



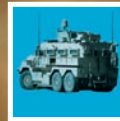
Donaldson
FILTRATION SOLUTIONS
AEROSPACE & DEFENSE

AEROSPACE & DEFENSE

Leading the Way in Military Ground Vehicle & Equipment Filtration

Military Ground Vehicles & Equipment

Mission Ready.



Donaldson – World Leader in Military Filtration Solutions

Nearly a century of military experience and expertise.

Comprehensive product line.

Protects vehicles from nature's roughest tests.

Global resources for every challenge.

Military

For the War Fighter

For nearly a century, Donaldson has provided filtration solutions to keep military vehicles moving, and the company has developed technologies to keep pace with military requirements of evolving complexity.

From desert sandstorms to jungle swamps, a range of environmental factors challenge military vehicle and equipment operators. Yet military vehicles must operate reliably in every situation.



Donaldson offers a comprehensive selection of ground vehicle filtration solutions.

Donaldson's custom filtration solutions - based on actual experience in the field - ensure that equipment performs when and where it is needed.

Donaldson's complete commitment to the war fighter encompasses:

- The industry's best and most comprehensive research and development program
- Rigorous designs that exceed operational standards
- Product and systems that meet or exceed ISO9001/AS9100 quality requirements
- Systems that are validated in the field where it counts
- Unmatched technological capabilities and product expertise
- Global distribution and local support that meets emergency needs



Changing filters is a user-friendly process.

Learn more at www.DonaldsonAerospace-Defense.com



FOCUS

Customer Solutions

PROBLEM: In Desert Storm, the M1 Abrams could only travel as few as 12 miles (20 km) before the filters needed to be changed.

SOLUTION: The M1 Abrams requirement pioneered the first PJAC Air Cleaner back in 1991. On a 1,560 mile dust course at Yuma Proving Grounds, a non-pulse jet equipped M1A1 had to stop and service filters ten times. The M1A1 equipped with the PJAC never had to stop to service the filters. Now the PJAC is offered on many ground vehicles and is used by governments all over the world.

PROBLEM: The Leclerc tank needed a fuel filter that would increase engine protection and provide high reliability for this main battle tank.

SOLUTION: Donaldson designed a robust fuel filter which offered long life, high efficiency and easy maintenance. All of these benefits translate into reduced vehicle down time and superior engine protection.

PROBLEM: The U.S. Army needed a proven filtration system that would increase performance and mission availability of the M915A5 Line Haul Truck vehicle.

SOLUTION: The M915 PJAC™ Ultra® system was selected to improve filtration for the M915A5. The PJAC Ultra is a self-cleaning air cleaner that increases vehicle availability, minimizes maintenance and has ten times the life of a conventional air cleaner.

PROBLEM: The United Kingdom's Ministry of Defence required engine filtration systems that would allow Warrior and CVR(T) vehicles to operate effectively in austere environments.

SOLUTION: Donaldson responded quickly by designing and manufacturing upgraded engine filter systems for the CVR(T) and Warrior. Both designs allowed the reduction of engine upgrades required, and decreased regular engine maintenance demands while demonstrating significant cost savings.

“Extreme conditions require prepositioned ground fleet to be equipped with PJAS.”

– PM Combat Systems, U.S. Army speaking about lessons learned with tanks and other equipment in Operation Iraqi Freedom.
Note: The Army uses Pulse Jet Air System (PJAS) interchangeably with Pulse Jet Air Cleaning (PJAC).

“As the Warrior fleet is upgraded with the new and improved Donaldson Air Filtration (AF) System, we are expecting both immediate benefits and long-term cost savings. These armoured infantry vehicles are being used in extreme conditions, such as Afghanistan, and the legacy AF systems were simply not designed for use in such environments. The United Kingdom Ministry of Defence therefore needed an air filtration system that would provide UK armed forces with improved engine protection, increased vehicle performance and higher reliability. We also wanted a solution that would increase the time between filter maintenance intervals, decrease spares consumption and simplify maintenance. We have achieved all of these requirements using the customised solution designed and manufactured by Donaldson.”

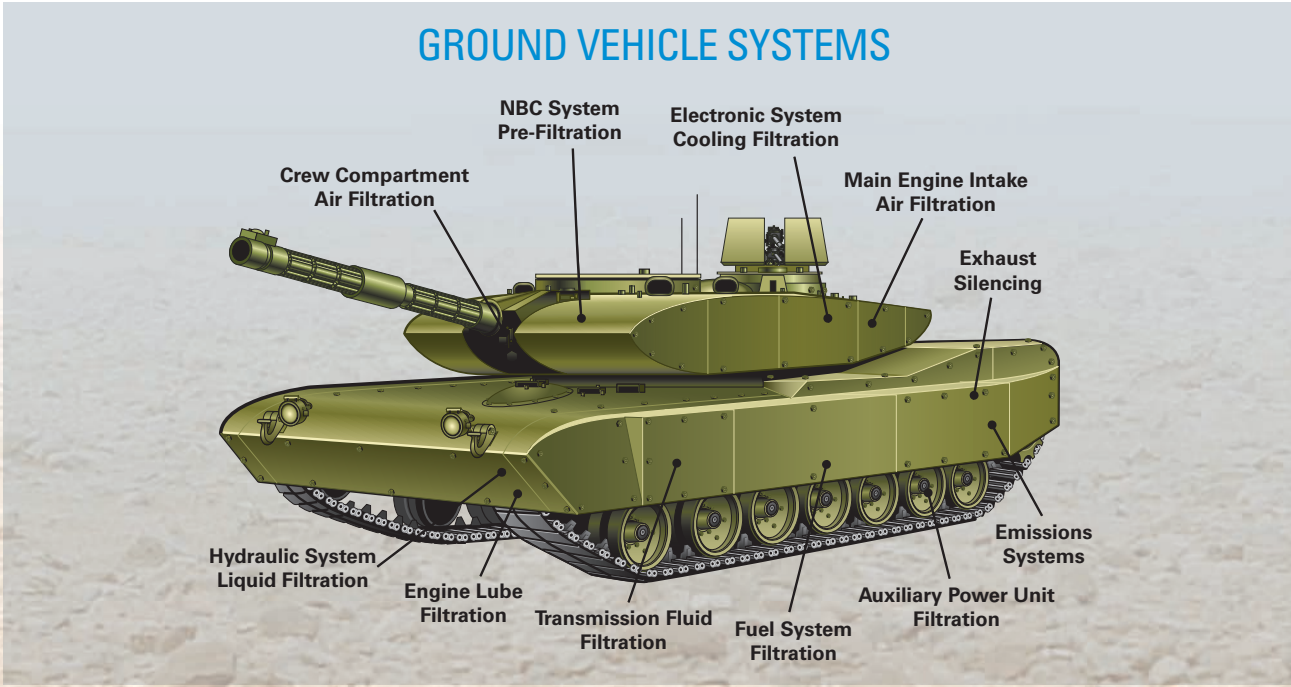
– Mike Venables – Director Whole Fleet Management Integrated Project Team with the United Kingdom Ministry of Defence.



Powering Success

Donaldson offers more than 100 filtration media and has over 1,500 active patents. Donaldson leverages this filtration expertise when designing efficient filtration solutions for military diesel and gas turbine engines, transmissions, fuel, oil, hydraulic and pneumatic systems, electronics and environmental control systems.

Donaldson main engine air intake, hydraulic, fuel, oil, transmission filtration and environmental control systems are found in main battle tanks including the Abrams, Leclerc and Merkava; armored vehicles such as the Bradley, M113, MRAP, M/ATV, Spartan and Stryker; the Paladin self-propelled artillery, M88 Hercules recovery vehicle and Terrier combat engineer vehicle; and trucks ranging from the Logistics Vehicle System Replacement (LVS), HEMTT and FMTV to the HET, Sherpa and HMMWV.



Over

Major Defense Land Platforms

M1A1 & M1A2 Abrams

M-ATV

RG31 MRAP

RG33 MRAP

Caiman MRAP

Cougar MRAP

M2/M3 Bradley

Stryker & LAV III Light Armored Vehicle

LAV II

LAV I

Armored Security Vehicle (ASV)

Multiple Launch Rocket System (MLRS)

M113A2

M113A2 Retrofit Kit

M113A3

M109A6 Paladin SPH

M9 Armored Combat Earthmover (ACE)

M88A2 Hercules

AAV7A1 Assault Amphibious Vehicle

Family of Medium Tactical Vehicles (FMTV)

M915A4/M916/M917 Truck

M915A5 Truck

Heavy Expanded Mobility Tactical Truck (HEMTT)

HEMTT A4

M939 - 5 Ton Truck

Logistic Vehicle System Replacement (LVSR)

Landing Craft, Air Cushion (LCAC)

Tactical Quiet Gensets

EQ-36 Counterfire Target Acquisition Radar

Heavy Equipment Transporter (HET)

Terrier Engineering Vehicle

Warrior

T-72M

Merkava

AMX Leclerc

Caesar, Artillery Vehicle

CVR(T)

Jackal

Land Rover

Mastiff

AMV

Ridgeback

Sherpa 2 & 3

Light Tactical Vehicle

VBCI Wheeled Infantry Vehicle

AN/TPQ-37 RADAR

Bulldog

Challenger 2



Liquid filtration options are highly efficient and effective.

Advanced

Ultimate Filtration Resource

Media Design and Development

Donaldson has the ability to design and develop liquid and air filtration media for specific applications. Unique to the industry, Donaldson's prototype filter manufacturing facility encompasses development and testing of numerous media formulations. This exclusive capability gives Donaldson the opportunity to develop proprietary media grades for advanced applications.

Ultra-Web® Nanofiber Technology

- Increases filter life span with the ability to hold up to five times more contaminants than standard cellulose filters
- Higher efficiency media provides superior engine protection

Synteq XP

- Patented media enhances system performance by increasing the filter's efficiency, reducing operating pressure drop and extending the filter life up to three times that of a traditional cellulose filter

Strata® Tubes

Donaldson Inertial Particle Separator systems

- Protect diesel, gas turbine engines and environmental systems in conjunction with high efficiency barrier filters
- Use inertial force to spin contaminants out of incoming air
- Remove up to 99% of particulates from air flows
- No maintenance required

Strata® Tubes are proven performers that require little maintenance.



Flexibility in Media Packaging

Donaldson has the ability to package media in varying shapes and configurations based on customer requirements.

PowerCore®

The filter media is formed into honeycomb shaped flutes that are sealed on alternate ends. The honeycomb structure is much more rigid than traditional pleated filters and allows more than twice as much filter media to be packaged within a given amount of space.

- Configuration allows for three times the capacity of conventional filters
- Equal or better performance in 60% less space than a conventional air cleaner
- Custom configurations available to fit confined spaces

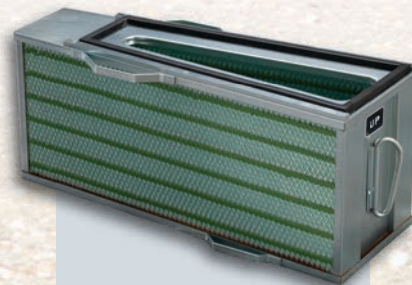


PowerCore® is a highly advanced and proven filtration technology.

Packaging Flexibility

Donaldson filters can be designed in a variety of sizes and filter media choices to meet your system specifications.

- Panel
- Round
- Vee-Pac®
- Konepac™
- PowerCore®
- RadialSeal™
- Axial seal



Vee-Pac® is one of Donaldson's flexible packaging options.

Technology

Systems

Conventional/Static Air Cleaners

- Can be designed to meet a wide variety of performance and weight requirements
- Various options that include primary, secondary and pre-cleaner filtration
- Customizable designs that may include unique mounting brackets or scavenge systems

PJAC™ & PJAC™ Ultra®

- A self-cleaning air cleaner that cleans your filter element during operation allowing operators to focus on the mission at hand
- Demonstrated reduction in filter maintenance
- Offers more than 10 times the life of a conventional air cleaner



Self-cleaning filtration like PJAC™ reduce vehicle down time and increase filter element life.

Hydraulic Manifolds

- Donaldson manifolds minimize the space required for your hydraulic system
- Complex manifolds package accessories such as indicators, check valves and sampling ports, along with return, case drain and high pressure lines into one system
- Robust designs that optimize performance
- Intelligent Filter Indicator which allows the operator to monitor the time remaining before filter element replacement



Hydraulic manifolds preserve precious space.

Fuel, Lube/Oil, Transmission & Coolant Filtration

- Highly efficient and effective systems that protect coolants, fuel, hydraulic and transmission fluid, oil and lube/oil
- Extensive design and manufacturing capabilities - t-type filters and manifolds that include indicators, valves and sampling ports





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