



ISO 5011 Test Results

Certified to the ISO 5011 Air Filtration Standard

Competitive Comparison of Turbo Mouthpieces

for

2004.5 – 2005 Duramax LLY

Manufacturers Tested

Manufacturer	Part Number
S&B Filters	76-1006
AFE	46-60039
LBZ (Stock) Mouthpiece	98011738
LLY (Stock) Mouthpiece	-

**ISO 5011, Second Edition
Test Report for Airflow on Turbo Mouthpieces**

The test data presented in the following report represents the restriction of airflow. The turbo mouthpieces tested were procured from various distributors or provided by customers. The tests were performed in accordance with ISO 5011.

The Line Graph shows the pressure drop as a function of the airflow rate for the intake elbows. The computer controlled test equipment initiates the test at close to zero (0) cubic feet per minute (CFM) and then increases the CFM gradually until the CFM termination point is reached. During the test, the restriction of each mouthpiece is measured in inches of water ("H2O) as it relates to the airflow rate (CFM). Visual inspections of turbo mouthpieces are performed to insure against manufacturing flaws.

Definition of Terms & Test Protocol

Restriction

Restriction measures how difficult it is for the air to get through the mouthpiece and is measured in inches of H2O. Instead of referring to restriction, the industry uses "air flow" to describe the effect of restriction. They say for example, that a High Performance Filter "flows better" than the OEM paper filter. On a line graph, the lower the restriction of a filter the better the air flow.

Note: Testing was conducted based on the ISO 5011 testing standard; however, variances from the actual test procedures may exist. The intent of the testing is to show comparative test results between various products that are intended for similar use. Tests are conducted under a climate-controlled environment; however, changes in temperature and humidity between tests may occur which could alter the actual test results.

Performance Ranking & Summary			
Manufacturer	Mouthpiece Part Number	Ranking	Improvement vs Stock LLY
S&B Filters	76-1006	1	78.6%
LBZ (OE)*	98011738	2	75.9%
AFE	46-60039	3	75.7%

* In order to utilize the LBZ (OE) Mouthpiece on an LLY Duramax, significant modifications are required including cutting of the stock system.

ISO 5011 Test Results for 2004.5-2005 Duramax LLY Turbo Mouthpiece



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Average Environmental Conditions & Test Specs		
Temperature	69.5	deg F
Relative Humidity	50.2%	%
Baro Pressure	29.00	mmHg
Test Stand	#1	
Inlet Size	3.75	inches
Housing	-	
Contaminant	-	
Contam. Lot #	-	
Dust Feed Rate	-	grams/minute
Rated Flow	612	cfm

Baseline		
Part Number	Airflow (scfm)	Net Restriction " of H2O
LLY (Stock) Mouthpiece	0.0	0.0
	305.1	10.0
	456.8	22.6
	611.1	40.7
Test 375	770.8	50.1
Sample 16	849.6	50.1

Detailed Airflow Data			
Part Number	Airflow (scfm)	Net Restriction " of H2O	% Less Restrictive than Stock
S&B Filters	0.0	0.0	0.0%
76-1006	307.1	2.3	77.0%
	462.7	4.9	78.3%
	613.0	8.7	78.6%
Test 375	762.7	13.7	72.7%
Sample 18	918.5	19.6	60.9%
AFE	0.0	0.0	0.0%
46-60039	307.0	2.5	75.0%
	460.7	5.5	75.7%
Test 375	612.8	9.9	75.7%
Sample 17	767.0	15.1	69.9%
	924.3	21.8	56.5%
LBZ (OE)*	0.0	0.0	0.0%
Mouthpiece	306.2	2.5	75.0%
98011738	457.8	5.7	74.8%
	611.7	9.8	75.9%
Test 375	763.0	15.0	70.1%
Sample 15	913.4	20.5	59.1%

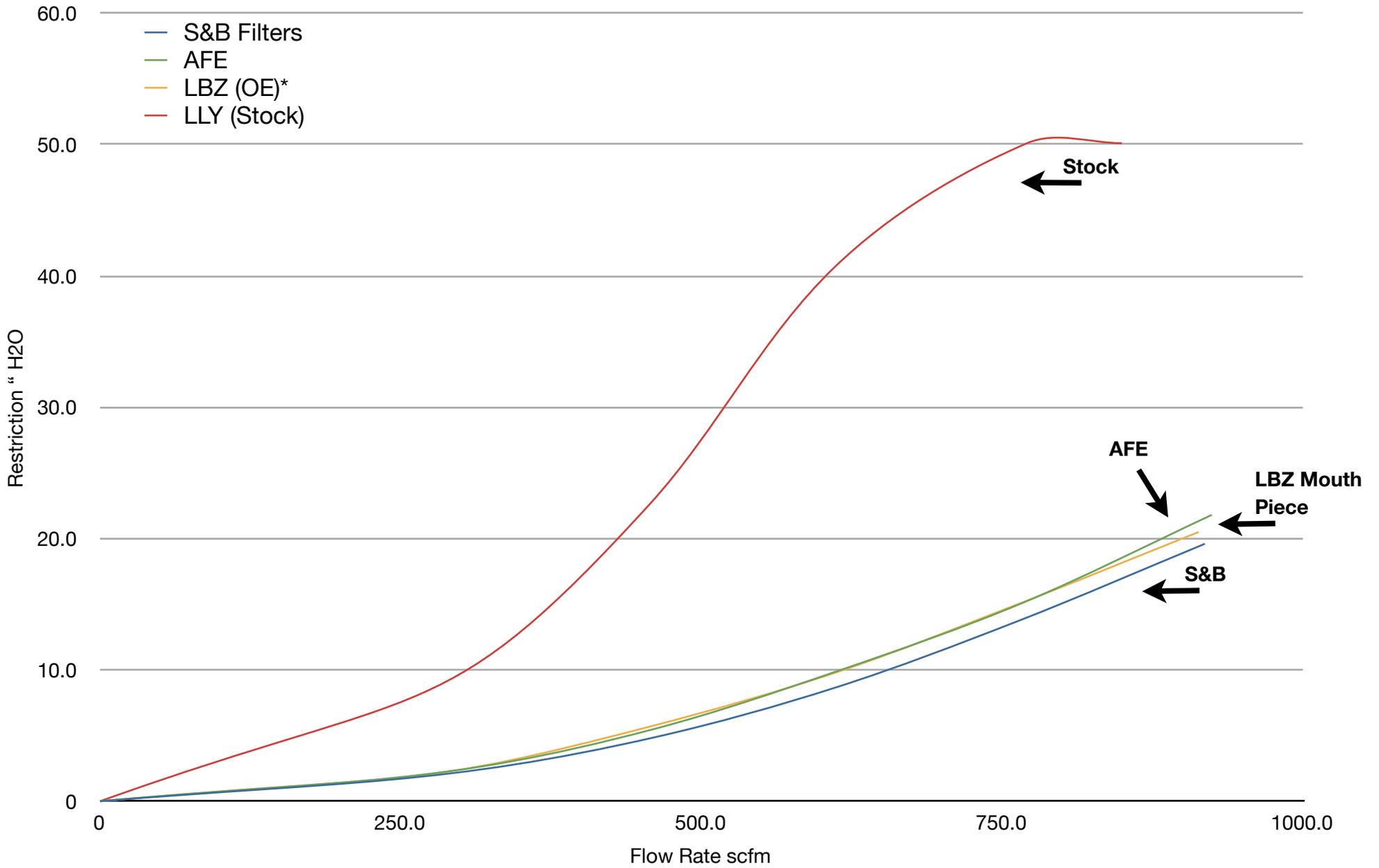
Note: All testing done using 3.75"ID testing fixture and V-band clamp adapter.

S&B, AFE, and EO LLY tested using same venturi on the inlet, all ports taped off. OE LBZ tested using larger diameter venturi due to the larger ID of that mouthpiece.

Test Stand maxes out @ 50.1"H2O

* In order to utilize the LBZ (Stock) Mouthpiece on a LLY Duramax, significant modifications are required which includes cutting of the stock system.

Resistance to Flow Curve
(A lower restriction curve translates into better airflow.)



S&B Turbo Mouthpiece 2004.5 - 2005 Duramax LLY

- Improves throttle response.
- Larger internal diameter.
- Smooth unrestricted flow designed using Computational Fluid Dynamics flow simulation software.
- Lower EGTs.



How were the Turbo Mouthpieces tested?

All testing done using 3.75"ID testing fixture and V-band clamp adapter. S&B, AFE, and OE LLY tested using same venturi on the inlet, all ports taped off. The OE LBZ was tested using larger diameter venturi due to the larger ID of that mouthpiece. Test Stand maxes out @ 50.1"H₂O



See the following pages for additional images & details taken during testing.





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Supporting Testing Detail



Air Flow Test Report

Test Number: 375
Sample Number: 15
Filter Description: n/a
Test Description:

Report Date: 10/10/2012
Tech: C.V.

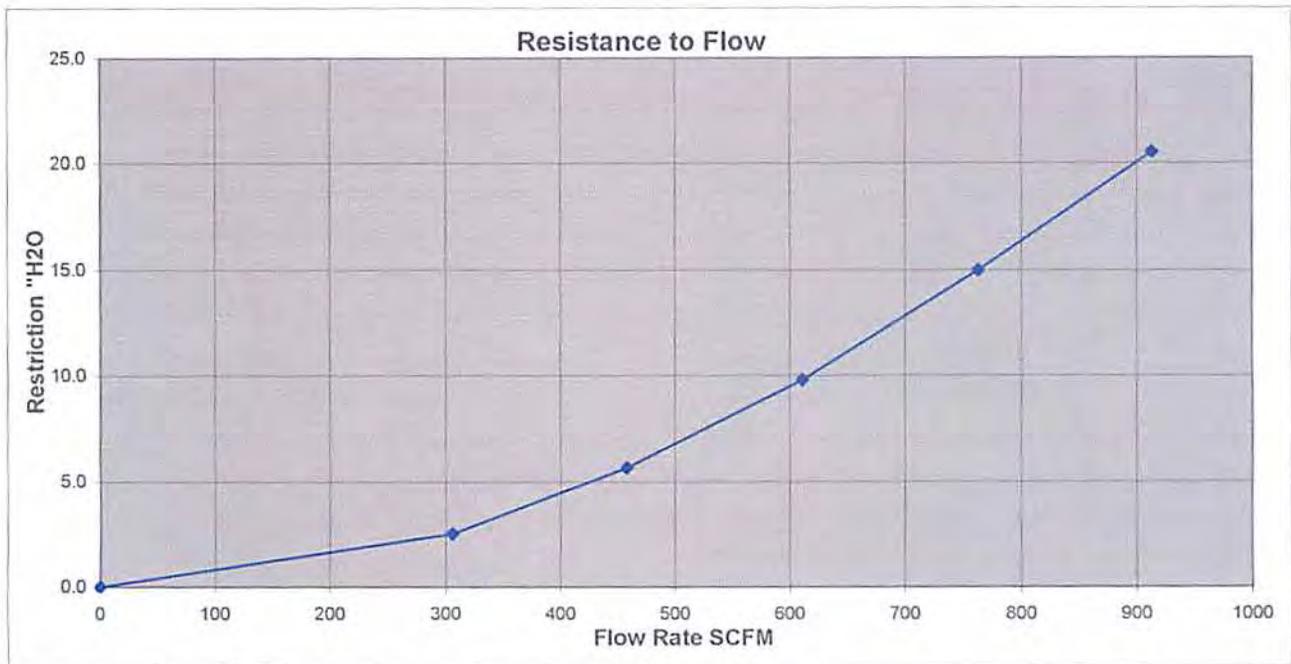
LBZ mouthpiece, w/venturi

Test Conditions

Flow: 612 SCFM Temperature: 69.91 DEG. F
Barometric Pressure: 28.99 IN. Hg Humidity: 50.6 %

Test Results

Flow SCFM	Restriction IN. H2O		
	Gross	Tare	Net
0	0	0	0.0
306.207	2.524	0	2.5
457.833	5.668	0	5.7
611.702	9.787	0	9.8
762.995	14.994	0	15.0
913.407	20.541	0	20.5





Air Flow Test Report

Test Number: 375
Sample Number: 16
Filter Description: n/a
Test Description:

Report Date: 10/10/2012
Tech: C.V.

LLY mouthpiece, w/venturi

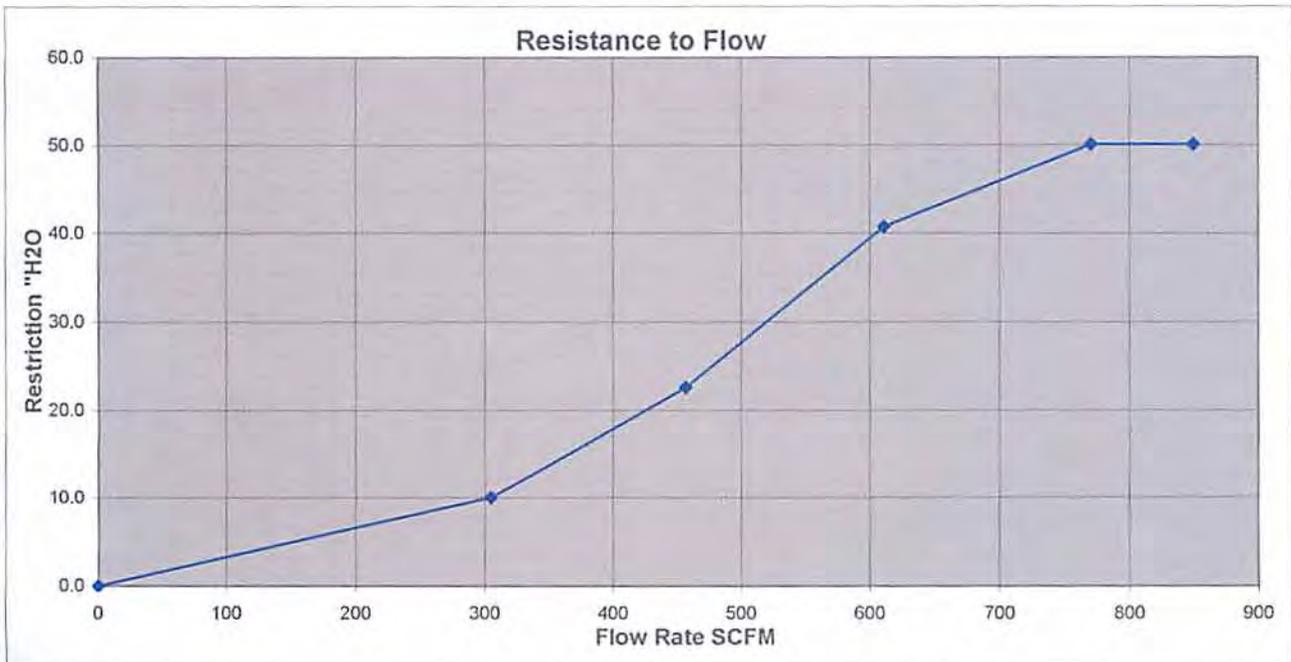
Test Conditions

Flow: 612 SCFM
Barometric Pressure: 29.01 IN. Hg

Temperature: 69.63 DEG. F
Humidity: 50.1 %

Test Results

Flow SCFM	Restriction IN. H2O		
	Gross	Tare	Net
0	0	0	0.0
305.117	10.01	0	10.0
456.831	22.573	0	22.6
611.114	40.723	0	40.7
770.762	50.098	0	50.1
849.587	50.098	0	50.1





Air Flow Test Report

Test Number: 375
Sample Number: 17
Filter Description: n/a
Test Description:

Report Date: 10/10/2012
Tech: C.V.

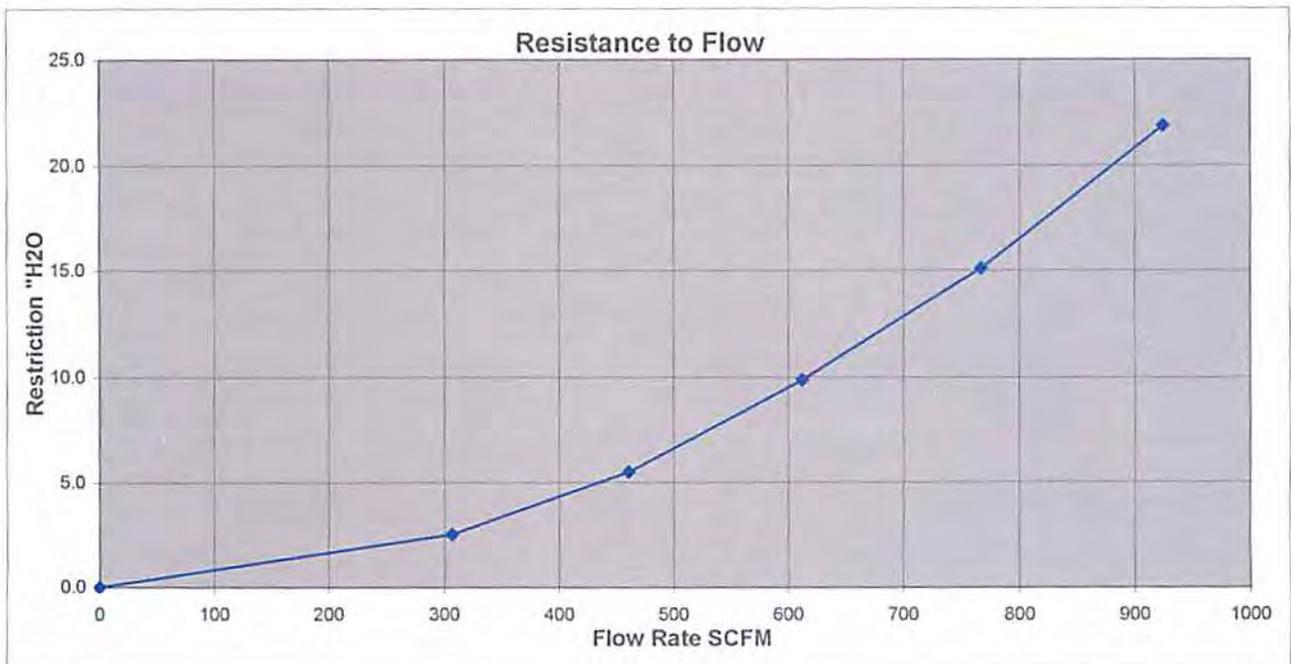
AFE #:46-60039, w/venturi

Test Conditions

Flow: 612 SCFM Temperature: 69.37 DEG. F
Barometric Pressure: 29.01 IN. Hg Humidity: 50 %

Test Results

Flow SCFM	Restriction IN. H2O		
	Gross	Tare	Net
0	0	0	0.0
306.99	2.503	0	2.5
460.669	5.538	0	5.5
612.793	9.865	0	9.9
767.013	15.083	0	15.1
924.269	21.845	0	21.8





Air Flow Test Report

Test Number: 375
Sample Number: 18
Filter Description: n/a
Test Description:

Report Date: 10/10/2012
Tech: C.V.

S&B #76-1006, w/venturi

Test Conditions

Flow: 612 SCFM
Barometric Pressure: 29.00 IN. Hg

Temperature: 69.22 DEG. F
Humidity: 50.1 %

Test Results

Flow SCFM	Restriction IN. H2O		
	Gross	Tare	Net
0	0	0	0.0
307.104	2.255	0	2.3
462.655	4.949	0	4.9
612.95	8.69	0	8.7
762.677	13.728	0	13.7
918.509	19.624	0	19.6

