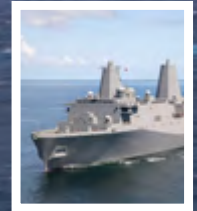




# Marine Filtration Solutions

Better Filtration Means  
Better Operational Readiness



Our products keep mission critical equipment running in the most demanding environments, maximizing the U.S. Navy's operational readiness for mission success.



# Donaldson Filtration Solutions

## Leading the Industry in Critical Shipboard System Protection

With more than 100 years in the filtration business, Donaldson leads the industry in high-performance filtration solution design, development, test, and production.

Our MIL-STD and commercial solutions protect on-board and pier-side hydraulic, lubrication, pneumatic, transmission, fuel, air, exhaust, electronics, and environmental control systems on military equipment deployed throughout the world, ensuring optimal mission readiness, even in the most demanding environments.

The defense industry has relied on our standard and custom filtration solutions since World War II. Having sailed with the U.S. Navy for more than 50 years, Donaldson holds many approvals from the U.S. Navy to produce fluid filters needed on their vessels.



## R&D Focused for Cutting-Edge Results

At Donaldson, we are driven by a commitment to continuously improve the capabilities of our filtration solutions. Our progressive next generation technology allows you to adapt to your changing environment and achieve ever-increasing efficiency and reliability for your mission critical equipment.

Each Donaldson filtration solution is meticulously designed, refined, tested, and manufactured in house to stringent military standards and other government specifications. Our recent acquisition of Hy-Pro Filtration expanded our capabilities, intellectual property, and facilities, further enhancing our ability to remain a step ahead in customizing the ideal solution for your needs.

## The Savings are in the Planning

Going beyond simple filtration, our products are designed to reduce downtime and lower total ownership costs by supporting improved maintenance practices. With Donaldson, the U.S. Navy can match maintenance cycles with operational cycles and adopt a cost-effective condition-based maintenance program, extending component life and limiting down time.





# Donaldson by the Numbers

**200,000+** different military and commercial filters, elements, and accessories

**150+** types of filters

**1,800+** active U.S. and international patents

**Over 35** different filter media formulations meeting stringent government requirements

**More than 5,000** parts with National Stock Numbers (NSN)

**100+** years in the filtration business

**100** technical laboratories in **12** countries

**45** worldwide manufacturing facilities

**23** global distribution centers

## Donaldson Capabilities

Donaldson is a full-service filtration solutions provider. We research, engineer, design, manufacture, test, certify, and support all of our products to ensure the highest quality on the market.

### Engineering

- Five global design validation centers
- Prediction and simulation modeling

### Development and Validation

- Filter performance testing
- Filter assembly durability
- Prototype filtration media design and development

### Test and Evaluation

- Material testing for static and fatigue
- Structural analysis
- Environmental testing
- Airflow filtration analysis
- Rapid prototyping
- Fluid analysis

### Manufacturing

- More than 45 worldwide manufacturing facilities
- Change Qualification Process (CQP) to maintain bill of materials
- Process Failure Mode & Effect Analysis (PFMEA)
- IAFT, ISO and AS (Aerospace & Defense) quality certifications
- Continuous improvement programs
- Prototype filter media manufacturing

### Custom Filtration Solutions

The U.S. Navy trusts Donaldson filters and filtration systems to keep equipment at peak operational readiness even in the harshest environments. We've earned this trust through a deep understanding of our customers' applications, allowing us to custom design filtration solutions, often exceeding your requirements and expectations.

Throughout our 50-year relationship with the U.S. Navy, our highly experienced multidisciplinary engineers have delivered multiple filtration solutions, including modifying existing systems and creating clean-sheet special fluid cleaning applications aboard surface vessels and submarines.

From design and prototype to test and final product manufacturing, we work with you to ensure your product is on time, on budget, and to your exacting requirements. In addition to our custom solutions, we also offer a large selection of COTS and Mil-Spec products.

# Hydraulic Filtration & Conditioning

For performance under any pressure, Donaldson's full line of MIL-STD filters and conditioning equipment boost efficiency and reduce costly wear.

By removing water and all sized contaminants, our patented media technology protects vital equipment, reduces down time, and expands operational life by removing water and contaminants from hydraulic fluids. In addition to standard variety of solutions, we can custom design the ideal solution for your operation and environment.

Designed for low-, medium-, and high-pressure, from 350 psi to 6,500 psi, our full range of filters keep sophisticated equipment running smoothly and efficiently.

## Hydraulic Filtration Solutions

- High-density filters and cartridges
- Assemblies
- Supporting hydraulic circuits, lines and reservoirs
- Fluid analysis
- Off-line filtration
- Filter service indicators
- Custom solutions
- Fluid conditioning

## Hydraulic Filtration Benefits

- Longer system life
- Reduced maintenance costs
- Reduced life cycle costs
- Supports/filters any fluids you use
- Enhanced operational flexibility
- Operates in almost any environment

## Advanced Media Technology

Donaldson offers more than 35 different media technology options to provide solutions that meet or exceed a wide variety of specifications. For higher efficiency, Donaldson created Synteq™ synthetic media technology to meet customer requirements. With Synteq™ customers experience:

- Enhanced hydraulic system component protection
- Lower operating pressure drop
- Longer filter life – 2 to 3 times that of traditional cellulose filter media
- Higher filtration efficiency







## Fuel Filtration & Conditioning

Donaldson's on-line and off-line fuel filters and conditioning equipment increase fuel efficiency while preventing costly premature injector and pump wear.

We have fuel filters for engines, fuel transfer systems and bulk fuel storage. Our fuel filters are compatible with DFM/F-76, JP5/F44, JP8, biodiesel (up to B100), kerosene, and #1 and #2 diesel.

Our wide range of fuel filtration solutions and custom media design options support fuel injectors operating at pressures up to 30,000 - 45,000 psi (2,000 - 3,100 bar), providing complete protection of your entire fuel system.

### Fuel Filtration Solutions

- Replacement filters
- Filter assemblies
- Water separators
- Replacement seals
- Valves
- Water collection bowls
- Custom solutions
- Diesel fuel conditioning
- TRAP vent breathers

### Fuel Filtration Benefits

- Lengthen engine component life
- Reduce maintenance costs
- Reduce life cycle costs
- Lengthen filter life
- Increase mission readiness



## Hy-Pro Off-Line Fuel Filtration

Dedicated filtration on stand-by diesel fuels is the first line of defense in preventing one of the worst sources of particulate and water contamination, new fluids. Off-line filtration eliminates this dangerous source of contamination before new fluids enter critical operating systems.

A division of Donaldson, Hy-Pro's high-efficiency off-line fuel filtration systems achieve and maintain target fluid cleanliness in fuel storage tanks. The unit features oversized filter assemblies to optimize single pass efficiencies and reach target ISO codes when either re-circulating tank fluid or dispensing.

# Advanced Lube Filtration & Conditioning

Today's mechanical systems and engines require newer lubricants and advanced filtration and conditioning technologies for optimum performance, protection, and equipment life.

Designed to meet these stringent requirements, Donaldson's products provide unrivaled fluid cleaning protection in a single pass. Lube oil filters remove and hold contaminants before they get into the engine, gears or drives. By capturing wear metals, soot, airborne moisture, and other damaging particulate contaminants, our filters expand capacity and increase flow rate beyond the capability of a single or dual filter head.

Our extensive line of lube filtration solutions range from filters and conditioning equipment to complex manifolds with intelligent sensors, indicators, valves, and sampling ports, each designed specifically to help with condition-based maintenance, reducing both cost and labor.

## Lube Filter Solutions

- Comprehensive line of diesel engine filters for standard and extended life
- Assemblies
- Manifolds
- Lube oil analysis
- Off-line filtration
- Oil conditioning
- Differential pressure indicator
- Custom solutions

## Lube Filter Benefits

- Ultra-high efficiency filtration on fine particulates and sludge at system pressures up to 1,000 psi (69 bar)
- High contaminant holding capacity
- Water and particle separation
- Minimum oil flow restriction
- Minimized pressure drop
- Reduce energy consumption

## Coolant Filtration

Between 40-50% of today's hot-running engine down time is caused by coolant system failures. Donaldson coolant filters protect coolant systems, reducing down time by removing contaminants and maintaining cooling system balance. Donaldson also supports engine cooling with a complete line of replacement filters, filter elements, and off-line filtration systems (filter carts and panels), as well as line and reservoir accessories such as breathers, suction strainers, diffusers, and gauges.

## Pier Side Filtration Technology

New fluids are the leading contributors of damaging contaminants to your engine and component systems. Polishing and flushing oil and hydraulic lubricating fluids prior to adding them to equipment, gearboxes, and reservoirs optimizes system performance and lengthens component life.

Donaldson's convenient off-line filtration technology delivers baseline ISO fluid cleanliness levels for new lubricating fluids and maintains those levels throughout the fluid's useful life. Donaldson off-line filtration technology provides vital off-line filtration, flushing, and fluid transfer, removing fine particles, particulates, and water.





## Smart Filtration

Donaldson's own patented **Filter Minder™** connected technology monitors air, hydraulic and fuel filter health as well as the lube/hydraulic oil condition, thus optimizing engine operations, improving asset protection and maximizing return on investment. Wireless sensor and receivers send filter performance and oil condition data to the cloud where proactive analytics alert you when filters are approaching the end of optimal life or the oils are suffering some sort of degradation/contamination that may lead to a catastrophic failure and expensive repair.

Constant monitoring allows you to extend the use of your filters while also helping you avoid damage from shortened filter life due to high contamination. Supporting condition-based maintenance, **Filter Minder™** takes the guesswork out of filter replacement.

## Innovative Air Filtration Technology

From engines to critical electronics and environmental systems, onboard components depend on Donaldson's industry-leading high-efficiency filters to operate effectively to the maximum extent of operational life.

Our advanced filter media and designs for superior air intake and exhaust filtration solutions are developed in-house to surpass standard performance requirements. As a result, Donaldson high-density patented technology provides exceptionally high-performance, removing even the smallest particles from the air, including smoke, atmospheric dust, and microbiological material to protect engines, components, and crew.

### Air Filtration Solutions

- Diesel and gas turbine engine air intake filtration
- Air purification systems
- HEPA filters with antimicrobial additives
- Standard HEPA filtration
- Maintenance-free inertial particle separation
- Crew air filtration
- Avionics, environmental control system, and electronics air filtration
- Custom solutions

### Air Filtration Benefits

- Protect critical electronic equipment from particulate and chemical contaminants
- Defend crew health by removing bacterial, fungal, and viral particles
- Increase diesel and gas turbine engine and component efficiency
- Lengthen operational life
- Reduce downtime
- Enhance reliability and mission readiness

## Exhaust Solutions

Donaldson designs and manufactures integrated exhaust solutions for the military, meeting strict U.S. and international regulatory and military standards. Our exhaust products include catalytic converter mufflers (CCM), diesel oxidation catalyst (DOC) mufflers, exhaust ejectors, spark arrestors, and ejector mufflers for use on numerous medium to heavy-duty military vehicles and equipment.

### Emission and Exhaust System Benefits:

- Reduce noise and back pressure
- Increased fuel economy
- Extended service life





## Donaldson Filtration Solutions Protecting Critical Systems for Optimal Operation in all Environments

At Donaldson Filtration Solutions, we help ensure the safe, reliable performance of the U.S. Navy's critical military platforms, even in the most demanding environments. Our global network and local support means we're always standing by, wherever you may sail, to ensure the highest level of customer support.

### Military Standard Products

Donaldson products meet the rigorous requirements stipulated in Department of Defense Specifications and Standards Index.

### Our U.S. Armed Forces Customers

- U.S. Navy ships and submarines
- U.S. Coast Guard ships
- U.S. Army and Marine Corps combat vehicles
- U.S. Navy, Air Force, Army, and Marine Corps fixed and rotary wing aircraft

### U.S. Navy Vessels Currently Protected by Donaldson Products

- Aircraft Carriers
- Cruisers
- Amphibious Ships
- Submarines
- Destroyers
- Landing Craft

## Better Filtration Means Better Operational Readiness

At Donaldson, our world-class customer service includes comprehensive global support and our extensive online resources.

To learn more about our innovative filtration solutions for critical military systems, including our custom design and modification capabilities, contact us or visit our website at [www.donaldsonaerospace-defense.com](http://www.donaldsonaerospace-defense.com)



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