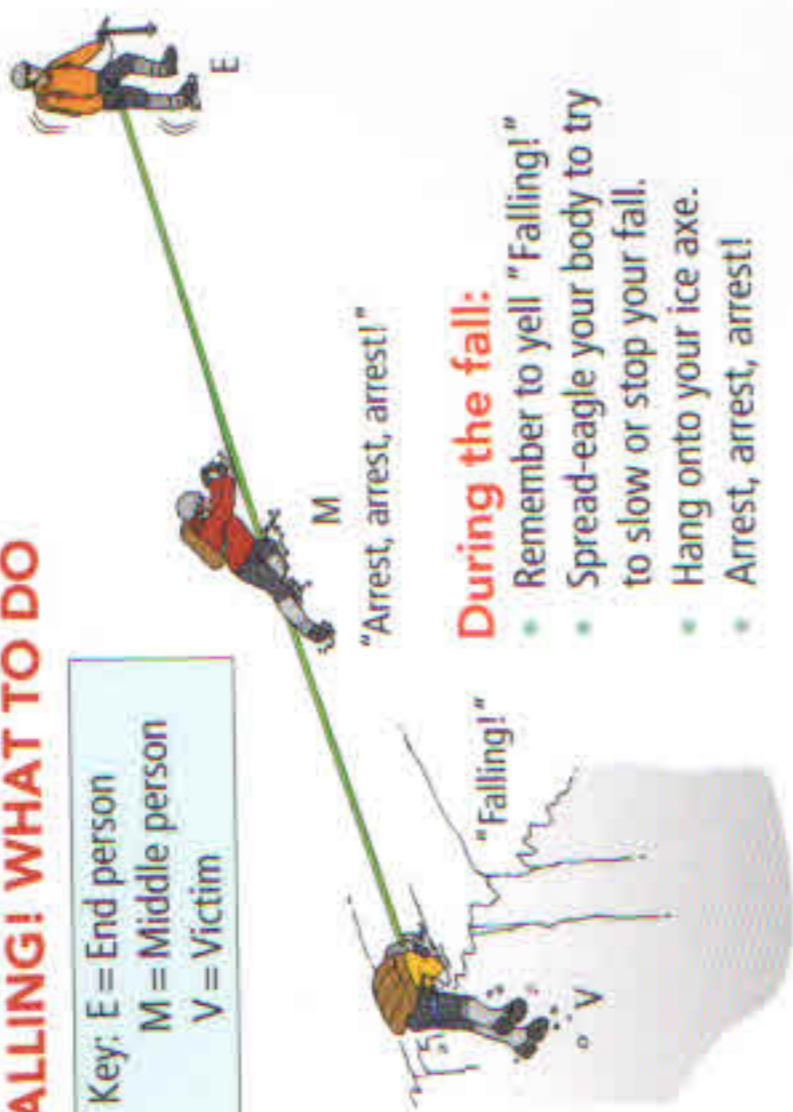


FALLING! WHAT TO DO

Key: E = End person
M = Middle person
V = Victim



During the fall:

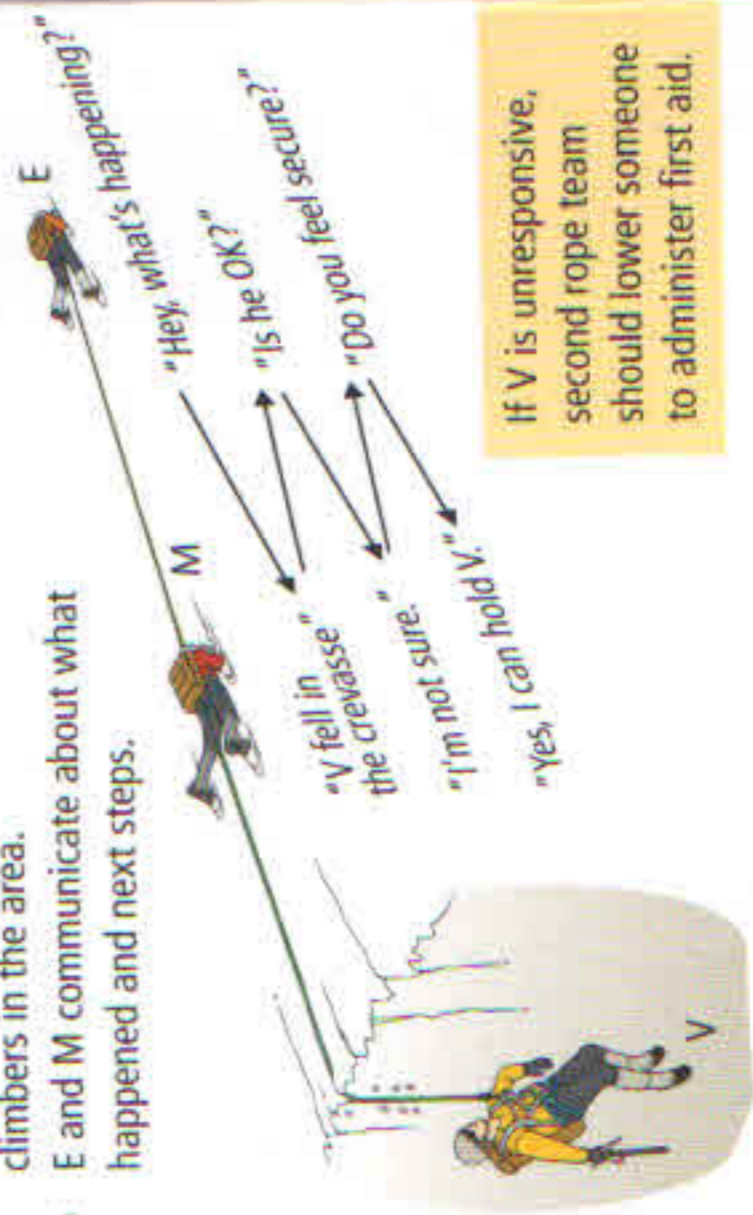
- Remember to yell "Falling!"
- Spread-eagle your body to try to slow or stop your fall.
- Hang onto your ice axe.
- Arrest, arrest, arrest!

In the crevasse:

- Check climbing rope tie-in, then clip climbing rope temporarily into carabiner on chest harness. (Chest harness will need to be unclipped when you reach the lip of the crevasse.)
- Tie ice axe out of the way.
- Clip pack to rope below your prusiks.
- Climb or prusik all or part-way out of crevasse if possible. If climbing the side of the crevasse, slide prusiks up as you go!
- Put on more clothes and use parka hood to keep falling snow out of your clothes.
- Don't waste energy yelling.
- Don't suddenly put more weight on rope (in instances when some of your weight is initially supported by a ledge).

FIRST RESPONSE

- Rope team drops into self-arrest positions.
- Rope team shouts for help from other climbers in the area.
- E and M communicate about what happened and next steps.

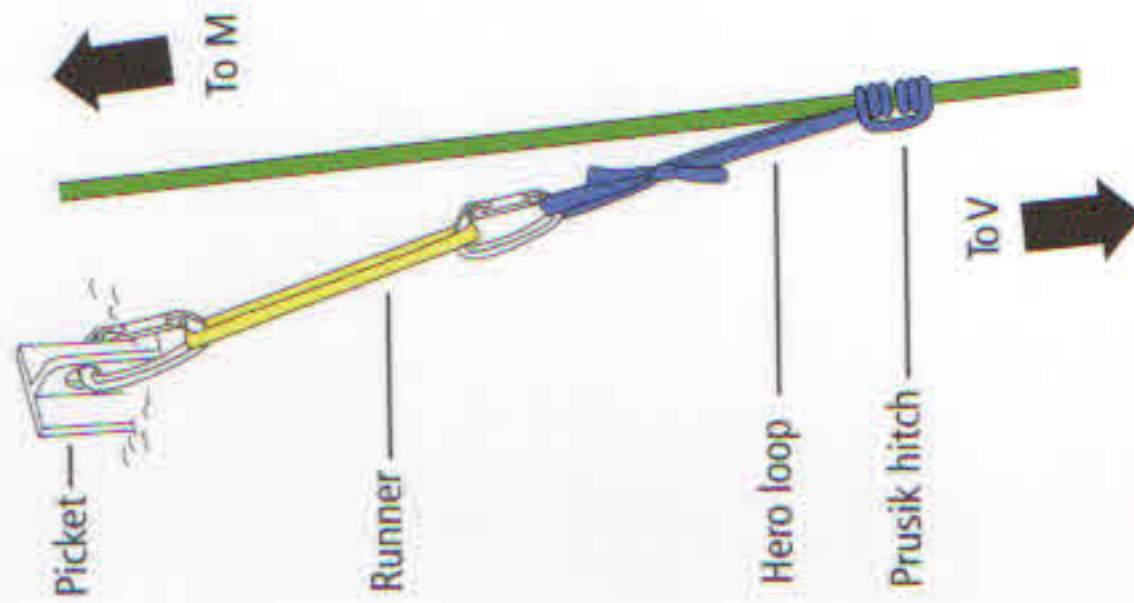


INITIAL ANCHOR INSTALLATION

- M prepares to accept all of V's weight. E gradually releases self-arrest, transferring V's load to M and maintaining readiness to drop back into self-arrest.
- E slides waist prusik to self-belay while carefully approaching M. E also probes route for crevasses with ice axe and is ready to self-arrest if M needs help.
- E sets up initial anchor as quickly as possible.



- E selects a spot for the initial anchor in well-consolidated snow next to the rope, 3 or more feet on V's side of M.
- E drives picket (ideal) or ice axe vertically into snow.
- E clips single runner into picket with carabiner. If ice axe used, instead girth-hitch runner to axe.
- E attaches hero loop to rope with prusik hitch, then clips hero loop with carabiner to runner from picket or ice axe, keeping gate up and away from hero loop.
- E slides prusik hitch down rope toward V to remove slack in hero loop and runner. Initial anchor now ready to accept V's weight.



IMPORTANT

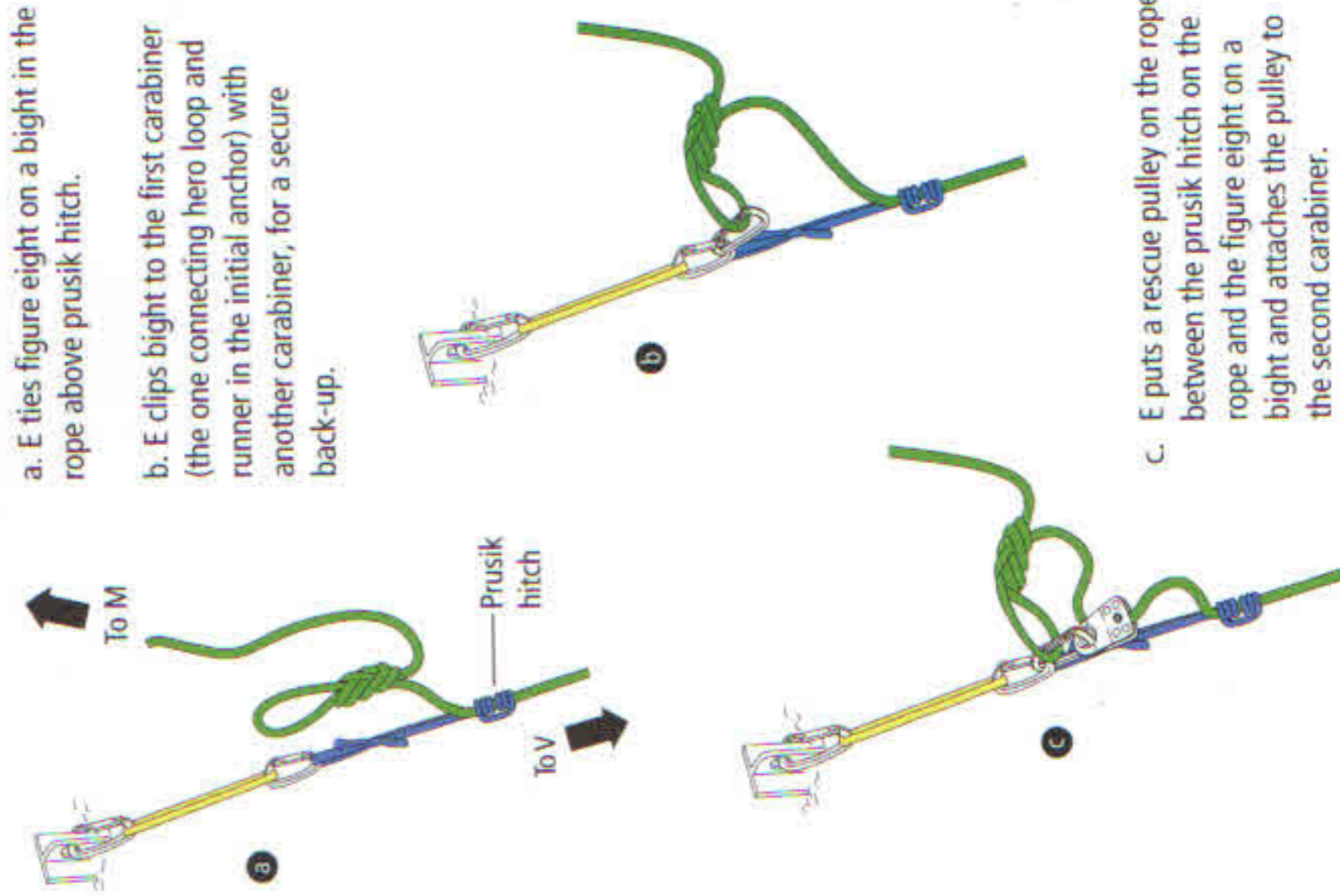
When building anchors, keep the rope on top of everything else.

TRANSFERRING V'S WEIGHT

- M transfers V's weight to initial anchor.
- E guards initial anchor by standing on top of or in front of the head of picket or ice axe.
- M stands up, takes over guarding initial anchor. M remains tied in to the rope.
- E is tied in to rope and has prusiks connected. If initial anchor begins to fail, E and M shout alarm and drop back into self-arrest.

BACK-UP FIGURE EIGHT

- E backs up the hero loop in the initial anchor.



- E ties figure eight on a bight in the rope above prusik hitch.
- E clips bight to the first carabiner (the one connecting hero loop and runner in the initial anchor) with another carabiner, for a secure back-up.

- E puts a rescue pulley on the rope between the prusik hitch on the rope and the figure eight on a bight and attaches the pulley to the second carabiner.

MAIN ANCHOR CONSTRUCTION

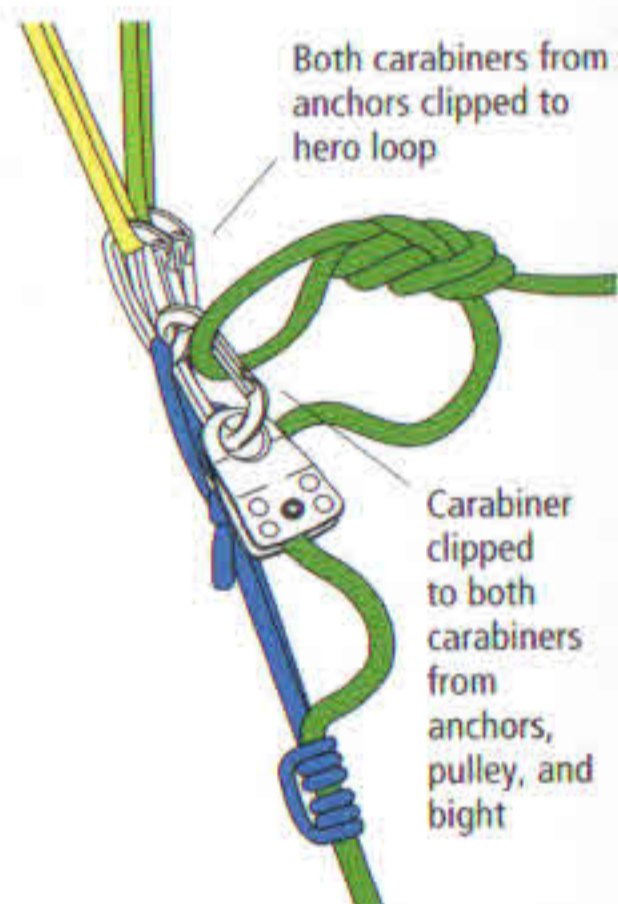
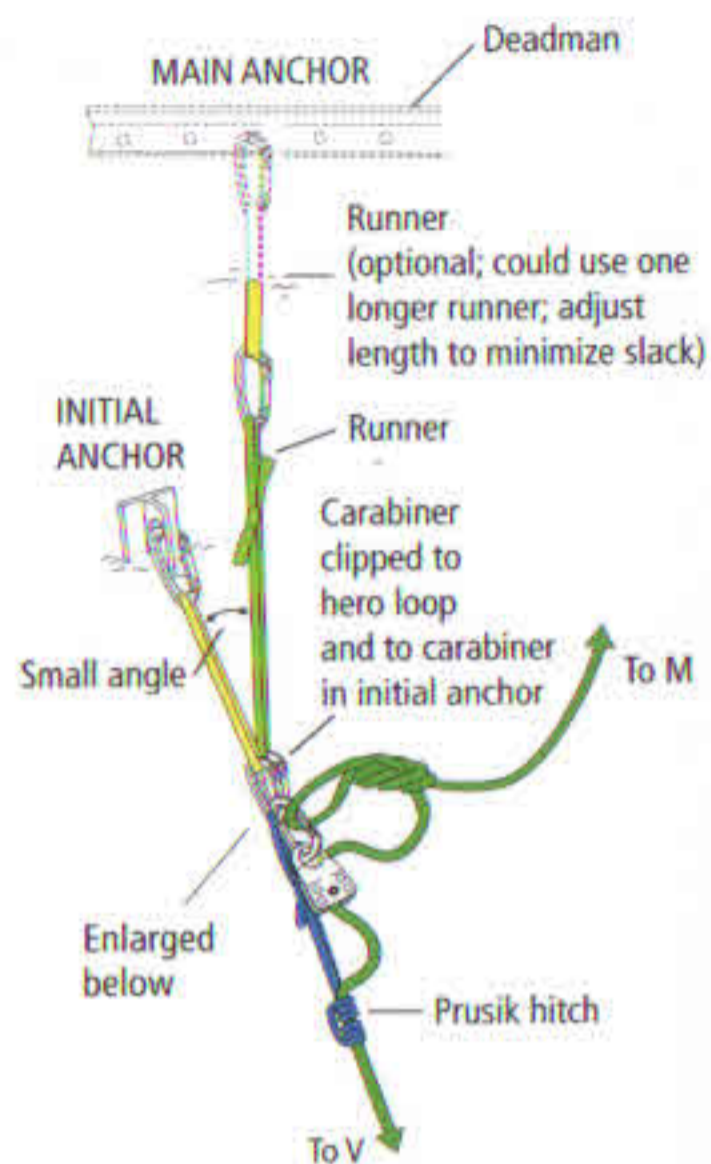
► E constructs main anchor.

1. E selects site, measures, and buries deadman with carabiner and runner attached.
2. E then clips another runner to the carabiner, if needed.
3. E clips another carabiner to that runner and clips it to both the hero loop and the carabiner in initial anchor. Gate is up and away from connection point.
4. E checks that connection from deadman to hero loop is taut and reties runner if necessary to avoid slack.

★ MAIN ANCHOR MUST BE:

1. Bomber (and SRENE)
2. Behind and in line with initial anchor

► M attaches self to main anchor with personal anchor. M removes foot and waist prusiks from rope and unties from climbing rope, freeing it for use in hauling.



IMPORTANT

Keep everyone attached to the mountain via ropes or personal anchors. E remains tied in to climbing rope throughout rescue.

RESCUE OPTIONS

At this point, more than one method could be used to haul V out, but only the Z-pulley method is described in detail here, since it provides a relatively powerful 3:1 mechanical advantage and will work to extract a victim who cannot assist at all in the rescue. Other methods (not explained in this guide) are:

- **Single-pulley method:** 2:1 advantage; use if V has a free hand to clip in and there is sufficient manpower and rope; allows start with unentrenched rope.
- **Quick indirect pull:** several strong pullers haul up V with a separate single rope.

Frequently a combination of methods can be used. For instance, if V can climb or prusik most of the way out of the crevasse, then a single pulley or indirect pull can assist V over the lip.

★ **Important:** With any of these methods, you must use the anchored rope system already set up to take up the slack as V is raised. This belay of V is critical—otherwise V could be dropped back to the beginning!

Z-PULLEY SYSTEM

E has already installed one pulley in the system, as part of the back-up figure eight. Now E must install a second pulley on the rope close to the crevasse lip:



► E self-belays with a prusik to lip, probing for crevasses with ice axe. E carries second pulley, hero loop, and carabiner, plus pad for rope, sling, and carabiner.

► E puts something (sleeping pad, pack, ice axe) under rope at lip to prevent entrenchment of the rope. This pad should be anchored. (Cont. on next panel)

★ Once the first pulley has been installed, either there should be a knot back-up (figure eight) until second pulley is installed or E and M should be holding the rope.

Z-PULLEY SYSTEM (cont.)

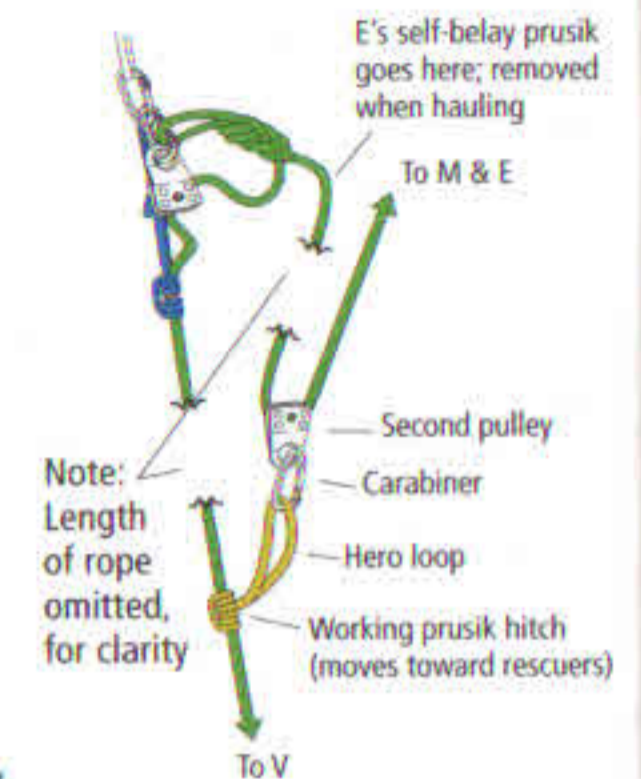
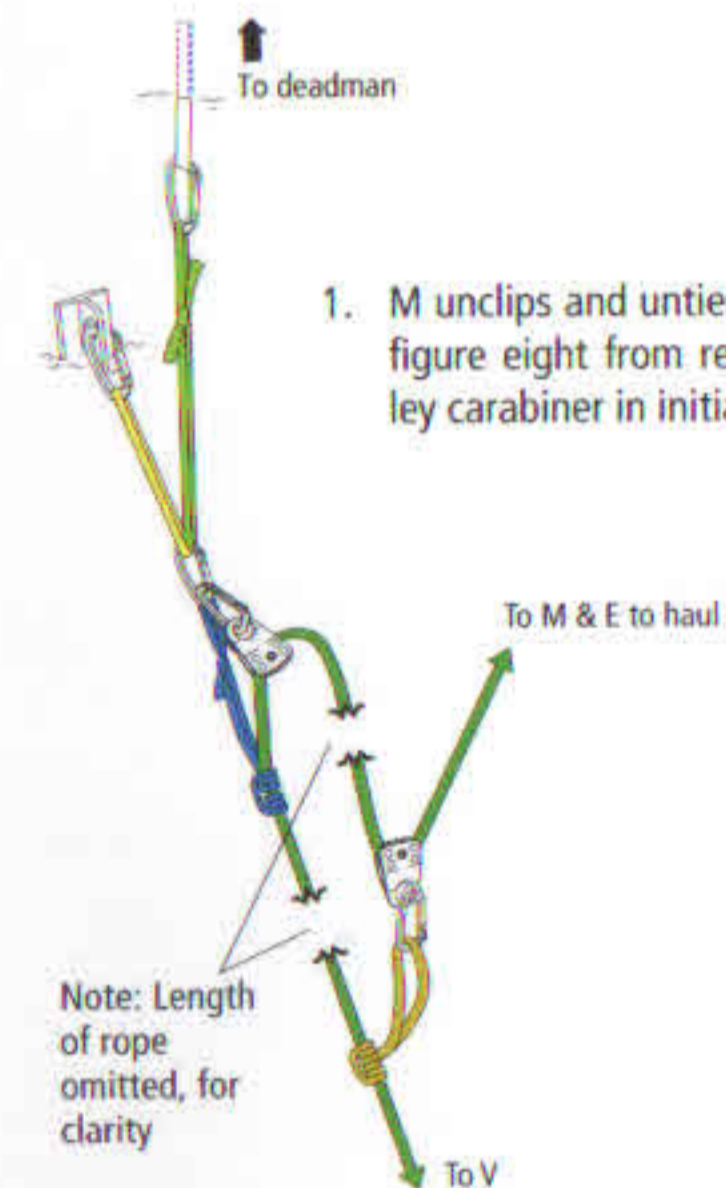
► E attaches hero loop with prusik hitch to V's rope near lip. E then takes bight of rope in slack beyond waist prusik and attaches pulley and carabiner to bight. E clips carabiner with pulley to hero loop.

► E returns to M, sliding waist prusik as self-belay. E attaches self to main anchor with personal anchor and then removes waist prusik from rope.

★ When moving the prusik, hold knot, but LET GO of it when you fall, so it catches.

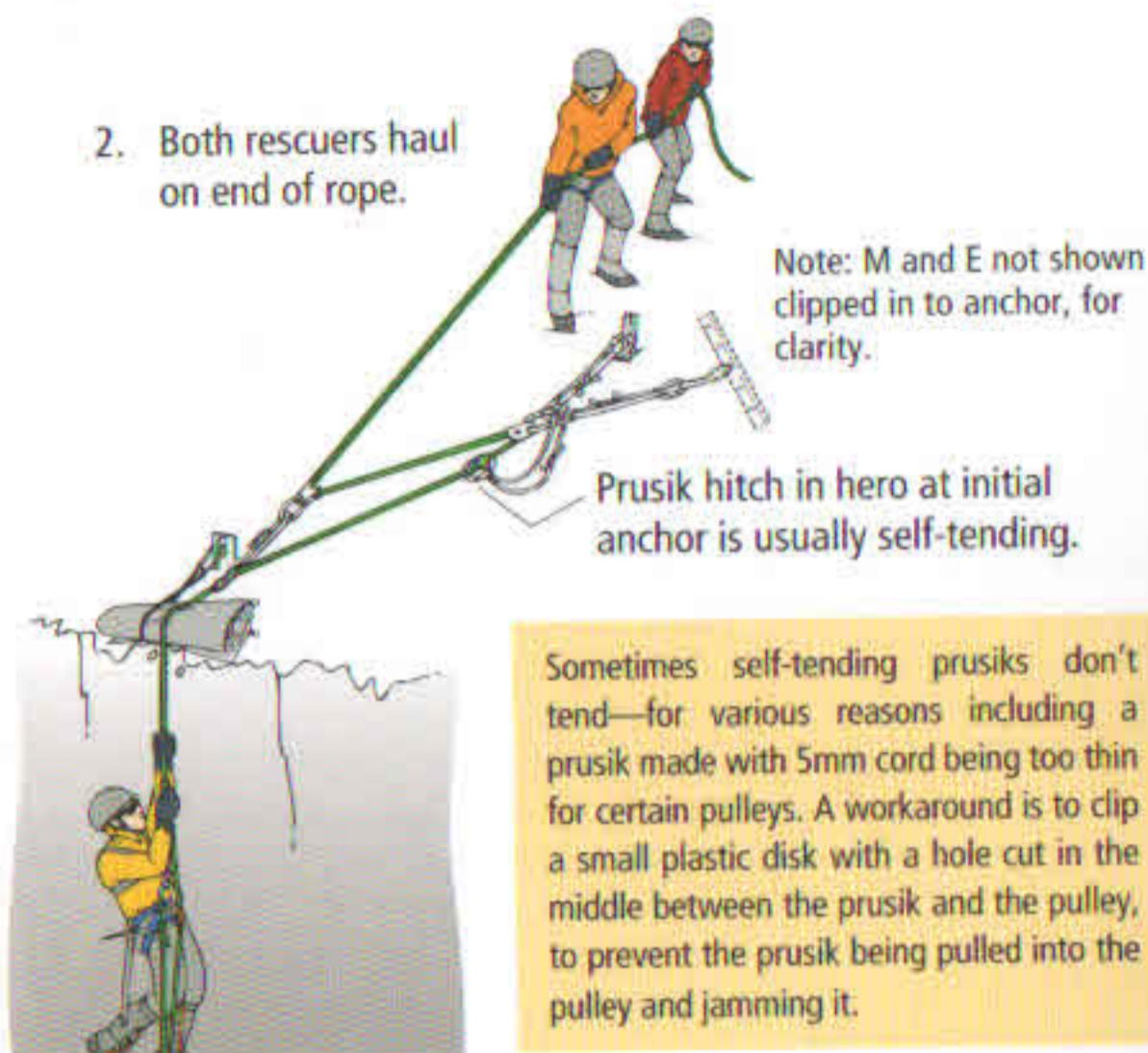
HAULING OUT THE VICTIM

► Together, E and M haul V from crevasse.



HAULING OUT THE VICTIM (cont.)

- Both rescuers haul on end of rope.



RESET

The working prusik (hero loop attached to V's rope near lip) will be pulled closer to rescuers as they haul. When it approaches the first pulley, it must be reset.

- Both rescuers relax their hold on rope so the self-tending prusik in initial anchor holds V's weight.
- E ties back-up figure eight again to keep rope from moving through pulley, and clips it back into carabiner with pulley on it.
- E then slides working prusik hitch along the rope, resetting it back where it was installed originally, close to crevasse lip, while self-belaying with waist prusik (must be re-attached to climbing rope as before).
- E returns to M, attaches self to main anchor with personal anchor, and removes waist prusik from rope.
- E unclips and unties back-up figure eight.
- E and M resume hauling. Repeat steps 1-5 as needed.

APPROACHING THE LIP

With any hauling system, be careful as the victim approaches the crevasse lip, because at this point the force of the pull tends to pull the victim in, toward the wall, potentially causing injury.

Assist V in getting over the lip by:

- Throwing down a foot loop.
- Providing a runner for V to grab.
- Being there (on belay) to give a hand up.

SNOW ANCHORS

Types of Anchors

PICKET BURIED AS DEADMAN: Very strong; bury deeper in soft snow; good main anchor

PICKET DRIVEN IN AS STAKE: Fast to set up; medium strong; good initial anchor; use as main anchor only in very firm snow.

ICE SCREW: Medium strong; use in ice when digging is difficult.

★ In a pinch, skis, a bundle of wands, or a shovel can be buried as a deadman.

SRENE Anchor for Crevasse Rescue

Characteristics of a safe climbing anchor:

SOLID: Each component used to build the anchor—any natural features and climbing gear—must be as strong as possible.

REDUNDANT: Use two solid anchor points.

EQUALIZED: The rigging method should equally distribute the load between the anchor points, increasing the reliability of each part.

NO EXTENSION: Failure of one component should not make the anchor suddenly extend, which could shock-load the system and cause dangerously high impact forces on the remaining components.

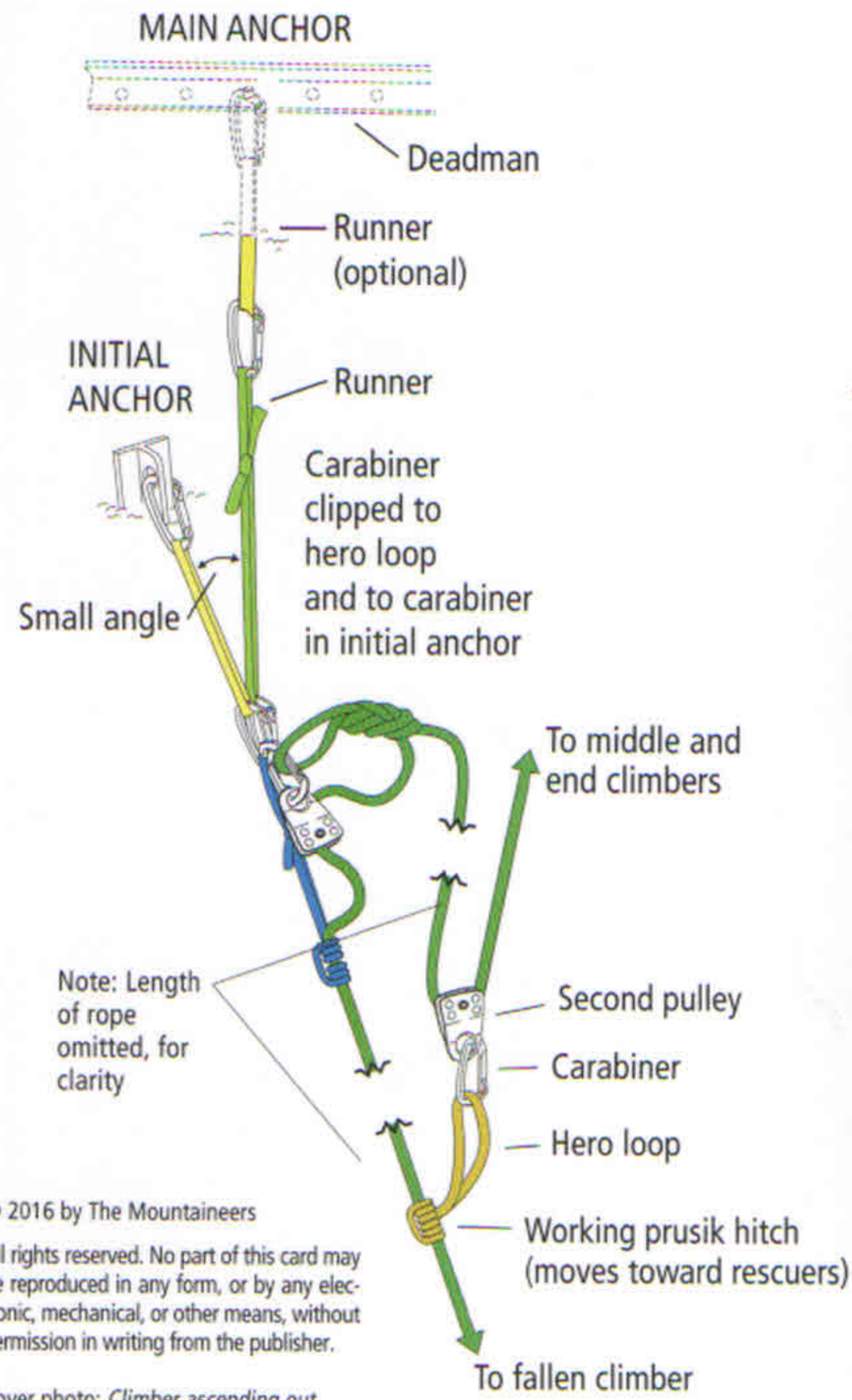
★ An ice axe can be a deadman, but only as a last resort, since you'll need it for other tasks such as probing for crevasses and self-arresting.



WARNING!

This pocket guide is not a substitute for mountaineering education. It is incumbent upon any user to attain proper training in crevasse rescue and safe mountaineering skills—and to use this card strictly as a reminder of those skills. Users will recognize the inherent dangers in mountain environments and assume responsibility for their own actions and safety. The publisher is expressly not responsible for any adverse consequences resulting directly or indirectly from information contained in this card.

Z-PULLEY AT A GLANCE



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