



# Handy Hints

## From

# The Workshop

For vehicle advice when preparing your Bash car, please feel free to call at the Variety office.

*Reviewed November 2008*



## INTRODUCTION

Greetings to all our customers, both current and future. As the title suggests, these are handy hints for those Bashers who don't know a shock absorber from a seat belt. These hints have been accumulated over many Bashes and if used for the purpose intended (only use with parental supervision) can reduce the chances of you becoming a potential customer of the Mobile Workshops. By avoiding becoming a customer, you will enjoy the Bash more, and so will we!

## BASH BREAKDOWNS

Flat tyres, fuel problems and electrical faults cause the most common breakdowns on the Bash. Less common breakdowns are broken axles and other problems.

The idea of the Bash is that you should be able to do some of the basic things yourself (such as changing a flat tyre), however, don't be too distressed if you can't. Where we are able to help is with the more complicated and/or larger jobs (such as any welding that may be required). As you may have to wait a while until a mobile workshop comes along, (we will be there as soon as we can but please remember there are only 7 workshops and occasionally a big job rears its head) it helps us if some of the initial preparation is done while you are waiting, such as jacking the car up or getting the spares out etc.

## COOLING SYSTEMS:

Ford and Holden's cooling systems were designed in the 70's to reach Boiling Point only when the outside (ambient) temperature reaches 55° C. Modifying your car's cooling system can prevent the cooling system from working properly, with overheating occurring earlier than expected, e.g.:

- Thermo fans – can restrict airflow and should be fitted with a manually operated switch.
- bull bar, driving lights etc (which could deflect the air in a different direction),
- Use of fly wire in front of the radiator (could result in 25% less efficiency in air going through the radiator).
- Holden V8s: where possible try to use a genuine water pump – some non-genuine tend to cause air lock in the cooling systems

A perfect modification to the cooling system would be to introduce a 3- or 4-core radiator. These are much larger than the original 1- or 2-core systems originally present, and are far more efficient.

Addition of a **filter in the top radiator hose** is an excellent preventative measure. It can be cleaned out daily to avoid a build up of scale entering and blocking the radiator.

## PREPARING THE SUSPENSION & UNDERBODY

One of the necessities of the Bash is giving your car some additional ground clearance. The easiest way to do this is to go for larger diameter wheels and tyres. Holden's can go for 14" x 6" steel wheels (say from a HK to HG Monaro, some model Volvos and BMWs) and 7.50 x 14 tyres to suit the Japanese utes (such as Holden Rodeo's) however be aware on some model Holden's changing away from the original type of wheel can cause distortion of the brake drums and a whole lot of new problems. Some conversions may



also require longer wheel studs to be fitted. If in doubt don't hesitate to ask for advice. Fords and Valiant already have 14" wheels and the 7.50 x 14 tyres can be used. The big Yank Tanks can use 15" or 16" wheels with appropriately larger tyres. If fitting larger wheels and/or tyres always check to ensure they have adequate clearance at all steering and suspension positions.

When modifying your wheels, maintain equal rim width from the centre of the wheel, on both sides. This avoids extra load on axles and wheel bearings. Do not extend your wheels outward beyond the roadworthy specifications of 25mm.

### **REAR SUSPENSION:**

Where modifications are carried out to strengthen the leaf spring rating, be cautious of the condition of the U-bolts. When unsure, replace them with new ones. Past history tells us this has caused accidents due to U-bolt loosening and axle movement on the leaf spring, creating a rear wheel steer. It is advisable during the course of the Bash, to put a spanner to these U-bolts to check the tension and tighten when necessary. If you need more ground clearance, the best way to go about it is to have the springs reset or add extra leaves. Do not try to raise the back using air shocks. They are renowned in their ability to punch the back floor out of cars due to the air pressure in one shocker increasing when the other shocker has been compressed. This makes the shocker act as if it is a solid bar and if a bump comes along while it is in this condition, goodbye floor.

With Holden's, it is wise to get a cross member welded between the rear sub frames as a mount for the tops of the shockers. As originally designed Holden's are weak in the body where the top of the shocker mounts.

### **FRONT SUSPENSIONS:**

If you raise the rear of the car, you should also raise the front to match. Remember to get the front end re-aligned after you do this. It is quite common for front end adjusting bolts on Holden's to come loose causing the adjusting shims to drop out. Replacing the shims with washers doesn't stop the bolts coming loose but at least you don't lose the shims. It then is only a matter of retightening the bolts. Also when raising the car, check to make sure the shockers don't run out of travel when the suspension moves.

**Holden bottom ball joints:** The replacement ball joint should be of a good quality. We recommend a genuine type, as sold by Rare Spares. Stay away from "S\*p\*r Ch\*\*p" etc. varieties. On the last Bash, a HR Holden was totalled due to the failure of a bottom ball joint.

### **DRUM BRAKES:**

At the 2006 Workshop Day we introduced the checking of all drum brakes, because in previous years we saw a 10% failure rate in this area. This was mainly due to incorrect installation of brake components. After the 2006 Bash, we are pleased to advise a less than 2% fail rate. It is recommended that where self-adjusters are fitted, leave them there. Keep the brake system as standard as possible.



## **WHEELS & TYRES**

As the roads are fairly rocky in a few places, we suggest that you take along two spare wheels and tyres together with two tubes. All tyres fitted to the car should be decent off-road tyres as they are more resistant to punctures. Please don't be tempted to fit recaps as they are prone to failure on out back roads and tracks.

## **UNDERSIDE PROTECTION**

Other pieces of tackle that are compulsory are sump and stone guards for the underside of the car. These have different requirements so they need slightly different approaches.

The sump guard's job is to prevent the sump and gearbox from damage sustained by hitting a rock or similar on the road. Thus it needs to be reasonably strong. For those that can afford it, aluminium checker plate as used to make boat trailers is ideal if given a little bit of bracing. Steel checker plate is perhaps a little heavy, and a lighter gauge of metal could be used. The sump guard should be no wider than the sump of the engine to allow engine heat to get away from the engine bay. Remember to mount the plate securely and check that the steering does not touch it, even with the wheels off the ground. Use bolts not Tek screws or self-tappers to secure sump guards. If possible bolt threads should point upwards or be shielded or covered to prevent damage from rocks etc.

The fuel tank guard's main job is to prevent the fuel tank being pierced by stones and smaller rocks. Thus the guard can be made of lighter gauge metal. However the guard should cover all exposed parts of the fuel tank. Ensure there is adequate clearance between the tank and the guard so any small stones etc can find their way out again rather than get jammed in. In restricted applications thick rubber or fibreglass bonded to the tank can make an effective shield.

## **TAIL SHAFT LOOP**

This is compulsory on the Bash. The idea is that if the front universal joint breaks, the front of the tail shaft is stopped from hitting the road and acting as a pole vault.

The loop can be made a number of ways. The easiest is to use some inch by eighth steel strap, make a loop under the tail shaft (give it plenty of clearance) and bolt it to the floor. It should be positioned about 6 inches behind the front universal. Another effective method is to use some chain (the size you might padlock some gates together) bolt it to the floor either side of the tail shaft with a loop hanging under the tail shaft.

## **FUEL & BRAKE LINE PROTECTION**

This is compulsory. On most cars, the fuel and brake lines run alongside the chassis or sub frames from front to back. They can be easily protected using garden hose. What you do is to get a length of hose long enough to do the job, split it lengthways with a knife, then slip it over the fuel and brake lines. You can then hold it on using nylon cable ties. Do not use side cutters or pliers to trim cable ties as they leave a very sharp edge where cut. Use a knife to trim them off square leaving a flat end rather than a pointed shard.



## **IN THE ENGINE BAY**

As the going is likely to be dusty on the Bash, it is a good idea to get a good quality air cleaner element along with a couple of spares. They should be changed regularly on the Bash. Sand and dust getting into an engine through the air cleaner can do a very rapid job of reboring your engine, and without the necessary larger pistons and rings, can turn your louverley motor into a pile of junk that even STP Oil treatment couldn't fix.

The engine restraint is required so that the engine can't move forward and damage the radiator or backwards in a minor accident or pothole or some such. The easiest way to achieve this is to get some heavy chain, bolt it to the engine and weld the other end to the chassis. You can do this for both forwards and backwards directions by running the chain forwards and backwards, welding it both ends and bolting the middle to the engine.

The way to avoid fuel problems on the bash is to ensure your fuel system is top notch.

Fit fuel filters before and after the fuel pump. Take along spare filters.

Fit a new fuel pump and take the old one along as a spare (with a spare gasket)

If the car has been standing a long time get the fuel tank and lines cleaned out. A good idea anyway as the bouncing around may shake rust flakes off the inside of the tank. If fitting an auxiliary tank make sure it is securely mounted, isolated from the passenger compartment and both the filler and vent are external.

Get the carbie rebuilt.

Take some correct size fuel hose (about 1 metre will do) and some hose clips along. This is in case the fuel line is hit by a stone and is crushed.

Cooling systems should be thoroughly checked, radiators cleaned, hoses, thermostats and belts replaced if necessary.

Thematic fans should be checked to ensure the correct direction of rotation.

Radiator stone guards should be of a material that causes minimal disruption to air flow.

## **ELECTRICAL PROBLEMS**

To reduce the chances of problems it is wise to get your car looked over by an auto electrician. Frayed wiring should be taped up and the generator, alternator and starter checked over.

Take along basic spares such as points, plugs, condenser, even a rotor, coil and distributor cap.

Make sure the battery is very secure and the battery holder is not rusted away.

Take along a spare fan belt and power steering belt if fitted.



## **OTHER BITS**

A compulsory fitting on a Bash car is 50mm tow balls fitted front and back. This is so that we can tow a broken vehicle into the nearest place of repair with the straight bars that all workshops carry. These bars have trailer hitches on both ends and are a lot safer than towropes.

The back end is easy; just get a normal tow bar. A bit of thought needs to go into the front to ensure that the tow ball is mounted on a substantial part of the car, such as a sub frame. Do not make the mistake of mounting it off centre, as the car will be a lot harder to drive undertow.

Both of the towbars should be the Haynes-Reece type. This type of towbar redresses the problem of front projections.

## **PACKING FOR THE JOURNEY**

These are bits and pieces that you need to make your journey go smoothly and not end in tears. **Above all remember excessive weight and overloading is what kills most Bash cars! If you don't need it, don't take it!**

## **TOOL KIT**

Nothing too large, an assortment of screwdrivers, shifter, small ring and open end spanners, pliers, side cutters, pocket knife, racer tape, electrical tape, some small and medium size cable ties, a pair of multi-grips, and some insulated wire of the size used in cars.

## **FIRST AID KIT**

The St John Ambulance kit is a good choice with the addition of some aspirin (for you or her) and some Berocca's. Check the Variety minimum standard for first aid kits and make sure yours exceeds that spec. A \$10 first aid kit just isn't going to cut it.

## **SPARE PARTS**

Rear axles with new bearings installed (wrap the bearing in plastic so that it doesn't get dirty and make sure the axles you are taking actually **fit your vehicle**), points, condenser, coil, fuel filter, air filter, exhaust gaskets and mounting straps, universal joint, 4lts of engine oil, 1lt of gearbox and diff oil (4lts of auto fluid, if you have an auto, as well), bottle of brake fluid, length of rubber fuel hose, fan belt(s), radiator hoses, 1m of heater hose and a selection of fuses for the electrics.

## **SAFETY EQUIPMENT (compulsory)**

A safety reflective triangle is required plus two hi visibility jackets.

## **FUEL**

One jerry can with nozzle or funnel. You may need a second jerry can if you cannot get 440 kms with one full tank and jerry can. Remember to use an approved container.



## **WATER**

You must carry 20 litres of water. It can be in one container or in a number of containers (4 litre bottles can be easier to pack).

## **JACK**

A jack is needed together with a jack plate to prevent the jack sinking into soft ground. A piece of solid wood is ideal. Don't forget the wheel brace.

## **MOBILE WORKSHOP DAY**

In this part of the Handy Hints, we will be describing what we will be looking for when we check your car. We have also included a copy of the check sheet that we use. You can use it to go through your car to make sure you have thought of everything. At Volkesrepair, Earl Street, Airport West with Bash Scout Rob Langley and Joch Motors, in Dandenong Street, Dandenong with Bash Entrant Charlie Scarcella's workshops. There are 3 hoists so we can have a good look underneath. The main areas that we will be looking at are:

As you can see, it is an extensive list and virtually amounts to a limited roadworthy check. However, with our expertise, each car only takes about 20 minutes to check. As we have said before, the more work you put in before the Bash, the less work you'll have to do during the Bash.

You will have the opportunity to rectify any faults and represent your car for a final check however be warned –**IF YOUR CAR DOES NOT PASS YOU WILL NOT BE TAKING IT ON THE BASH!**

**REMEMBER TO ROAD TEST YOUR CAR IN ITS FULLY LOADED STATE BEFORE THE BASH!**

**Best regards**

**THE WORKSHOP BOYZ.**