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TECHNICAL BULLETIN No. 3/2006

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SUBJECT *QFRS TRIAL TECHNIQUE 'A – PILLAR HOLD'*

INTRODUCTION

This bulletin introduces and highlights a 'trial technique' that has been developed by the Queensland Fire and Rescue Service (QFRS), from a number of traditional techniques; to assist in the relocation of a dash in the modern motor vehicle.

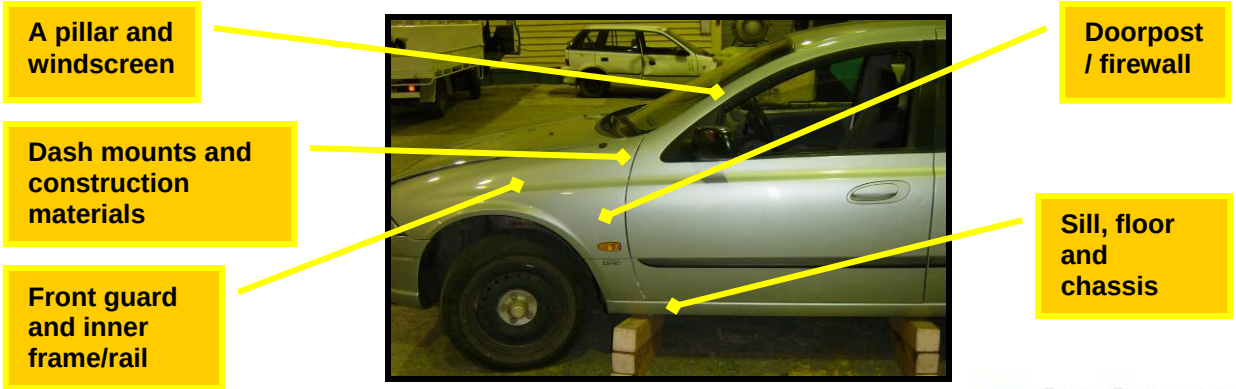
This technique is potentially very suitable for use on vehicles constructed with a chassis, as well as those of monocoque construction. The following series of photos outline the technique on late models of undamaged Ford Falcon utility and Holden Commodore sedan.

This trial technique may not be suitable for vehicles without suitable strength or construction features in the front door post and A-pillar sectioning (where they meet). Further tests of the trial technique by all ARRO members and road rescue agencies when possible in training evolutions will assist in assessing the viability of the technique and suitability for certain types of vehicles.

It does appear though, through initial testing, that this technique is suitable for late model vehicles, as newer construction materials and designs contribute to the overall structure and strength of these vehicles.

TECHNIQUE

Fundamentally relies on releasing the main structural components to rotate the dash forward, moving the attached steering column and pedal assemblies upward and away from the entrapped casualty. Structural elements that may contribute to strength and resist movement when normally rolling or lifting a dash are:



TECHNIQUE STEPS

Step 1: Guard squash

- Deal with all hazards: battery isolation and stabilisation before commencing.

- Remove door and commence inner guard exposure, half outer guard removal.

- Note: *how far guard is pulled forward.*

Step 2: Inner guard, rail/frame release and outer guard removal

- A number of cuts starting as a wide V cut are required to cut through the outer and inner guard, into the rear section of the front shock/spring/strut tower.

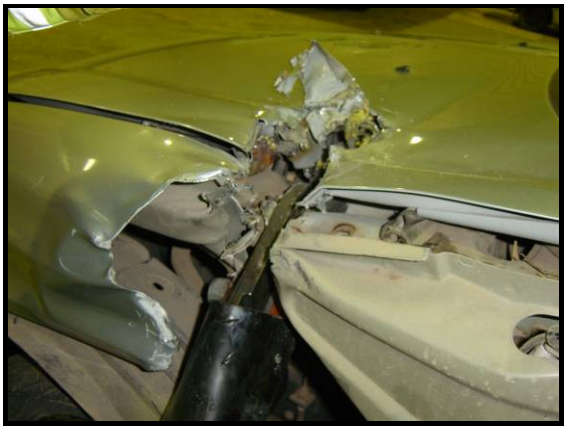
- This cut should be placed into the rear section or behind the shock/spring/strut tower, where the rail/frame connects with the tower.

- A gap is recommended to ensure that when the dash is rolled the support frame and rear of coil tower do not bind, allowing ease of movement (this example approx 50mm).

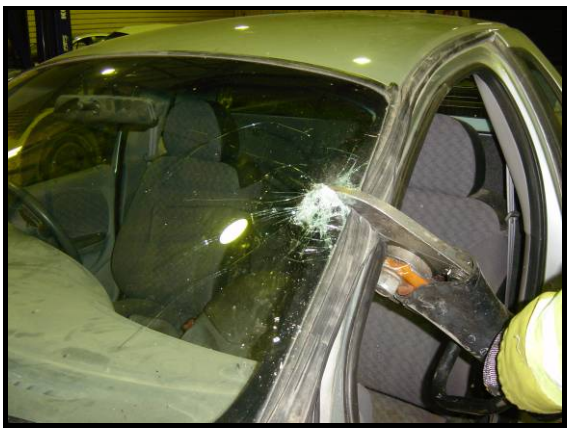
- Lower access may be required to cut through the inner guard and front rail/frame.

- Extra cutting may be required after the outer guard is removed.

- Note: *beware of coil spring or gas struts, bonnet struts, A/C hoses and electrical wiring.*



TECHNIQUE continued



Step 3: Windscreen/A pillar release

- Cut completely through the A pillar, half way between roof and dash, place ram in as a support before commencing, to prevent uncontrolled downward movement.

- Prepare the windscreen by making a hole for the short spreader chain and cut windscreen halfway along or for full length, or remove.

- Note: *PPE for glass cutting and soft protection for patient/s is always required.*

Step 4: Relief cuts

- Multiple cuts through base of door post along sill line, below bottom hinge.

- Continue forward through to firewall.

- Monitor ram to ensure support is maintained.

- Be aware of electronic control units and associated wiring when cutting.

TECHNIQUE continued

Step 5: Multiple actions

- Attached spreader tips for chain adaptors and a short spreader chain with a round turn to lowest section available on the A pillar.

- Attached a long spreader chain to underside front of vehicle, towards the middle, a tow point or similar.

- Fully open spreader and engage hooks and ensure all free chain is removed to allow full use of the travel when the spreader closes.

- For safety, cover or remove battery to avoid bonnet contact and fire hazard.

Step 6: Commence ramming

- As ram extends, spreader can be closed to follow up ram as a safety if ram slips.

- Monitor A pillar where chain attaches for bending or twisting that may allow the chain to lose grip or slip off.

- Note: *rotation of dash with no lifting of sill, or downward movement of front bumper.*

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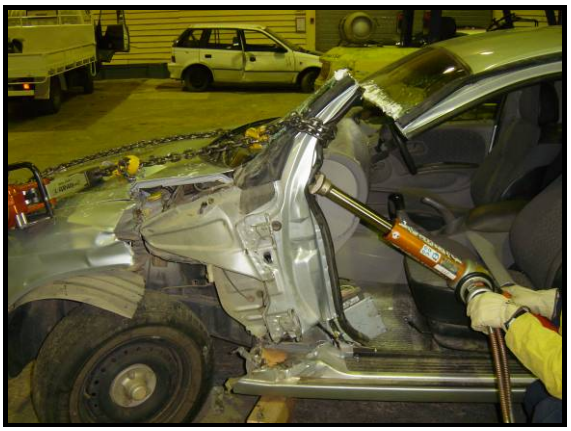


TECHNIQUE continued

Step 7: Continue ramming

- If using a short ram, a second ram can be used to take over, and continue the process.

- Continue closing the spreader as a safety if the ram slips.

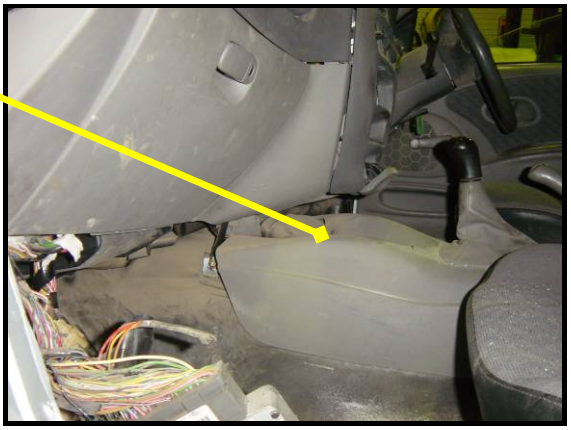
- Monitor the position of the ram head, this is about the maximum push that can be achieved on this example.

Step 8: Remove ram (if required) assess movement, eg. 65mm, central dash lift.

- Removal of the ram with the spreader *holding the A pillar*, **hence 'A Pillar Hold'**

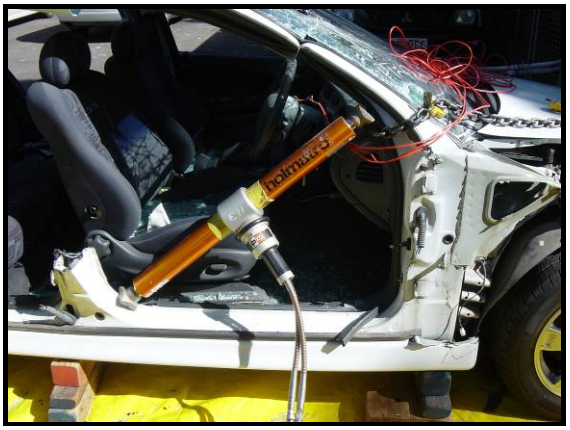
- Minimal creep back, depending on how much movement is made beyond safe point. No upward movement of sill, perfect for chassis constructed vehicles.

- Wedges should be added for safety.

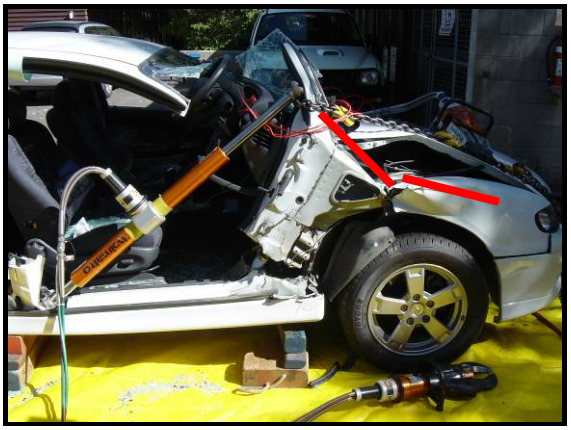


COMPARISON

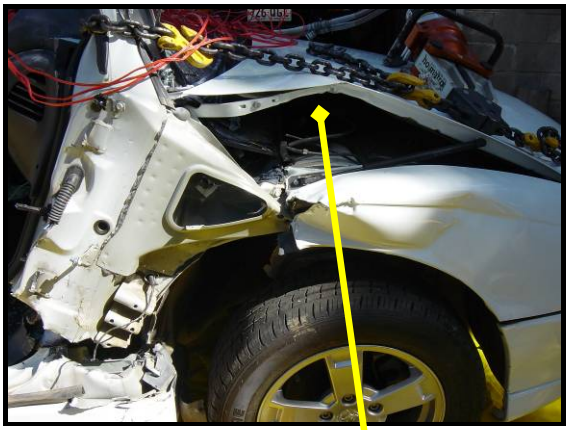
An early trial of the 'A Pillar Hold' technique as tested by the Queensland Fire and Rescue Service (QFRS) on a late model Holden Commodore sedan, in April 2005 *(other alternatives demonstrated here as well, including a modified 'B pillar Rip' technique using a ram or spreader, and demonstrations of SRS activations).*



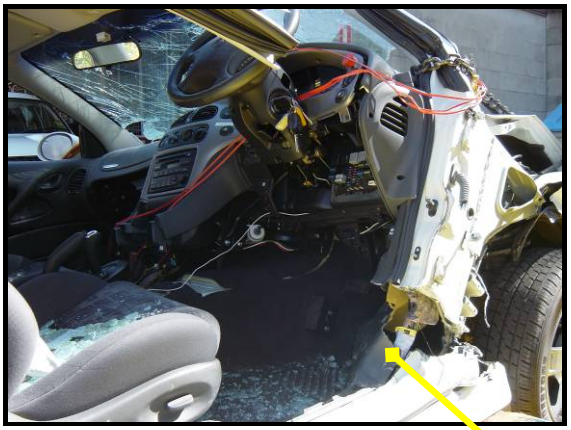
Single turn of chain found to be less secure.



Note: angles of movement



Note: deformation of bonnet.



Note: clear space when spreader holding, add wedges into relief cut for safety.

No downward movement of the front bumper or upward movement of the sill was experienced, limiting any cribbing of the spaces in traditional dash roll techniques. Chassis constructed vehicles will not experience the floor ripping of the body mounts as with the normal dash roll technique.

The utilisation of the spreader and chains relies on prior thought being given to removing the potential of the battery coming into contact with underside of the bonnet. The rate and timing at which the spreader is closed to chase and support the ram movement is relative to the operators need and initial movement of the ram.

Further gains in rotating and moving the dash forward can be had by delaying the closing of the spreader until a period after the ram commences pushing.

REVIEW

The trial 'A Pillar Hold' technique is not meant to replace the traditional methods of dash displacement, but could be a viable alternative for newer model vehicles *(The roofs have been left intact on these vehicles to demonstrate the amount of movement achieved by the technique).*

Awareness of the A pillar strength and movement are critical. More details need to be sourced from vehicle manufacturers to be guided by the strength of materials used in the construction of vehicles, particularly the method of, 'tailor blanking'.

Increased compressive strength of materials, measured in 'mpa' (mega pascals) can be also used to classify areas that require more resilience and resistance to impact. These areas are affecting road rescue agencies ability to undertake traditional techniques on newer vehicles.

Features of vehicle construction that use boron (and other) steel alloys in dash tubes or supports, may react favourably to this technique, as the main areas of relief are areas that allow rotation of the dash assembly, applying force over a distance (eg. A lever) to the central dash mount point.

The spreader and chains are only used as secondary to the ram, **not** as the primary force to rotate the dash forward.

RECOMMENDTAIONS

1. ARRO members and agencies wishing to trial this technique should do so on late model vehicles only, and in a training environment only;
2. ARRO members and agencies who trial this technique should provide details on the success or failure rate, and on what make and model of vehicles the technique has been attempted on;
3. The QFRS and ARRO Technical Committee will continue evaluations of this technique, in particular on newer models of vehicles as they become available through various sources; and
4. Please send any details of trials or points of discussion through to Daryl Rush, at the contacts below.

Daryl Rush

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