineering challenges
for the defense industry
Systems integration

As a tier-one systems integrator, Parker is a world leader in system solutions. We provide customers with such value-added services as system architecture definition, integration, certification, production, and lifetime customer support.

Vehicle systems & subsystems

*New and complete upgrades*

- Electromechanical drives
- Electronic controls
- Fuel
- Filtration
- Fluid conveyance
- Hydraulics
- Pneumatics
- Power generation
- Seals
- Thermal management
- Wheel drives
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The world of defense faces countless hurdles. Many revolve around key engineering challenges. If those challenges can be solved, then military objectives can be met.

Faster.  
More economically.  
More efficiently.

Parker Hannifin, with its broad range of motion and control technologies, has a standardized system for addressing the key engineering challenges of our era. Linking our powerful engineering expertise with the unique needs of our defense customers, Parker is solving the world’s greatest defense challenges.

And engineering your success.
Wheel drive units

Hybrid technology: Electric motor in wheel
- Silent-drive mode of operation
- Enhanced crew safety
- Fording capability
- Lower fuel consumption
- Independent drive control of each wheel
- Flexibility of vehicle design
- 600 horsepower in a 5 x 20-inch package

Electric motor
- Brushless DC 750 VDC
- Liquid cooled
- Continuous power: 170 kW or 220 Hp
- Peak torque: 3400 N.m

Wheel
- Two-stage gear train
  - Oil lubricated
  - Sealed and vented
- Overload protection
- Internal parking brake

Electric propulsion, rechargeable storage
MA3 mobile hardened inverter
High-performance, high-intelligence motor controller for either PMAC or induction motors. Speed and torque points can be adjusted instantaneously and performance algorithms optimized to vehicle needs.
- Standard onboard digital communications with multiple protocols
- USB port, full programmability
- Rugged cast aluminum housing
Electromechanical drive systems
Small, lightweight, and powerful assists

- Low noise operation
- Significant speed-to-power density
  - High-density power with cooling package series
  - Small envelope
  - Higher speeds (with cooling package usage)
  - Electrohydraulic and pneumatic solutions available
- No hydraulic fluid, no leakage issues
- Crush-prevention technologies available
- Easy field replaceability
  - Completely modular
  - Simple removal and replacement
- Easy-to-understand fault detection and diagnostics

Global vehicle motor (GVM)
Off-the-shelf electric machine specifically designed for vehicle duty electric traction and power generation applications. Combined with the MA3 motor controller, GVM output power can reach 200 kW+.

- Power density up to 4 kW/kg
- Specific power up to 13 kW/L
- Highest dynamic efficiency reduces energy storage
- Scalable power output
- Selectable voltage levels
- Flexible base speed
- Patent-pending cooling
- Kit form available for optimized vehicle integration

Energy dissipation unit
- Supports electrical braking
- Small, optimized size for fully armored vehicle (MRAP)
- Air cooled
- Two MW peak, 150 kW continuous

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Environmental & filtration systems

Designed to withstand harsh battlefield conditions, as well as chemical, biological, radiation, and nuclear wash downs

■ CBRN regenerative filters
- Electronically controlled dual canister filters
- Meet a wide range of airflow requirements
- Continuously regenerate
- No requirement for canister replacement

■ CBRN single-pass filters
- Compact, high performance
- CBRN filtration system
- Utilize the existing approved M48 cartridge
- Easily integrated into any platform
- Provide 100 CFM of clean air

■ CBRN environmental and overpressure seals
- Advanced materials and technology can withstand harsh battle environments and CBRN wash downs
- Accurately maintain cab overpressure to ensure safe crew atmospheres
**Dual system fuel management**

_Broad product line of smart pumps, valves, and filters_

- Smart, brushless line of pumps, hydraulic and fuel filters, level-control valves, isolation valves, combination water separator smart pumps, electronic controller systems, and fire-retardant systems
- Designed to provide diagnostic information to vehicle system health monitoring
- Provide increased survivability

**Water desalination and purification in any environment**

Whether in the desert, the middle of the ocean, or an isolated disaster area, Parker’s reverse osmosis technology offers highly effective desalination and purification for the most challenging needs in the most difficult environments.
Power generation systems
Reducing costs, maintenance, and emissions
Parker has been at the forefront of power generation technology for decades. Our expertise in combustion turbine systems, combined-cycle power equipment, fossil fuel solutions, and nuclear power components offers unmatched solutions for virtually every power generation need.

Multiple drive options for export power

- **Custom hydraulics**
  - Alternator-generator drives
  - Constant RPM regardless of engine RPM
  - Constant high-amperage output

- **Silent-drive hydraulics**
  - Battery-powered hydraulics
  - Charging in one assembly

- **High-voltage 460 VAC systems**
  - 10 kW – 300 kW
  - Precision two-phase liquid cooling with 90% efficiency

Winch systems
Integrated hydraulic and electric options

- Multiple lightweight winch options
- Selected by TACOM and the USMC to provide the winch system for the LAV-RA2 upgrade
- A world leader in orbit-style, low-speed, high-torque, hydraulic motors
- Winch technology to meet the most demanding challenges
- Integrated solutions with optimum performance over a full line of vehicle platforms
PHASE I

- **Engine-driven power system**
  - Retrofitable to existing vehicle platforms
  - Engine fan-belt driven
  - 300-pound system
  - High voltage
  - 30 kW power
  - Hydraulic-driven, direct-belt drive

PHASE II

- **Micro-turbine power system**
  - Retrofitable to existing vehicle platforms
  - 200-pound system
  - 40 kW quiet power
  - Small package
  - Isolated from engine
  - Same fuel supply as engine
  - No parasitic drain on vehicle power train

**Suspension systems**

Innovative strut/actuator technology

- Height management
- Roll and lateral stabilization
- Variable travel
- High response

*Electronic integration control*

- Lane-change stabilization
- Complete system stability
Door assist systems
Small, lightweight, and powerful

Over 20,000 systems in service today, assisting vehicle crews in operating heavily armored doors quickly and efficiently

- Uniquely powerful, yet compact enough to fit within armored doors
- Electrohydraulic and pneumatic subsystem solutions available
- Both provide lightweight and reliable low-noise operation
- Subsystem content tailored for specific applications
- Crush prevention technologies incorporated to enhance warfighter safety

Powering MRAP doors
Using an integrated design philosophy, these superior door assist systems offer a significant increase in door speed and strength, translating into invaluable protection for the soldier. Their small, compact design creates greater power density, while providing valuable space for critical components in the vehicle.

Power steering systems
Featuring Intellinder™ absolute position sensor

- Monitors linear position in applications requiring intelligent system control
- Four redundant sensors for improved reliability and safety
- Easy adaptability for reduced engineering and installation costs
- Absolute and immediate position-sensing technology for optimum safety
VISION SYSTEMS
Platforms
- Thermal imaging systems
- Range finders
- Target acquisition and designation
- Binoculars and monoculars
- Eye protection
- Flashlights

Applications
- Housings
- Eye pieces
- Battery covers
- Lens caps
- Rubber armor

ELECTRONICS
Platforms
- Radios
- Headsets
- GPS systems
- Detection
- Ruggedized computers

Applications
- Housings
- Keypad covers
- Antenna covers
- Rubber armor

SOLDIER COMFORT AND PROTECTION
Platforms
- Hydration systems
- Chemical/biological protection

Applications
- Caps
- Tubing
- Grips

WEAPONS
Platforms
- Grenades
- Missiles

Applications
- Handles
- Bases

Sealing in safety
The best defense against water and dust intrusion
Parker seals offer low permeation, EMI-shielding capability, NBC wash-down resistance, reduced complexity, and ease of assembly.
Integrated fluid connector systems
Designed as an integrated system

As the world’s largest manufacturer of fluid connectors, Parker offers a complete range of commercial, off-the-shelf (COTS) products for tactical and combat vehicles. Our fluid connectors are engineered, manufactured, and tested to work as an integrated system, delivering exceptional quality and reliability that you can count on.

**Formed hydraulic hose**
- Eliminates hose/tubing combinations
- Color coding available
- 50% reduction in installation time

**Aluminum adapters**
- 65% lighter than steel and stainless steel fittings
- Superior corrosion resistance to salt spray

**Aluminum quick couplings**
- Shorten engine change-out time
- Reduce fluid loss in the system
- Flush-face, non-spill options

**Hose for transmission & fuel**
- Lightweight aluminum fittings
- Easy to install, flexible

**Lightweight swing check valves**
- Lightweight check-valve option
- Low crack pressure with good flow performance

**Thermal bypass valves**
- Warms up hydraulic and transmission oil on cold starts
- Pressure relief to prevent over-pressurizing the cooler
- Lightweight aluminum construction
Silicon heater hose
- Lightweight, extremely flexible

Fuel line hose
- Lightweight, extremely flexible

Engine coolant hose
- Replaces formed hose
- Extremely flexible
- Easy routing

Air brake harnesses
- Turn-key installation
- Color coding available
- 50% reduction in installation time

Hose for air brakes
- Lightweight aluminum fittings
- Easy to install, flexible

Push-to-connect hydraulic hose/tube connections
- Compatible with any existing O-ring face-seal fitting
- Wrenchless assembly
- Can be disconnected with standard wrench

Non-welded pipe assemblies
- Utilizing SAE/ANSI O-ring flanges
- Carbon steel and stainless steel
- 1/2” to 10” range
- Two distinct technologies: flare flange and retaining ring systems

Adapters with enhanced corrosion protection
- XTR coating provides more than seven times the industry standard of corrosion protection
- Withstands harsh environmental conditions
Advanced thermal management
Supporting warfighters on the ground, in the air, and at sea

- Enabling cross-platform, mission-critical applications
  *A key enabler in the pursuit of SWaP*
  - Radar and electronic warfare
  - SIGINT
  - Vetronics
  - Mission systems
  - Command & control
  - Power electronics

- Cooling systems that improve efficiency and decrease SWaP for military vehicles

**Applications**
- Motor drives (IGBTs)
- Traction motors
- Batteries
- Ultra capacitors
- Vetronics

**System elements**
- Coldplates: single- and two-phase
- Liquid infrastructure: pumps, QDs, valves, seals, and hoses
- Heat rejection: heat rejection units, heat exchangers, and heat rejection panels
- Enclosures: SprayCool™ and liquid-cooled conduction
- Working fluids: EGW, PGW, PAO, refrigerants (R134A, R236A, & dielectric fluids)
Parker Hannifin Corporation
The world leader in motion and control

The world's leading diversified manufacturer of motion and control technologies and systems, providing precision-engineered solutions to address the challenges of humankind, including food, water, infrastructure, transportation, life sciences, environment, defense, and energy, for a wide variety of mobile, industrial, and aerospace markets.

$13 billion in sales
865,000 products sold
58,000 employees
13,000 distribution/MRO outlets worldwide
1,100 markets
341 manufacturing facilities
139 divisions
49 countries