



## 2008 VW Jetta GLI, 2.0L I4, Turbo 114,767 miles

Intake valves cleaned with  
No. 05319 *CRC GDI IVD® Intake Valve & Turbo Cleaner*





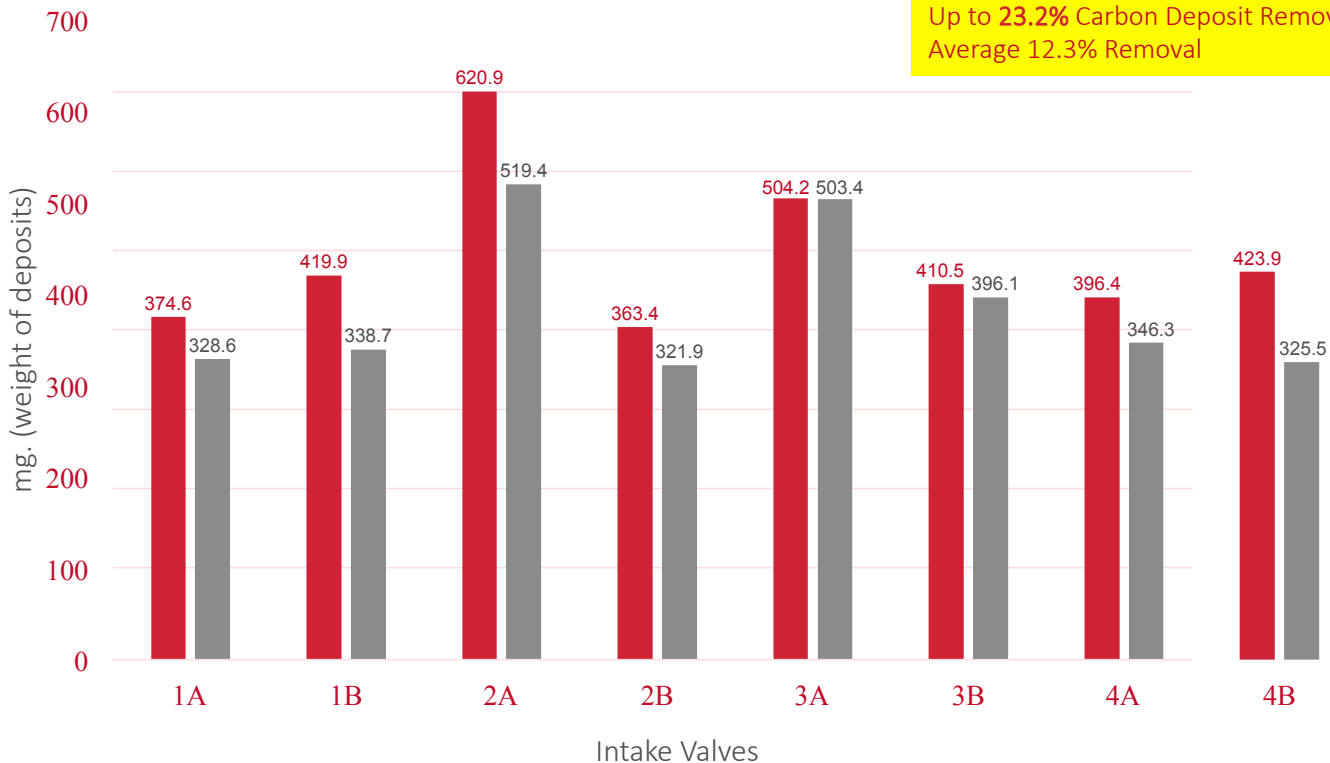
# VW JETTA GLI TEST RESULTS – INTAKE VALVES

After Cleaning with CRC GDI IVD® Intake Valve & Turbo Cleaner

## 2008 VW JETTA GLI

After First Hour:

Up to 23.2% Carbon Deposit Removal  
Average 12.3% Removal



■ Pre Cleanup (Dirty) ■ After Cleaning with 05319

**AVERAGE 12.3%  
Deposit Removal  
After First Hour!**

12.3%  
Removal

19.3%  
Removal

16.3%  
Removal

11.4%  
Removal

.2%  
Removal

3.5%  
Removal

12.6%  
Removal

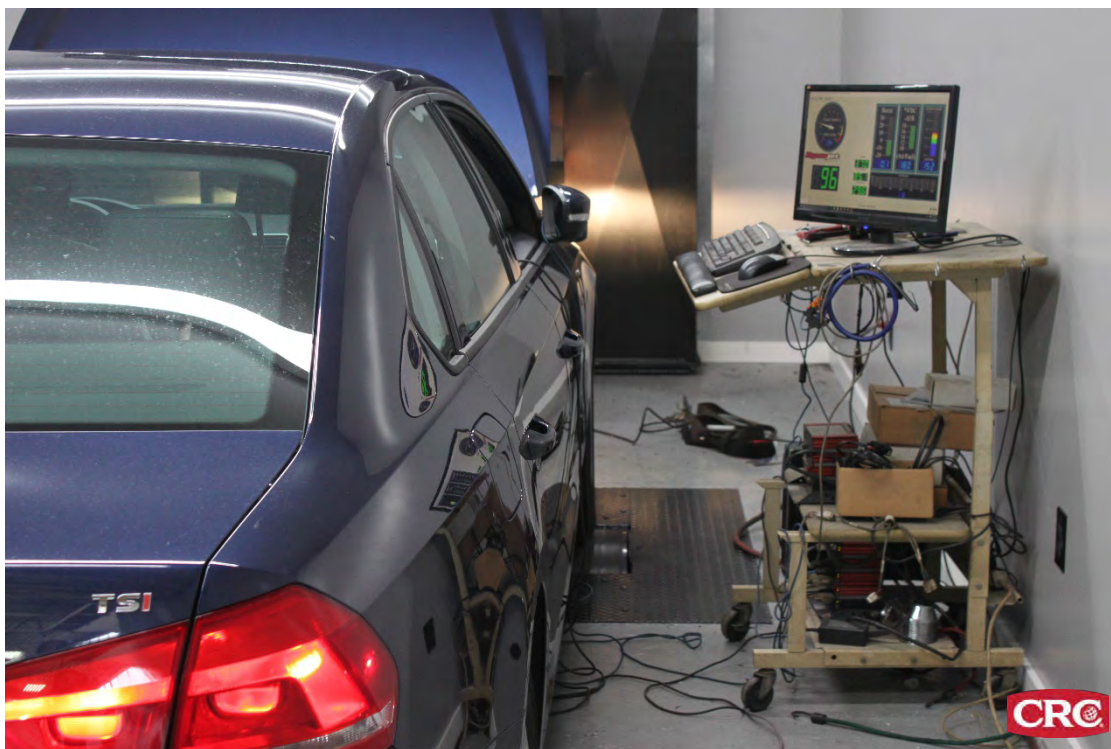
23.2%  
Removal





## 2015 VW Passat Turbo, 1.8L V4 24,757 miles

Intake valves cleaned with  
No. 05319 *CRC GDI IVD® Intake Valve & Turbo Cleaner*





- Gained 13.5 horsepower & 4.9 ft.-lbs. of torque!
- Proven to keep cleaning even 8 days after application

## CRC GDI IVD® Intake Valve & Turbo Cleaner

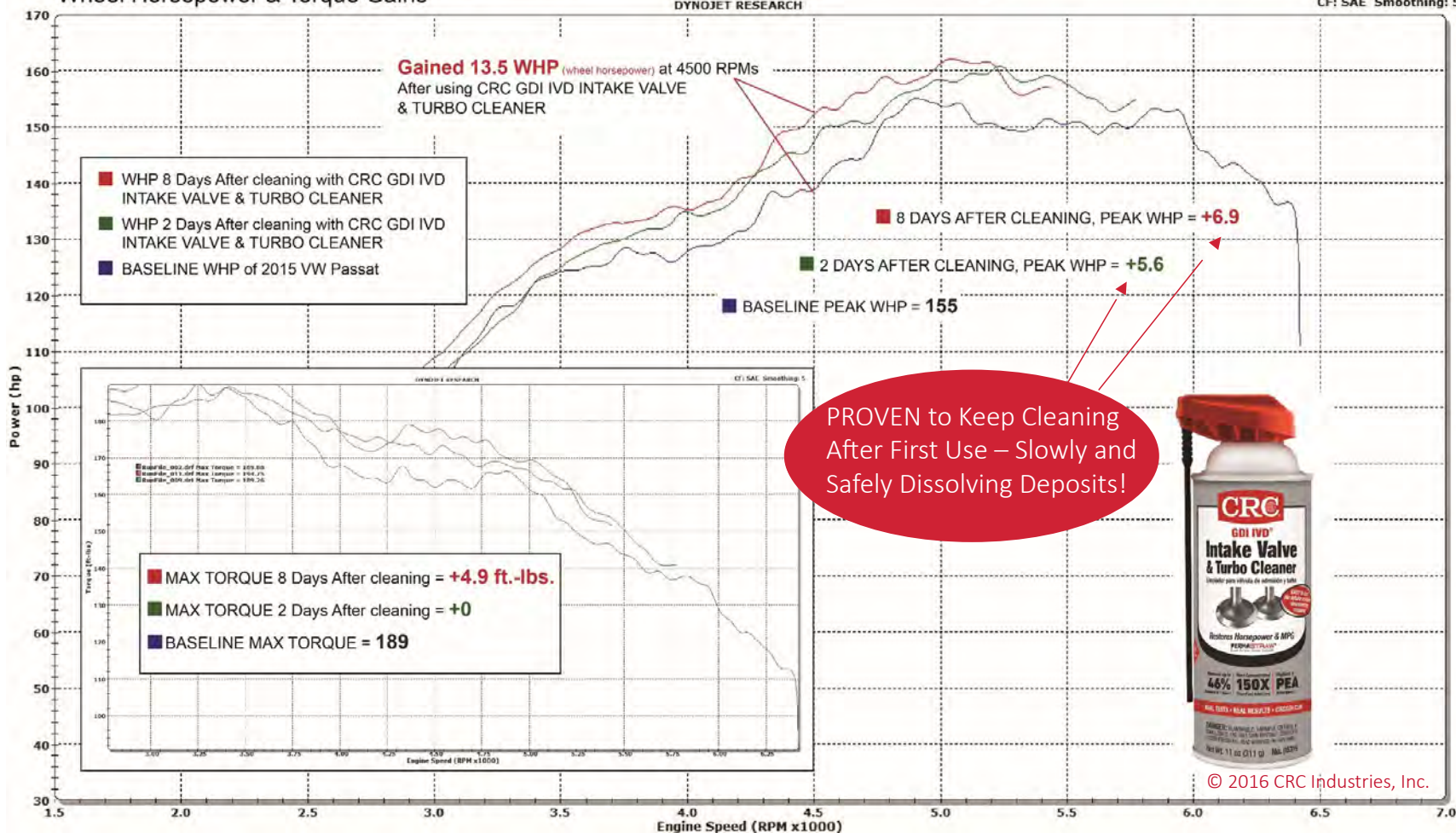
2015 VW Passat 1.8L V4 Turbo · 25K Miles

Wheel Horsepower & Torque Gains



DYNOJET RESEARCH

CF: SAE Smoothing: 5







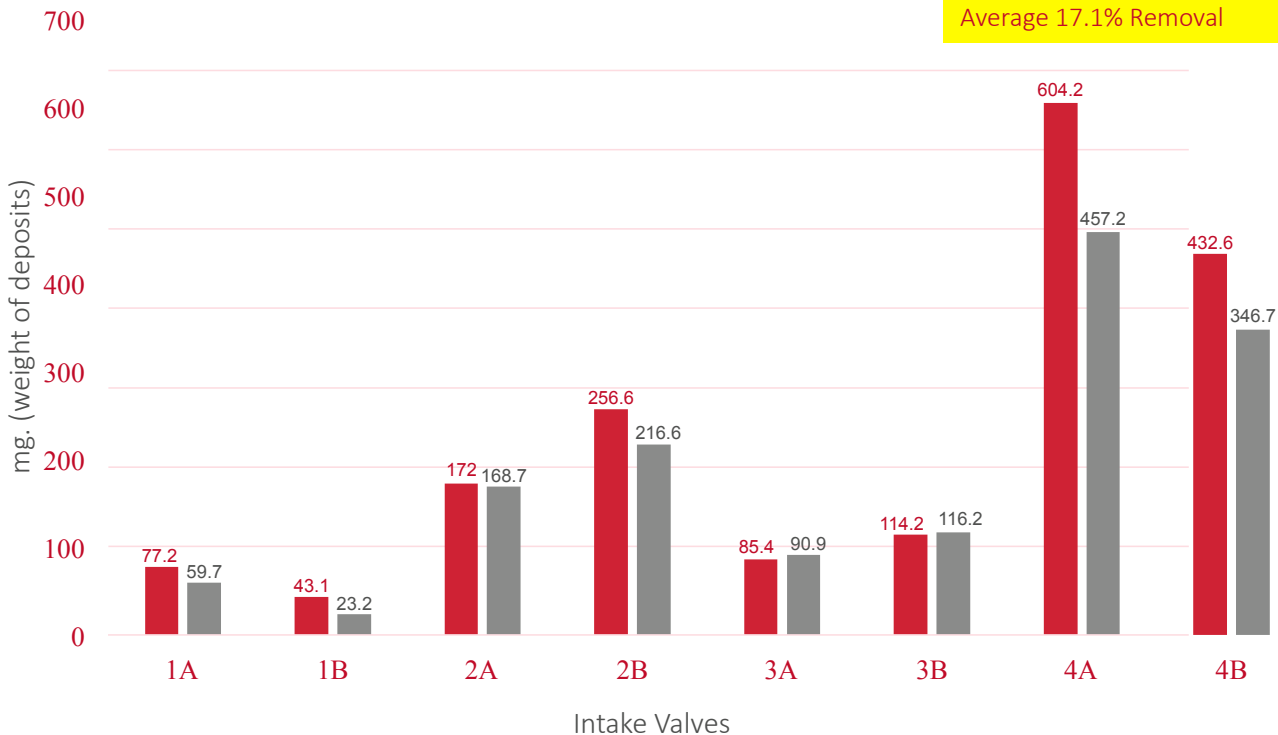
# HYUNDAI SONATA TEST RESULTS — INTAKE VALVES

After Cleaning with CRC GDI IVD® Intake Valve & Turbo Cleaner

## 2011 Hyundai Sonata

**After First Hour:**

Up to 46.2% Carbon Deposit Removal  
Average 17.1% Removal



■ Pre Cleanup ■ Post Cleanup

**AVERAGE 17.1%  
Deposit Removal  
After First Hour!**

22.7%  
Removal

46.2%  
Removal

1.9%  
Removal

15.6%  
Removal

-6.4%  
Removal

-1.8%  
Removal

24.3%  
Removal

19.9%  
Removal



## 2011 Hyundai Sonata Piston Tops & Cylinder Heads After Cleaning with CRC GDI IVD® Intake Valve & Turbo Cleaner



PISTON TOPS				CYLINDER HEADS			
<b>THICKNESS OF CARBON DEPOSIT BEFORE CLEANING (AVERAGE MILS)</b>							
CYL 1	CYL 2	CYL 3	CYL 4	CYL 1	CYL 2	CYL 3	CYL 4
4.23	3.84	4.37	4.59	11.55	10.55	10.01	9.89
<b>AFTER CLEANING with CRC GDI IVD INTAKE VALVE &amp; TURBO CLEANER</b>							
0.5	0.11	0.21	0.1	4.21	3.15	1.51	1.53
<b>CLEANUP RESULTS % AFTER 1 HOUR!</b>							
88.2%	97.1%	95.2%	97.8%	63.5%	70.1%	84.9%	84.5%

Pre CU CCD Thickness Measurements									
LOCATION	PISTON TOP					CYLINDER HEAD			
	1	2	3	4		1	2	3	4
A	5.33	5.15	3.96	4.42		13.30	6.23	5.98	5.46
B	4.03	1.72	3.45	4.78		14.90	12.80	13.30	15.70
C	4.09	3.02	3.17	3.61		14.20	14.40	15.20	15.10
D	4.17	2.63	4.89	4.99		6.40	7.31	8.11	7.88
E	3.40	4.42	5.24	2.61		8.96	12.00	7.45	5.31
F	3.56	5.79	5.47	4.70					
G	5.05	4.17	4.41	7.02					
AVERAGE	4.23	3.84	4.37	4.59		11.55	10.55	10.01	9.89
	4.26					10.50			
MAX	5.33	5.79	5.47	7.02		14.90	14.40	15.20	15.70
MIN	3.40	1.72	3.17	2.61		6.40	6.23	5.98	5.31

Post CU CCD Thickness Measurements									
LOCATION	PISTON TOP					CYLINDER HEAD			
	1	2	3	4		1	2	3	4
A	0.34	0.00	0.00	0.16		0.36	0.00	0.00	0.00
B	0.64	0.00	0.00	0.00		11.50	9.75	1.73	1.50
C	0.56	0.46	1.46	0.24		3.33	1.32	1.80	2.71
D	0.60	0.13	0.00	0.00		4.02	4.56	4.00	3.43
E	0.46	0.11	0.01	0.02		1.82	0.13	0.00	0.00
F	0.66	0.05	0.02	0.30					
G	0.25	0.00	0.00	0.00					
AVERAGE	0.50	0.11	0.21	0.10		4.21	3.15	1.51	1.53
	0.23					2.60			
MAX	0.66	0.46	1.46	0.30		11.50	9.75	4.00	3.43
MIN	0.25	0.00	0.00	0.00		0.36	0.00	0.00	0.00

\* units of thickness are mils

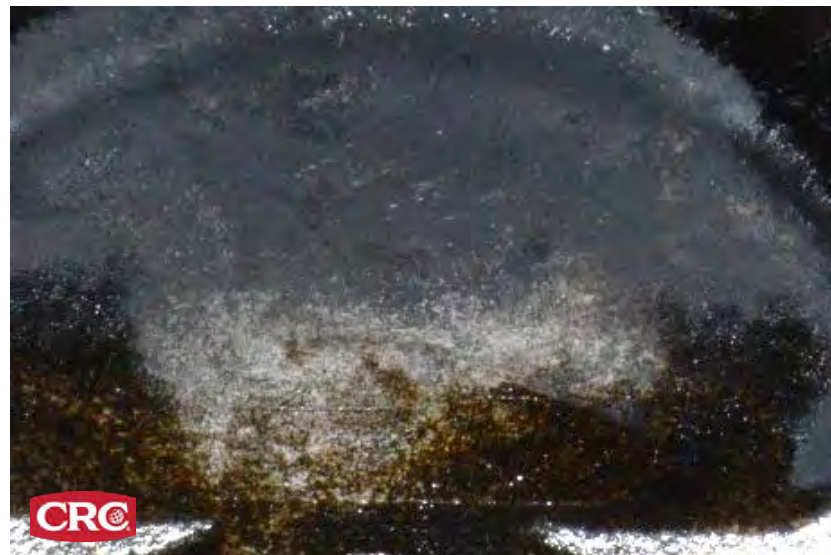


## 2011 Hyundai Sonata Before/After Photos

After Cleaning with CRC GDI IVD<sup>®</sup> Intake Valve & Turbo Cleaner



Piston Top (Dirty)  
Carbon Deposit Thickness in Mils = 4.59



Piston Top After Cleaning with CRC 05319  
Carbon Deposit Thickness in Mils = 0.1

Carbon Deposits Reduced  
by **98%** After First Hour!





## 2011 Hyundai Sonata Before/After Photos

After Cleaning with CRC GDI IVD® Intake Valve & Turbo Cleaner



Cylinder Head (Dirty)  
Carbon Deposit Thickness in Mils = 9.89



Cylinder Head After Cleaning with CRC 05319  
Carbon Deposit Thickness in Mils = 1.57

Carbon Deposits Reduced  
by **85%** After First Hour!





## 2011 Hyundai Sonata Before/After Photos

After Cleaning with CRC GDI IVD<sup>®</sup> Intake Valve & Turbo Cleaner



4  
856 #8  
2.5K DU  
3/2/15



Intake Valves (Dirty)

Deposit weight (mg) **604.2**



4  
856 #8  
AIS CU  
3/3/15



Intake Valves After Cleaning with CRC 05319

Deposit weight (mg) **457.2**

Intake Valve Carbon Deposits Reduced  
by 24.3% After First Hour!



## 2011 Hyundai Sonata Before/After Photos After Cleaning with CRC GDI IVD® Intake Valve & Turbo Cleaner



**Fuel Injectors  
Before Cleanup**



**Fuel Injectors  
100% Flow Restored  
After Cleaning with  
CRC 05319**

		Injector Flow Data				
		Cleaned SOT	Pre CU	Post CU	Cleaned EOT	
		Data	2/5/2015 No CU required	3/2/2015	3/3/2015	3/6/2015
Injector ID	Flow #	Flow qty (gm.)	Flow qty (gm.)	Flow qty (gm.)	Flow qty (gm.)	
Injector 1	1	101.00	99.00	101.00	101.00	
	2	101.00	100.00	101.00	101.00	
	3	101.00	100.00	101.00	101.00	
	Average	101.00	99.67	101.00	101.00	
Injector 2	1	100.00	97.00	100.00	101.00	
	2	101.00	98.00	100.00	101.00	
	3	101.00	98.00	100.00	101.00	
	Average	100.67	97.67	100.00	101.00	
Injector 3	1	100.00	98.00	100.00	100.00	
	2	100.00	98.00	100.00	100.50	
	3	100.50	98.00	100.00	101.00	
	Average	100.17	98.00	100.00	100.50	
Injector 4	1	100.00	98.00	100.00	100.00	
	2	100.00	98.00	100.00	101.00	
	3	101.00	98.00	100.00	101.00	
	Average	100.33	98.00	100.00	100.67	





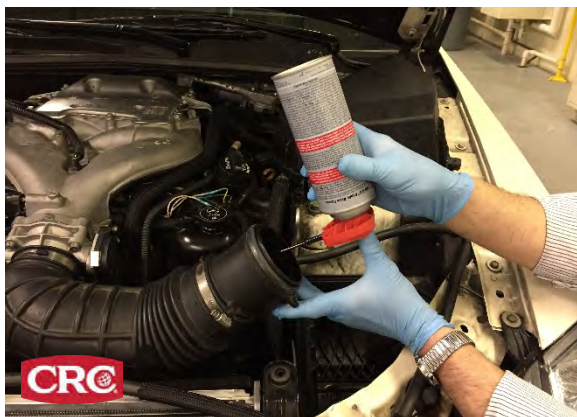
## 2009 Cadillac CTS, 3.6L V6, 24-Valve Direct Injection, Non-Turbo, 171,346 miles

Intake valves cleaned with  
No. 05319 *CRC GDI IVD® Intake Valve & Turbo Cleaner*





## CADILLAC CTS - CLEANING GDI INTAKE VALVES



Spray CRC GDI IVD®  
Intake Valve & Turbo Cleaner  
past the MAF sensor...



Directly into the throttle body...



Or professionals can spray through a vacuum line  
connected to the intake manifold  
(i.e. brake booster vacuum line)



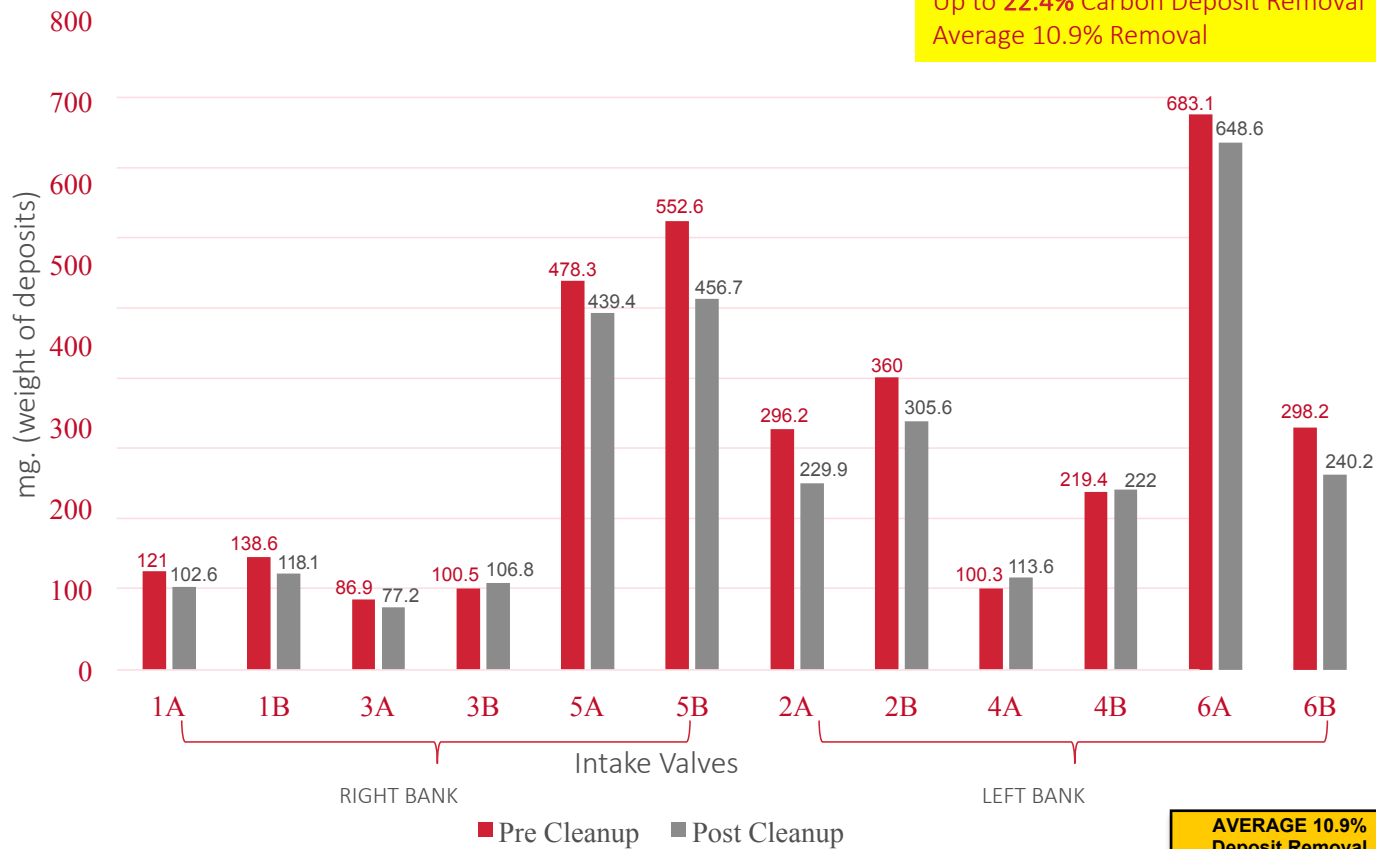


# CADILLAC CTS TEST RESULTS – INTAKE VALVES

After Cleaning with CRC GDI IVD® Intake Valve & Turbo Cleaner

2009 Cadillac CTS

**After First Hour:**  
Up to 22.4% Carbon Deposit Removal  
Average 10.9% Removal



**AVERAGE 10.9% Deposit Removal After First Hour!**





## 2009 Cadillac CTS Piston Tops & Combustion Chambers

### After Cleaning with CRC GDI IVD® Intake Valve & Turbo Cleaner



PISTON TOPS						COMBUSTION CHAMBERS					
THICKNESS OF CARBON DEPOSIT BEFORE CLEANING (AVERAGE MILS)											
CYL 1	CYL 2	CYL 3	CYL 4	CYL 5	CYL 6	CYL 1	CYL 2	CYL 3	CYL 4	CYL 5	CYL 6
6.76	7.32	6.65	8.5	6.75	8.59	9.52	10.15	10.54	12.38	12.07	11.88
AFTER CLEANING with CRC GDI IVD INTAKE VALVE & TURBO CLEANER											
2.59	3.4	3.18	4.04	3.49	2.77	3.45	4.43	5.35	6.73	6.71	4.88
CLEANUP RESULTS % AFTER FIRST HOUR!											
61.7%	53.6%	52.2%	52.5%	48.3%	67.8%	63.8%	56.4%	49.2%	45.6%	44.4%	58.9%

CCD Thickness Measurements

		PISTON TOPS																													
		Pre CU							Post CU																						
		A	B	C	D	E	F	G	H	I	J	AVG.	Max	Min	A	B	C	D	E	F	G	H	I	J	AVG.	Max	Min				
RIGHT BANK	1	6.25	5.86	5.54	7.35	7.50	8.41	4.93	6.41	7.73	7.61	6.76	6.72	7.43	8.41	4.93	1.59	5.12	2.44	4.46	2.69	2.40	0.96	3.04	1.67	2.47	2.59	3.09	3.25	5.12	0.96
	3	6.22	7.16	7.82	6.93	7.94	6.91	6.43	6.45	4.62	6.06	6.65			7.94	4.62	6.95	4.57	1.05	2.77	3.26	3.03	1.16	3.59	2.19	4.31	3.18			5.86	1.05
	5	6.48	8.24	5.81	6.98	8.93	9.40	6.79	6.10	6.53	4.30	6.76			9.40	4.30	4.68	3.99	2.86	3.74	5.83	3.43	0.41	3.00	3.79	3.20	3.49			5.83	0.41
LEFT BANK	2	10.30	7.29	5.57	8.95	8.11	9.29	5.64	6.89	4.17	6.95	7.32	6.14	7.43	10.30	4.17	0.97	2.80	1.96	6.89	3.81	8.93	3.82	2.14	1.90	1.22	3.40	3.40	3.25	8.93	0.97
	4	12.20	8.87	7.55	10.80	11.40	9.99	6.58	8.05	4.87	4.55	8.50			12.20	4.55	4.35	7.57	2.46	4.97	7.24	5.84	2.14	3.11	1.73	0.95	4.04			7.57	0.95
	6	13.40	7.42	8.64	7.42	9.06	7.36	7.52	7.77	10.50	6.76	8.59			13.40	6.76	0.00	0.00	3.36	3.89	6.21	6.37	1.31	3.84	1.81	1.18	2.77			6.37	0.00

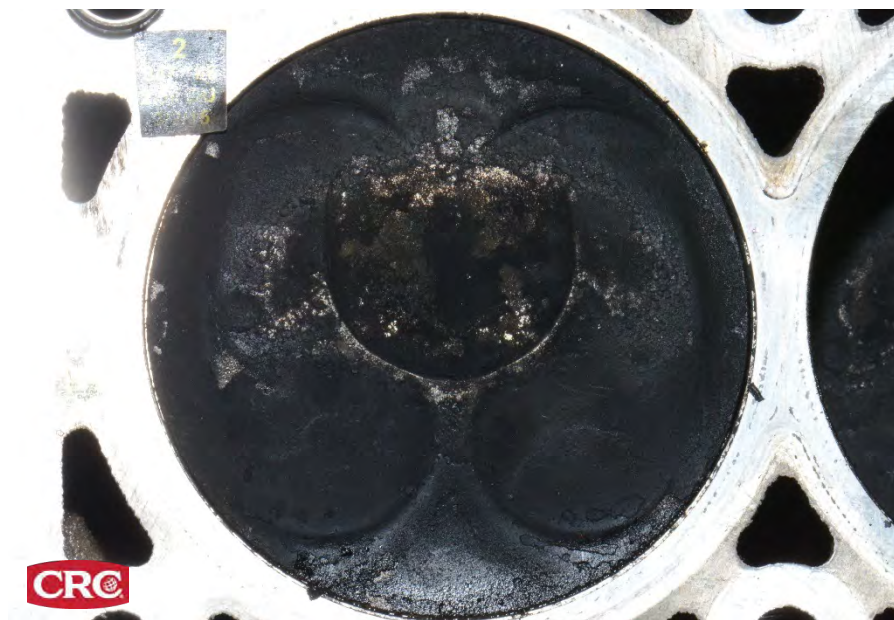
		COMBUSTION CHAMBERS																									
		Pre CU							Post CU																		
		A	B	C	D	E	F	G	H	I	J	AVG.	Max	Min	A	B	C	D	E	F	G	H	I	J	AVG.	Max	Min
RIGHT BANK	1	5.96	10.80	10.20	11.10	10.71	11.09	11.10	5.96	0.79	4.06	3.97	5.07	3.45	5.02	5.07	0.79										
	3	7.05	11.60	12.20	11.30			12.20	7.05	2.07	10.80	3.55	5.16			5.35	5.17	10.60	2.07								
	5	12.20	9.87	14.20	12.00			14.20	9.87	0.72	10.70	5.95	9.48			6.71	10.70	0.72									
LEFT BANK	2	4.68	11.50	13.10	11.30	11.47	11.09	13.10	4.68	0.66	4.40	3.11	9.53	4.87	5.02	9.53	0.66										
	4	9.61	15.80	13.00	11.10			15.80	9.61	5.37	8.40	5.14	8.00			6.73	4.87	8.40	5.14								
	6	10.50	12.00	13.00	12.00			11.88	13.00	10.50	2.01	3.70	3.18			4.88	3.44	4.88	2.01								





## 2009 Cadillac CTS Before/After Photos

After Cleaning with CRC GDI IVD<sup>®</sup> Intake Valve & Turbo Cleaner



Piston Top (Dirty)

Carbon Deposit Thickness in Mils = 8.59



Piston Top After Cleaning with CRC 05319

Carbon Deposit Thickness in Mils = 2.77

Carbon Deposits Reduced  
by **68%** After First Hour!



## 2009 Cadillac CTS Before/After Photos

After Cleaning with CRC GDI IVD® Intake Valve & Turbo Cleaner



Cylinder Head (Dirty)

Carbon Deposit Thickness in Mils = 9.52



Cylinder Head After Cleaning with CRC 05319

Carbon Deposit Thickness in Mils = 3.45

Carbon Deposits Reduced  
by 64% After First Hour!





## 2009 Cadillac CTS Before/After Photos

After Cleaning with CRC GDI IVD<sup>®</sup> Intake Valve & Turbo Cleaner



Intake Valves (Dirty)  
Deposit weight (mg) 296.2

Intake Valves After Cleaning with CRC 05319  
Deposit weight (mg) 229.9

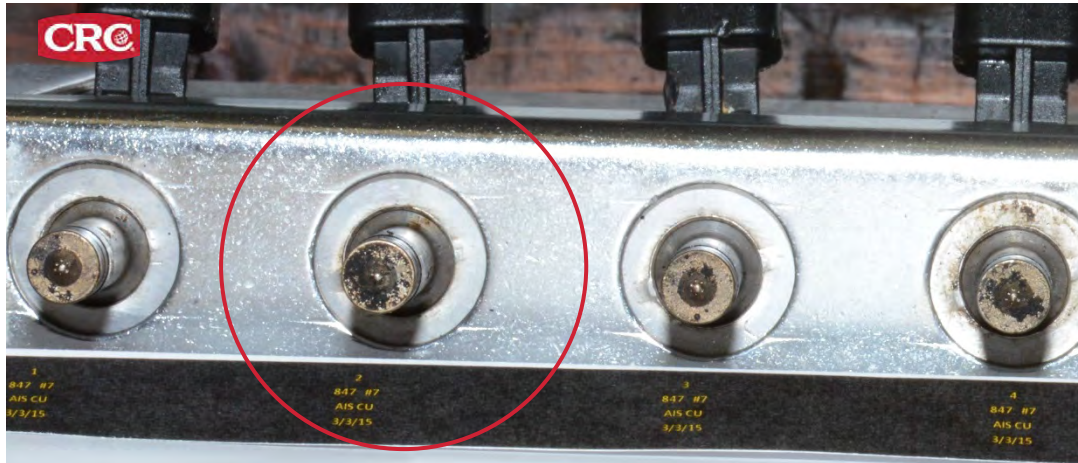
Intake Valve Carbon Deposits Reduced  
by 23% After First Hour!



## 2009 Cadillac CTS Before/After Photos After Cleaning with CRC GDI IVD® Intake Valve & Turbo Cleaner



Fuel Injectors (Dirty)



Injector Flow Data

		Cleaned SOT	Pre CU	Post CU	Cleaned EOT
Date		2/9/15	3/2/15	3/3/15	3/5/15
Injector ID	Flow #	Flow qty (gm.)	Flow qty (gm.)	Flow qty (gm.)	Flow qty (gm.)
Injector 1	1	91.00	90.00	90.00	91.000
	2	91.00	90.00	91.00	91.000
	3	91.00	90.00	91.00	91.000
	Average	91.00	90.00	90.67	91.00
Injector 2	1	88.50	88.00	89.00	88.000
	2	89.00	88.00	89.00	88.000
	3	89.00	88.00	89.00	89.000
	Average	88.83	88.00	89.00	88.33
Injector 3	1	89.00	88.00	89.00	89.000
	2	90.00	89.00	89.00	89.000
	3	90.00	89.00	89.00	89.000
	Average	89.67	88.67	89.00	89.00
Injector 4	1	90.00	89.00	90.00	89.000
	2	90.00	90.00	90.00	89.000
	3	90.00	90.00	90.00	89.000
	Average	90.00	89.67	90.00	89.00
Injector 5	1	91.00	91.00	92.00	90.500
	2	92.00	92.00	91.50	90.000
	3	92.00	92.00	92.00	90.000
	Average	91.67	91.67	91.83	90.17
Injector 6	1	89.00	89.00	90.00	88.000
	2	90.00	89.00	90.00	89.000
	3	90.00	89.00	90.00	89.000
	Average	89.67	89.00	90.00	88.67
Reference Injector	1	89.00	90.00	90.00	88.000
	2	90.00	90.00	90.00	89.000
	3	90.00	90.00	90.00	89.000
	Average	89.67	90.00	90.00	88.67

Fuel Injectors up to **91% Flow Restored**  
After the First Hour, Cleaning with CRC GDI IVD® Intake Valve & Turbo Cleaner





2009 Cadillac CTS Before/After Photos  
After Cleaning with CRC GDI IVD® Intake Valve & Turbo Cleaner



Spark Plugs (Dirty)



Spark Plugs After Cleaning with CRC 05319



## 2013 Mini Cooper Countryman, 1.6L 35,045 miles

Intake valves cleaned with  
No. 05319 *CRC GDI IVD® Intake Valve & Turbo Cleaner*







## MINI COOPER TEST RESULTS — INTAKE VALVES

After Cleaning with CRC GDI IVD® Intake Valve & Turbo Cleaner

### Mini Cooper

**After First Hour:**

Up to 21% Carbon Deposit Removal

Average 12.4% Removal



■ Pre Cleanup ■ Post Cleanup

**AVERAGE 12.4%  
Deposit Removal  
After First Hour!**

1.2%  
Removal

13.4%  
Removal

-3.8%  
Removal

4.4%  
Removal

13.6%  
Removal

7.8%  
Removal

21%  
Removal

15.5%  
Removal



**2013 MINI COOPER COUNTRYMAN**  
After Cleaning with CRC GDI IVD® Intake Valve & Turbo Cleaner

**Turbo Impeller**



**Before**



**After cleaning with  
CRC GDI IVD® INTAKE VALVE &  
TURBO CLEANER**