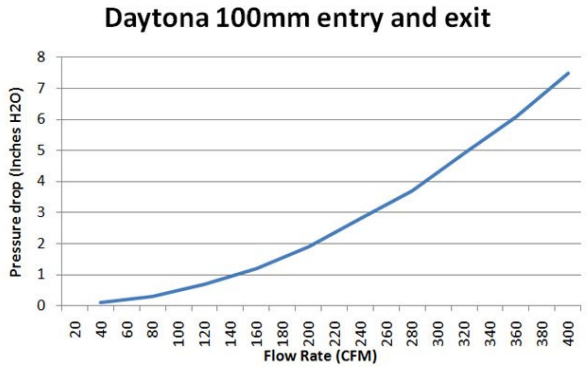
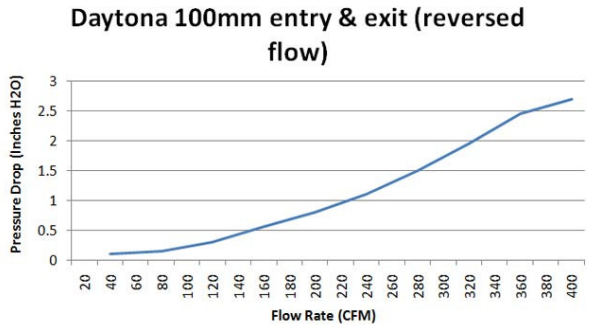
Air Flow Rate Data for air filters in induction kits

This document shows air flow in CFM (cubic feet/min) for air filters when used in a Reverie air induction kit canister. All measurements were taken while using a 100mm inlet and outlet pipes. Optimal CFM measurement is taken at 1.5" of water; this is considered an acceptable pressure drop across a filter. 1.5" of water equates to approximately 3.73 mbar. 1" H_2O = 2.49 mbar

Tested flow direction shown with red arrows

	Description	Size (mm)	No on Main Graph	CF/M	Graph (Pressure Drop/Flow Rate)
 R01SE0198	**Daytona 230C Carbon Air Induction Canister** 100, 75 or 58 mm outlet (CFM Measured with 100mm inlet & outlet)	152mm x 285mm	1	178	
 R01SE0198	**Daytona 230C Carbon Air Induction Canister (Reverse flow)** 100, 75 or 58 mm outlet (CFM Measured with 100mm inlet & outlet with flow reversed)	152mm x 285mm	9	280 Much higher Flow in Reverse	

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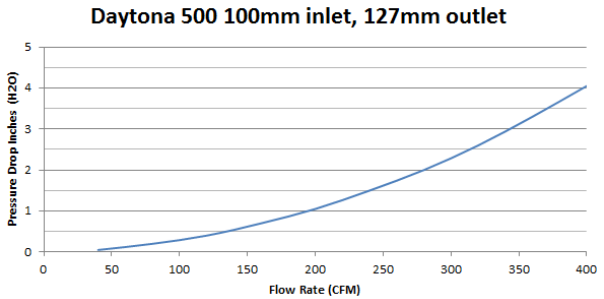
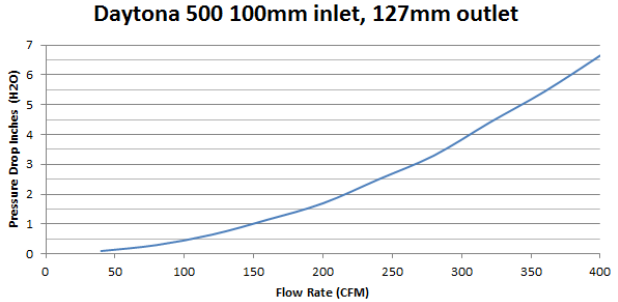
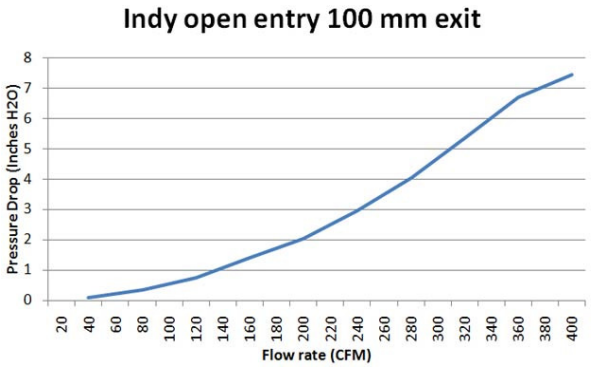
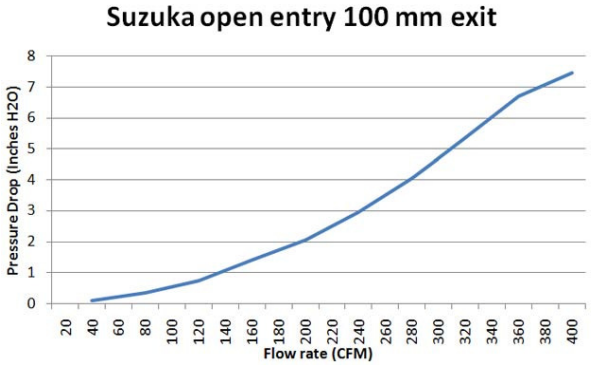
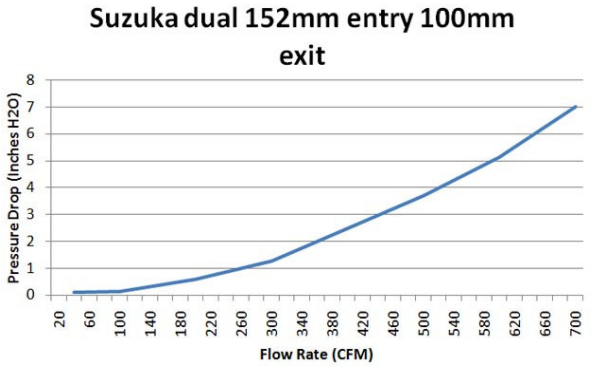
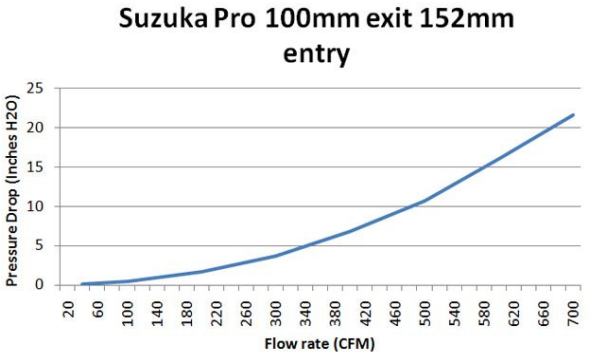
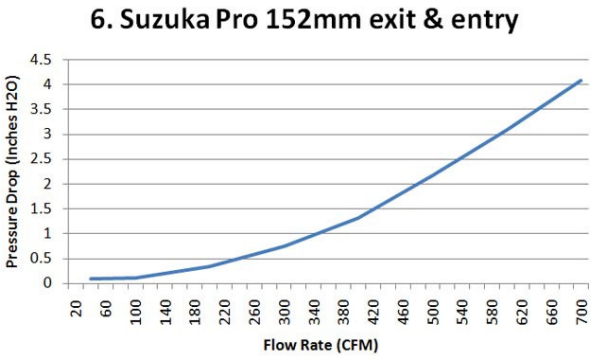
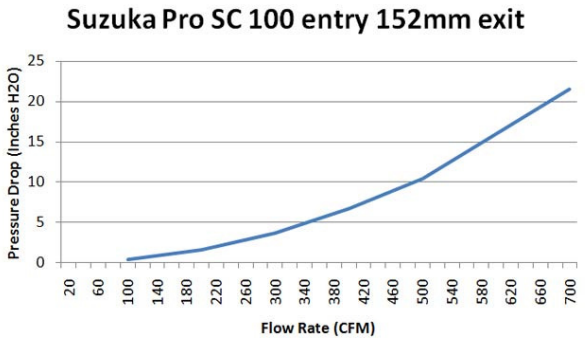
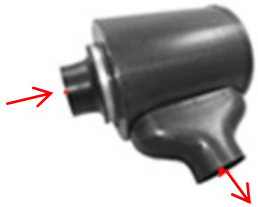
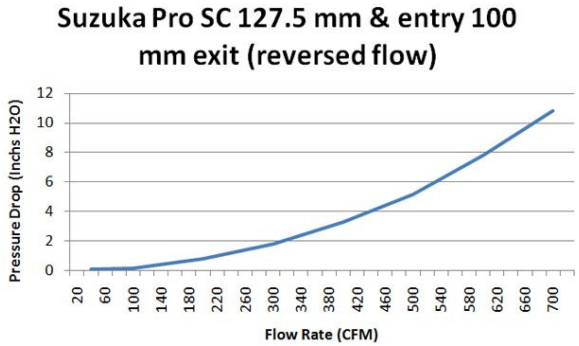
 R01SE0594	**Daytona 500 Carbon Air Induction Canister** 127.5, 100,85,75 or 58 mm outlet (CFM Graph with 100mm inlet & 127mm outlet)	205mm x 300mm	NA	284 with 127mm inlet & exits	
 R01SE0594	**Daytona 500 Carbon Air Induction Canister (Reverse flow)** 127.5, 100,85,75 or 58 mm outlet (CFM Graph with 100mm inlet & 127mm outlet)	205mm x 300mm	NA	268 with 127mm inlet & exits	
 R01SE0351	**Indy 200BC Carbon Air Induction Canister** 152mm (6”) inlet/outlet	152mm x 235mm	2	166	

 R01SE0352	**Indy 200BC Carbon Air Induction Canister** 152mm (6”) inlet, custom outlet	152mm x 235mm	NA	N/A	N/A
 R01SE6009	**Indy 200BC Carbon Air Induction Canister** 152mm (6”) inlet, rectangular outlet	152mm x 235mm	NA	N/A	N/A
 R01SE0049	**Suzuka 290C Carbon Air Induction Canister** 152mm (6”) outlet and 100mm inlet with two raised flat mounting surfaces	152mm x 470mm	3	166	

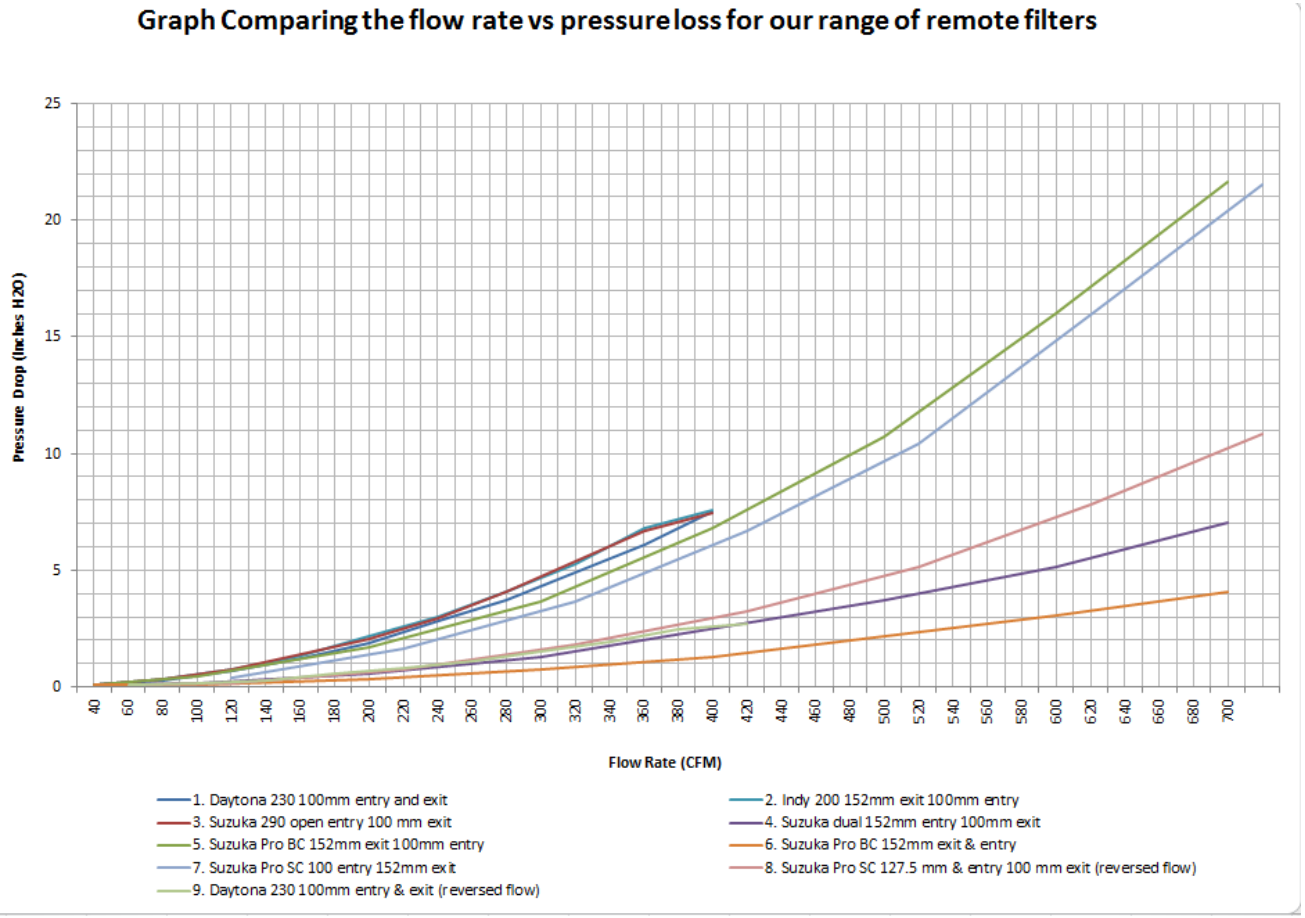
 R01SE0488	**Suzuka 290C Clubman Carbon Air Induction Kit** 2 x 152mm (6”) inlet with 100mm outlet	152mm x 305mm	4	317	
 R01SE0479	**Suzuka Pro BC Carbon Air Induction Kit** 152mm (6”) inlet, 100mm outlet	252mm x 360mm	5	185	
 R01SE0479	**Suzuka Pro BC Carbon Air Induction Kit** 152mm (6”) inlet/outlet	252mm x 360mm	6	422	

 R01SE0478	**Suzuka Pro SC Carbon Air Induction Kit** 100mm side inlet, 152mm (6”) outlet	252mm x 360mm	7	190	
 R01SE0478	**Suzuka Pro SC Carbon Air Induction Kit** 127.5mm side inlet, 100mm outlet **(Reverse flow)**	252mm x 360mm	8	270 Higher in Reverse flow	

Graph Comparing Flow Rates of Different Air Induction Kits

The graph below shows flow rate in cubic feet per minute (CFM) against pressure loss across the filter measured in inches of water (Inches $_{H2O}$). Measurements were taken for each air induction kit with 100mm inlet/outlet pipe, however, as the larger air boxes are not designed for use with a 100mm inlet pipe so flow graphs with their optimum intake size have been included. The larger Suzuka Pro is designed to use a 127.5 mm or a 152mm inlet pipe allowing it to flow much more air.

1"/H_2O = 2.49 mbar



Intake Sizing

An inlet that is too small will cause a pressure drop inside the air box restricting performance. The inlet sizing table (below) shows the minimum recommended inlet/ducting size for a power output category. The larger the power output of an engine the more air it will require to run at peak efficiency, therefore a larger intake is needed as power increases. Multiple smaller inlets can be used to achieve the same open inlet area as a larger intake, for example, if a larger inlet pipe won't fit on the air box, multiple smaller inlet or oval inlet pipes could be used to create a comparable open area. High flow alloy straight trumpets can also be used as intakes.

BHP Category	Open Area (cm²)	Inlet Diameter (mm)
1 - 150	44.18	75.0
150 - 205	56.75	85.0
205 - 265	78.54	100.0
265 - 325	127.68	127.5
325 +	181.46	152.0

On typical engines 150CFM is required for each 100BHP

On high performance engines 130CFM is required for each 100 BHP

The formula below shows the formula for required airflow to the engine in cubic feet per minute.

CFM = Engine Capacity (Cubic Inches) / 3464 x Max RPM 1L = 61.0237in³

For example a 5.7 litre engine requires 703CFM of air at 7000rpm :
703 CFM = 347.84CI / 3464 * 7000RPM

Or if supercharged:
CFM = (CI x RPM / 3456) x (boost [psi] / 14.7 + 1)