

PHASES OF STABILIZATION: SIDE-RESTING VEHICLE

With a side resting vehicle, I teach that you begin with simple wood cribbing on the least stable side of the vehicle than move to the opposite side. It doesn't hurt if manpower is available to have several points of cribbing on each side in the event that one or more points may require elimination due to interference with buttress setup, base restraints, or extrication. If possible, I like to have a "spotter" manually hold the vehicle from the end of the vehicle to provide a little more security during setup and warn others of trouble.

Following the wood cribbing, My plan is to preferably setup a quick 3-point system to handle vehicle rock and twist. If I were to do just a 2-point setup, I would do so with one stand on each side of the vehicle directly opposite each other.

I prefer to address the passenger compartment side of the vehicle first with a Res-Q-Jack jack stand with the 'C' channel end fitting making purchase through the windshield at the intersection of the 'A' post and dash. I like to place this stand at a slight angle towards the rear of the vehicle. This keeps the base forward of the roof compartment out of the way and gets us ready for a vehicle lift if we need to do so later. I do not use any straps at this point on this stand to restrain the base, instead I like to use a chain/hook assembly we designed specifically for vehicle stabilization.

The assembly consists of a large 8" J-hook and 3/8" grab hook on one end, a mini 'J' hook, a 'T' hook, and another 3/8" grab hook on the other end. The ends are connected with a 4' length of 5/16" chain. All components are grade 70 which corresponds to a 5400 lb. WLL. Grade 70 components are not rated for overhead lifting.

I go through the glass of the door on the bottom side and hook the low side 'A' post at the dash intersection with a large 8" J-hook, I attach the opposite end of the chain to the master link on the jack stand base. I then pull as much chain slack as I can up to the extra grab hook to shorten the assembly. I do not tighten this jack stand until undercarriage side is set.

At the undercarriage, I use the simple adjustable stands. I will place one stand forward of the front door hinge, and one stand near the rear wheel of the vehicle. I like to use the new Res-Q-Jack ARG ends which have a round point for hole/slot engagement, an angle to cradle, and a slot for chain purchase. These particular end fittings are compatible with most purchase point demands with side resting and roof resting vehicles. I still prefer the 'C' channel head at the 'A' post to reach in and get a good grip on the post. I make my end fitting purchase as high as possible on the vehicle above the center of gravity.

As for the base restraints, on these stands I employ the simple quick acting cambuckle straps which are pre-attached to the bases. Being attached to the base, they are always there. With a cam strap you avoid the typical problems people experience with ratchet straps. And the convenient 'S' hooks allow for rapid attachment to the vehicle or tow hook cluster.

The thing to be aware of is that straps with these hardware components have a failure strength in the neighborhood of 2000 lbs. A 3 to 1 safety factor gives a WLL of about 700 lbs.

This is not a strap you rely on to hold the weight of the vehicle, however it is often the best means of obtaining rapid initial stabilization in the pursuit of timely patient access.



PHASES OF STABILIZATION

By Cris Pasto

After several years and several hundred cars, I've become comfortable with a concept which makes the process of stabilization a more orderly, more efficient process.

There should be several underlying goals in selecting a method for stabilizing a vehicle on its side or roof. They include safety, speed, repeatability in procedure, compatibility with various vehicles, patient access freedom, and extrication option freedom.

With common situations like the side resting and roof resting vehicles there is a degree of stabilization effort required that is unique to each situation. Vehicles with little damage resting on flat ground with no entrapment require very little effort, however vehicles with entrapment are going to require more precautionary measures to accommodate the extrication. Both situations have the similar starting points, however they differ in how far they progress in sophistication.

Neither stabilization effort has an end until you leave the scene. I'll quote Ron Moore's phrase a thousand times which is, "stabilization is one thing that never ends" until the call is over.

Certain crashes only require so much in terms of stabilizing, however, others require a significant amount and the situation may be dynamic in that the stabilization will evolve as the extrication methods employed get more sophisticated.

Patient access is a vital event which should take place very early in the rescue. Unnecessary delays in getting to the victim don't do a whole lot in terms of public relations, and do even less for the patient's well being. Completely prepping a scene for a sophisticated evolution prior to patient access could leave the patient unattended for an undue amount of time.

I believe in performing enough stabilization to safely access the patient, and continue the process of stabilization during the patient access phase to accommodate the anticipated future operations. This would involve employing more equipment, beefing up restraints, checking purchase points, or adding redundant supports.

Ideally, these straps are run from the base to the vehicle and form a 'V' to offer a little side kick restraint in addition to outward restraint. The base restraint connection with the vehicle is made as low as possible below the vehicle's center of gravity.

Use of a single base restraint requires coordination with the end fitting purchase. The single strap must be nearly directly below the end fitting to avoid pulling the stand over. Multiple base straps make the end fitting purchase and restraint attachment a little more independent of each other as the straps can run at varying angles or go straight back.

With the stands at the undercarriage in place, we tighten the jack and be sure all base straps have tightened adequately to avoid surprise later.

Additional manpower should now be available to continue with stabilization. Safety chains, pickets, or stakes may be added to the stand base plates.

Forward to rearward stability can be addressed if it was not necessary earlier. If an issue, the vehicle can be tied to an engine, tree, guardrail, etc. at both the front and rear. Cribbing can be adjusted and/or added.

If the vehicle structure is weak or a quick lift is desired to free a patient beneath, a fourth stand with a jack can be added at the rear post/rear deck intersection leaning towards the front of the vehicle in the opposite direction of the 'A' post jack stand. The base of this stand is attached to the rear post with a chain/hook assembly in a similar fashion to the front post attachment.

If a roof removal is anticipated a strap may be attached to the front post 'J' hook and run up to the front of the vehicle to prevent the hook from slipping off the 'A' post after cutting if a concern. The rear post hook may be secured in a similar fashion.

From this point, it is a simple process to raise the vehicle with the jacks, or use lift bags and follow the lift with the jacks. Of course, we need to add and adjust our wood cribbing as well.

Summary of steps:

1. Prevent vehicle from sliding with chains, straps, or stakes.
2. Place wood cribbing, step blocks, or wedges around vehicle - start with least stable side first.
3. Place jack stand at passenger compartment side 'A' post using a single chain/hook sling between base and lower 'A' post.
4. Place adjustable stands at undercarriage - one forward of front door hinge and one near rear of vehicle. Restrain bases with simple cambuckle straps.

5. Tighten jack stand and adjust cribbing.
6. PATIENT ACCESS
7. Tie loose ends of cam straps in front of cambuckle tight to cambuckle as a safety.
8. Drive stakes or pickets through bases.
9. Attach redundant base restraints (straps, cables, chains, etc).
10. Apply an additional jack stand at rear post of passenger compartment side in similar fashion as first one.
11. Lift vehicle with jacks. Adjust cribbing while lifting.
12. Monitor and adjust as necessary.

PHASES OF STABILIZATION: ROOF-RESTING VEHICLE

I apply the same concepts when stabilizing the roof resting vehicle. That is, do only that which is necessary to make patient access then continue stabilization efforts adding additional supports, tie lines, or redundant restraints. The typical setup assumes a passenger vehicle with nose down.

My first step is to secure the vehicle from sliding. This may be accomplished by staking the hood to the ground, strapping, chaining or otherwise tying the vehicle to earth, or a combination of the above. Ground slope and condition will determine the equipment and time spent on this effort. With favorable conditions this may be considered a later step.

Then place wood cribbing or wedges between the hood and the ground just in front of the 'A' post.

Next I will wrap a 3/8" grade 80 chain, 16 feet long, around the rear of the vehicle which will serve as a purchase point for my stands. Generally, I will choose one of two ways to apply the chain wrap. One method involves the application of a chain saddle beneath the rear of the vehicle with the loose ends extending up to the undercarriage which is on the topside. I like to connect the two loose ends with a cam or ratchet strap to allow a means of tightening this chain. I will also restrain this saddle from sliding off the rear with a strap at each side connecting the chain to the undercarriage just in front of the rear wheel to a point which I refer to as the "swing arm pivot point".

I then place a Res-Q-Jack® jack stand at each rear fender leaning toward the fender at about a 45 degree angle. I prefer to use the chain grab slot provided on the CRG end.

If the original chain grab type end fittings are used, the stands are placed at the fenders prior to the chain. Finally, the bases of the two stands are connected with a heavy duty ratchet strap or chain.

Another method of applying the chain is to run one loose end of the chain around a roof post, usually the rear post, and hooking back to the chain to form a snug noose around the post. The chain is then run over the topside to the opposite post where a similar operation is performed. This procedure could be performed with two independent chains as well. The two jack stands and the base to base connection are applied in the same fashion as before. I prefer this method when the post being wrapped is not immediately adjacent a door.

At this point, with either method discussed, we have completed the initial stabilization phase. Patient access may be made at this time. Idle manpower can continue in the stabilization effort to prepare for extrication procedures.

If a rear lift is anticipated, one should bare in mind that the shape formed by the rear of the car, the two fender stands, and the base to base strap is a trapezoid which is not an inherently stable shape. We can improve on this by connecting a base strap up to the chain at each fender in an attempt to introduce triangles into the geometry. I refer to these straps as "sway restraints". In addition, a third stand could be placed at the very rear of the vehicle leaning toward the front of the vehicle to form a 3-point roof resting setup. The straps on this base can be attached to the fender bases which could then in turn be attached to the "swing arm pivot point" as well to counteract the strap load of the third stand on the fender stands. Bases can also be further restrained with stakes, chains, or straps.

Summary of steps:

1. Prevent vehicle from sliding with chains, straps, or stakes.
2. Place wood cribbing, step blocks, or wedges in front of 'A' post at both sides.
3. Apply chain to rear of vehicle. Use chain saddle or chain post wrap.
4. Place jack stands at each fender and engage chain.
5. Attach heavy duty ratchet strap or chain from one base to other.
6. Tighten jack stand and adjust cribbing.
7. PATIENT ACCESS
8. Apply sway straps - use cam straps towards rear of vehicle.
9. Attach front base straps to swing-arm location at undercarriage.
10. Apply third stand at rear of vehicle and run base straps to fender stand bases.
11. Stake bases if possible.
12. Attach redundant base restraints (straps, cables, chains, etc).
13. Lift vehicle with jacks. Adjust cribbing while lifting.
14. Monitor and adjust as necessary