



August 2014

# *Der Skooner*

Great Plains Region/Porsche Club of America



Volume 49 Issue 7



# The Starting Line - Tom Cooper

There was an excellent turnout for the July breakfast. We had 22 participants for breakfast and eleven cars on the fun run. We went north out of Elkhorn, there are just not a lot of ways to get out of Elkhorn, but then headed east on Bennington road. We hooked up with Highway 36 east of Bennington and took that to 72nd street where we turned north to Blair High road until we reached Highway 75 just south of Fort Calhoun. The plan was to go through the south side of Fort Calhoun and come back south past Dodge Park, but the recent rains closed that route and we had to turn south on Highway 75 to Northern Hills Drive. Then it was back to 72nd street and down to Cuninghame Road and we ended up at the marina for a photo op.

The Summer Fun Run at MPH is in the history books. Hastings is a great place to have a DE and George and his crew did an excellent job once again. This event would not take place if

it wasn't for the hard work of all the volunteers. For the most part the weather cooperated with Saturday being almost unreal for mid July and Sunday returning to more typical July weather with a high of ninety two. If you have not been to the track at Hastings even to just watch it is well worth the trip.

August is shaping up to be a busy month. We will, of course, continue the monthly breakfast meeting on the second Saturday of the month, but we will also have a golf tournament at Oak Hills Country later in the day. If you have not already signed up for this event, be sure to contact Terry Lessmann at [txlessmann@cox.net](mailto:txlessmann@cox.net). Then on Sunday, August 10th, Dave Rickman, a GPR member, will have an all makes car show at his Bishop Heights True Value Hardware Store at 27th & Highway 2 in Lincoln. The next Sunday the 17th, there will be another edition of

Summerfest at Lutheran Church of the Master in Elkhorn. We finish off the month with another Cruise Night at the Sonic in Lincoln.

There is still one DE on the schedule for this fall at MAM. The event is scheduled for the 13th and 14th of September. Just for your information, the Huskers are playing at Fresno State that weekend and the kick off time is 9:00 P.M. On Saturday night after the DE, we will again have the famous steak fry at the Schlott's home in Elkhorn. You don't have to attend the DE to come to the steak fry, but be sure to RSVP to Abe and Kelly at [AShlott@wd-wpp.com](mailto:AShlott@wd-wpp.com), so they can be sure and have enough steaks.

Hope to see you at an event in August,

Tom

## **THANK YOU! THANK YOU! THANK YOU!**

*The Board of Directors, on behalf of the entire Great Plains Region Porsche Club of America membership, expresses it's gratitude to those individuals and organizations that have provided financial assistance this year.*

### **CLUB RACE**

#### **CORPORATE: \$1000+**

Porsche of Omaha  
Warren Distribution

#### **918: \$750-\$999**

Jack Baker  
C.A.R.S.  
Gene and Sally Knapp  
Robert Lynch  
John Marchant

#### **962: \$500-\$699**

Henry Davis  
Mack Leasing  
Roland Manarin  
Dennis Strauss

#### **908: \$100-\$499**

Stan Mills

### **DRIVERS EDUCATION**

#### **CRANKSHAFT: \$200+**

Russ Rabeler

#### **PISTON: \$100-\$199**

Terri Whitney

### **GENERAL**

#### **CRANKSHAFT: \$200+**

Steve Gehring

#### **PISTON: \$100-\$199**

David Adler  
John Beerling  
Kim Burger  
Ken Burson  
Joe Chambers  
Tom Cooper  
Dennis Fitske  
George Poullos  
Steve Wilwerding

#### **ROD: \$50-\$99**

Sandy Bruso  
Randall Dotson  
John Krecek  
Sandy Steckman  
Manfred Wunderlich

#### **VALVE: \$30-\$49**

Eric Elliott

**customized  
management**

For your commercial real estate.

John Krecek, Broker  
Tel: (402) 995-1470  
Email: [johnkrecek@gmail.com](mailto:johnkrecek@gmail.com)

**customrealty LLC**



**Branching Out** LLC

Interior & Exterior  
Tropical Plantscape Design  
Holiday Design & Installation

[www.branchingout.com](http://www.branchingout.com)

Terry Whitney  
Owner/President

O 402.331.4768  
F 402.331.5039

8909 H Street  
Omaha, NE 68127  
[taw@branchingout.com](mailto:taw@branchingout.com)

# Motorsport Park Summer Fun 2014

We had 29 drivers for the Summer Fun DE at Motorsport Park in Hastings. The field included five novices, 12 in the Green, and 12 in the Red, group. All of the groups were spirited and an excellent time was had by all.

All groups had 7 - 20" sessions so we were pretty tired by the time things wrapped up. Everyone went to their hotels and cleaned up and headed to the Tessman's for a fantastic evening of food, friends and music. It was a perfect evening and Dennis, Kathy and Brian Tessman are the best hosts and there is no better place in Hastings for a bunch of Porsche aficionados to hang out.

We finished the night with the legendary Bacardi Bus. If you have never been to an event in Hastings it is worth it for a trip in the Bacardi Bus alone. I can not do it justice by trying to describe it but you will have more fun and laugh harder than you have in a long time.

We will be back to Hastings for the Club Race and DE May 29th-31st next year. Please make it on your calendar now and get it on your schedule.

It's an experience you will love and remember for a long time.

Club Race Chair  
Tom Chambers



*We have no idea what JR, Rick and John are doing!*



*George Anderson, owner/operator of Motorsports Park Hastings looks good in black. He stopped by to ask if the weather was acceptable! Saturday was outstanding!*

**BENSON**  
**BODY & PAINT**  
2430 N. 84th St. \* 402-391-5875  
\*Quality Autobody Repair & Refinishing Since 1984  
John@bensonbodyandpaint.net

**Imprimis, LLC**  
Business Advisory Services  
1217 North 129th Circle  
Omaha, Nebraska 68154  
402-203-2331

**Kurt D. Halvorson**  
President



[kdhalvorson@cox.net](mailto:kdhalvorson@cox.net)

# Tessman Garage Summer Fun Party



Top - Tessman's Garage before being invaded by the Great Plains Region of the Porsche Club of America!

Right - Tessman's top service station attendant. Just about anything you need for your vehicle is available. Cash, checks and credit cards accepted! You know it's a mannequin, you know it's there, and yet one is still startled when coming around the corner!

Bottom - the front yard of Tessman's Garage after being invaded but the Great Plains Region of the Porsche Club of America with slight contamination.

Cover - beautiful Porsche's at the Tessman garage



# Auto Airconditioning... Gary Quast

## Part 1 Basic Principles

The dehumidification and cooling of surrounding air is better known to us as air conditioning. When applied to an automobile, the system absorbs heat from the warm air inside the passenger compartment and discharges it to the outside air. It is, in effect, a heat transfer operation. The most common misconception about car AC is that cold air is created. Technically, heat is being removed from the air inside the passenger compartment. The actual air conditioning process is performed by a closed refrigeration system that circulates a refrigerant under pressure. The refrigerant has the ability to evaporate and condense during each cycle of the system and these "changes of state" are what makes the system work.

Based on the following two principles of refrigeration, heat is removed from the air in the passenger compartment as quickly as the refrigerant can absorb it:

1. Refrigerant will "absorb" a large amount of heat when it changes from a liquid to a gas.
2. Refrigerant will "give off" a large amount of heat when it changes from a gas to a liquid.

Five major components do the circulating, condensing and vaporizing of the refrigerant. These include the compressor, condenser, receiver-dryer, thermostatic expansion valve, and evaporator. Each unit is equally important. A malfunction of any one element will interrupt the heat transfer cycle and disrupt system operations.

Other parts are used, but only to control and increase the efficiency of the system. High pressure hoses and metal lines connect the various parts and form the continuous circuit for the recirculation of the refrigerant.

The compressor is the power unit of the system, pumping out refrigerant gas under high pressure and high heat on the discharge side (high side of the system), and sucking in low pressure refrigerant gas on the intake side (low side). Compression raises the temperature on the refrigerant gas flowing to the condenser, and it serves to stimulate rapid heat flow from the hot refrigerant to the cooler outside air. Heat always flows from hotter to cooler objects.

The condenser's job is to change the high pressure refrigerant gas to a liquid. It does this

by providing a means for transferring heat from the hot refrigerant to the cooler atmosphere. The condenser performs this function by placing the hot refrigerant in contact with the inner walls of as many feet of tubing as possible. This tubing is positioned in the air stream to bring about the best heat transfer situation.

In most automotive applications, the condenser consists of a crisscross arrangement of tubing passing through thin supporting cooling fins. Its usual mounting position, on front engine water cooled cars, is ahead of the engine radiator, where it can best receive the benefit of the full flow of ram air flowing into the engine compartment while the vehicle is in motion. On rear engine, air cooled cars, two condensers are usually used, one in the engine air flow and the other in the ram air flow. When the refrigerant gas reaches the pressure and temperature that causes condensation, a large quantity of heat is given off and the hot gas becomes a warm liquid.

NEVER leave your rear deck lid open when the AC is in operation!! This would result in the rear condenser not getting air flow since the engine fan would not be drawing air across it and the condenser would seriously overheat.

Next in the system is the receive-dryer. This is the storage tank for liquid refrigerant, and it also contains a filter and a desiccant to remove foreign particles and moisture from the circulating refrigerant. It is necessary to have a place to store the refrigerant because the demands of the evaporator vary under different operating conditions. The filter and drying agent are required to keep harmful contaminants from circulating through the system.

The thermostatic expansion valve is a metering device that controls flow so that the liquid refrigerant can expand and become refrigerant gas most efficiently in the evaporator. Actually, the expansion valve has three functions: metering, modulating, and controlling. The refrigerant enters the expansion valve as a warm, high pressure liquid. It passes through an orifice which is controlled by a small thermal bulb in the tailpipe and is released from the valve into the evaporator as a cold, low pressure, atomized liquid. If the tailpipe gets too warm, the bulb signals the valve to open and allow greater refrigerant flow. When the tailpipe cools, the reverse occurs.

The evaporator is the second heat transfer unit in the air conditioning system. In contrast to the condenser, however, its coils carry cold refrigerant, which picks up heat from the passenger compartment of the car to cool the interior. The evaporator is similar to the condenser in construction and is generally mounted in a housing under the cowl where warm air from the passenger compartment is blown by fan across its coils and fins. In early 911 models, the evaporator was located in the front trunk compartment in what was known as the "smugglers box". Originally this area was used for placement of a gas heater.

The refrigerant is the common denominator in the air condition system. It might be considered the life blood of the system since its continuous circulation as a liquid and a gas is what makes the system work. Its circulation is impaired by the loss of part of the charge, or if the refrigerant becomes contaminated with air, or water, the system will not cool efficiently, or may fail completely.

For many years, the standard refrigerant used and recognized as best for automotive use was Freon-12 or simply R-12. As of December 31, 1995, the auto industry was forced by the EPA to drop CFC-based refrigerant R-12 because of its liability for ozone depletion. They switched to non CFC-based R-134a, which as it turned out, also provided a substantial reduction in greenhouse gas liability. How much better is R-134a? Carbon dioxide has a global warming rating of 1. R-12 has a rating of 12,000. Years ago, that made R-134a's rating of 1400 seem like a better deal. But now automakers are being required to switch to a new refrigerant for worldwide use—R-1234yf. This new refrigerant has a global warming impact number of just 4. The EPA has mandated that all vehicles use R-1234yf beginning with the 2017 model year. There is no intent to retrofit R-134a systems with the new R-1234yf, in the way many R-12 systems were haphazardly converted to R-134a. R-1234yf will use specific fittings to minimize any accidental mixing of the two refrigerants. R-1234yf is slightly less efficient than R-134a which was considerably less efficient than R-12. Auto manufacturers had to modify and upgrade systems to maintain good cooling performance when the last changeover was mandated and they are in the process of doing it again!

(Continued on page 8)



**CARS**  
Classic Automobile Restoration & Service

**CURT WESTLUND**  
Co-Owner

**BOB DIERS**  
Co-Owner

4820 South 61st Street Omaha, Nebraska 68117  
402.734.7575



**Pour it. Then store it.**

Ethanol in today's fuel makes it less stable than ever. No-Rosion solves this problem.

It stabilizes fuel. Prevents and removes deposits. Stops corrosion. Enhances fuel volatility. Pour in a bottle now, and prevent problems in the spring.

One bottle treats 20 gallons of fuel.  
(\$10.95 per bottle / \$49.95 per six pack)

Applied Chemical Specialties, Inc.  
(402) 571-3360 • Fax (402) 390-9262  
Order online at: [WWW.NO-ROSION.COM](http://WWW.NO-ROSION.COM)

# Mark your calendar GPR sponsored events underlined

## August

- 9** Breakfast at Heartland Cafe. 2615 North Main. Elkhorn, NE. 8a-???
- 9** GPR Member Golf Scramble. Oak Hills Country Club. 12325 Golfing Green Drive, Omaha, NE. First tee time at 1 pm. Cost is \$70 per person which includes 18 holes of golf, cart, a meal following the Texas scramble and prizes. Everyone is welcome but must be included when signing up so we have an accurate participant count. We have seven tee times/28 participants available. Please contact Terry Lessmann, txlessmann@cox.net. (note the 2 N's) with your email address and participant names. Also confirm with Terry the names of your foursome if you've so determined. Otherwise Terry will assign foursomes.
- 10** Bishop Heights True Value Car Show. 4200 South 27th Street, Lincoln, NE. This informal car show is hosted by member Dave Rickman at his True Value hardware store in Lincoln. Everyone who displays their car receives a \$5 gift certificate to the Bishop Heights True Value. Call (402) 420-0077 for more details.
- 17** Summerfest Car Show at the Lutheran Church of the Master. 1200 North 181st Court, Elkhorn, NE. This is a great family event including food booths, kids games, and exotic animals at Wildlife Encounters. Plan to attend and participate with your family and P-Car!
- 23** Sonic Show N Shine Cruise Nite: "Happy Days" are here again! The neon nostalgia blast from the past that lasts and lasts, Show N Shine Cruise Nite returns from its 20th season! It all started back in 1995 as an informal venue for club member enthusiasts to gather and show their Porsches just like we used to in the "old days" at our favorite hamburger drive-in. Now over 3,000 exceptional automobiles and their owners have found a home at the mecca for summer nite fun. With its newer all European format, under the Porsche banner, we welcome our other enthusiast friends. You might see a Ferrari, Audi, BMW, Maserati, Mercedes-Benz, Lotus, VW, Bentley, Jaguar, Triumph or Aston Martin. Last year over 30 marques were represented when we averaged 90 cars a nite! It is the only club event ever covered by newspaper, tv, radio, Panorama and our newsletter. Like the movie "America Graffiti", come back with us to the warm summer nites of cruising. Then we were hanging out with our friends, going steady, watching movies(?) at the drive-in, gas was cheap and carhops and jukeboxes could still be found. We will be listening to the oldies under the glow of neon at "America's Drive-In: Sonic" Mark your calendar now! Cruise on out and check it out! Getting there is half the fun! We'll be there from 6 to 9 PM, but come and go as you like. See old friends and make some new ones. Fun, friends, half price food and our favorite fast cars. We'll save you a spot. SSCN: 20 years and still cruising!

## September

- 13-14** Fall Finally Driver Education. Mid-America Motorplex. Details to follow

## October

- 24** Blue Man Group. Orpheum Theatre. 409 S 16th St. Omaha, NE. 8p. Join fellow club members for an evening of outstanding entertainment. GPR has reserved a block of seats located in rows B(2) and C(3) and are the best seats in the house. Pre-show meet up at Jackson Street Tavern, 1125 Jackson Street. Anytime after 5:30p for food and/or beverage.

## November

- 21.** Radio City Christmas Spectacular starring the Rockettes. Orpheum Theatre. 409 S 16th St, Omaha, NE. 8p. Join fellow club members for an evening of outstanding entertainment. GPR has reserved a block of seats located in rows A(1) and B(2) and are the best seats in the house. Pre-show meet up at Jackson Street Tavern, 1125 Jackson Street anytime after 5:30p for food and/or beverage. Only eight tickets remain. August 1st we will accept payment from member guests. We MUST receive payment by August 21st.

## Radio City Christmas Spectacular

November 21 @ 8:00 pm | \$84.50



Join fellow club members for an evening of Broadway entertainment with the Radio City Christmas Spectacular starring the Rockettes.

GPR has reserved a block of seats for the Friday, November 21st show at the Orpheum Theater in Omaha. The seats are located in rows A(1) and B(2) and are the best seats in the house.

We will also have a pre-show meet up at Jackson Street Tavern (1125 Jackson Street.) Meet anytime after 5:30 pm for food and/or beverage.

The cost is \$84.50 per ticket.

**In order for us to confirm attendance and submit final payment, we MUST receive your payment by August 22nd.** Your payment will serve as your RSVP.

Please make checks out to GPR/PCA and remit your payment to:

Bob Lynch  
6100 Northern Hills Drive  
Omaha, NE 68152



**Straightaways:  
Time to catch your breath between the curves.**

This isn't merely the Porsche Cayman. This is a world unlocked. It's finding enlightenment and exhilaration in those twists in the road. Something we call the Code of the Curve. It's mid-engine balance, agility and precision. Combined with increased horsepower, lighter weight, a wider stance and acceleration from 0 to 60 in a mere 4.7 seconds, it translates into adrenaline-fueled curve-carving that opens up a world of possibilities. Unlock the Code of the Curve with a test drive. Porsche. There is no substitute.

**The Porsche Cayman S.**

**Porsche of Omaha**  
6625 L Street  
Omaha, NE 68117  
Toll Free: (800) 889-1893  
omaha.porschedealer.com  
mitschs@woodhouse.com



**A part of the Woodhouse Auto Family**



**PORSCHE**

# **Auto Airconditioning... Gary Qaust (continued from page 5)**

In brief, then here's how the air conditioning system works:

1. Heat laden Refrigerant vapor (gas) is drawn into the compressor, where it is placed under high pressure and is pumped into the condenser.
2. In the condenser, engine intake air passing through the core removes heat from the refrigerant vapor as it changes to its liquid state.
3. The refrigerant, having done its job of discharging the heat, then flows into the receiver-dryer where it is filtered, de-moisturized and stored for use as required to meet the cooling needs in the passenger compartment of the car.
4. As the compressor continues to draw refrigerant vapor from the outlet side of the evaporator, liquid refrigerant under high pressure is circulated from the receiver-drier to the expansion valve.
5. The expansion valve meters the refrigerant into the inlet side of the evaporator.
6. Pressure drops as the refrigerant (suddenly released to the broad area of the evaporator coils) vaporizes and absorbs heat from air in the passenger compartment.
7. This heat laden refrigerant vapor is then drawn back to the compressor to start another refrigeration cycle.

## **PART 2 - Evaluation, planning and repair/ replacement of non-functional System**

Even with today's outstanding technological advances, auto AC systems are still prone to the same problems that have always been present. Let's take a trip around the system starting with the compressor. We will progress from component to component as the refrigerant would flow through the system. Remember the drawing of the circulation system in Part 1? Here it is again, just to help you navigate the journey through the system.

### The Rubber Hoses:

By far the most common problems is a leak of the refrigerant. Leaks can occur at any of the connections of the hoses to the major components and even through the hose itself. The earlier cars had rubber hoses that were designed during the time that R12 refrigerant was inexpensive and it's affect on the ozone level was not known. This older rubber was prone to having refrigerant permeate through it over time. It was common to recharge the systems each season and the refrigerant was inexpensive. Today, with the high cost of refrigerant, we do not want to have any leaks. When R134a was introduced it was found that it leaked at a greater rate than R12. To solve this problem, a new type of hose was developed that has an inner liner that reduces the rate of permeation of refrigerant through the hose wall. This hose has been called "barrier" hose and is used on all new vehicles and for repair in all systems.

The "barrier" hose has small "pin holes" running the length of the hose. These holes are "pressure relief" holes designed to allow excess pressure escape in the event that the primary wall of the hose suddenly should fail under extreme pressures.

You should inspect your hoses and your entire system on an annual basis looking for cracks, signs of oil, or dirt accumulation on the hoses or around the fittings. The refrigerant has an oily characteristic and most leaks can usually be detected by the presence of the oily material or the accumulated dirt on the hose or around the fittings. There are electronic testing devices and dyes that can be used to search for leaks. Early systems had "flare fittings" which were more prone to leaks than more recent systems that use "o" ring fittings. Several companies make adapters to replace a flare fitting with the "o" ring fitting when installing a newer component.

If the system is losing refrigerant and you cannot easily find an area of leakage you should have the system checked by and AC specialist. AC specialists have an electronic "sniffer" that can detect refrigerant in the air around any leaks and they also have a "dye" that they can put in the system and look for the discoloration where the system is leaking. 911 deck lid hoses receive a lot of bending and the lines that run under the car are subject to damage from "high centering" and from lifts or jacks, so don't forget to check those.

### The Compressor:

Once the hoses have been checked it is time to evaluate the primary components of the system starting with the compressor. In the early years Porsche used several different manufacturers of compressors. Around late 1970 they began using York compressors. These units were a crankshaft - 2 piston type mechanism. The York units were rather large and took a considerable amount of horsepower to operate. Commonly, when the 911 engine was running and then the AC was turned on, the engine would "shudder" and the rpm would instantly drop due to the high compression of the unit. These were the same common compressors found on most American autos of the time. Imagine a large V-8 engine using the same basic compressor as the little Porsche. No wonder it shuddered on start up! Around the early part of 1984, Porsche began using a wobble-plate Nippon compressor.

Today the common replacement for most Porsches will be one of the "rotary" compressors. Much smaller, much lighter in weight and it takes considerably less horsepower to turn. For most 911's, the type 507 Rotary Piston Compressor is the most popular replacement. It is a "swash plate" better known as a "wobble-plate" compressor. The Wobble-plate is a variable displacement compressor of an axial piston design with the pistons driven by a wobble plate. Since the angle of the plate determines the length of the piston stroke, changing the angle changes the length of stroke, therefore changing the amount of refrigerant displaced on each stroke. The wobble plate moves a number of small pistons and usually has an electronic control valve. It runs smoother, quieter, and uses much less horsepower to rotate and the displacement can be adjusted, which cannot be accomplished with a standard crankshaft type compressor. Compressors are manufactured by two

companies; Kuehl and Nippondensot.

The compressor also has an electromagnetic clutch attached to it. When an electrical charge is sent from the temperature control switch in the cabin or from the thermo switch on the evaporator, the clutch will engage and the compressor will actively begin compressing the returning warm gas from the low side and discharging it to the high side. These clutches have been known to fail. While the modern compressor is durable, it can still have internal wear and tear of parts and compressor seals are also know to leak. If you have either internal damage or seal leakage, it it's probably best to replace the whole compressor. Even if parts are available, the labor and parts cost would not justify repair rather than replacement.

### The Condenser:

All 911's have a rear deck lid condenser mounted on the underside of the engine cover. Air is drawn across the condenser by the engine cooling fan. There were a number of variations in design of the tube and fin condensers used in the early cars, each design was an attempt to get better air flow and improve cooling of the air passing through the condenser. Modern new condensers have what is termed a "serpentine" design of the tubing with minimal joints, greater fin spacing, and round rather than rectangular cross section tubing. This results in a greater velocity and volume of flow through the condenser, which provides greater cooling capacity.

In order to provide greater surface area and cooling capacity, an additional condenser is usually placed in the front on the underside of the car's belly pan or centered behind the front bumper. On the factory equipped cars, there is an additional electrical fan in the front trunk connected to a duct to suck air from behind the bumper through the condenser. Many of the current suppliers of new or replacement AC parts offer a condenser specifically sized and designed for front installation. Also, there are condenser units made to fit inside the left rear wheel well and these can be purchased in one or two condenser units and have electrical fans to provide constant air flow when the AC is operating. These work quite well for vehicles without good front airflow as they not only increase the amount of condenser surface, but with the electric fans are not dependent on car movement for air flow.

### The Receiver/ Drier:

The receiver/drier serves three very important functions and is used in vehicles with a thermal expansion valve, as in Porsche automobiles. Most foreign manufacturers use the thermal expansion valve and receiver dryer combination.

1. It acts as a temporary storage container for oil and refrigerant when neither are needed for system operation (such as during periods of low cooling demand). This is the "receiver" function of the receiver/drier.

(Continued on page 10)



## **Auto Airconditioning... Gary Quast (continued from page 8)**

2. Most receiver/driers contain a filter that can trap debris that may be inside of the AC system.

3. Receiver/driers contain a material called desiccant. The desiccant we used to absorb moisture that may have gotten into the AC system during manufacture, assembly, service or from the humidity in the air. This is the "drier" function of the receiver/drier.

Anytime the system is opened for any reason the receiver/drier must be replaced to prevent contamination and loss of function. Leaks, assembly, and replacement of any of the components of the system will result in contamination of the refrigerant. Time also has a negative impact on the desiccant. Thus, anytime the system has been opened or when the system is older, the receiver/drier should be replaced. There are various opinions as to how often a system should be recharged as long as the system is working satisfactorily, but there is not absolute answer. Also, there is a "glass window" on the side of the receiver/drier to visualize the refrigerant. Any time that dirt or debris is seen in the refrigerant, replacement of the receiver/drier is indicated as well as a complete evaluation of the total system.

### The Evaporator:

The evaporator is usually located in the old gas heater box or "smugglers box" in the front trunk compartment in the early cars and under the cowl in later models. It is accessed through the hinged door and is situated inside a large black plastic box commonly known as the "Bosch box". The Bosch box has a drainage tube that exits the car via a small tube in the bottom of the box. All water and condensate will drain through this, if the tube is not plugged. When the AC is working and the car is parked, you should see a normal discharge of water from this.

The evaporator is constructed and looks like a condenser with its serpentine tubes and fins. In addition, it has an expansion valve, and the expansion valve pigtail capillary tube. This tube is attached to the top of the evaporator outlet pipe, inserted into the evaporator unit and secured with a clip and insulated with AC tape or foam. The aluminum tube is connected to the thermostat switch on the AC console and the tube filled with a gas sensor shuts off the compressor to prevent the evaporator from icing up which significantly reduces system efficiency. Handle this tube with care. If it is bent or breaks, it will need to

be replaced as the unit will not function if this is broken.

Another component of the evaporator system is the electric fan that blows air across the evaporator. In the Behr box, it sits above the evaporator. It is not uncommon for the fan to fail or to see the fan blades "slip" on the motor armature and get caught on the evaporator fins. Replacement rather than repair is indicated for either condition. Variable speed fans are available for replacement and allow a much better control of the fan speed/air flow.

### The Expansion valve:

Porsche used an externally equalized expansion valve through 1989 on the 911.

Once the refrigerant leaves the receiver drier, it flows to the expansion valve. This little device is absolutely critical to the function of the system, and it is quite simple in how it does it. The expansion valve is found attached to the refrigerant line as it arrives at the evaporator. The valve is simply an adjustable hole for the refrigerant to flow through. There is a small temperature bulb which attaches to the outlet pipe from the evaporator, and will open and close the opening inside the valve depending on the temperature of the evaporator. In the circuit diagram on page 1, part 1 of this article, you will note the color of the tubing changes to blue after the expansion valve. That is because the hole for the refrigerant to flow through is so small, only a little amount can pass through at any one time. The blue lines indicate low pressure, one side of the expansion valve will be around 200psi while the other side will be around 35 psi. The now low pressure liquid refrigerant flows from the expansion valve directly into the evaporator.

The evaporator does exactly what you would think, it evaporates. As the now low pressure refrigerant enters the evaporator, it literally starts to boil. Unlike water, which boils at 100 degrees Celsius, R134a boils at -26. degrees Celsius. As soon as the refrigerant drops to a low pressure, it is free to boil. Inside the evaporator intense boiling takes place as the R134a changes from a liquid back into a gas. A side effect of boiling is the absorption of heat. Heat is absorbed into the boiling refrigerant. As the refrigerant leaves the evaporator, it is now a low pressure gas at which point it returns to the compressor to begin the journey again.

Expansion valves should be replaced when diagnostics have confirmed valve failure or

leakage, or your compressor seized or locked up.

### Vents:

The earlier Porsche were notorious for poor air conditioning. Part of the problem was the system itself was not as efficient as today's systems and another part of the reason was that the systems did not move enough air across the evaporator coils to cool the passenger compartment. In spite of the vast improvement in the new systems, if installed in an earlier car, the lack of adequate air flow still exists.

The evaporator gets air from inside the passenger compartment via the grill on the center tunnel just in front of the rear seat. On the front end the tunnel is a round pipe extension about 3" in diameter that enters into left rear corner of the smugglers box. Without AC in the car, this is covered with a rubber cap, which must be removed when AC is installed. . Also, there is an opening behind the wooden foot board on the passenger side of the front seat. The opening behind the passenger foot board is trapezoidal in shape and really not too big. In the center of it is an electric sensor and the opening is covered by a screen. So, the area for return air is somewhat constricted.

Systems that have been in place for a number years usually have built up lint and dirt on the evaporator unit which cuts down on the amount of air that can flow through the evaporator. This dirt, lint, etc. needs to be gently cleaned off.

All of the early cars had insufficient outlet venting into the passenger compartment. In the early cars, the dash outlets were very narrow and with directional grills in the outlet, air flow was greatly restricted. Around 1978, Porsche changed the outlet grills and incorporated them in the dash, but they were quite small in size and again proved inadequate to provide unrestricted air flow. Currently, after market suppliers have grill modification kits for the 1978-1989 cars. The kits add two or three additional grille outlets without damaging the dash. This drastically improves air flow and if coupled with a current variable speed fan, makes a tremendous difference in air volume to the passenger compartment.

In part 3 of this article, we will discuss the installation of a new complete system in an early 911.



**President:**

Tom Cooper  
635 Shorewood Lane  
Waterloo, NE 68069  
402.779.2261 (h)  
tcooper40@cox.net

**Past President:**

Steve Wilwerding  
4811 Davenport St.  
Omaha, NE 68132  
402.319.8623 (h)  
steve.wilwerding@gmail.com

**Treasurer:**

Robert Lynch  
6100 Northern Hills Dr.  
Omaha, NE 68152  
402.573.1684 (h)  
robert.lynch911@gmail.com

**Secretary:**

Abe Schlott  
727 S. 13th Street  
Omaha, NE 68102  
402.977.5885 (h)  
aschlott@wd-wpp.com

**Membership:**

Sandy Brusco  
2862 Duane Plz. Apt D  
Bellevue, NE 68123  
402.612.7931 (h)  
brusos@usa.redcross.org

**Safety:**

Sally Knapp  
919 Bayberry Dr.  
Bellevue, NE 68005  
402.291.9350 (h)  
sallyknapp@juno.com

**Social:**

Brian Tessman  
12929 Jessie Avenue  
Omaha, NE 68164  
402.598.4946 (h)  
brian24667@yahoo.com

**Der Skooner Editor:**

George Poullos  
6221 North 158th Avenue Circle  
Omaha, NE 68116-4027  
402.679.4915 (m)  
gpx@cox.net

**Web Master:**

Eric Elliott  
736 West Godfrey Dr.  
Lincoln, NE 68521  
402.770.7986 (h)  
ericelliott@mac.com

**Club Race Registrar**

Joe Chambers  
17069 Dora Hamann Parkway  
Omaha, NE 68116  
402.493.0207  
jbchambers2@cox.net

**Web Page:** <http://gpl.pca.org>

**PCA Zone 10 Rep:**

Kim Fritze  
612.275.4891  
zone10rep@gmail.com

# ***GPR Board and Monthly Meeting Minutes***

The Great Plains Region PCA Board met Tuesday, July 1, 2014 at the home of Bob Lynch. Members in attendance: Tom Cooper, John Krecek, Joe Chambers, Steve Wilwerding, Brian Tessman, Eric Elliott, Sally Knapp, Bob Lynch

**Secretary:** The minutes were approved with corrections.

**President:** There will be a novice class at the DE in Hastings later this month. Presently there is one novice driver registered. Discussed various ways to promote the DE including email blasts and phone calls. The Tessmans's have offered their house for a party Saturday night, Brian will confirm with his parents. All the rooms at the Comfort Inn are taken, there are rooms available in Grand Island.

**Club Race Chair:** May 29-31, 2015 is the tentative date for next year's race. Tom will ask George Anderson to reserve those dates.

**Treasurer:** The monthly report was sent via e-mail. Reviewed Club Race financials.

**Social:** July 12th Breakfast and Fun Run – Heartland Café. There's a new fixed menu for \$5.50. July 12th dinner at Charleston's. August 9th Golf Tournament at Oak Hills will be a Texas Scramble. August 17th Summerfest Car Show at Lutheran Church of the Master.

**Membership:** There are currently 250 National members and 105 GPR members which includes 6 lifetime and 1 gratis (Zone 10 rep). Two new National members, Mark Bergerson and Patti Boyle were approved.

**Safety:** Insurance for the upcoming fun run has been submitted. Participants have been coming to track events with motorcycle helmets which is clearly stated in the tech form as not acceptable. Hopefully, the 4 new loaner helmets will alleviate that problem somewhat.

**Newsletter:** July 20th is the deadline for the August issue of Der Skooner.

**Website:** The website is up to date, Eric will add new information.

**Past President:** No report

**Old/New Business:** Tom is still working on the club medallions.

The next meeting will be August 5, 2015 at the home of Fast Johnny Krecek.

Respectfully submitted, Sally Knapp

---

**Editorial Policy:** *Der Skooner* is the official publication of the Great Plains Region/Porsche Club of America. Statements and opinions appearing in *Der Skooner* are those of the author and not necessarily those of the GPR, PCA, the Board or the Editor. The Editor reserves the right to edit all material and to publish only material that is felt to be in the best interest of GPR/PCA. Other regions are welcome to reprint *Der Skooner* articles provided that the source and author are credited. Address changes must be sent to both Tom Cooper, 635 Shorewood Lane, Waterloo, NE 68069 and PCA, P.O. Box 5900, Springfield, VA 22150.

Editor  
6221 North 158th Avenue Circle  
Omaha, Nebraska 68116-4027

PRSRT STD  
US POSTAGE  
PAID  
OMAHA, NE  
PERMIT NO. 678



**A Publication of the Great Plains Region / Porsche Club of America**

# Radio City Christmas Spectacular

November 21 @ 8:00 pm | \$84.50



Join fellow club members for an evening of Broadway entertainment with the Radio City Christmas Spectacular starring the Rockettes.