

Technical rescue evolution

'The Clam'

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Best Wishes

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The 'Clam'

Side removal, strategic ramming and cutting # Note 1

WARNING - IMPORTANT NOTE:*

** The methods outlined below are not suitably detailed for vehicles equipped with SIPS, IC, HPS - For further details on model year 2000 + go to 'MVA extrication series' and the MVA extrication PathFinder.*

2 dr Car/Coupe

Detail:

1. **Perform Scene assessment (Outer & inner survey)**
2. **Control/reduce all risks** – *Invariably the car's battery will be inaccessible to disconnect – see bullet point 6 and Notes vi*
3. **Stabilise the vehicle** – *See map1 and Notes iv & v*
4. **Gain entry for medic - Entry is usually made via the rear window** (*Place sheet on the ground and break glass into sheet and remove to dump*)
5. **Medic performs: Ignition off - BTLS – Airway, c-spine immobilization and assessment – Fit the c-collar only where it is considered appropriate** (*Head must be in the central in-line neutral position before a C-collar can be fitted*) – **DO NOT** place the head central in-line if it -
 - *Compromise the airway*
 - **Causes neck muscle spasm*
 - **Causes pain, numbness, tingling*
 - **Causes neurological deficit – loss of motor function*** Where the airway is already actually compromised these points can be ignored*
6. **Carefully open the car's boot (trunk) and remove the lid by cutting the hinges** – *Where fitted in the luggage compartment, disconnect the battery. Otherwise, inform rescuers that they are working with power on.*
7. **Perform glass management - Use soft protection & wear dust mask**
8. **Cut all seat belts to roof pillars on the side the 'Clam' is going to be performed and remove all webbing.** *Where appropriate pass webbing and tongue onto the AIO - Accident Investigating Officer. Where the seatbelt is supporting the casualty, DO NOT cut or undo until absolutely necessary.*

Inverted Door Forcing: (From the doorlock)

9. **Open (try & pry) or gain access to the doorlock** – *Where appropriate use the spreader to crush the sill or if sufficient space already exists, grip the door's edge with the spreader's tips and fold back to gain sufficient access for the tips.*
10. **Force the front door-lock** - *When forcing the doorlock, try to roll the latch off the Nader pin.*
11. **On opening the front door, cut the window housing away and where fitted, cut the door check-strap and open the door fully** – **DO NOT** *force the door backwards so as to upset the car's stability.*
12. **Tie the front door back or unbolt/cut the door hinges and remove the door** – *Alternatively if spreading; spread door hinges under the hinges*

only, otherwise the door will be forced onto the ground and cause the vehicle to lift, unsettling stabilisation.

Inverted cutting & ramming:

The methods of inverted cutting & ramming outlined below, highlights the critical areas of risk and the measures to control or reduce risk. *Hard protection HP and soft casualty protection (SP) must be used where it is considered safe to do so.*

13. Remove stabilising material from under roof structure on working-side - see map 2.
 14. Place and lightly tension rams in position - see map 2.
 15. Introduce the long spine board
 16. Prior to cutting, support the casualty and remove the seatbelt
 17. Manually support the rams. Give an audible warning, cut the working-side centre pillar and ensure all wiring is cut through (*Avoid the seatbelt anchorage plate*).
 18. Manually support the rams. Give an audible warning and cut the working-side-rear roof post, and ensure all wiring has been completely severed.
 19. Ensure that doors on the opposite side to ramming are closed and the door mirror removed.
 20. Ensuring both rams remain under load at all times, extend in unison and pack progressively between the bulkhead and the ground. Orientate the casualty's seat and as the vehicle raises, ease the casualty's knees/legs either side of the steering wheel
- *RISK – Failure to maintain tension on both rams at all times and possible mishandling of casualty, particularly as the vehicle is raised.**
(As an additional safety measure a ratchet-belt tensioner can be introduced at the end the evolution and coupled up and tensioned to secure the extended rams in place prior to casualty removal)

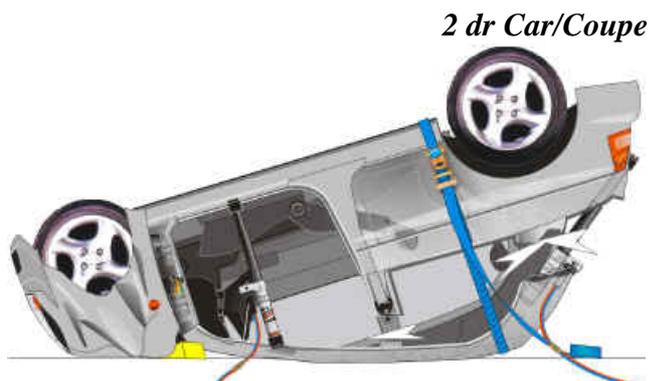
Map 1

Due to the weight of the engine, the overturned 2 dr Car/coupe will normally come to rest front-end down. It is essential to concentrate in packing between the bulkhead and the ground to prevent further collapse of the windscreen pillars.



Map 2

Following the line of the centre post, ram between the sill and the roof's side channel and, using large ram, ram between the rear header channel and the framework of the boot/ luggage compartment on the working side. DO NOT over tension rams.



2/3 dr Hatchback

Detail:

1. **Perform Scene assessment (Outer & inner survey)**
2. **Control/reduce all risks - Invariably the car's battery will be inaccessible to disconnect** – see bullet point 4
3. **Stabilise the vehicle** – See map1 and Notes *iv & v*
4. **Gain entry for paramedic** - *Entry is usually made via the rear Hatchback*). **WARNING - Breaking rear hatchback glass** - *Where gas struts are bonded to the glass on the hatchback, it will cause struts to eject to their full extension instantly the toughened glass is broken, and where the hatchback is opened or forced, it will drop suddenly under its full weight assisted by the gas struts. Where fitted in the luggage compartment, disconnect battery. Otherwise, inform rescuers that power is still on.*
9. **Medic perform: Ignition off - BTLs – Airway, c-spine immobilization and assessment - Fit the c-collar only where it is considered appropriate** (*Head must be in the central in-line neutral position before a C-collar can be fitted*) – **DO NOT** place the head central in-line if it -
 - *Compromise the airway*
 - **Causes neck muscle spasm*
 - **Causes pain, numbness, tingling*
 - **Causes neurological deficit – loss of motor function*
 - * Where the airway is already actually compromised these points can be ignored*
6. **Perform glass management**
7. **Cut all seat belts to roof pillars on the side the 'Clam' is to be performed and remove all webbing.** *Where appropriate pass webbing and tongue onto the AIO - Accident Investigating Officer. Where the seatbelt is supporting the casualty, DO NOT cut or undo until absolutely necessary.*

Inverted Door Forcing: (From the doorlock)

8. **Open (try & pry) or gain access to the doorlock** – *Where appropriate use the spreader to crush the sill or if sufficient space already exists, grip the door's edge with the spreader's tips and fold back to gain sufficient access for the tips.*
9. **Force the door-lock** - *When forcing the doorlock, try to roll the latch off the Nader pin.*
10. **On opening the front door, cut the window housing away and where fitted, cut the door check-strap and open the door fully** – **DO NOT** *force the door back so as to upset the car's stability.*
11. **Tie the front door back or unbolt/cut the door hinges and remove the door** – *Alternatively if spreading, where possible spread door hinges under the hinges only, otherwise the door will be forced onto the ground and cause the vehicle to lift, unsettling stabilisation.*

Inverted cutting & ramming:

The methods of inverted cutting & ramming outlined below, highlights the critical areas of risk and the measures to control or reduce risk. **Hard**

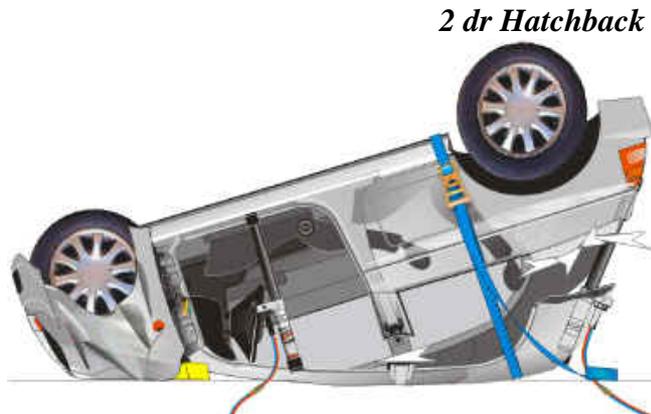
protection (HP) and soft casualty protection (SP) must be used where it is considered safe to do so.

12. Remove stabilising material from under working-side roof structure.
13. Place and lightly tension rams in position - *see map 2.*
14. Introduce the long spine board
15. Prior to cutting, support the casualty and remove the seatbelt
16. Manually support the rams. Give an audible warning, cut the working-side centre pillar and ensure all wiring is cut through (*Avoid the seatbelt anchorage plate*).
17. Manually support the rams. Give an audible warning and cut the working-side-rear roof post, and ensure all wiring has been completely severed
18. Ensure that doors on the opposite side to ramming are closed and the door mirror removed.
19. Ensuring both rams remain under load at all times, extend in unison and pack progressively between the bulkhead and the ground. Orientate the casualty's seat and as the vehicle raises, ease the casualty's knees/legs either side of the steering wheel

***RISKS** – Failure to maintain tension on both rams at all times and possible mishandling of casualty, particularly as the vehicle is raised. (As an additional safety measure a ratchet-belt tensioner can be introduced at the end of the evolution and coupled up and tensioned to secure the extended rams in place prior to casualty removal)

Map 3

Following the line of the centre post, ram between the sill and the roof's side channel and, using large ram, ram between the rear header channel and the framework of the hatchback on the working side. DO NOT over tension rams.



4 dr Car/Hatchback/Estate

Detail:

1. Perform Scene assessment (Outer & inner survey)
2. Control/reduce all risks - Invariably the car's battery will be inaccessible to disconnect – *see bullet point 6*
3. Stabilise the vehicle – *See 4 dr Car (a) and Notes iv & v*
4. Gain entry for paramedic - **Entry is usually made via the rear window/hatchback** (Place sheet on the ground and break glass into sheet and remove to dump). **WARNING - Breaking rear hatchback glass** - *Where gas struts are bonded to the glass on the hatchback, will cause struts to eject to their full extension instantly the toughened glass is*

broken, and where the hatchback is opened or forced, it will drop suddenly under its full weight assisted by the gas struts.

- 10. Medic perform: Ignition off - BTLS – Airway, c-spine immobilization and assessment - *Fit the c-collar only where it is considered appropriate (Head must be in the central in-line neutral position before a C-collar can be fitted) – DO NOT place the head central in-line if it -***
 - Compromise the airway*
 - *Causes neck muscle spasm*
 - *Causes pain, numbness, tingling*
 - *Causes neurological deficit – loss of motor function*
 - * Where the airway is already actually compromised these points can be ignored*
- 5. Where appropriate, carefully open the car's boot (trunk)/hatchback/ tailgate and remove – *Where fitted in the luggage compartment - disconnect battery. Otherwise, inform rescuers that power is still on.***
- 6. Perform glass management**
- 7. Cut all seat belts to roof pillars on the side the 'Clam' is to be performed and remove all webbing. Where appropriate pass webbing and tongue onto the AIO - Accident Investigating Officer. *Where the seatbelt is supporting the casualty, DO NOT cut or undo until absolutely necessary.***

Inverted Door Forcing: (From the doorlock)

- 9. Open (try & pry) or gain access to the front doorlock - *Where appropriate, use the spreader to crush the sill or, if sufficient space already exists, grip the door's edge with the spreader's tips and fold back to gain sufficient access for the tips.***
- 10. Force the door-lock - *When forcing the doorlock, try to roll the latch off the Nader pin.***
- 11. On opening the front door, cut the window housing away and where fitted, cut the door check-strap and open the door fully – *DO NOT force the door back so as to upset the car's stability - See 4 dr Car (b)***
- 12. Tie the front door back or unbolt/cut the door hinges and remove the front door – *Alternatively if spreading, where possible spread door hinges under the hinges only, otherwise the door will be forced onto the ground and cause the vehicle to lift, unsettling stabilisation.***
- 13. Open/force the rear door - *See 4 dr Car (c)***

Inverted cutting & ramming:

The methods of inverted cutting & ramming outlined below, highlights the critical areas of risk and the measures to control or reduce risk. *Hard protection (HP) and soft casualty protection (SP) must be used where it is considered safe to do so.*

- 14. Remove stabilising material from under the working-side roof structure.**
- 15. Fit ram in front doorway and lightly tension in position - *See 4 dr Car (d)***
- 16. Introduce the long spine board**
- 17. Prior to cutting, support the casualty and cut away the seatbelt**

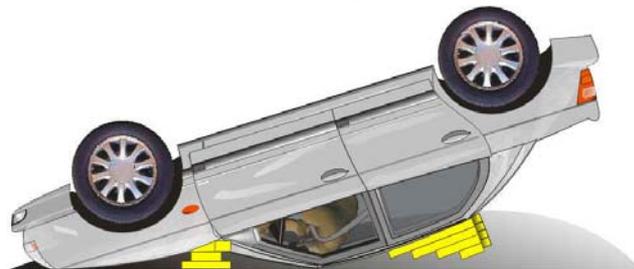
18. Give an audible warning, cut the working-side centre pillar's base diagonally into the sill and ensure all wiring is cut through (*Avoid the seatbelt retractor reel*) - See 4 dr Car (e)
19. To prevent adverse metal movement, the base of the centre pillar must be cut first. Give an audible warning, cut the working-side centre pillar close to the roof's side channel and ensure all wiring is cut through (*Avoid the seatbelt anchorage plate*) and carefully remove the center post complete with the rear door - See 4 dr Car (f)
20. Manually support the first ram. Place the large ram in the rear doorway between the sill and the roof's side channel, following a parallel line with the first ram, and extend both rams to tension. **DO NOT over tension rams.**
21. Manually support the rams. Give an audible warning and cut the working-side-rear roof post (*Avoid the seatbelt anchorage plate*) and ensure all wiring has been completely severed - See 4 dr Car (g)
22. Ensure that doors on the opposite side to ramming are closed and the door mirror removed.
23. Ensuring both rams remain under load at all times, extend in unison and pack progressively between the bulkhead and the ground.
24. Orientate the casualty's seat and as the vehicle raises, ease the casualty's knees/legs either side of the steering wheel - See 4 dr Car (h)

RISKS – Failure to maintain tension on both rams at all times can lead to a ram becoming dislodged (*Rams must be manually supported and proper attention paid when extending the rams. The heavier the vehicle, the more weight will remain on the rams*). Possible mishandling of casualty: As the vehicle is raised, the steering wheel and column can lift the midriff and legs. - see NOTES

4 dr Car/Hatchback/Estate

a.)

Due to the weight of the engine, the overturned 2 dr Car will normally come to rest front-end down. It is essential to concentrate in packing between the bulkhead and the ground to prevent further collapse of the windscreen pillars.

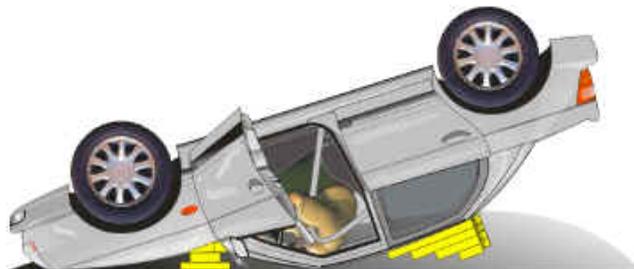


b.)

Open/force the front door on the working side only. Cut away the window housing and cut the door's check strap. Open door fully and tie back to secure or remove.

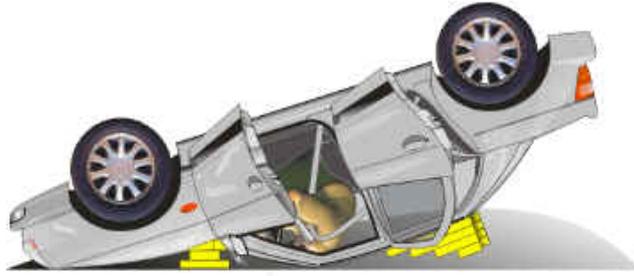
IMPORTANT:

Doors opposite to the working side must be kept closed when performing the 'Clam'.



c.)

Open/force the rear door on the working side only. The rear door is usually removed complete with the centre post - see d, e, and f.

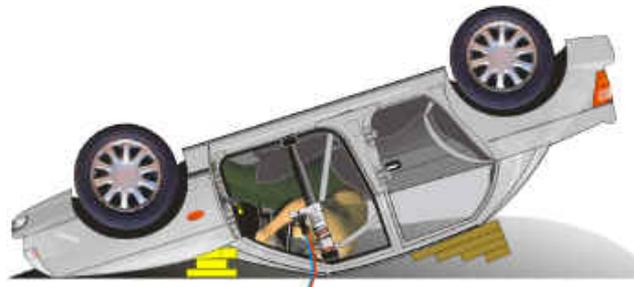


It is a matter of preference or necessity whether doors on the working side are removed. However the rear door is normally removed complete with the centre post.



d.)

Remove stabilisation to the roof's side channel on the working side. Use a mid range ram for the front door opening. Following the line of the centre post, place the ram between the sill and the roof's side channel and extend slightly to tension. **DO NOT over tension ram.**



e.)

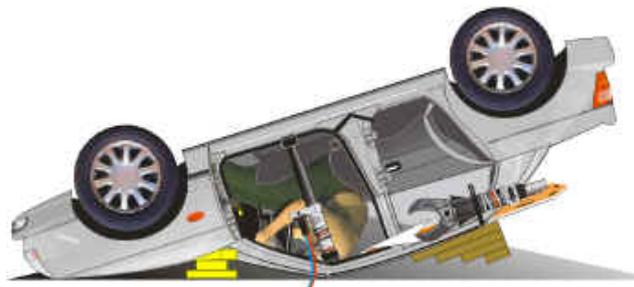
Removal of the centre post complete with the rear door -

Introduce the long spine board. Support the casualty and cut away the seatbelt. Use hard protection and perform cuts to the base of the centre post avoiding the seatbelt retractor assembly.



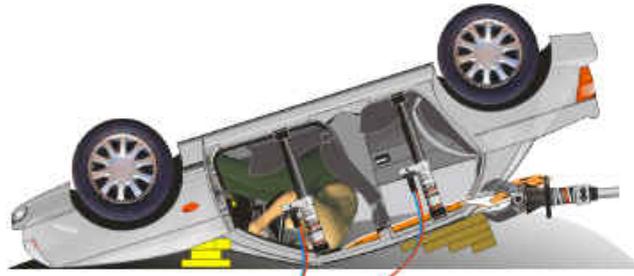
f.)

Use hard protection and support the centre post. Avoiding the seatbelt's anchor plate, cut the centre post at its top close to the roof's side channel, and carefully remove the centre post



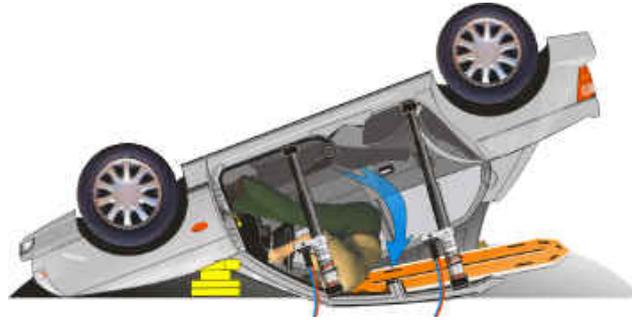
g)

Manually support the first ram. Place the large ram in the rear doorway between the sill and the roof's side channel following a parallel line with the first ram and extend both rams to tension. **DO NOT over tension rams.** While manually supporting the rams, cut the rear 1/4 post.



h.)

Ensure that doors on the opposite side to ramming are closed and the door mirror removed.. Extend the rams in unison. Ensuring that tension is constantly maintained on both rams. Initially the roof's structure will be pushed to the ground. Then as the car body raises, manoeuvre the casualty's knees either side of the steering wheel and rotate the casualty onto the long spine board.



NOTES:

- I. *Persons entrapped within overturned vehicles are statistically more likely to die than conventional accidents, particularly if they are suspended up-side-down in the wreckage. The airway is more likely to be compromised and spinal injury more prevalent. Partial or total collapse of the roof pillars means that space is at a premium and depending on the severity of roof collapse, the acquisition of space dictates that adventurous new extrication evolutions be practised. 'The Clam' is such an evolution. Tried and trusted it has been used operationally with great acclaim. However, its down-side necessitates that the technique be practised on various car models before being attempted on the street, as being relatively new it seems complicated and requires a confident and competent crew to deliver it safely and efficiently. It is therefore recommended that it be practised and confidence gained on its merits by putting its performance and stability to the test.*
- II. *Although the detail is set out in sequential order, a multi faceted approach is recommended. Where techniques compliment each other, techniques can be performed side by side to speed the extrication process.*
- III. *'The Clam' is preferentially performed on the entrapment side of the vehicle. On opening up the car's interior, metal is always moved away from the casualty is the most dynamic way possible. 'The Clam' caters for this criterion in the truest sense, gaining the most space in the shortest possible timeframe.*
- IV. *The car that has come to rest on its roof will invariably, due to the weight of the engine, be nose down and resting on the windscreen pillars with it's rear end in the air. For practical purposed the car can be considered stabilised but we must appreciate that the fulcrum point (point of balance) is usually near to mid way. Where the windscreen pillars are compromised, it is essential to concentrate packing between the bulkhead and the ground to prevent any further collapse, particularly as we perform the extrication. Step chocks can be placed on either side of the roof where it is supported by the side channels.*
- V. *Where the vehicle is not adequately stabilised, the fulcrum point on a mid/rear engine car or estate car may give rise to the car tilting as the weight of the medic is transferred through the tailgate. Additionally, where the engine is ripped out in the accident, the weight advantage of the engine being lost will require a span set to be introduced to secure the tension on the rams at the end of the evolution.*

- VI. *By virtue of the fact that the car has come to rest on its roof, in the majority of cases the battery will be inaccessible to disconnect and the extrication will have to be performed with power on to the ignition and any direct supply. BE AWARE, some cars will have the battery in the boot/luggage compartment and will be accessible to disconnect.*
- VII. *When performing the clam, two rams are utilised, one to indemnify the other, effectively negating the necessity of building cribbing requiring a large amount of blocks and effort which, in real terms, would offer less than satisfactory stability.*
- VIII. *The use of a span set (ratchet belt tensioner) is only advised on the lighter car. The heavier car has sufficient body weight to keep tension on the ram's purchase without any fear of failure.*
- IX. *Re-check stabilisation throughout the evolution and pack progressively between the car's bulkhead and the ground as the rams are extended.*
- X. *The mirror mounted to the front door must be removed and doors on the opposite side to ramming must be closed when performing the clam.*
- XI. **Possible mishandling of casualty:** *As the vehicle is raised, the steering wheel and column can lift the midriff and legs of the up-side-down casualty. It is therefore essential to withdraw the lower half from the footwell and ease the knees either side of the steering wheel as the vehicle is raised.*

Reaffirmation

- XII. **IMPORTANT:***
The methods outlined in this draft are not suitably detailed for vehicles equipped with SIPS, IC, HPS - For further details on model year 2000 +, go to 'MVA extrication series' or the 'MVA extrication PathFinder'

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