



Donaldson®

*Filtration Solutions*

*for Gas Turbines,*

*Generators, and Compressors*

# Dual Inlet GDS Static Air Filter for Operating Airflows 9,000 - 79,000 cfm / 255 - 2237 m<sup>3</sup>/min

*Integral Moisture Removal...Optional Insect Screens...Pressure-Sensing Options*

Donaldson GDS series static air filter systems protect gas turbine compressor and generator sets in a variety of operating environments, both urban and industrial.

## How It Works

The GDS filter system has air inlets on two sides, covered by weather hoods with moisture eliminator panels that eliminate 99.5% of droplets larger than 60µ from the incoming airstream. Insect screens are optional and are shown in the photo at right.

Banks of filter cartridge pairs provide high-efficiency barrier filtration against dust, pollen, dirt and other airborne particulate. Donaldson filters have proven 99.9% efficient at removing AC fine test dust, while still providing long filter life.

Standard GDS filter elements are made with Donaldson's proprietary synthetic media, which provides high efficiency and long life.

Note that for environments with very heavy dust concentrations, such as desert or construction areas, and very cold conditions where icing can occur, we recommend the Donaldson GD<sub>X</sub> self-cleaning pulse filter system.



These Donaldson Dual-Inlet GDS Filter Systems protect turbines from the ravages of sand and dust near Tucson, Arizona USA. Note the insect screens over the inlet hoods. Donaldson GDS systems keep combustion air clean for hundreds of turbines all over the world.

## Configure the Design You Need

The following pages outline standard configurations and options for the GDS Dual-Inlet Filtration system. Customize your GDS by choosing exactly the options you need for your particular application and environment. **Use the handy Order Configuration form on page 2 to list your choices**, then call us to discuss it, or just fax the page in.

GDS for Indoor or Sheltered Areas .....	page 4
GDS for Outdoors .....	page 5
Hood Kits .....	page 6
Insect Screens .....	page 6
Pressure-Sensing Kits .....	page 7
Filters and Pre-Filters .....	page 8

## Configure your own GDS -- exactly the way you need it!

Donaldson offers the performance and functional advantages of custom-engineered Dual-Inlet GDS Filtration Systems -- but with the convenience and shorter lead-time of standard systems!

Information on the following pages explains the choices and lists specific part numbers. When you've chosen what you want for the filter system you need, use this handy configuration form to list your part numbers.

Then call or fax us (see phone & fax list at bottom of this page) to discuss your configuration. We look forward to serving you and meeting your filtration needs.

### About Your Application

Turbine/Compressor/Generator Brand & Model

Airflow Requirement (actual)

Indoor or Outdoor Installation?

Operating Environment

### Component Description

### Part Number

Base System (size, indoor or outdoor, carbon or stainless)

Weather Hoods (size, material)

Option: Insect Screens (size, material)

Pressure-Sensing Equipment (several choices)

Option: Pre-Filter Wraps

Notes on specific circumstances, environment, etc:

**Call or fax us this page with your GDS Dual Inlet configuration requirements.**

Your Name:

Company:

Site Name:

Date System Needed:

Your Phone:

In North/South America,

call 01-952-887-3131 or fax 01-887-3843

In Europe/Middle East/Africa,

call 32-16-38-3940 or fax 32-16-38-3939

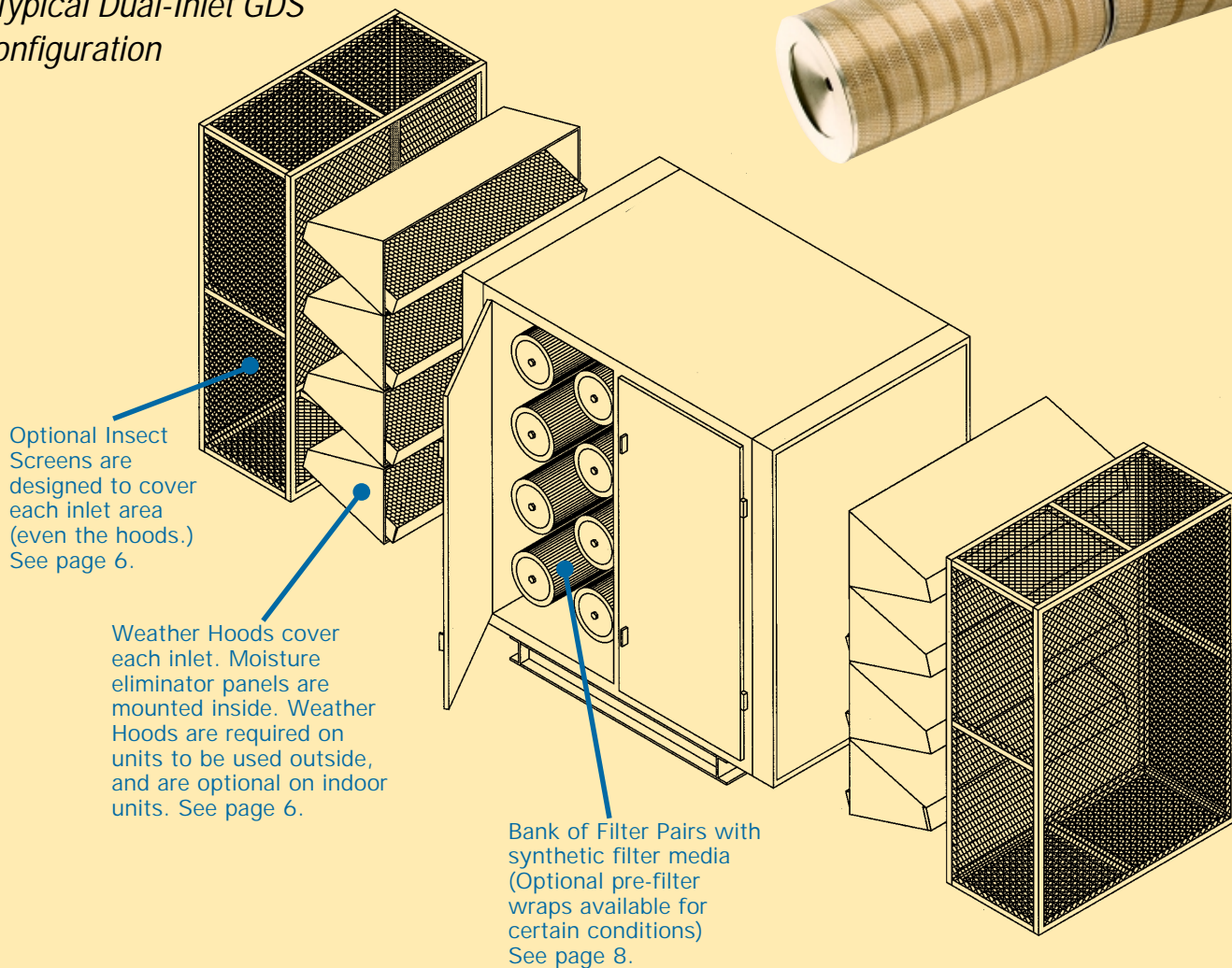
In Asia/Pacific,

call 65-65464400 or fax 65-6546-4325

## System Overview: Dual-Inlet GDS Features & Benefits

- 120 mph windload construction.
- Pressure sight gauge.
- Front access doors allow easy access for filter inspection and servicing.
- Pressure-sensing electrical components are pre-wired to a common junction box, easily accessible on the backside of the filter house. Configurations with various ratings are available (NEMA 7, NEMA 4X, etc.)
- Weather hoods with integral moisture eliminator panels provide protection against rain, snow, fog, mist.
- Optional insect screens preclude insects and other ambient debris from clogging the filters.
- Optional pre-filter wraps can extend high-efficiency filter service life by protecting them against seasonal debris (seeds, insects, etc.)
- High ratio of filter media to airflow means long filter service life and reduced filter maintenance costs.
- Pairs of conical and cylindrical filter elements are the heart of the system, providing high filter efficiency and high dust holding capacity for maximum filter performance and longer filter service life. Mounted horizontally in the system, they are easy to remove and replace at service time.
- Synthetic media, specially developed by Donaldson, is a high performance formulation designed to handle even the toughest environments.

### Typical Dual-Inlet GDS configuration



## Dual-Inlet GDS for Indoor or Sheltered Environments

Typically configured without weather hoods, this style of GDS filtration system is designed for use in sheltered areas. Each basic system includes filter

elements with synthetic media and moisture eliminator panels. Choose carbon steel or, for extra corrosion resistance, stainless steel.

**Begin by** choosing the airflow range your application requires, and carbon or stainless steel material.

**Next Steps:** Choose insect screens from page 6, then review pressure-sensing options on page 7.

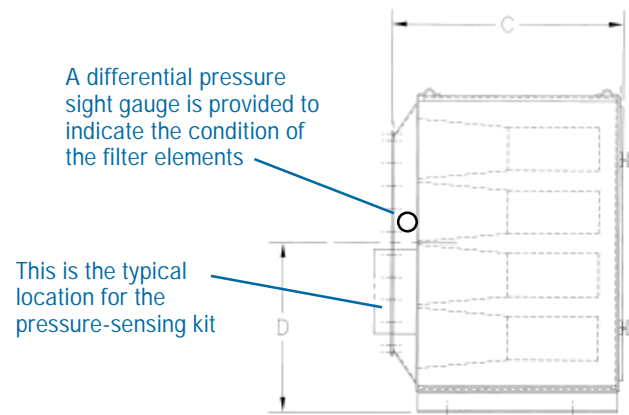
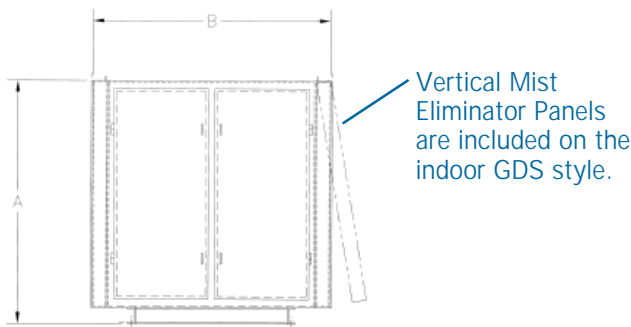
Airflow Range (actual) <sup>(1)</sup>	Part No. for <b>Carbon Steel</b> <sup>(2)</sup>	Part No. for <b>316L Stainless</b>	Filter Rows High x Wide <sup>(3)</sup>	Dimensions (shown in inches & mm)									
				A	B	C	D	E	F	G	H	J	
9,500-13,500 <i>cfm</i> 269-382 <i>m³/min</i>	GDS-AD57939-01	GDS-AD57939-03	2 H x 3 W	54 1372	73.87 1876	76.26 1937	32.88 835	24 610	48 1219	46 1168	36 914	26.5 673	
13,500-20,000 <i>cfm</i> 382-566 <i>m³/min</i>	GDS-AD57940-01	GDS-AD57940-03	3 H x 3 W	72 1829	73.87 1876	65.36 1660	39 991	48 1219	48 1219	46 1168	36 914	16 406	
18,500-27,000 <i>cfm</i> 510-765 <i>m³/min</i>	GDS-AD28233-01	GDS-AD28233-03	3 H x 4 W	72 1829	88.62 2251	65.76 1670	39 991	48 1219	72 1829	64 1626	36 914	16 406	
24,000-36,000 <i>cfm</i> 680-1019 <i>m³/min</i>	GDS-AD28234-01	GDS-AD28234-03	4 H x 4 W	90 2286	88.62 2251	65.76 1670	48 1219	60 1524	72 1829	64 1626	36 914	16 406	
30,000-45,000 <i>cfm</i> 850-1274 <i>m³/min</i>	GDS-AD28235-01	GDS-AD28235-03	4 H x 5 W	90 2286	110.62 2810	65.76 1670	48 1219	72 1829	72 1829	82 2083	36 914	16 406	
37,500-56,000 <i>cfm</i> 1062-1586 <i>m³/min</i>	GDS-AD57941-01	GDS-AD57941-03	5 H x 5 W	108 2743	110.62 2810	64.45 1637	57 1448	84 2134	84 2134	82 2083	36 914	14.5 368	
45,000-67,500 <i>cfm</i> 1274-1911 <i>m³/min</i>	GDS-AD28236-01	GDS-AD28236-03	6 H x 5 W	128 3251	110.62 2810	74.76 1899	67 1702	90.55 2300	90.55 2300	82 2083	36 914	25 635	
52,500-79,000 <i>cfm</i> 1487-2237 <i>m³/min</i>	GDS-AD57942-01	GDS-AD57942-03	7 H x 5 W	148 3759	110.62 2810	110.26 2801	56.25 1429	96 2438	96 2438	82 2083	36 914	50.5 1283	

### APPLICATION NOTES:

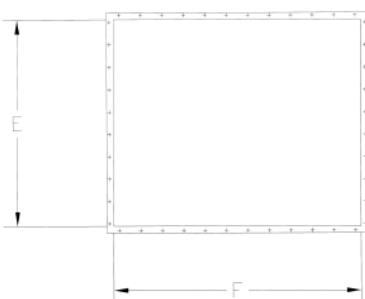
(1) Airflows are based on a range of 1500 - 2250 *cfm* (42.5 - 63.7 *m³/min*) per filter pair.  $\Delta P$  ranges for GDS indoor systems with new filter elements installed are:  
 0.7 inches/18 mm H<sub>2</sub>O @ 1500 *cfm*/42.5 *m³/min*  
 1.6 inches/41 mm H<sub>2</sub>O @ 2250 *cfm*/ 63.7 *m³/min*  
 $\Delta P$  is the measured static pressure from ambient condition through installed filter elements.

(2) The carbon steel GDS filtration system is painted with two coats of protection: zinc epoxy followed by a polyurethane topcoat.

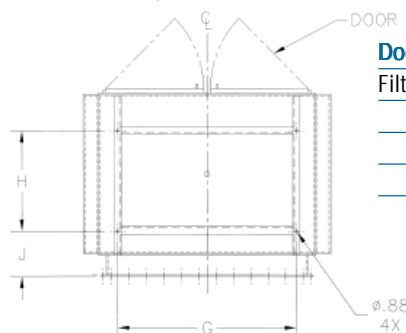
(3) Filter elements are installed in pairs (see photo on last page), which are arranged in rows within the filter house.



### Outlet Dimensions:



### Mounting Location



### Door Swing Area Allowance

#### Filter Arrangement Width:

- 3 rows wide, 1 door -- allow 57 inches/ 1448 mm
- 4 rows wide, 2 doors -- allow 35 inches/ 889 mm
- 5 rows wide, 2 doors -- allow 53 inches/ 1346 mm

## Dual-Inlet GDS for Use Outdoors

GDS filtration systems to be installed outdoors require weather hoods with moisture eliminator panels and possibly insect screens to protect the filter elements.

Choose carbon steel construction, or for extra corrosion resistance, choose stainless steel.

**Begin by** choosing the airflow range your application requires, and carbon or stainless steel material

**Next Steps:** Choose weather hoods and possibly insect screens from page 6.

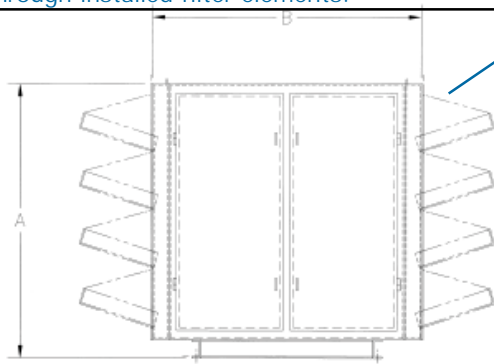
Airflow Range (actual) <sup>(1)</sup>	Part No. for Carbon Steel <sup>(2)</sup>	Part No. for 316L Stainless	Filter Rows High x Wide <sup>(3)</sup>	Dimensions (shown in inches & mm)								
				A	B	C	D	E	F	G	H	J
9,500-13,500 <i>cfm</i> 269-382 <i>m³/min</i>	GDS-85640-01	GDS-85640-03	2 H x 3 W	54 1372	73.87 1876	76.26 1937	32.88 835	24 610	48 1219	46 1168	36 914	26.5 673
13,500-20,000 <i>cfm</i> 382-566 <i>m³/min</i>	GDS-AD57938-01	GDS-AD57938-03	3 H x 3 W	72 1829	73.87 1876	65.36 1660	39 991	48 1219	48 1219	46 1168	36 914	16 406
18,500-27,000 <i>cfm</i> 510-765 <i>m³/min</i>	GDS-84840-01	GDS-84840-03	3 H x 4 W	72 1829	88.62 2251	65.76 1670	39 991	48 1219	72 1829	64 1626	36 914	16 406
24,000-36,000 <i>cfm</i> 680-1019 <i>m³/min</i>	GDS-84842-01	GDS-84842-03	4 H x 4 W	90 2286	88.62 2251	65.76 1670	48 1219	60 1524	72 1829	64 1626	36 914	16 406
30,000-45,000 <i>cfm</i> 850-1274 <i>m³/min</i>	GDS-84845-01	GDS-84845-03	4 H x 5 W	90 2286	110.62 2810	65.76 1670	48 1219	72 1829	72 1829	82 2083	36 914	16 406
37,500-56,000 <i>cfm</i> 1062-1586 <i>m³/min</i>	GDS-85641-01	GDS-85641-03	5 H x 5 W	108 2743	110.62 2810	64.45 1637	57 1448	84 2134	84 2134	82 2083	36 914	14.5 368
45,000-67,500 <i>cfm</i> 1274-1911 <i>m³/min</i>	GDS-84846-01	GDS-84846-03	6 H x 5 W	128 3251	110.62 2810	74.76 1899	67 1702	90.55 2300	90.55 2300	82 2083	36 914	25 635
52,500-79,000 <i>cfm</i> 1487-2237 <i>m³/min</i>	GGDS-AD52246-01	GDS-AD52246-03	7 H x 5 W	148 3759	110.62 2810	110.26 2801	56.25 1429	96 2438	96 2438	82 2083	36 914	50.5 1283

### APPLICATION NOTES:

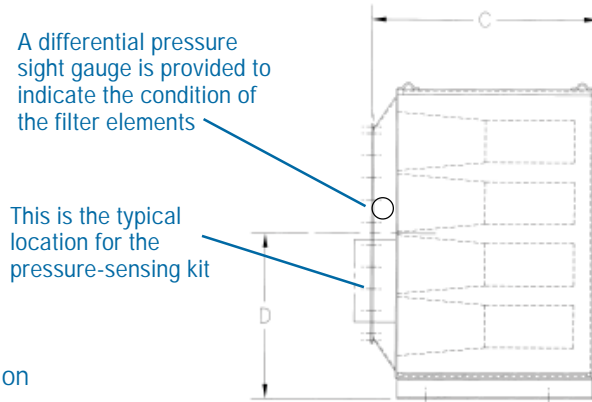
(1) Airflows are based on a range of 1500 - 2250 *cfm* (42.5 - 63.7 *m³/min*) per filter pair.  $\Delta P$  ranges for GDS outdoor systems with new filter elements installed are:  
0.8 inches/21 mm H<sub>2</sub>O @ 1500 *cfm*/42.5 *m³/min*  
1.7 inches/43 mm H<sub>2</sub>O @ 2250 *cfm*/ 63.7 *m³/min*  
 $\Delta P$  is the measured static pressure from ambient condition through installed filter elements.

(2) The carbon steel GDS filtration system is painted with two coats of protection: zinc epoxy followed by a polyurethane topcoat.

(3) Filter elements are installed in pairs (see photo on last page), which are arranged in rows within the filter house.



Note that hood kits are ordered separately.... see page 6.

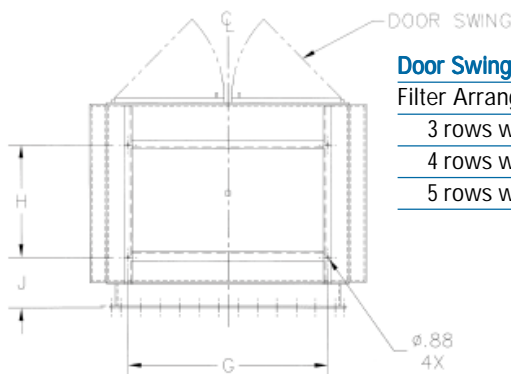
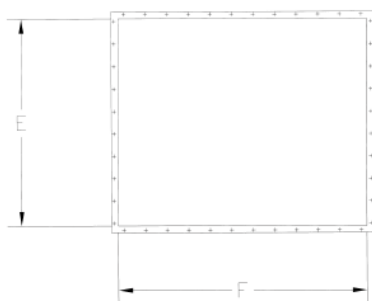


A differential pressure sight gauge is provided to indicate the condition of the filter elements

This is the typical location for the pressure-sensing kit

### Mounting Location

### Outlet Dimensions:



### Door Swing Area Allowance

Filter Arrangement Width:

3 rows wide, 1 door -- allow 57 inches/ 1448 mm

4 rows wide, 2 doors -- allow 35 inches/ 889 mm

5 rows wide, 2 doors -- allow 53 inches/ 1346 mm

## Weather Hoods with Moisture Eliminator Panels

The GDS weather hoods provide protection against rain, mist, fog and snow, and are required for Dual-Inlet GDS systems that will be used outdoors.

The inlet areas face downward to prevent direct entry of moisture. For 99.5% moisture removal from the

airstream, each hood section contains a moisture eliminator panel that works constantly without moving parts, is self-draining, and is made of a highly durable polymer.

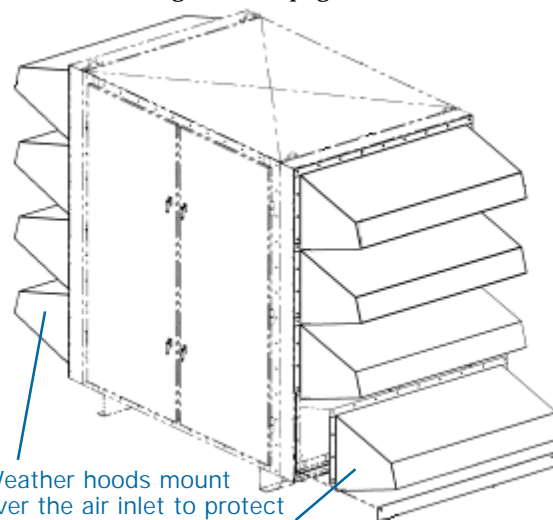
Weather hoods can be used alone or in conjunction with the Donaldson extended area insect screens shown below.

**Begin by** matching the filter arrangement you've chosen from page 5, then select the part number for either carbon or stainless steel.

**Next Steps:** Choose insect screens (below), if needed, then a pressure-sensing kit from page 7.

### Weather Hood Kits (1 kit contains everything you need for both GDS inlets)

Fits Filter Arrangement	Carbon Steel Part Number	316L Stainless Part Number	WIDTH: Air Filter with Hoods
2 High x 3 Wide	2SG-84341-01	2SG-84341-03	121.77 inches / 3093 mm
3 High x 3 Wide	2SG-84342-01	2SG-84342-03	121.77 inches / 3093 mm
3 High x 4 Wide	2SG-84342-01	2SG-84342-03	136.53 inches / 3468 mm
4 High x 4 Wide	2SG-84343-01	2SG-84343-03	136.53 inches / 3468 mm
4 High x 5 Wide	2SG-84343-01	2SG-84343-03	158.53 inches / 4027mm
5 High x 5 Wide	2SG-84344-01	2SG-84344-03	158.53 inches / 4027 mm
6 High x 5 Wide	2SG-84345-01	2SG-84345-03	158.53 inches / 4027 mm
7 High x 5 Wide	2SG-97906-01	2SG-97906-03	158.53 inches / 4027 mm



Weather hoods mount over the air inlet to protect the filters. One kit contains hoods for both inlet areas.

## Optional Insect Screens

GDS insect screens protect the filters from insect inundation and thereby guard against premature filter replacement. The stainless steel screens prevent insects and other debris from entering the inlet of the filter house.

Primarily used in operating environments with large quantities of insects, they are designed for both indoor and outdoor base units. The extended area design reduces the velocity of the

airflow through the screen enough to create only a minimal increase in system  $\Delta P$  and to allow many insects to fly away.

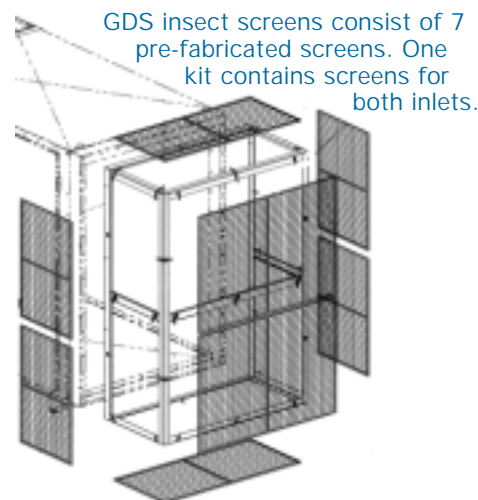
During cold weather operation insect screens should be removed and stored, due to potential icing conditions. The extended area insect screen can be used as a stand alone accessory or in conjunction with Donaldson weather hoods.

**Begin by** matching the filter arrangement you've chosen from page 4 or 5, then select the part number for either carbon steel frame or stainless steel frame. (Note that the screen portions are stainless steel for all part numbers.)

**Next Steps:** Choose a pressure-sensing kit from page 7.

### Insect Screen Kits (1 kit contains everything you need for both GDS inlets)

Fits Filter Arrangement	Carbon Steel Frame Part Number	316L Stainless Frame Part Number	WIDTH: Air Filter with Screen Kit
2 High x 3 Wide	2SG-85292-01	2SG-85292-03	129.88 inches/ 3299 mm
3 High x 3 Wide	2SG-84598-01	2SG-84598-01	129.88 inches/ 3299 mm
3 High x 4 Wide	2SG-84598-01	2SG-84598-03	144.62 inches / 3673 mm
4 High x 4 Wide	2SG-84599-01	2SG-84599-03	144.62 inches / 3673 mm
4 High x 5 Wide	2SG-84599-01	2SG-84599-03	166.62 inches / 4232 mm
5 High x 5 Wide	2SG-85606-01	2SG-85606-03	166.62 inches / 4232 mm
6 High x 5 Wide	2SG-84601-01	2SG-84601-03	166.62 inches / 4232 mm
7 High x 5 Wide	2SG-97910-01	2SG-97910-03	166.62 inches / 4232 mm



GDS insect screens consist of 7 pre-fabricated screens. One kit contains screens for both inlets.

## Pressure-Sensing Kit Options

We offer two pressure-sensing kit options:

**(1)** A pair of pressure switches that monitor the  $\Delta P$  across the filters. These switches are pre-wired to terminals in a junction box and can be used to send an alarm when pressure increases to a pre-set point, or to shut down the entire system in case of extremely high  $\Delta P$ . Kits are shown in figures A, B, C.

**(2)** A pressure transmitter that sends a constant signal for a digital readout. See figure D.

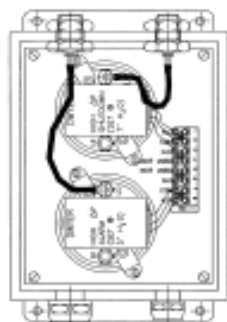
The pressure-sensing kit is mounted near the outlet of the filter house, on either the left- or right-hand side, as illustrated in the drawings on pages 4 & 5.

**Begin by** choosing the type of pressure-sensing equipment you need, then select the part number for either right- or left-hand mounting.

**Next Steps:** Consider pre-filter wraps, page 8. Complete your part number list on page 2 and call or fax it to Donaldson.

Pressure-Sensing Equipment Assembly Description	See Figure	Part Number for <b>Left-Hand</b> Mount	Part Number for <b>Right-Hand</b> Mount
NEMA 4 rated control box and pressure switches. Switches have adjustable setpoints from 3 to 11.75 inches (76 to 299 mm) H <sub>2</sub> O.	A	3EA-82271-01	3EA-82271-02
NEMA 4X control box with NEMA 4 rated pressure switches. Switches have adjustable setpoints from 3 to 11.75 inches (76 to 299 mm) H <sub>2</sub> O.	A	3EA-AD26596-01	3EA-AD26596-02
NEMA 7 rated control box and pressure switches. Switches have adjustable setpoints from 3 to 11 inches (76 to 279 mm) H <sub>2</sub> O.	B	3EA-81596-01	3EA-81596-02
CENELEC rated control box with NEMA 4 rated pressure switches. Adjustable setpoints from 3 to 11.75 inches (76 to 299 mm) H <sub>2</sub> O.	C	3EA-84092-01	3EA-84092-02
Rosemount transmitter, CSA & CENELEC approved. Calibration range: 0 inches/mm H <sub>2</sub> O = 4 ma, -10 inches (254 mm) H <sub>2</sub> O = 20 ma.	D	3EA-84091-01	3EA-84091-02
Rosemount transmitter, CSA & FM approved. Calibration range: 0 inches/mm H <sub>2</sub> O = 4 ma, --10 inches (254 mm) H <sub>2</sub> O = 20 ma.	D	3EA-AD50736-01	3EA-AD50736-02

**Figure A:**  
Pressure Switch

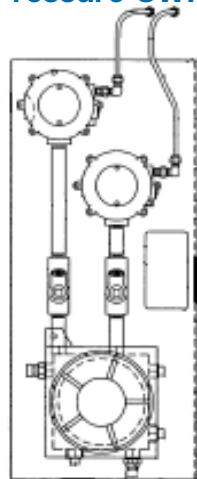


NEMA 4 or NEMA 4X enclosure.

**NEMA 4** = Enclosure is made of painted carbon steel. This is for indoor/outdoor use, with some protection against windblown dust, water, external ice.

**NEMA 4X** = Enclosure is made of stainless steel. This is for indoor/outdoor use, with some protection against corrosion, windblown dust, water, external ice.

**Figure B:**  
Pressure Switch

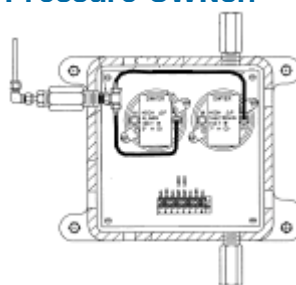


NEMA 7 Explosion-proof enclosure.

**NEMA 7** = For hazardous locations defined as Class I, Div 1&2, Groups C&D, per the (US) National Electrical Code.

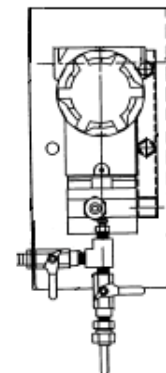
**CENELEC EEx'd'** marking = Same as NEMA 7, but per the safety standards in Europe. The 'd' indicates the device is flameproof.

**Figure C:**  
Pressure Switch



CENELEC rated. Switches with set points.

**Figure D:**  
Transmitter



CSA & CENELEC or CSA & FM approved. Analog signal for constant digital readout. No set points.

**APPLICATION NOTES:**

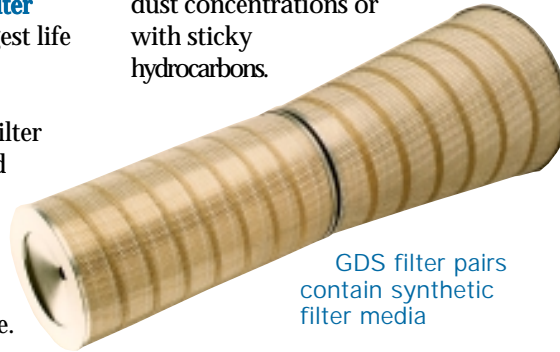
As you face the filter elements, the inlet that's on your right is considered the right-hand side. Choose the side that is most convenient for electrical connections and for a service person to reach.

## GDS Filter Media: Synthetic

Dual-Inlet GDS Filtration Systems include filter elements made with our specially-developed **synthetic filter media**, which provides the longest life and best filtration efficiency.

Fibers in Donaldson synthetic filter media are uniform in shape and distribution (unlike cellulose media fibers, which are irregular and rough), allowing low  $\Delta P$  to be maintained over the full life of the filter cartridge. And, because the media is synthetic, it is moisture-resistant and

durable enough even for difficult environments, including those with high dust concentrations or with sticky hydrocarbons.



GDS filter pairs contain synthetic filter media

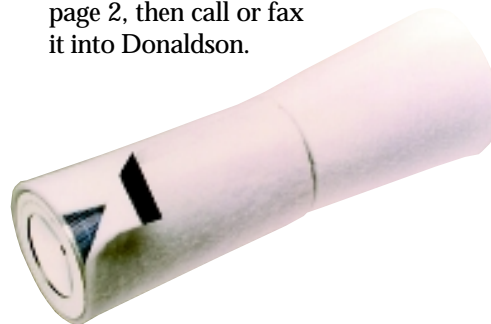
## Does Your GDS Need Pre-Filter Wraps?

If your GDS Dual Inlet filter system is in an area where seasonal debris is likely to shorten the life of the primary filters, use our pre-filter wraps. These synthetic pre-filters are designed to protect primary filters from a temporary influx of insects, seeds, ash, etc. They simply wrap around the filter pair, closing easily and securely with Velcro®, and are disposable when the season is over.

You'll need one kit for each element pair. Note that these must be ordered as a separate item.

**Begin by** considering whether you need pre-filter wraps.

**Next Steps:** Add the pre-filter wrap kit number to your configuration list on page 2, then call or fax it into Donaldson.



### Pre-filter Wrap Kit

3EA-45848-01 1 conical + 1 cylindrical wrap

### Where to Find Us:

**website:** [www.donaldson.com](http://www.donaldson.com)

**email:**

[filterinfo@mail.donaldson.com](mailto:filterinfo@mail.donaldson.com)

[gts-europe@mail.donaldson.com](mailto:gts-europe@mail.donaldson.com)

[gts-asiapacific@donaldson.com.sg](mailto:gts-asiapacific@donaldson.com.sg)

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Parts/Elements 800-431-0555

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Fax 32-16-38-3939

Donaldson Filtration Asia Pacific Pte Ltd  
No. 9, Changi South Street 3, #07-01  
Singapore 486361  
Phone 65-6546-4400  
Fax 65-6546-4325

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388 Castle Peak Road  
Tsuen Wan, N.T. Hong Kong  
Phone 852-2402-2830  
Fax 852-2493-2928

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1800 Zhong Shan West Road  
Shanghai 200233  
Phone 86-21-6440-1808  
Fax 86-21-6440-1639

DI Filter Systems Pvt. Ltd.  
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