

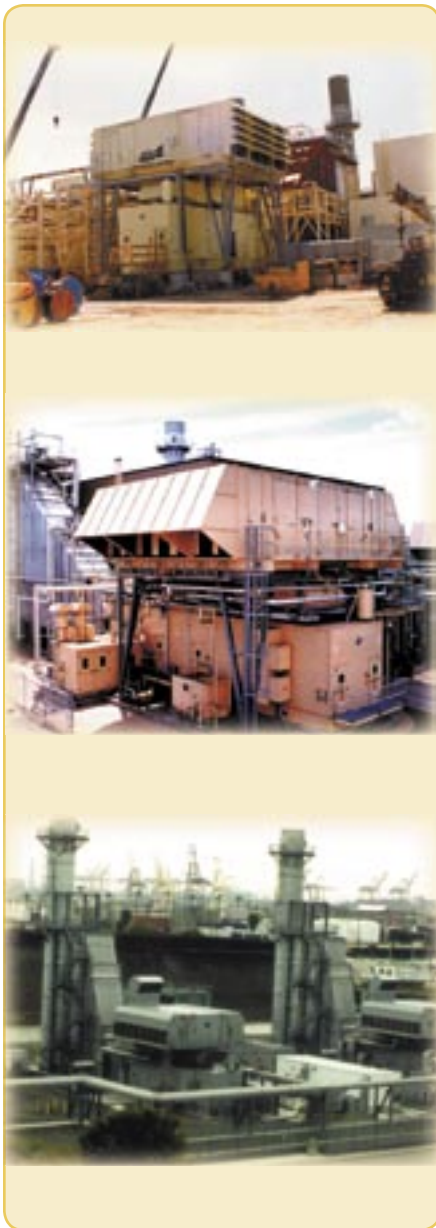


Donaldson®

Filtration Solutions
for Gas Turbines,
Generators, and Compressors

Replacement Filters for GE-AEP LM6000 Turbines

Superior Quality Air Inlet Filters, Pre-Filters and Hydraulic Filters



Your LM6000 turbine needs the best protection possible from the ravages of airborne contaminants -- and that means it needs high quality Donaldson replacement filters.

This mini-catalog describes filtration products and services that can help keep your turbine running at peak efficiency and output.

- Superior quality two-stage **air filters** -- the original Donaldson Composite Filter with our exclusive nanofiber Spider-Web® media in the final filter.
- **Pre-filters** in 3 sizes, one of which is 3½"-deep to fit perfectly into GE-AEP LM6000 Guard Filter frames.
- Replacement **hydraulic filters**, both spin-on and cartridge style, with our high performance Synteq® synthetic filter media.

Call us today for a quote on best price and delivery on your next order: **800-431-0555**

Pre-Filters Panels Protect Chiller Coils & Evap Cooler

Donaldson offers pleated, disposable pre-filters in various depths and framing materials to fit inlet air filtration systems on LM6000 turbines.

P03-0228 is designed to fit into LM6000 “Guard Filter” door framing. It uses a 100% non-woven blended fiber media, rated at 25-30% efficiency (ASHRAE 52.1-1992) with Arrestance efficiency of >90% when operated at a nominal face velocity of 500 feet per minute (2000 cfm per filter).

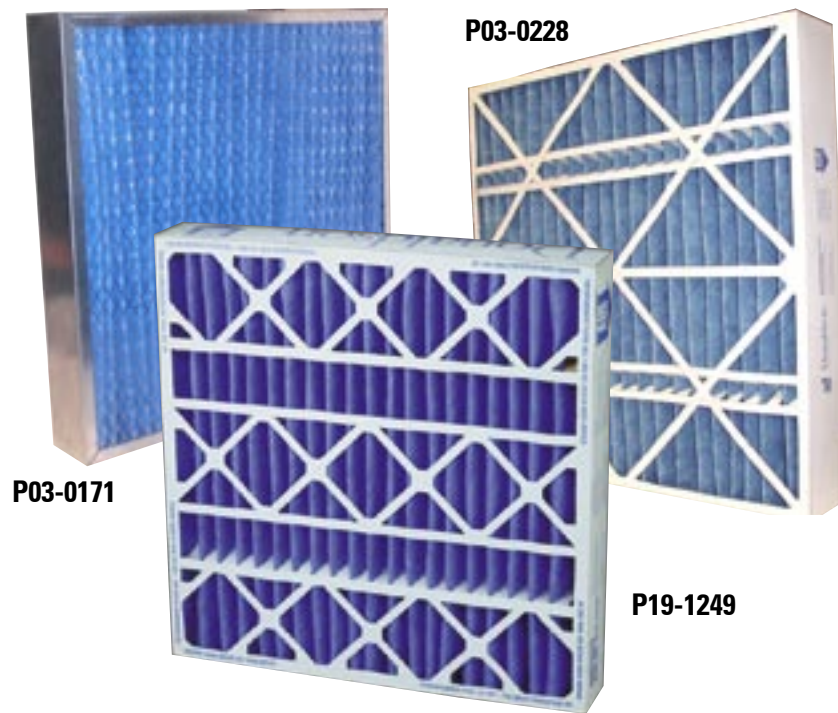
P19-1249 (beverage board frame) and **P03-0171** (metal frame) provide medium efficiency filtration in gas turbine inlet air filtration systems with inlet cooling.

Both pre-filters have 100% synthetic fiber media rated at 20-25% efficiency (ASHRAE 52.1-1992) with Arrestance efficiency >90% when operated at a nominal face velocity of 500 feet per minute (2000 cfm per filter).

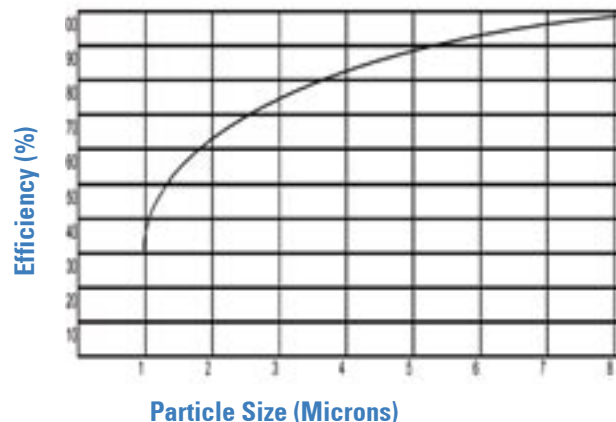
On all pre-filter styles, the air-leaving side of the filter media is bonded to a wire grid (copper-coated welded wire on the P03-0228) for stability, and the media is pleated to minimize the airflow resistance while maximizing the particle arestance and dust-holding capacity. On the beverage-board models, pleat separators (“fingers”) are an integral part of the frame and serve to maintain the spacing between pleats.

| | P19-1249 | P03-0171 | P03-0228 |
|-------------------------------|----------------------|---|----------------------|
| Nominal Size (inches) | 24 x 24 x 4 | 24 x 24 x 4 | 24 x 24 x 3½ |
| (mm) | 610 x 610 x 102 | 610 x 610 x 102 | 610 x 610 x 89 |
| Frame Material | beverage board | galvanized metal | beverage board |
| Rated Airflow Capacity | 2000 CFM | 2000 CFM | 2000 CFM |
| Initial Resistance | | | |
| at Capacity* | 0.26" (6.6mm) W.G. | 0.3" (8mm) W.G. | 0.3" (8mm) W.G. |
| Gross Media | 26.7 ft ² | 28 ft ² (2.60 m ²) | 26.7 ft ² |

* Filters have been tested to a dust loaded resistance >3.0" w.g. without materially affecting structural integrity or filter efficiency. A final resistance of 1.0"-1.5" W.G. is typical for most installations.



Efficiency by Particle Size





Full Line of Replacement Cartridges & Spin-ons

What cleanliness level do you need? Donaldson has a broad line of replacement filters, heads and full assemblies, to fulfill your oil cleanliness requirements. Most are in-stock, ready to ship. Call us with any brand part number, and we can cross reference it to a Donaldson filter that offers equivalent or superior performance.

Whether you need a spin-on or a cartridge replacement, a BunaN or special fluorocarbon seal (such as Viton), or a particular media to handle the contamination you face, Donaldson most likely has a replacement hydraulic filter for your industrial application. The filters most commonly used on LM6000's are shown at right.

Our exclusive synthetic media, Donaldson Syntec[®], is formulated specifically for industrial liquid filtration and yields the highest performance in gas turbine applications.

Hydraulic Replacement Filters



Duramax[®] Spin-On Filter

Designed to fit Donaldson's HMK05 & HMK25 filter heads

| | |
|----------------------------|-------------------------------|
| Part Number | P16-5659 |
| Length | 11.6" / 294 mm |
| Media | Syntec [®] synthetic |
| $\beta_{x(c)}=1000$ Rating | 5 μ m(c) |
| Flow | 50 gpm / 189.3 l/min |
| Working Pressure | 350 psi / 24.1 bar |
| Rated Static Burst | 800 psi / 24.1 bar |



Duramax[®] Spin-On Filter

Designed to fit Donaldson's HMK04 filter head

| | |
|----------------------------|-------------------------------|
| Part Number | P16-5332 |
| Length | 9.4" / 240 mm |
| Part Number | P16-5354 |
| Length | 6" / 152 mm |
| Media | Syntec [®] synthetic |
| $\beta_{x(c)}=1000$ Rating | 5 μ m(c) |
| Flow | 35 gpm / 130 l/min |
| Working Pressure | 500 psi / 34.5 bar |
| Rated Static Burst | 1000 psi / 69 bar |



Cartridge Filter

Designed to fit Donaldson's HPK03 & HPK04 High Pressure Filter Housings

| | |
|----------------------------|-------------------------------|
| Part Number | P16-7185 Cartridge |
| Length | 8" / 203 mm |
| Media | Syntec [®] synthetic |
| $\beta_{x(c)}=1000$ Rating | <5 μ m(c) |
| Collapse Rating | High (3000 psi/206.9 bar) |
| Flow | 120 gpm (454 l/min) |

Donaldson Spider-Web® Composite Air Filters Provide Superior Protection for LM6000's

The Donaldson Composite-Filter™ is a two-stage filter element: an inner and an outer filter that work together as a composite design. The inner filter is made of depth-loading filter media, and the outer filter employs Donaldson's specially formulated Spider-Web® nanofiber filter technology.

The CFS inner filter is configured as a wrap that can be installed and removed easily, even when the turbine is running. Typically changed 3 to 4 times more often than the outer filter, it is not only the first line of defense against contaminant, it also protects the outer filter and actually extends its life.

When it's time to replace inlet air filters on your LM6000, choose the superior performance and construction Donaldson filters. No competitive filter offering can match Donaldson's original Composite-Filter™ elements, which are the only filters used by GE in their standard OEM LM6000 turbine packages.

Our highest-performance filter media is the synthetic substrate with Spider-Web® overlay. The synthetic media substrate provides low pressure drop and resistance to media degradation in high humidity environments. The Spider-Web® nanofiber layer provides the best filtration efficiency available in the industry.

Even the inner filter (or 1st stage filter) is different from the competition: it's of better quality material and is held securely by a re-useable flat spring retainer.



Construction

- Inner Filter: non-woven poly
- Outer Filter: pleated 100% synthetic fiber filter media
- Pleats are held in place with hot melt spiral beading inside and our patented Pleatloc™ technique that prevents media bunching.
- Liners: Galvanized expanded metal
- Endcaps: Galvanized metal with filter media potted in plastisol
- Gasket: The 360° gasket and gasket stop ensure 100% sealing without over-compressing the gasket.

For LM6000's with Inlet Foggers or Cooling Coils

To minimize rust & corrosion, specify components made of stainless steel:

- Stainless steel latch:
Part No. **31295-02**
- Filter with stainless steel liners both inside & outside: Part No. **P19-1469**
- Filter with stainless steel outer liner (clean side): Part No. **P03-0050**

For Urban/High-Hydrocarbon Environments

- Filter with synthetic media:
Part No. **P03-0067**
- Pleated inner filter: Part No. **P19-5778**

Filter Efficiency Ratings

P19-0856

Media: Synthetic/Spider-Web

Test: ASHRAE 52.1-1992 @ 2000 cfm

Initial Dust Spot.....67%

Average Dust Spot.....97%

(with 3 inner filter changes)

Test: ASHRAE 52.2-1999 @ 2000 cfm

MERV 15

P03-0227

Media: Synthetic

Test: ASHRAE 52.1-1992 @ 2000 cfm

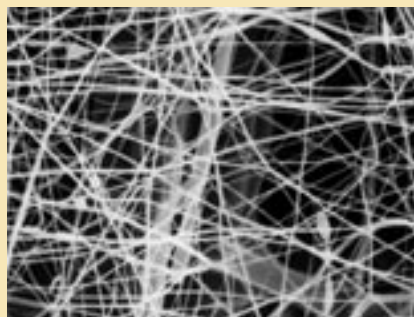
Initial Dust Spot.....56%

Average Dust Spot.....94%

(with 3 inner filter changes)

Test: ASHRAE 52.2-1999 @ 2000 cfm

MERV 13



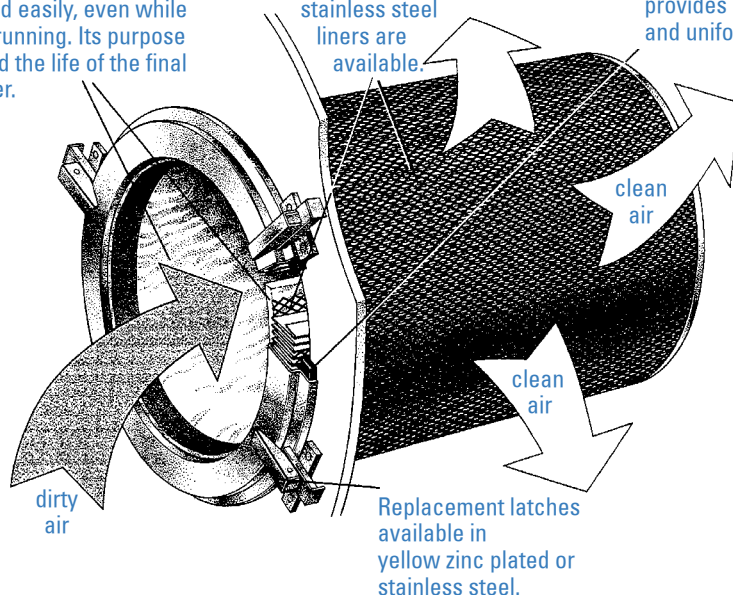
Spider-Web, a multi-layer mat of submicron-diameter nanofibers bonded to the surface of Donaldson media (shown above under the microscope, magnified 100's of times), is a Donaldson-proprietary technology and is the key to why our Composite-Filter™ is significantly more efficient than competitive filters on particles smaller than 3 microns – which are the ones that cause most compressor fouling.

Well-Engineered Filters

Inner (or 1st stage) filter with re-useable spring retainer can be changed easily, even while turbine is running. Its purpose is to extend the life of the final (outer) filter.

Standard inner and outer filter liner material is galvanized expanded metal. Optional stainless steel liners are available.

360° molded urethane gasket provides positive and uniform seal

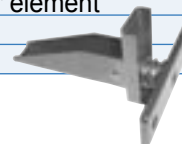


Composite-Filter Part Numbers

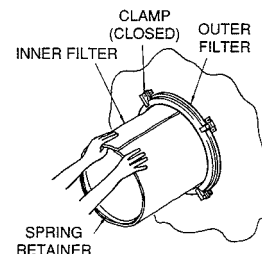
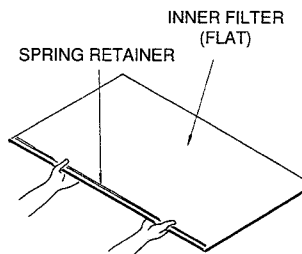
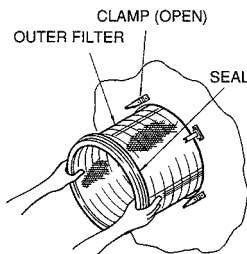
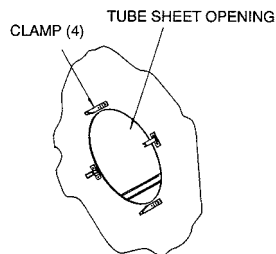
| Part Number | Length/Style | Media/Material | Comments |
|-------------|-------------------------|------------------------|--|
| P19-0856 | Composite Filter Set | Synthetic/Spider-Web | outer filter + flat inner, w/ retainer strip |
| P19-1129 | Composite Filter Set | Synthetic/Spider-Web | outer filter + pleated inner, w/o retainer strip |
| P19-0848 | Composite Filter, outer | Synthetic/Spider-Web | galvanized liners |
| P19-1469 | Composite Filter, outer | Synthetic/Spider-Web | stainless steel inside & outside liners |
| P03-0050 | Composite Filter, outer | Synthetic/Spider-Web | stainless steel outside liner |
| P03-0065 | Composite Filter, outer | Synthetic/Spider-WebXP | extra performance media |
| P03-0067 | Composite Filter, outer | Synthetic | for high hydrocarbon environments |
| P19-5778 | Composite Filter, inner | man-made fiber | inner element, pleated style (for high hydrocarbon environments) |
| P19-0844 | Composite Filter, inner | poly | inner element, flat style, w/ retainer strip |
| P19-0847 | Composite Filter, inner | poly | inner element, flat style, w/o retainer strip |

Accessories

| | | | |
|----------|-----------------|--------------------|-----------------------------|
| P19-0883 | Spring Retainer | | separate from inner element |
| 31295-01 | CFS Latch | yellow zinc plated | over-center latch |
| 31295-02 | CFS Latch | stainless steel | over-center latch |



Filter Service Procedure



The outer filter slides into the tube sheet opening and is secured in four locations to ensure that the gasket (seal) seats against the tube sheet.

The inner filter is installed by lifting it in a flat sheet form, rolling it into a cylinder, and inserting it inside the outer filter.

The spring retainer included in each inner filter expands and secures the inner filter against the inside liner of the outer filter.

Filter Change-Out Service

Free up your maintenance staff for other duties by using Donaldson for changing out the air filters in your LM6000 air inlet system. Our experienced expert crew can perform a variety of services... choose just the ones you need, or choose the whole package.

We can:

- Stage new filters and service equipment into place
- Remove old filters
- Dispose of old filters
- Install new filters & pre-filters

Call for a quote today!

Filter Analysis Service

Donaldson's lab analysis can help you discover exactly what condition your filters are in. Just send us one filter element after it's been installed in an operating turbine for 2 years or more, and we'll send back a filter test report with recommendations that may enable you to extend filter life or improve turbine output. Call us for details.

Release Ship Programs

For your scheduling convenience, Donaldson can pre-bill then hold your filter shipment at our warehouse for up to 4 months after receipt of order, releasing it only when you need it, or in batches over a few weeks to suit your work schedule. Call for details.

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