Pre-Cleaners

No Matter What Dust Condition, Pre-cleaners Extend Air Filter Life

Pre-cleaners remove contaminant of varying sizes from entering the intake duct, and they don’t require any engine power to operate. Some devices collect the contaminant (Full-View), others just eject or drop the contaminant (TopSpin™, TopSpin™ HD, in-line separator), or are connected via a scavenge system and route debris out the exhaust system (Donaspin, Strata™ Cap).

Product Offering

- Six pre-cleaner styles offer the broadest product range in the industry
- Strata™ Cap is the new scavenge system option for operating in heavy dust environments
- TopSpin™ HD is the new all-metal option for heavy-duty applications where a rugged and durable pre-cleaner is needed
- Pre-cleaners extend life of vehicle air filters and serve as rain caps
- Units are made of durable materials — either metal or impact resistant plastic
- Most units install outside of engine compartment — leaving more space under hood for other components (exception-in-line separator)
- No wires or power requirements
- Please note: Strata Cap and Donaspin require additional components for scavenge system — hoses, check valves, clamps and exhaust ejector

To Scavenge or Not To Scavenge . . .

Air cleaners are designed to operate with or without aspiration. Aspiration (otherwise known as scavenging) is accomplished by introducing a secondary airflow in the intake ducting (generally through the use of an exhaust ejector or ejector muffler). This secondary airflow pulls the separated contaminant from the pre-cleaner and ejects it into the exhaust stream.

The advantages to scavenging are:

- Higher pre-cleaner efficiency (resulting in longer primary filter service life)
- Completely self-servicing (no regular maintenance needed on pre-cleaner)
- Drop tube can be located in a variety of orientations (not just straight down as is necessary on non-scavenged systems)

Aspirating an intake system through the use of a scavenging device adds more components (an ejector and some plumbing) to the overall system, but will enhance the separator efficiency of the pre-cleaner and consequently extend the primary filter service life.

An alternative . . .

Air Cleaners with Built-in Pre-Cleaning

Before you decide on adding a pre-cleaner. Take a look at our PowerCore® air cleaner housings — the PowerCore PSD Series. PowerCore air cleaners have a pre-cleaning section built directly into the housing. If you have the room, choosing a PowerCore air cleaner will reduce the number of components in your intake system — fewer parts to track, maintain and manage. And, some PSD air cleaner models can also be used in scavenged systems.

See the PowerCore PSD Series section for more information.
Selection
Select the style that matches dust conditions, airflow and desired efficiency level. Each pre-cleaner family is presented on the following pages.

Compare — Weight, Scavenge, Service and Materials
Additional characteristics about our pre-cleaner line to help you decide on the style that’s best for you.

<table>
<thead>
<tr>
<th>Dust Condition</th>
<th>Max. Septr Efficiency</th>
<th>Unit Weight Range</th>
<th>Pre-Cleaner Family</th>
<th>Scavenge Required</th>
<th>Service Required</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy</td>
<td>96%</td>
<td>6.2 – 9.1</td>
<td>2.82 – 4.14</td>
<td>Strata™ Cap</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>90%</td>
<td>8.0 – 10.0</td>
<td>3.63 – 4.54</td>
<td>Donaspin™</td>
<td>Yes</td>
<td>No</td>
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<td>Medium</td>
<td>85%</td>
<td>1.0 – 6.0</td>
<td>0.45 – 2.72</td>
<td>TopSpin™</td>
<td>No</td>
<td>No</td>
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<tr>
<td></td>
<td>80%</td>
<td>1.0 – 9.5</td>
<td>0.5 – 4.3</td>
<td>TopSpin™ HD</td>
<td>No</td>
<td>No</td>
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<tr>
<td></td>
<td></td>
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<tr>
<td>70%</td>
<td>11.5 – 14.8</td>
<td>5.23 – 6.70</td>
<td>In-Line Separator</td>
<td>No</td>
<td>No</td>
<td>Steel</td>
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<tr>
<td>75%</td>
<td>0.8 – 9.2</td>
<td>0.37 – 4.17</td>
<td>Full-View</td>
<td>No</td>
<td>Yes</td>
<td>Steel/Plastic</td>
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</table>
Strata™ Cap Pre-Cleaner

Low Profile Pre-cleaner and Rain Cap in One!
The scavenged Strata™ Cap pre-cleaner removes up to 96% of incoming contaminant — the highest efficiency compared to all other Donaldson pre-cleaners. It is designed for the most demanding heavy dust environments in the construction and mining industry.

Features
Separates up to 96% of incoming contaminant per ISO 5011/SAE J726
• Significantly extends air filter life
• Reduces air filter servicing and replacement
• Lowers cost per operating hour
• Separates more than 99% of 20 micron and above particles

Low profile for maximum operator visibility

Robust design for heavy-duty environments
• No moving parts
• Both a rain cap and pre-cleaner
• No bowl to clean or empty
• UV resistant plastic construction

Simple installation
• Unit installs outside of engine compartment, leaving more space under hood for other components
• No wires or power requirements
• Requires additional standard components for scavenge

Lighter Weight
• Low profile
• Lighter weight compared to other Donaldson scavenge systems; e.g., STB System and Donaspin™ pre-cleaner

Application
• Accommodates a range of airflows from 350 to 1,300 cfm (9.9-36.8 m3/min).
• Primarily used in heavy dust environments
• Great for off-road vehicles and equipment from crawler tractors to farm tractors to skid steer loaders
• Recommended mounting: outside of engine compartment on top of the air cleaner inlet stack

The scavenged Strata™ Cap pre-cleaner removes up to 96% of incoming contaminant — the highest pre-cleaning efficiency ever invented by Donaldson.
Advantages of Scavenging

Scavenging is accomplished by introducing a secondary airflow to the drop tube on the air cleaner (generally through the use of an ejector or ejector muffler). This flow pulls the separated contaminant from the pre-cleaner and inserts it into the exhaust stream.

- Higher pre-cleaner efficiency (resulting in longer filter service life)
- Completely self-servicing (no regular maintenance needed on pre-cleaner)

Aspirating an intake system through the use of a scavenging device adds more components (an ejector and some plumbing) to the overall system, but will enhance the separator efficiency of the pre-cleaner and consequently extend the filter service life.

Performance — Restriction at 10% Scavenge

![Graph showing airflow vs. restriction (inches of H₂O)](image)

- Airflow (m³/min)
- Restriction (inches of H₂O)
- H002700
- H002704
Strata™ Cap Pre-Cleaner

Performance — Initial Efficiency at 10% Scavenge

<table>
<thead>
<tr>
<th>Airflow (cfm)</th>
<th>Airflow (m³/min)</th>
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<tr>
<td>300</td>
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<td>400</td>
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<td>600</td>
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<td>1100</td>
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<td>1200</td>
<td>94.5%</td>
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<td>94.0%</td>
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<tr>
<td>1400</td>
<td>93.5%</td>
</tr>
<tr>
<td>1500</td>
<td>93.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overall Height (A)</th>
<th>Body Dia. (B)</th>
<th>Outlet I.D. (C)</th>
<th>Scavenge Hose I.D. (D)</th>
<th>Part Number</th>
<th>Weight lbs.</th>
<th>Rated Air Flow @ 6” H₂O</th>
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</thead>
<tbody>
<tr>
<td>8.00</td>
<td>218</td>
<td>14.00</td>
<td>5.00</td>
<td>H002700</td>
<td>13.6</td>
<td>600 cfm / 17.0 m³/m</td>
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<tr>
<td>8.60</td>
<td>218</td>
<td>17.20</td>
<td>8.00</td>
<td>H002704</td>
<td>19.4</td>
<td>1140 cfm / 32.3 m³/m</td>
</tr>
</tbody>
</table>

Dimensional Specifications

**Installation**

For proper function, the pre-cleaner/rain cap installs over a 5.0” or 8.0” OD metal intake tube and connects to a 2.0” I.D. scavenge hose. The scavenge hose should be secured from movement within 12.0” / 305mm of the pre-cleaner/rain cap.

Additional components are required for proper installation:

- Scavenge hose (2.0” / 51mm I.D.) need enough for two cut lengths connecting to the Strata™ Cap to check valve and the check valve to exhaust ejector
- Hose clamps (x 4) (Part No. P115200)
- Check Valve (Part No. H000722)
- Metal Intake Tube (O.D.) to mount Strata™ Cap to Air Cleaner (5.0” / 127 mm or 8.0” / 203 mm Dia. — depends on your Strata™ Cap size)
- Standard and expanded I.D. exhaust ejectors available

Clamp Supplied

Intake Pipe Connection

Clamp Torque 11.3 ± 2.0 N·m

10% Scavenge Recommended

Scavenge Hose Connection 2.0” I.D. (clamp not supplied)

Clamp Torque: 4.5 ± 0.5 N·m
Service Procedure

The pre-cleaner/rain cap may need to be cleaned over time. The procedure below recommends removal and disassembly of the unit to clean. The unit can be cleaned with either water, mild-soapy water or compressed air. Tapping or hitting the components to dislodge contaminant should be avoided. It may cause damage and prevent reassembly.

1. Turn off engine.
2. Loosen both connecting clamps (metal pipe and scavenge hose) and remove the Strata™ Cap pre-cleaner.
   **Note:** Cover or plug intake pipe to protect air intake system from contamination during service.
3. Turn unit upside down.
   Remove the screws (save for reassembly) and disassemble the unit (screen is two pieces).
4. Clean all the parts to remove dust and debris from each component.
5. After cleaning, inspect the gasket on the perimeter of the upper baffle. If damaged in any way replace with new gasket. Check gasket position, make sure it is installed evenly around upper baffle perimeter.
   **Note:** Using the unit without gasket properly installed will affect Strata Cap pre-cleaning performance.
6. With cover upside down, reassemble components. Unit has alignment guides to aide reassembly.
7. With all components together, reinstall and torque the 6 screws to 2.3 ± 0.3-0.6 N·m
   **Note:** Removable screw adhesive is to be used on the screws if original blue patch has been worn off.
8. Replace Strata Cap on intake stack, reconnect scavenge hose. Tighten clamps to torque specifications. If scavenge support was disconnected, reconnect.

Service Parts

<table>
<thead>
<tr>
<th>Strata Cap Model No.</th>
<th>Gasket</th>
<th>1/2 Screen 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>H002700</td>
<td>P617476</td>
<td>P617922</td>
</tr>
<tr>
<td>H002704</td>
<td>P167475</td>
<td>P617923</td>
</tr>
</tbody>
</table>

Entire screen section of the Strata Cap is two pieces. The service part number is one screen only.
TopSpin™ Pre-Cleaner

TopSpin™ Can Extend Filter Life in Heavy Dust Conditions

Donaldson TopSpin™ will extend primary air filter life, boost system efficiency, and extend engine life.

Features
Separates up to 85% of incoming contaminant per ISO 5011/SAE J726
- Greatly extends air filter life
- Reduces air filter usage
- Lowers cost per operating hour
- Automatically ejects mixed debris
- Separates more than 99% of 20 micron and above particles

Self-cleaning/self-scavenging
- No maintenance to clean bowl
- No exhaust ejector required

Easy installation
- Quick installation
- One clamp to tighten
- No wires or power requirements

Dual mounted bearings
- More robust design
- Extends bearing life

Lighter Weight
- Lighter than competitive pre-cleaners
- Lighter than Donaldson full-view pre-cleaner

Application
- Engine airflows of 80 to 1500 cfm (2.3-42.5 m3/min).
- Primarily used in medium to heavy dust environments
- Great for off-road vehicles and equipment from crawler tractors to farm tractors to skid steer loaders
- Recommended mounting: on top of the air cleaner inlet stack

How it Works:
More than 99% of contaminant 20 micron and larger is expelled

Incoming dirty air
Pre-cleaned air entering the intake system
Performance Curves
Multiple tests conducted per ISO 5011/SAE J726 and average results are shown in charts below.

Dimensional Specifications
Donaldson TopSpin™ can be mounted horizontally or vertically. Installation instructions, stainless clamp and warranty are included. Operating temperature range: -40 °F to 180 °F (-40 ºC to 82 ºC)

Cross reference from a full-view pre-cleaner to a TopSpin pre-cleaner can be found on the Full-view Pre-cleaner page.

Cross reference from a full-view pre-cleaner to a TopSpin pre-cleaner can be found on the Full-view Pre-cleaner page.

Cross reference from a full-view pre-cleaner to a TopSpin pre-cleaner can be found on the Full-view Pre-cleaner page.
TopSpin™ HD Pre-Cleaner

All-Metal Pre-cleaner is Durable Solution for Punishing Conditions

Donaldson TopSpin™ HD will extend primary air filter life, boost system efficiency and extend engine life in medium to heavy dust environments.

Features
Separates up to 80% of incoming contaminant per ISO 5011
- All-metal construction
- Greatly extends air filter life
- Reduces air filter usage
- Lowers cost per operating hour
- Automatically ejects mixed debris

Self-cleaning/self-scavenging
- No maintenance to clean bowl
- No exhaust ejector required

Easy installation
- Quick installation
- One clamp to tighten
- No wires or power requirements

Application
- Engine airflows of 50 to 1600 cfm (1.4-45.3 m3/min).
- Primarily used in medium to heavy dust environments
- Great for off-road vehicles and equipment, including crawler tractors, farm tractors, skid steer loaders, mining, and fracking machines
- Recommended mounting: on top of the metal air cleaner inlet stack. Do not mount on non-metal inlet stack

Built as tough as your equipment

Rugged one-piece aluminum hood with recessed discharge louver sheds flying debris.

One-piece stainless steel impeller is the only moving part. Dual bearings ensure reliable performance.

Stainless steel clamp with locking nut makes installation quick and secure. Clamp is included with each TopSpin HD.

All the interior components are solid stainless steel to resist dirt, water, heat, and debris encountered in demanding environments.
**TopSpin HD Performance Curves**

**Dimensional Specifications**

Donaldson TopSpin™ HD can be mounted in an upright position or horizontally with louver opening at the bottom. Installation instructions, stainless steel clamp and limited lifetime warranty are included. Operating temperature range: -40 °F to 180 °F (-40 °C to 82 °C).

Cross reference from a Full-View pre-cleaner to a TopSpin™ HD pre-cleaner can be found on the Full-view Pre-cleaner page.

<table>
<thead>
<tr>
<th>Outlet I.D. (C)</th>
<th>Overall Height (A)</th>
<th>Body Dia. (B)</th>
<th>Operating Flow Range m3/min</th>
<th>Part Number</th>
<th>Weight lbs.</th>
<th>Weight kg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.06 in (52.3 mm)</td>
<td>3.41 in (86.5 mm)</td>
<td>5.4 in (137.2 mm)</td>
<td>50-100 1-4.2-8</td>
<td>H002850</td>
<td>1.0</td>
<td>0.5</td>
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<tr>
<td>2.58 in (65.5 mm)</td>
<td>4.25 in (108 mm)</td>
<td>6.3 in (160 mm)</td>
<td>100-200 2.8-5.6</td>
<td>H002851</td>
<td>1.75</td>
<td>0.8</td>
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<tr>
<td>3.07 in (78 mm)</td>
<td>4.96 in (125.9 mm)</td>
<td>7.2 in (182.9 mm)</td>
<td>150-275 4.2-7.8</td>
<td>H002852</td>
<td>2.75</td>
<td>1.2</td>
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<tr>
<td>4.10 in (104.1 mm)</td>
<td>5.81 in (147.6 mm)</td>
<td>8.72 in (221.6 mm)</td>
<td>200-400 5.6-11.3</td>
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<td>5.08 in (128 mm)</td>
<td>7.56 in (192.1 mm)</td>
<td>11.19 in (284.2 mm)</td>
<td>350-700 10-20</td>
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<td>6.10 in (154.9 mm)</td>
<td>7.72 in (196 mm)</td>
<td>12.78 in (324.6 mm)</td>
<td>500-950 14-27</td>
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<td>7.10 in (180.3 mm)</td>
<td>8.38 in (212.7 mm)</td>
<td>14.75 in (374.6 mm)</td>
<td>750-1350 21-38</td>
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<td>8.08 in (205.2 mm)</td>
<td>8.38 in (212.7 mm)</td>
<td>14.75 in (374.6 mm)</td>
<td>950-1600 26.6-44.8</td>
<td>H002857</td>
<td>9.5</td>
<td>4.3</td>
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</tbody>
</table>

*SCFM = Standard Cubic Feet per Minute. The ISO 5011/SAE J726 test procedure was used to extract the results in the charts above. The ISO 5011/SAE J726 is a widely accepted industry test used by OEMs to evaluate the efficiency of the intake system components. Test results are an average from testing several units.
Full-View Pre-Cleaner Helps Extend Filter Life on Agricultural & Construction Equipment

Features

- Recommended mounting: on top of the engine intake stack
- Centrifugal force in bowl separates up to 75% of incoming dust before it enters the engine air intake system
- Low maintenance
- Durable, lightweight, noncorrosive construction
- Full-view plastic bowl lets operator easily see when service is needed
- One-bolt cover retention for easy service. When dirt reaches the level of the arrow, remove top nut and plastic body, then empty — no tools required
- Mounting clamp included

Tired of Emptying the Cup?
Before you consider replacing your full-view pre-cleaner with another one, check out the TopSpin™ and TopSpin™ HD models on the previous pages.

Pre-cleaner Upgrade Path

<table>
<thead>
<tr>
<th>Full-View</th>
<th>TopSpin</th>
<th>TopSpin™ HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>H000820</td>
<td>H002425</td>
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### Full-View Pre-Cleaners Specifications

<table>
<thead>
<tr>
<th>Inlet (ID/OD)</th>
<th>A (in)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (in)</th>
<th>E (mm)</th>
<th>Weight lbs</th>
<th>Entire F.V. Pre-Cleaner</th>
<th>--- Replacement Cover ---</th>
<th>--- Replacement Bowl ---</th>
<th>Max. Airflow CFM</th>
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<td>413</td>
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<td>71</td>
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<td>2.81</td>
<td>71</td>
<td>15.94</td>
<td>405</td>
<td>9.2</td>
</tr>
</tbody>
</table>

1 - Heavy Duty Option
Donaspin™ Pre-Cleaner

Extends Filter Life in Extremely Heavy Dust Conditions

The Donaspin™ Pre-Cleaner extends the life your air filter by removing up to 90% of the dirt and contaminant before it reaches the filter and ejecting it automatically via the exhaust system.

Donaspin is designed especially for equipment operating in very heavy dust/debris environments.

**Application**
- Vehicles: agricultural equipment, construction and waste haul vehicles
- For engine airflows of 305 to 800 cfm
- Recommended mounting: on top of the air inlet stack

**Features**
- Built-in louvers spin air to separate up to 90% of incoming dirt and debris from the air intake system
- Works as part of a scavenged flow system to continuously expel pre-cleaned contaminants through the exhaust flow
- Durable, corrosion-resistant steel construction
- High efficiency with low restriction
- No maintenance. Self-cleaning. No moving parts.
- Mounting clamp is included

**How It Works**

To create a scavenged flow system, combine the Donaspin with a Donaldson exhaust ejector and ejector check valve.

**Donaspin™ Pre-Cleaner**

<table>
<thead>
<tr>
<th>A (in)</th>
<th>B (I.D.) (in)</th>
<th>C (in)</th>
<th>D (in)</th>
<th>E (in)</th>
<th>F (in)</th>
<th>Rated Airflow @ 5” H₂O Added (cfm)</th>
<th>Approx. Weight (lbs)</th>
<th>Part Number</th>
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<tr>
<td>8.00</td>
<td>203</td>
<td>3.00</td>
<td>76</td>
<td>11.98</td>
<td>304</td>
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<td>114</td>
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<td>770 10 4.5</td>
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</table>
Two-stage Cleaning for Unexpected Dust/Moisture Conditions

When your truck is being used in heavier-than-anticipated dust or moisture conditions, you may not have to replace the entire air cleaner. The problem may be solved by adding a Donaldson in-line separator.

Installing this unit on your single-stage system creates a two-stage air filtration system. This enables an over-highway vehicle, which usually sees only light dust, to be easily and economically adapted to off-road medium to heavy dust conditions.

Applications
• **Vertical model:** On/off road, mounted on inlet tubing or cowl mounted directly to air cleaner
  – Compatible with engine airflows of 500 to 1500 cfm
• **Horizontal model:** On/off road, typically mounted underhood
  – Compatible with engine airflows of 100 to 1400 cfm

Features
• 80% water removal efficiency
• 70% dust removal efficiency

How It Works
1. When moisture — and/or dust-filled air — enters at one end, the built-in, stationary vanes cause the air to spin.
2. This spin creates centrifugal force, which pushes all moisture and dust to the outside wall where it separates from the air.
3. Moisture and dust are thrown into the Vacuator Valve tubing, then automatically released by the Vacuator Valve.
4. Clean air (acceptable for maximum filter life and engine performance) passes to the air cleaner.

**In-Line Separators**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>CFM Range</th>
<th>Inlet (B)</th>
<th>Outlet (C)</th>
<th>Diameter (B) (D)</th>
<th>Length (C)</th>
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</table>

1 - Outer diameter
2 - Inner diameter

Vertical model, for airflow of 500 to 1500 cfm. Mounts on stack top.

Horizontal model, for airflow of 100 to 1400 cfm. Mounts underhood.

Vacuator™ Valve P103198

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