

Technical Modifications: Handbrake Safety Alternatives

Douglas Hallawell, with contributions by Bill Button and Ron Theroux; Photos by Bill Button and Lorne Goldman

The Handbrake Safety Problem

Amongst those who own a 4-wheeler Morgan with the good old Salisbury axle, some must have noticed the dangerous conception of the bracket of the handbrake mechanism which runs along the rear of the axle. This mechanism is attached to the rear of the axle by way of a solid pointed bracket welded onto the



Julia Woolgar's Ruptured Tank (which didn't catch fire)

axle. Well, this bracket points directly at the petrol tank. In the event of a severe rear-end collision (or even lateral rear), the tank risks being ruptured entailing a full-scale fire of the Morgan. This flaw was corrected, fortunately, 9 years ago by MMC which has since been using BTR axles built in Australia.



Lorne Goldman's Ruptured Tank (which caught fire)

Owner Modifications

Having had the opportunity in 2003 to participate in MOG 33 – 33rd international reunion on the east coast of USA – as well as in a couple of west coast events in 2004, I was able to meet many Morgan owners.

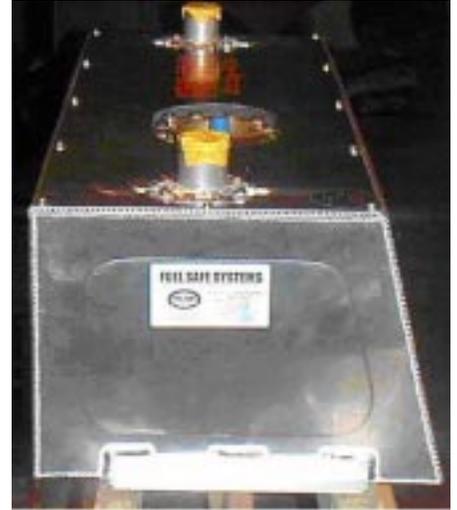
What amazes me is noting how many of them carry out mods/improvements themselves on their beloved Morgans. These enthusiasts share their experiences on the biggest international DG devoted to Morgans – www.emog.com – bringing together 1200 owners of the marque.

This was how I discovered that Paul Marchant from

California replaced his Moss gearbox – on a Plus 4 Super Sports – with a Toyota Celica 5-speed box (1982-'85). Just the alloy casing allows a weight-saving of approximately 22 kilos. He also lightened the engine compartment where a compact and lightweight starter motor (from Moss Motors) has replaced the good old Lucas unit.



Lorne's FuelSafe Petrol Tank



Lorne's FuelSafe Petrol Tank

Handbrake Solution I: "FuelSafe" Tank

Emog's Quebec webmaster – Lorne Goldman – owns a 1984 Plus 8. As a result of a severe rear-end collision, his Morgan was totally burnt because of rupturing of the petrol tank by the above-mentioned notorious bracket. Today, his Plus 8, totally rebuilt (mostly by the factory), benefits from a "FuelSafe" petrol tank as used by racing Morgans. To complete security at the rear, a new BTR axle has replaced the old Salisbury unit. A few details and photos are at:

www.gomog.com/phoenix/phoenix.html

Solutions	Advantages	Disadvantages
FuelSafe Tank	Probably the best solution. Bill noticed in "Racer Parts Wholesale" that you can buy a block of "fuel cell foam" 1'x1'x1' holding 6.5 gal for \$42. Electronic sending units are \$118. Looks like a talented person could make one for under \$500.	Very expensive - \$1,800, and the price recently went up.
Hydraulic Valve	This solves two problems: the lack of reliability of the current hand brake system and the removal of the brackets that punctured Lorne Goldman's tank causing the fire.	There is no manual backup for emergency stops after hydraulic failure. Button says that the jury is still out on this solution. The hydraulic valve in his +4 seems to work, but it depends on a leak-free brake system. Button says he doesn't recommend this solution yet, pending making sure that all of the "kinks" are worked out.
Tank Shield	Probably the best "bang for the buck." Simple and effective.	None that anyone can think of.
Tank Relocation	Better protection in case of a rear collision. It would open up usable space in the rear and improve weight distribution.	There would be extra fabrication effort (and cost) to fit this space so that it wouldn't interfere with the differential or drive shaft.

Lorne's unfortunate experience has, however, benefited others, especially in the USA, who have since installed these "FuelSafe" tanks.

**Handbrake Solution II:
Hydraulic Handbrake Valve**

Another regular of the DG, a resident of the state of Washington and answering by

the name of "Button," has chosen to do away with the handbrake mechanism's bracket by replacing the Salisbury axle with a BTR axle on his Plus 4. His modification resorts to aeronautical technology by using a discreet



Ron Theroux's Solution: A Shield

**Handbrake Solution III:
Fuel Tank Shield**

Ron Theroux has yet another solution he found on Emog.

He fabricated the plate from a 1/16"/12 gauge sheet. There is a radius on the top corners plus the sides and top edges have been massaged with a body tool to roll up making lips so that there are no sharp edges.

Urethane construction adhesive was used to hold it in place; no other rigid fasteners.

Ron says, "It only has to work once, I think it would work best if it (has to) collapses with the tank. This modification has got to be better than nothing, and the total cost, in place, was \$6.00 CDN - and real bargain for Morgan safety."

**Handbrake Solution IV:
Relocated Fuel Tank**

Relocating the fuel tank is an interesting solution that offers attractive advantages. Lorne Goldman and Bill Beck came up with this idea.

The idea is to fabricate a tank to fit in back of the seat, in front of the differential, and under the parcel shelf. The details of this solution haven't been worked out as yet, and it may not be possible.

As of this date, however, the authors do not know of anyone who has actually tried this solution.

Summary

See the table at the bottom of page four for a summary of advantages and disadvantages of each solution. Readers should feel free to submit comments regarding this topic.



Bill Button's Hydraulic Setup: Photo 1

hydraulic valve which greatly simplifies the setup of the handbrake's mechanism. The extension on the Moss gearbox is, no more, no less, an

overdrive unit which Bill Button succeeded in adapting during a previous transformation. The attached photos speak for themselves, but in order to achieve this, a lot of time was spent by Button.

The solution of the hydraulic valve deserves to have 1 or 2 details improved and is being tested during the early part of May. Its cost is \$104. It requires the use of DOT 5 synthetic fluid. Needless to say, Button has already done away with the incrimi-



Bill Button's Hydraulic Setup: Photo 2



Bill Button's Hydraulic Setup: Photo 3



Bill Button's Hydraulic Setup: Photo 5

nating bracket! I found his modification ingenious; now it's up to you to judge.



Bill Button's Hydraulic Setup: Photo 4



Hydraulic Handbrake Valve