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Clearing the Air PHP's CMRC Delete Kit for the '05 GT

By Dale Amy
Photography: Dale Amy

Horse Sense: Paul Svinicki reports that swapping on the CMRC delete kit without making the necessary revisions to Spanish Oak programming will cause an immediate 22 to 24hp loss at the wheels.

Among the new bells and whistles appended to every Three-Valve modular are Charge-Motion Runner Controls wedged between the '05 GT's intake manifold and cylinder heads, you may also hear them generically described as "tumble plates" in recognition of their job of speeding up and inducing a tumbling motion into air bound for the combustion chambers at light throttle openings. This is said to help homogenize the air/fuel mixture for thorough and squeaky-clean combustion at idle and just off-idle.

By any name, the CMRC contraption consists of what looks like partial throttle plates stuck in each intake runner path. The pivoting flappers are processor-controlled, closing off all but a small portal to accelerate and tumble incoming air at low rpm, and then swinging wide open as the engine's demand for oxygen increases. That's the theory anyway. The problem



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In their light-throttle position, the CMRCs, or simply "tumble plates," present only a small window for incoming air to funnel through. Though they rotate to a wide-open position as early as 1,500 rpm, having



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The factory sticks Charge-Motion Runner Controls on the Three-Valve 4.6, with the intention of massaging intake air velocity and flow characteristics to maximize light-throttle efficiency and minimize emissions. Replacing them with the unrestricted CMRC-delete plates from Paul's High Performance (shown here on the outside) makes more power, eliminating a little mechanical complexity in the process.

is they seem to block ultimate airflow and therefore rob power, much as the similar functioning Intake Manifold Runner Control plates did on Four-Valve Cobra engines.

eight of them in the induction air stream seems to create a choke point in the intake runners, and less air equals less power. In contrast, the PHP CMRC-delete plates (\$199) are obstruction free all the time.

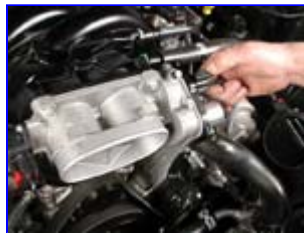
The aftermarket solution is also the same as in the case of the IMRCs: Get rid of 'em. The [Paul's High Performance](#) CMRC-delete kit we're installing here is affordable, produces a generous horsepower and torque boost on the PHP Dynojet, and is straightforward to install, as will be seen via the accompanying photos. Beware, however, that the GT's super-sensitive Spanish Oak processor must be recalibrated to take advantage of the revised airflow characteristics, and to avoid the pesky old Check Engine light, driveability hiccups, a significant power loss and, says Paul, the eventual decision by the all-powerful Spanish Oak to go into "fail-safe" mode wherein the engine will spin no higher than 3,800 rpm.

Paul developed a specific tune to accompany the CMRC delete kit and strongly recommends you get both as a package deal, but will sell the delete hardware alone for those who have a qualified tuner in the neighborhood.



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This is what your '05 GT's Three-Valve will look like both before and after installation of PHP's delete plates, since they, like the factory CMRCs, will be hidden at the junction of the intake manifold and cylinder heads. No one will be able to see where the extra power came from.



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The intake manifold must be lifted to effect the swap. With the inlet hose unclamped, the first step is unplugging the electronic-throttle-control harness from the driver side of the throttle body, as well as the throttle-position-sensor harness, not yet detached here from the passenger side. The throttle body can



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Disconnect the large and small vent hoses from their nipples on the manifold.

remain on the manifold.



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Remove both the vacuum line and wiring harness from the fuel-rail-pressure monitor.



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Next, separate the spring-lock fuel-line connection using the appropriate release tool...



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...then unplug each of the fuel injector electrical harnesses.



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After freeing the alternator wiring harness from the passenger-side rail, unbolt and remove the fuel rail assemblies, complete with injectors.



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Five bolts per side secure the plastic manifold--one hidden between the middle two runners on each side. Remove these and the manifold is almost ready to come off...



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...but first, another vacuum line (arrow) and the CMRC electrical harness Karl Roeckle is thoughtfully pointing out here, must be detached at the back end of the manifold. We couldn't get the camera at them on the car, so we're showing them here for clarity. This shot also shows the tumble plate actuating rods.



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Undo the three bolts that secure the CMRC



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All that remains is to bolt the PHP CMRC



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...and reinstall the manifold and all the

actuator servo to the back of the manifold, and two more that secure each CMRC plate to the manifold runners, and lift the whole assembly off.

eliminators in place...

paraphernalia you disconnected a few minutes ago. But remember, flash retuning will be necessary to convince the Spanish Oak processor that all is copasetic. (See dyno chart on next page.)

Clearing the Air (cont.)

TALES FROM THE DYNO

Baseline	CMRC Eliminators	Difference				
RPM	POWER	TORQUE	POWER	TORQUE	POWER	TORQUE
2,500	126.8	266.4	132.3	278.0	5.5	11.6
2,600	133.6	269.9	139.6	281.9	6.0	12.0
2,700	140.8	273.8	146.5	285.0	5.7	11.2
2,800	146.3	274.4	151.7	284.6	5.4	10.2
2,900	150.5	272.6	155.9	282.3	5.4	9.7
3,000	155.3	271.9	160.8	281.5	5.5	9.6
3,100	160.4	271.8	166.3	281.8	5.9	10.0
3,200	166.0	272.5	172.9	283.7	6.9	11.2
3,300	172.2	274.0	181.6	289.0	9.4	15.0
3,400	180.1	278.3	191.5	295.8	11.4	17.5
3,500	189.3	284.1	200.2	300.5	10.9	16.4
3,600	197.1	287.5	207.0	302.0	9.9	14.5
3,700	204.3	290.1	214.6	304.6	10.3	14.5
3,800	213.5	295.1	223.3	308.6	9.8	13.5
3,900	221.4	298.1	231.1	311.2	9.7	13.1
4,000	229.7	301.6	239.8	314.9	10.1	13.3
4,100	239.3	306.5	249.0	318.9	9.7	12.4
4,200	248.1	310.2	257.3	321.7	9.2	11.5
4,300	255.1	311.6	263.4	321.8	8.3	10.2
4,400	260.1	310.5	268.2	320.2	8.1	9.7
4,500	264.5	308.7	272.8	318.4	8.3	9.7
4,600	269.2	307.4	277.5	316.8	8.3	9.4
4,700	274.2	306.5	282.6	315.8	8.4	9.3
4,800	279.3	305.6	288.1	315.2	8.8	9.6

4,900	284.4	304.8	292.8	313.9	8.4	9.1
5,000	288.2	302.8	296.5	311.4	8.3	8.6
5,100	290.3	299.0	297.9	306.8	7.6	7.8
5,200	291.1	294.1	298.1	301.1	7.0	7.0
5,300	290.6	288.0	297.4	294.7	6.8	6.7
5,400	289.9	282.0	297.3	289.2	7.4	7.2
5,500	288.6	275.6	296.9	283.5	8.3	7.9
5,600	287.0	269.2	296.1	277.7	9.1	8.5
5,700	285.9	263.4	295.8	272.6	9.9	9.2
5,800	287.1	260.0	296.6	268.6	9.5	8.6
5,900	289.1	257.4	299.0	266.1	9.9	8.7
6,000	290.8	254.5	301.0	263.5	10.2	9.0
6,100	291.4	250.9	301.4	259.5	10.0	8.6
6,200	291.7	247.1	300.1	254.2	8.4	7.1
6,300	289.7	241.5	297.1	247.7	7.4	6.2
6,400	285.7	234.4	292.9	240.4	7.2	6.0
6,500	280.3	226.5	287.3	232.1	7.0	5.6
6,600	274.7	218.6	281.7	224.2	7.0	5.6
6,700	268.3	210.3	275.6	216.0	7.3	5.7
6,800	264.4	204.2	269.8	208.4	5.4	4.2

Our subject GT, belonging to Jim Sell, already wore JBA headers and exhaust, along with underdrive pulleys, thus explaining its healthy baseline numbers.

We expected that installing the PHP CMRC-delete kit would benefit top-end power, but were surprised to see that both horsepower and torque were up right across the tach, with a maximum point-to-point increase of 11.4 hp and 17.5 lb-ft occurring at 3,400 rpm. Peak-to-peak gains were similarly impressive at 9.7 ponies and 10.2 lb-ft. Paul actually tested down to below 1,000 rpm, and at no point did the factory CMRC setup provide any power or torque advantage.

SOURCES

Paul's High Performance
 Dept. 5.0
 3715 Commerce St.
 Jackson, MI 49203
 (517) 764-7661
www.paulshp.com

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