MOTORSPORT

REPORT



BMW Car Club of America Rocky Mountain Chapter





The official publication of the Rocky Mountain Chapter BMW CCA FALL 2020



RMC BMW CCA MONTHLY MEMBERSHIP REPORT

AS OF SEPTEMBER 30, 2020



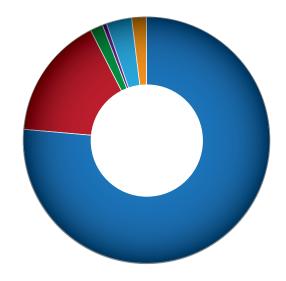
Current Associates (312)

Life Members (30)



Renewing Members (63)

Lapsing Members (36)



2020 CALENDAR OF EVENTS:

GET UP-TO-DATE INFORMATION ON UPCOMING DRIVING, SOCIAL EVENTS, AND REGISTRATION ON OUR WEBSITE AT: http://rmcbmwcca.org/events. All dates and event locations are subject to change.

Due to the continued impacts of the COVID-19 pandemic, the RMC BMW CCA events schedule has been adjusted to reflect the current guidance from federal, state, and local agencies, as well as the National BMW CCA Board of Directors. Please be aware that the dates listed below may change in order comply with any change in guidance. We will continue to communicate any changes via our email blasts, website, and our RMC Facebook page.

Thank you for your patience as we work through these changes together and thank you for being a supportive member of our Rocky Mountain Chapter of BMW CCA.

NOVEMBER

November 11 - RMC Budget & Planning Meeting Location TBD - 6:15pm - 9:00pm

November 27 - Closing date for submissions to the 2021 Motorsport Report Winter Edition

JANUARY

January 13 - RMC Monthly Conference Call 6:30 pm – 8:00 pm

January 15 & 16 - Ice Gymkhana Georgetown Lake Georgetown, CO 80444



DAVID DUECKER, IN MEMORIAM

BY: KEITH DANA





With much sadness I have to tell you that we lost one our autocross community friends on Saturday, July 25, 2020.

David Duecker fell ill Saturday morning at the autocross event. He was taken to a hospital in Parker and then airlifted to a Denver hospital where he passed away during surgery.

David drove the beautiful Sakhir Orange M4. He was always friendly, and always kind. We became friends when he used to grid near me, and was part of the BS posse in his Z4. He drove hard and drove well, but was always humble. In the last few years he started doing more track days. The back of his M4 displayed a significant number of decals representing the tracks he had driven. He fit track days into his vacation travels all over the US and Europe.

He was a driving instructor at BMW driving schools and at Street Survival events. The students always gave him high marks. I can't tell you much about his professional or family life, but I am sure they were equally impressive.

David's family informs us that there will not be funeral services, and we certainly want to provide them with as much respect and privacy as possible. As a Club, we're exploring ways to honor David by creating a Street Survival scholarship, and by contributing to a charity in his name - all yet to be determined.

I am going to miss David!

Respectfully,

Keith Dana Autocross Chair

A note from the editor: We will all miss David's smiling face and his incredibly kind heart. The RMC BMW CCA offers our deepest condolences to David's family and hope that they find comfort in knowing how much David touched our lives and left nothing but cherished memories for so many. May he rest in peace.

CHAPTER SECRETARY CANDIDATE

GARY BOHN



I've been a member of the Rocky Mountain Chapter BMW CCA since 2004. I remember my first driving school at Second Creek, and my first autocross at Coors field like they were yesterday.

I've contributed at our RMC chapter level as the Driving Events Coordinator, and currently work extensively at the National Club Racing level too. Working with all the US and Canada chapters that do CR events is something I do all year round.

So I can see things from both the local perspective and the big picture perspective from national at the same time. I've listened to our president's directive to control costs during this pandemic, and I am in favor of upholding this direction. I would treat expenses with the same scrutiny I would apply to my own spending at home.

I would bring all the accumulated experience and knowledge to help our RMC chapter grow and adapt to the ever changing landscape we face today. All while keeping an eye to the future.

Gary Bohn

RMC BMW CCA CHAPTER ELECTIONS UPDATE

BY: SUSAN RHODES

For the upcoming 2020 elections, one candidate submitted a letter of intent to run for the position of Secretary. Additionally, no letter of intent was received for the position of Treasurer by the August 28, 2020 deadline.

Since the open positions for Secretary and Treasurer were without opposition, a vote by the members will not be conducted for either of these positions, but instead will be ratified by the Board of Directors on or before December 31, 2020.

Gary Bohn, a long-time RMC BMW CCA member that is featured in this quarter's newsletter, will be taking over as Chapter Secretary beginning January 1, 2021.

Tom Wipf, the current RMC BMW CCA Treasurer, has kindly agreed to remain in his position for the 2021-2022 two-year term. ■



Glen Shelly Auto Brokers is an ultra low-volume auto broker and dealer focused on the highest quality vehicles. We take an individual approach to each BMW we represent, with an aviation-grade attention to detail and thorough journalistic descriptions.

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MEMBER SPOTLIGHT

BY: FRANKIE FARRELL





My name is Frances Farrell, and I go by Frankie. I first experienced a ride along with my husband (then boyfriend) Ian Farrell about 10 years ago at an SCCA autocross in his Scion tC. It was exhilarating and I was quite impressed with how different the sport was – I had never experienced anything like it. From there I attempted driving my own car a few months later in my stock 2007 Scion tC at an SCCA event. It was definitely fun, and along with Ian guiding me, I was able to demonstrate times quicker than I was expecting. I was not super competitive although definitely quicker than my husband was when he first started. Ian has mentioned that I have more natural talent for autocross than he does, and I could be faster than him if I were to compete more and take the time to learn some technique.

The last few years, I have mainly autocrossed for fun without looking to be super competitive, so I have only participated in 2-3 SCCA events per year since then. In 2014, I surprised myself by finishing second in G-Street Ladies class at the SCCA Match Tour (national tour event) at PPIR.

My main hobby and passion has been obstacle course racing. I had even qualified for the North American Spartan Race championship in 2018. However, shortly after qualifying, my health took a turn for the worse and I had a wake-up call. I was diagnosed with an autoimmune disease that significantly decreased my stamina and strength which has never returned back to normal. So, luckily, moving forward I now have a new sport to look forward to and one that I can be competitive in. One that I can enjoy with my husband! I look forward to more BMW CCA autocrosses and I am excited to see how I can improve on my performance with learning a little more technique and skill.

At the Women's autocross in September, I was driving a 2014 Ford Focus ST in the Open class with the SCCA G-Street (stock class) index. The car is mostly stock with GS class-legal modifications such as a rear sway bar, muffler delete, upgraded brake pads, lighter wheels and Bridgestone RE71R tires. Ian and I will most likely stick to this car for a while, at least until the next upgrade. We possibly have our eyes on an E92 or F80 M3 for a future competition car.

A "SPECIAL" AUTOCROSS E36

BY: MICHAEL FELDPUSCH



I first saw this car compete at the SCCA National ProSolo finale back in the early 2000s. It was lined up against David Fauth in the DSP class and I watched these two E36s battle it out, with David winning the in the end. The car was driven and built by Brian Matteucci from the Houston region, and it was built to win the DSP class, taking advantage of every line in the rule book. After several years, this green E36 came to Colorado when it was purchased by Paul Leonard, a member of the BMW Club. Paul and his son, Evan, drove the car for several years on a local and National level with SCCA. It was in 2009 that I purchased this car because I didn't want this "special" E36 to leave the state. I already had an Autocross car (SCCA SSM Corvette) and thought, "This is what I need, another autocross car." But I bit the bullet and got the car because to build an E36 like this, from scratch, would cost a lot of money and time. But here is an SCCA DSP car that is basically ready to go.

My first year at Nationals with this car, I placed 5th and took the last trophy spot. With the addition of the Mazda RX8s to the class, the E36 has been tough to win at nationals, which means there is always more room for development. This article is to detail out the complete built, from end to end, starting with Brian and working up to my upgrades.

This E36 is a 1995 325is that was originally purchased by Brian. Not sure on when, but the theme for this car was to build it as light as possible and to the limit of the class (at that time). Before any power or suspension work, legal weight reduction was the first step. The car came stock with a sunroof, but the roof was completely replaced with a non-sunroof roof from an E36, including the headliner in the cabin. The next thing to be replaced was the windshield. Brian purchased 15 windshields from various vendors and weighed each one. He took the lightest windshield from the batch and returned the rest. All the low hanging fruit for weight reduction was performed like replacement seats, steering wheel, stereo, and AC removal. Additional reduction included lightweight rims and at that time, the SSR 18x10" rims were

Photos provided by Fox Chung and Michael Feldpusch



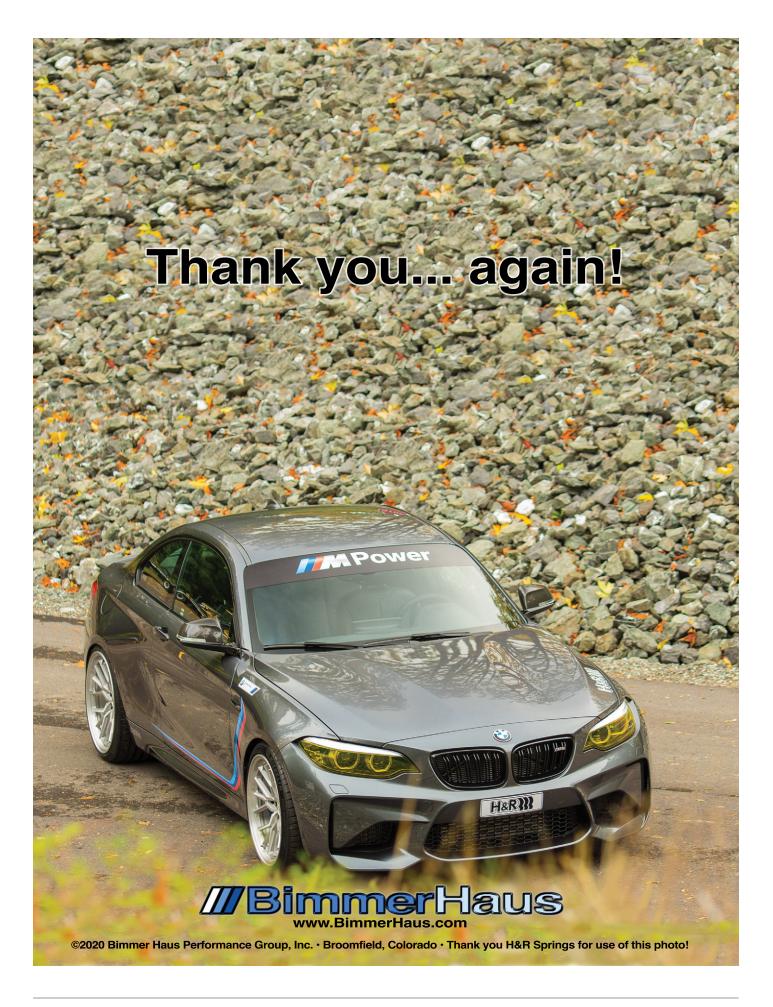


the lightest rim that could fit the widest tire, which are 285. Fender flaring on the front and rear fenders were performed to make this car look great and fit the wider-than-stock rims. For power, a low-mileage 1999 2.8-liter motor was swapped in for the original motor along with additional upgrades such as lightweight pulleys, electric fan, Conforti software, cold-air intake, BMW 540i MAF, Dinan throttle body, and an M52 intake manifold. In addition, there is a Euro M3 tubular header with updated exhaust. Suspension wise, Brian put H&R sway bars, upgraded springs, and Koni single adjustable shocks.

When Paul obtained the car, the first thing he did was name it Green Machine. During Paul's time with the car, additional work on the car to make it lighter took place such as replacing the front dash with a non-airbag dash from a 1993 E36. Evolution of the Street Prepared rules enabled Paul to lower even more weight with small things here and there. Too much to list but some of the significant upgrades were AST double adjustable shocks, rear spoiler, LTW 15inch custom rims, lightweight flywheel, M5 clutch, stainless steel brake and clutch lines, and replacement of parts like control arms, bushings, and wheel bearings.

Then it was my turn for the continuation of the build. The first thing I did when I obtained the car was put on the BMW Racing black strip up the hood and the roof. It took me, David Jobusch, and Jake Latham three hours to put it on. Never again. The Green Machine name was retired and Jessica, my wife, decided to name the car Stewie. But it is often referred to as, "the green car." It was a big transition for me going from a 600+HP V8 motor to an inline-6 with barely 200hp. But the car is fast, not because of the power but how well it handled and how light it was. As the tradition of this car's owner, updates and upgrades are constantly being done. These are not necessarily in order, but the modifications (with legal weight reduction in mind) I did early on were: Upgraded Ignition coil packs, replaced stock baffled intake boot with smooth silicon boot, updated cold-air intake, purchased a Riot Racing big-bore throttle body (65mm to 68mm), larger fuel injectors, upgraded ECU tune software, replaced the old faded headlights, markers, and rear tail-lights, custom LTW front splitter, and Joefist rear spoiler. The biggest upgrade was going to 17x11" rims with 315s. This required a replacement of the front fenders to make room for the tires as well as some "fitment" adjustments on the front bumper. The rear fender flares, which is a part of the chassis, was not touched but by removing the rear sway bar and upgrading the springs 1000#s allowed no roll but plenty of stick in the rear. The exhaust from the headers back was replaced with a better flowing exhaust which was obvious by the throttle response and sound. During the COVID lockdown, I was able to drop another 20 pounds by replacing the rear folddown seats with a stock 1993 E36 non-folding rear seat.

After the abbreviated 2020 Autocross season, it was determined a LOT of maintenance type of things needed to be done. This includes repairing a leaking power steering system, replacing worn slipping clutch, shock rebuild or replace, and brake rotor replacement are a few just off the top of my head. The list is growing and there are more things to do, if by me, or by the next chapter member that owns this wonderful Autocross car.



THE Z SERIES CAR CLUB OF AMERICA

BY: JON MOORHEAD

The Z Series Car Club of America (ZSCCA) is a Special Interest Group of BMW CCA dedicated to the enjoyment of all Z-Series BMWs. The Hi RockeeZ group is active in Colorado. Find us on Facebook or visit us at: www.zscca.org. ■





Photos provided by Peter Thompson.

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Jim Flint

Long Time BMW CCA Member Experienced Realtor & Investor Bimmer Burger Night Host Driving School Track Enthusiast





SAVE THE DATE: 2021 ICE GYMKHANA AT GEORGETOWN LAKE





Join the Rocky Mountain Chapter BMW CCA to enhance your winter driving skills on the ice at Georgetown Lake. Because one day of Ice Gymkhana cannot meet the demands of those who want to participate in this event, there will be two dates available! Members can register for one day on either Friday, January 15th or Saturday, January 16, 2021.

Registration for this popular winter driving event will begin in December 2020.

Watch for more details via our website: www.rmcbmw.cca/events. ■

Photos provided by Adrian Gonzales.



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PAUL E. GEBHARDT OBITUARY

AUGUST 24, 1930 - AUGUST 7, 2020

Paul E. Gebhardt of Longmont, formerly of Boulder and Goodyear, Arizona, passed away peacefully early in the morning of August 7th, just a few days before his 90th birthday. Paul was born on August 24, 1930 in Milwaukee, Wisconsin, the second child of George E. and Carolyn B. Gebhardt.

He attended grade school, junior high and early high school in Davenport, Iowa. Paul later graduated from Manchester High School in Manchester, Iowa in 1947 where he excelled as a four sport athlete.

Paul then attended and graduated from St. Ambrose College in Davenport, Iowa with a degree in business administration. While at St. Ambrose Paul was a member of the St. Ambrose championship football teams of 1949, 1950 and 1951.

During the summer of 1949 and 1950, Paul enlisted in the Marine Corps Officer Training Program and became a commissioned officer in 1951. Also in 1951 Paul met Phyllis Jane Allen on a double date. They later married on March 12, 1952 and were happily married for 65 years until her death on October 4, 2017.

Shortly after they married, Paul was deployed to Korea where Paul proudly served his country for 18 months before retiring as a Marine Corps Captain in 1954.

Paul and Phyllis then started their journey of a long career in the automotive industry, moving their family over the years from Illinois to Iowa and eventually to Colorado. From 1954 forward, Paul represented the Chevrolet, BMW, Fiat, Lancia, Lincoln Mercury, Buick, GMC, Volkswagen, Isuzu, Saab, and Porsche brands of automobiles. In 1975, Paul moved his family to Colorado and founded Boulder European Autos which later became Gebhardt Automotive. Today Gebhardt Automotive continues as a 45 year family owned business selling the BMW and Volkswagen brands.

Paul took great pride that all seven of his children worked at the dealership at one point during their careers and that his legacy continues with three generations of family dealerships in Boulder and Loveland, Colorado. Paul believed that as a family dealership, everyone he worked with was a part of his second family. He carried in his shirt pocket 3x5 index cards with the names of every person that worked at the dealership as it was important to him to know all the people he worked with.

Paul strongly believed in giving back to the community that supported his business and served on many boards and committees including as a city councilman in Washington, Iowa. He was a past president of the Washington and Boulder YMCA boards, Boulder Country Club, and the Colorado Motor Vehicle Dealer board. He was also never afraid to stand up for what he believed in and never shy to express an opinion (sometimes he had reliable facts!).

Paul was a man of faith and through the years was a member of Sacred Heart of Jesus (Boulder), St. John the Baptist, and St. Francis of Assisi (Longmont) parishes. He had a book entitled, 'Everyman's Road to Heaven' and wrote in the front cover, "Please return to Paul Gebhardt, I'm trying to get there too!", and that was how he lived his life, trying to get to heaven.

He is survived by seven children, Joe (Jacque) Gebhardt of Loveland, Anne Gebhardt O'Brien of Westminster, Susan (Larry) Helbig of Atlanta, Mike Gebhardt of Longmont, Jim Gebhardt of Superior, Tom (Sheila) Gebhardt of Erie, and Carol Gebhardt of Westminster.

He was a devoted "Papa" to eight grandchildren, Matt (Sarah) Gebhardt of Windsor, Greg (Haley) Gebhardt of Fort Collins, Chris (Suzy) Gebhardt of Loveland, Tripp O'Brien of New York City, Katie (Luke) Whitson of Longmont, Ryan Gebhardt of Superior, Maddy Gebhardt of Superior, and Callen Gebhardt of Erie.

Paul is also survived by eleven great grandchildren, Joseph, Jackson, Gabby, Nolan, Nicholas, Stella, Jordan and Baylor Gebhardt and Tanner, Emmie Alden and Addie Grace Whitson.

He is also survived by his good friend and brother-in-law Bob Prescott of Arizona and the Prescott, Crowley, and Mattes families.

Paul was preceded in death by his beloved wife Phyllis and an infant son, his parents George and Carolyn Gebhardt, his sister Ruth Ann and her husband David Mattes, sister and brother-in-law Judy and Tom Crowley, and sister-in-law Linda Prescott.

One of Paul's favorite sayings (that we can print in the newspaper) was, "God gave you two eyes, two ears and one mouth. Use them accordingly."

Paul loved to spend time on the golf course and he probably sold more cars on the golf course than at the dealership. After many happy memories at Boulder Country Club, Paul joined Lake Valley Golf Club, "A fabulous course with beautiful views and great BLTs". A grateful acknowledgement to Mitch Galnick, Rob Mount, and the staff at Lake Valley for their kindness to Paul in his last years on the course.

Paul looked forward to being with a member of his family every day, but due to Covid-19 that was not possible for the last five months. The family would like to thank the wonderful caregivers at Greenridge Place Memory Care Center, Touching Hearts, and Dignity Hospice for the great care he received and making him feel loved like family.

A private family Mass was celebrated on August 24th, his 90th birthday at St. Francis of Assisi Catholic Church, with a burial at Fort Logan Cemetery.

Paul carried an old piece of paper in his wallet that had the typewritten words "MONEY IS LIKE MANURE---IT'S NO GOOD UNLESS IT IS SPREAD AROUND." In lieu of flowers memorial contributions can be made to two of his favorite causes: Buffs4Life Foundation PO Box 19261 Boulder, CO 80308 www.buffs4life.org or to the YMCA of Northern Colorado 2800 Dagny Way Lafayette, CO 80026 www.ymcanoco.org

To send flowers to the family or plant a tree in memory of Paul Edward Gebhardt, please visit our Heartfelt Sympathies Store. ■

An Event Not To Be Missed

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Make plans to visit the most comprehensive collection of pre- and early post-war BMWs ever seen in North America.

Produced with sponsorship from The Werk Shop, Classic BMW of Plano, Texas, CocoMats, and Yokohama Tires, the BMW CCA Foundation has assembled twenty significant cars and four equally compelling motorcycles at their beautiful, newly air-conditioned museum in Greer, South Carolina.

Included among the rare classics on display are a 1930 3/15 PS DA2 Cabriolet, believed to be the oldest BMW in North America; three of BMW's race-dominating pre-war roadsters – a 319/1, a 315/1, and a 328; a Pebble Beach trophy-winning 503 cabriolet; a 507, two Baroque Angels; a pair of EMWs, likely the only ones in the United States, built by the Soviets in BMW's former factory in Eisenach; an Isetta 300; a race-prepared 1960 700, and more. Motorcycles include a race-winning R47 sport bike and an R2 single; a postwar R24 and a sidecar-and-trailer-equipped military R75.

The vehicles are supported by extensive archival photos and stories, and an audio tour is available for download to mobile phones. If you can't make it to the show, a virtual tour is available online at www.bmwccafoundation.org.

A beautiful, 166-page, full-color GENESIS exhibit book, written by Jackie Jouret, is also available from the BMW CCA Foundation store, in softcover or limited-edition hardcover.















For more information, visit www.bmwccafoundation.org or call 864-329-1919

RMC BMW CCA AUTOX 2020 SEASON & CLASS WINNERS

BY KEITH DANA, CHIEF OF AUTOCROSS

2020 Autocrossers.

The 2020 autocross season was a success because of you. We cancelled our driving school. We rescheduled the season twice. We anguished over Covid guidelines. We braced ourselves for low turnout.

You showed up! The first event sold out!

Instead of a school and 7 events scheduled from the 1st of May until late September, we got started in mid-June. We managed to squeeze 6 events, plus the women's only event, into the shortened season. Events were on 2 or 3 week centers, instead of 3 or 4.

You showed up. It was great to see you all out on the tarmac.

The Autocross Chiefs did an outstanding job this season. We had fast, challenging, and fun courses. The events ran smoothly. We got a lot of runs. You contributed, as every participant at our events has a job, and has a part in the event's success.

We saw some outstanding driving this season. There were some fast runs. I want to give a shout out to Caleb Levonas in BMW E-class for the best average PAX. 10,000 is perfect, and Caleb's best 4 average was 9941!

You showed up.

I apologize for my lack of communication since the last event. I lost momentum after the season ended.

I tried to keep the momentum up, but Covid knocked the wind out of my sails. I started to organize the annual Autocross Awards Banquet, but BMW CCA National sent out updated Covid Guidelines. I had to agree with the RMC Board that there was no way to hold a dinner party that complied with those guidelines. All season we said that your health and safety was #1, so there was no sense in arguing. Momentum was sucked away.

You showed up.

We ordered trophies for the season's class podium finishers before the season ended. They promised that the trophies would show up long ago. We will mail the trophies to you.

In the absence of an awards ceremony, below is the list of season podium finishers in each class. All these people attended at least 4 events, and were ranked based on their best 4 events based on PAX ratings. Please do what you can to congratulate your grid neighbors and friends that made the list below. You can see the full list of results via this link: https://drive.google.com/file/d/19HzwU2lk_1bwMm5K5WBnxsDCJVLs6BZO/view.

Congratulations on a great 2020 Autocross Season. Cheers to a better 2021 Autocross Season!

Looking forward to seeing you on the tarmac next season,

Keith. ■





			Best 4 Events	Avg. of Best 4
Rank	Class	Driver	Total Points	Points Avg.
1st	BSS	Shelton Sanders	38123	9531
2nd	BSS	Christopher Dawkins	38032	9508
3rd	BSS	Sam Smith	36850	9213
1st	BAS	Bryce Kliewer	39129	9782
2nd	BAS	Kris Lee	38831	9708
3rd	BAS	Blake Odenheimer	38060	9515
1st	BBS	Dan Garfinkel	38145	9536
2nd	BBS	Keith Dana	38016	9504
3rd	BBS	Eric Van Der Heide	37430	9358
1st	BCS	Yarko Thomas	37404	9351
2nd	BCS	Jon Moorhead	35419	8855
3rd	BCS	David Hannegan	32703	8176
1st	BDS	Robert Critchley	38768	9692
2nd	BDS	Mike Critchley	37060	9265
3rd	BDS	Robert Jones	34419	8605
1st	BES	Caleb Levonas	39762	9941
2nd	BES	Joe Levonas	38549	9637
3rd	BES	Ian Guy	37519	9380
1st	L	Kimberly Kliewer	37103	9276
2nd	L	Karen Lange	35942	8986
3rd	L	Tracy Riley	35269	8817
1st	0	Mark Legg	38901	9725
2nd	0	Jeff Morgan	37871	9468
3rd	0	Brian Moore	37632	9408
1st	X	Michael Feldpusch	39266	9817
2nd	X	David Jobusch	38591	9648
3rd	X	Mark Baer	38442	9611

Photos by Fox Chung.



















Photos by Fox Chung.



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PHILES' FORUM

BY VIC LUCARIELLO

Hello, Bimmerphiles! This time out, we are continuing the discussion of brake bleeding and brake fluid flushing.

Last time we talked about brake system bleeding and brake fluid flushing and the purpose of each. Bleeding is intended to remove any air or other gas bubbles from the hydraulic system, while flushing is done to replace old, contaminated brake fluid with fresh new fluid. Of course, a good flush will tend to remove any entrained gasses. Air or gas bubbles in your brake (or clutch) system can cause a low, "spongy" pedal, while contaminated fluid, in addition to fomenting corrosion, can boil under severe-use conditions and cause......a low, "spongy" brake pedal. Generally speaking, when all is said and done, the main difference between brake bleeding and brake fluid flushing is the amount of fluid put through the system.

There are several methods of bleeding brakes and changing brake fluid, and some methods may be better than others for problem situations. With one exception, all the methods we'll talk about involve fluid movement from the master cylinder, down to the calipers, and out of the system via the bleeder screws. In the case of brake bleeding, the idea is that any air will be expelled with the discharged fluid. I guess the various methods can be categorized as "pressure" or "vacuum." Let's begin with vacuum.

Before we begin, note that regardless of what method you use, you should be capturing all expelled brake fluid in a suitable container via a piece of tubing attached to the bleeder screw. I always use clear vinyl tubing so that I can observe the color of the expelled fluid as well as any bubbles. Suitable vinyl tubing can be had at any hardware store. Brake fluid handily removes most paints. And, trust me on this, you definitely do not want to get brake fluid in your eyes! So, eye protection is required, as it is for just about any work on your car.

Vacuum bleeding/flushing involves applying suction to the caliper bleeder screws. This can be accomplished with a Vacula or Mityvac shop-air-powered "brake bleeder," or with a simple hand pump as shown in Photo #1. This particular hand pump is by Phoenix Systems and it is suitable for both "normal" and "reverse" bleeding (more on this later). While the air-powered vacuum bleeders are faster, the hand pump works just as well.





Although vacuum bleeding/flushing is popular with many folks and is relatively fast to set up, there are a couple of disadvantages to it in my opinion. I guess what bothers me most is that, being that suction is applied to the bleeder screw, you can get fugitive air sucked in around the bleeder screw threads, and you can't tell if this air is coming from the brake system or sneaking around the bleeder screw. You can minimize the amount of fugitive air by wrapping the bleeder screw threads in Teflon tape. However, be SURE to keep the tape off of the tapered seat on the bleeder screw. Photo #2 depicts a bleeder screw wrapped in Teflon tape. Teflon tape comes in different qualities and thicknesses. The thin, good quality stuff is what I prefer.

A purported advantage of the vacuum method is that it tends to enlarge any bubbles in the system, thereby making them easier to entrain and remove. This sounds guite reasonable to me.

Vacuum bleeding/flushing is generally a bit slower than pressure bleeding (more on this later), and usually vacuum bleeding can only be applied to one bleeder screw at a time. Moreover, one needs to keep close watch on the brake fluid reservoir level (this applies to some other methods as well) to ensure that it does not empty and introduce air into the brake system.

Pressure bleeding/flushing can be sub-divided into several categories: gravity, pump-the-pedal [P-T-P], and external pressure. In the gravity method, one simply opens one or more bleeder screws and allows fluid to flow from the system. The gravity method is perhaps



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the slowest of all the methods I know of, and in some cases, depending upon the arrangement of the system and how long the brake lines are, one may get little or no brake-fluid flow from one or more bleeder screws, especially the rears. Also, being that this method is relatively slow, one may tend to get impatient and walk away, perhaps forgetting to keep an eye on the all-important brake fluid reservoir level. I once did a survey of professional shops specializing in BMWs and some shops claimed to use gravity bleeding/flushing.

That brings us to pumping the brake pedal. In this very popular (in the DIY set) method, one has an assistant pump the brake pedal, then hold foot pressure on it while the bleeder screws are opened one at a time. The pumping action of the master cylinder is used to expel fluid and any entrained gas. Then (hopefully) after the bleeder screw is re-closed, the assistant releases the brake pedal and the sequence is repeated...over...and...over.......and, well, you get the picture. Any of you who has spent any time in repair shops or track garages has undoubtedly heard the, "Pump it up.....Hoooold it....OK" litany. One of my first jobs when I began working at the corner "gas station" lo those decades ago was to be the P-T-P assistant. And that reminds me of one of the disadvantages of the P-T-P method.

When doing the ol' P-T-P routine, your assistant has to be very careful not to release the brake pedal before you say "OK". (Of course, you need to be very careful not to say "OK" until you have closed the dang bleeder screw). If the pedal is released before the bleeder screw is closed, the system will suck in a nice shot of air. In this family-oriented publication, I cannot repeat what ol' 'Pino Cocuzzo said to me in that Gulf station the first time I took my foot off the brake pedal too soon.

Speaking of less-than-competent assistants, I'll never forget the time I was bleeding the brakes on my hotrod in an effort to alleviate a spongy brake pedal. I must have repeated the "Pump it – hold it" litany for 15 minutes (at least it seemed that long) with no success before I realized that my assistant was depressing the CLUTCH pedal (no mean feat on my hotrod!).

Assistant incompetence aside, my main concerns regarding P-T-P bleeding/flushing are that it takes quite a while, and many pedal cycles, to pump a liter of fluid through the system, and that the master-cylinder's piston seals are dragged repeatedly over areas in the master-cylinder bore that they normally do not contact. In uncommon cases (perhaps more likely with older, cast-iron-body master cylinders), this can cause the master cylinder to fail. Yes, this has happened to me. Of course, one needs to keep close watch on the

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fluid level when using the P-T-P method. And a closer watch on the assistant!

The P-T-P method does have one great advantage over the other methods we are talking about. Even moderate foot pressure on a brake pedal can produce 1000 psi (pounds per square inch) pressure in the brake system. To put that in perspective, the pressure provided by a common pressure bleeder (more on this later) is only about 20 psi. Opening a bleeder screw with 1000 psi behind it results in a high-velocity jet of brake fluid, and this high velocity can sometimes expel a recalcitrant air bubble that has resisted other methods of brake bleeding. I rarely have to resort to P-T-P when bleeding a brake system. And of course, when you are doing a simple fluid flush, there should be no air in the system to begin with.

That brings us to external-pressure bleeding/flushing and unfortunately to the end of Philes' Forum for this time. See you next time, Bimmerphiles.

Anyone wishing to contribute to Philes' Forum can contact me at vic.sr@njbmwcca.org. I'm interested in tech tips, repair/ maintenance questions, repair horror stories, emissions-inspection sagas, product evaluations, etc.

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