"PV" Anyone? *by Terry Brim*

They say one of the toughest things to do in the NCRS judging world is to pass what they call a "PV" test or Performance Verification test. Always up for a challenge, I decided to try it on my 70' 350/350 4-speed convertible with A/C. I knew for the most part my car was in factory operating condition as I had had the car judged a few times. However, there were a few items that I also knew I had to do a little work on. Starting with the easy stuff, I have driven the car for years with an aftermarket steering wheel and a set of 76' vette wheels with radial tires both of which would have to go. I still had the original steering wheel along with the original wheels mounted on a set of non radial bias belted tires that I used for judging. Changing those items was the easy part as I had been through that routine many times before! For years, I also ran the car with a set of KYB shocks and a mono leaf fiberglass spring. That combination along with the radial tires made the car drive like a dream, but that was not the objective for passing a PV test. The objective here was to make the car drive as it originally was delivered from the factory….no matter how poorly it drove!

Since the PV test had been in the back of my mind for a couple of years, last year, I replaced the KYB shocks with a set of delco shocks and with the help of Greg Gorniak, I replaced the monoleaf spring with an OEM spring from a 69' which I got from fellow Chapter member Jamshid.

> Now the easy stuff was done: steering wheel, tires, shocks, rear spring, exhaust system, throw out bearing, temperature gauge, and interior dimmer switch

A couple of years ago, I also replaced the exhaust system with a set of stock mufflers from Allen's. Unfortunately, last spring while out on an early spring drive to clean out the winter cob webs, I had a float stick on my carburetor. While nursing the car back home, I experienced such severe backfiring that I blew both stock mufflers apart at both ends!

After rebuilding my carburetor, again with the help of fellow Chapter member Nick Kammer, I had a decision to make…..do I replace the exhaust with stock mufflers again or do I replace them with something that would give me more of a 60s sound? I opted for the latter and bought a set of magnaflow mufflers. As advertised, the sound was great, just what I wanted! The only problem was when I checked with the national team leader regarding whether or not the car would pass a PV with non-stock mufflers, the answer I

Continued on page 7

"PV" Anyone? (Cont'd) *by Terry Brim*

Continued from page 6

got back was an emphatic NO!

Once again, I turned to a fellow Chapter member for help. I took the blown out mufflers to Craig Egbert and asked him if he could weld the muffler seams front and rear where they had blown apart. Craig worked his magic and since the mufflers were still welded to the exhaust pipes (just as I had bought them from Allen's), it was less than an afternoon's task to replace the magnaflow's with the repaired stock mufflers and pipes. (thank you to fellow Chapter member Bob Hiney who just happened to stop by for his assistance).

One more item cropped up after the winters nesting, I had developed and on again off again squeal in the throw out bearing. I knew as Murphy would have it, the squeal would become most prominent during the PV test. Since it had been almost 15 years since my last clutch replacement, I decided now was the time to replace the throw out bearing and clutch. Enter fellow Chapter member Roger Owsley. I had been taking the car to Roger long before I even knew NCRS existed (try 1985). In fact, Roger had put the last clutch in for me so he was an obvious choice the pesky throw out bearing.

Next on the "easy list" was the temperature gauge. For years, my temperature gauge never read more that 120 degrees. For the PV test however, that would never do....spec says temp gauge must read at operating temperature between 190 and 210 degrees. Simple solution, buy a new temperature sending unit! Not so fast, if anyone has ever tried buying an aftermarket replacement, you will know what I'm talking about.....they just do not give you the proper temperature gauge readings.

> I soon discovered something was missing, a TCS temperature sending unit mounted in the passenger side cylinder head!

Once again Roger Owsley worked his magic, he was able with a few tricks to get the sending unit and temperature gauge to work per spec. (if any of you are having this problem, recommend you go see Roger).

Last item on the easy list was that my interior lights would not dim evenly across the entire spectrum. Turns out, I had a dead spot in the headlight switch rheostat. Simple fix was a new headlight switch.

Now the easy stuff was done: steering wheel, tires, shocks, rear spring, exhaust system, throw out bearing, temperature gauge, and headlight switch Next came the hard stuff, the vacuum system, the emission system and the washer system.

I had worked on the vacuum system a year or so ago and had it so that the wiper door wouldn't arbitrarily open and close on it's own when I started the car. I also had the system tight enough so that there was sufficient vacuum remaining to close the headlights as long as 40 seconds after engine shut down. PV manual specs minimum of 30 seconds so although on the edge, I felt I was ok.

Continued on page 8

"PV" Anyone? (Cont'd) *by Terry Brim*

Continued from page 7

Onto the emission system. I had the emission system working for more than a year or so I thought. I had replaced the TCS switch on the transmission along with a new TCS solenoid mounted on the passenger side of the intake manifold. Indeed, the RPM increased in 3rd and 4th gear 300 - 400 RPM as it should. After reading the PV manual for about the 5th time however, I soon discovered something was missing, a TCS temperature sending unit mounted in the passenger side cylinder head! This sending unit is to disable the TCS feature from operating below 82 degrees or above 250 degrees.

Sure enough, after removing the spark plug heat shield, there it was! Unfortunately it wasn't working. After replacing the TCS temperature sending unit, the TCS system worked….. sometimes! After MUCH trouble shooting, I found a loose connection on the TCS control relay mounted on the firewall.

After owning the car for over 28 years, I never even knew there was such a thing! I can now say if anyone wants to know how their emission system works on a 70 small block, come see me.

Now for the last and final hurdle, the infamous 5-port washer system! Any of you with this wonderful feature know what I'm talking about. Some engineering genius way back when thought it would be neat to wash the low beam headlights every time one wanted to simply wash the windshield! PLUS after the wash cycle was completed and headlights lowered, the washer fluid wouldn't drain from the headlight washer nozzles which when lowered were of lower gravity than the washer pump and reservoir.

> Lesson learned…..let the washer cycle finish before pushing the wash button to many time as this seems to get the relay out of sync causing it to hang up!

To start, my 5 port washer pump hadn't worked in years….probably due to lack of use! After replacing the 5 port washer pump, I had washer fluid on the windshield alright, along with washer fluid over the top of the car and over the sides of the car and wherever else you can imagine. In further inspecting the washer arms that run along the wiper arms, I soon discovered the only fix was a set of new rebuilt wiper arms with the washer nozzles attached. Plenty of after market ones are available however, I wanted to maintain the originality of the car. After much searching, I found a rebuilt pair of originals in California. After some minor adjustments, I now had washer fluid only on the windshield in the proper quantity and at the proper places.

The headlight washers however was a different story. After some minor adjustment of the headlight

Continued on page 9

"PV" Anyone? (Cont'd) by Terry Brim

Continued from page 8

washer nozzles, I had washer fluid squirting only on the low beams according to spec. The problem was I had replaced all the washer hoses a few years ago not knowing the requirement for the anti drip check valves located inside the tee's where the washer hose splits of to wash the top and bottom of each low beam headlight.

> Night prior to leaving for the PV test I decided to do one final check of the basic stuff...you know do the interior lights come when you open the doors.....NOPE! Murphy struck again, but this time early.

Without these anti drip check valves, the washer system drains itself after the wash cycle and the headlights are lowered. The PV test guide says this is a definite no no and is cause for immediate failure! No problem I thought, just find an aftermarket set and presto problem solved. One little problem however, no one, but no one makes an aftermarket anti drip valve for these 5 port washer systems. I have a motto however and that is never throw anything away that I take off the car. Lucky for me, I saved the old washer hoses from my project a few years ago and wouldn't you know up in my garage attic full of dust still connected to the to the old washer hose tee's were the anti drip check valves.

Fast forward to a couple of days before the PV test. I had asked Nick Kammer and Greg Gorniak to dry run the PV test with me per the PV test guide. During the dry run, Nick and Greg (who has been through a PV on his 65 coupe) made a few minor suggestions and adjustments. In adjusting the windshield washer spray pattern however the washer pump quit working...ugg.

After they left, thinking I was toast, I took the washer pump off the car, opened it up only to discover that the relay inside the pump had gotten stuck probably from pushing the washer button to many times and too quickly between wash cycles trying to keep the washer fluid coming while adjusting the washer hose positions. Lesson learned.....let the washer cycle finish before pushing the wash button too many times as this seems to get the relay out of sync causing it to hang up!

Night prior to leaving for the PV test I decided to do one final check of the basic stuff...you know do the interior lights come on when you open the doors.....NOPE! Murphy struck again, but this time early. Luckily enough however, a few shots of WD40 on the passenger door ajar switch did the trick.

The 70 mile drive over to the McDorman Regional in Canal Winchester, Ohio was uneventful given it was on bias belt tires at highway speeds. Many thanks to Mike Ammer who served as my shadow in his 04' coupe.

Day of the PV test, with the 5 port washer system primed (a must for those 5 porters wanting to pass) I was ready to go!

All went as planned for the pre-road portion of the PV

Continued on page 10

"PV" Anyone? (Cont'd) *by Terry Brim*

Continued from page 9

test with one exception. When the judge asked me to raise and lower the headlights to see if the headlight position alarm light would stay lit until both headlights were up...no light would come on! After a couple of tries and some silent cursing, the judge, with a little smile, finally put me out of my misery and asked me to try again, this time using the headlight switch....turns out I was using the pull down head light override switch.... Using the headlight switch the alarm light came on and worked perfectly. Was I nervous you ask? Nope not at all!

When the judge ask me to raise and lower the headlights to see if the headlight position alarm light would stay lit until both headlights were up...no light would come on!

The road portion of the PV test also went as planned with no hiccups. The car performed flawlessly! The one thing I remembered after the road test however was that during the 90% acceleration portion of the test, I cranked the RPM up to 5600 with the A/C on! It was a hot day and I had turned on the A/C at the start of the road test to keep us cool and had forgotten to turn it off before I started the 90% acceleration run. I was lucky that I didn't throw a belt with that smart move! All is well that ends well however and I passed the PV test on my first try. The key of course is to **read the PV test guide** and when done read it again and when done read it again and when done read it again and when done, well you get the idea....

What's next? Most folks say the hard part toward a Duntov is now behind me, all that remains is to achieve a judging score of 97 or better at a regional and then at a national meet. That is probably possible correcting a few more judging items, as I have previously scored 95-96 at numerous chapter meets. However that's a decision for another day.

Having meet my goal of passing the PV, I have turned my attention back to making it a driver. The stock steering wheel, tires

and wheels came off the car the day after the I returned home. I have also reinstalled the rear speakers in the car as I have a stock radio converted to a digital 80 watt system with an ipod connection....great sound for cruising back country roads. Next week, I plan on reinstalling the magnaflow mufflers and KYB shocks followed by the monoleaf spring to get the ride back.

After all, these cars are meant for one thing.

"DRIVING"