

Standard Rescue Methods & Procedures

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1.0 FOREWARD AND GENRAL NOTES

This docement describes the company approved types of systems for use in idustrial Climbing rescue situations. Because of the great variability in climbing situations These are meant as a rough guideline only and are subject to change and adaptation as The situation dictates. There are other types available which are not approved but the Company will continue our in-house research and keep abreast of any developments And improvement in equipment and techniques which may lead to better rescue systems.

Preventive safety is a fundamental aspect of PAT Eectrical Rope Sevices policy. With competent personnel. Constant safety awareness and safe systems of work zero-Accident levels are achievable. However, resuce systems must still be provided for at all Times and the following points apply:

- In pratice working situations vary considerably and thus the opitimum type of rescue system will vary. For a given situation some may be better than others and some may not be at all suitable.
- The level 3(Team Leader) must choose the best system to use before work commences and ensure that the system is either pre-assembled or the equipment kept readily to hand so that it can be very quickly set up if needed.
- With appropriate systems the rescue line may be attached to the technicians, sent to him or kept ready for another technican to go to him and connect it. The latter is probably preferable in most ordinary working situations as the line and the fixings may be unsafe encumbrance in themselves or become entangled and rendered useless. Also, with the technican going to the casualty's medical condition and render first aid if necessary. In all situations there must be a competent PAT technican in the vicinity who can be made quickly available to go to the casualty. This is necessary if rescue lines are to be attached but is also vital if the casualty's own rope beome snagged. It would then deem necessary to free or cut the rope so he could be pulled to safety. In many cases the casualty's working rope can be the lift rope. This means that the casualty is already attached and precludes the necessity of someone going to him.
- The chose system should be as simple and as fast as practicable since it will often be necessary to retrieve or reach a casualty as quickly as possible to check on his/hers medical condition and administer the necessary first aid. The speed of retrieval is a function function of the mechanical advantage and a direct function of power. Mechanical advantage should thus be a minimum and the available power a maximum. In practice this usually means using less multiplying pulleys and more people to pull or (If manual) small winches. An average person with equipment weighs about 75kg,so 150kg capacity gives a low mechanical advantage (so high speed) and the capability to lift 2 people.
- A standard recovery kit containing useful additional items of equipment for assisting with the recovery methods described overleaf is provided on all of PAT jobs. This should present at the pitch head and, wherever practicable, set up and positioned ready for the instant use prior to personnel assessing the worksite.

2.0 VERTICAL RESCUES-IRATA GUIDE LINES

2.1 Lower Only By Accompanying Rescuer

The casualty is attached on to his rope system by either his ascending or descending gear and there is a clear path vertically below him to a safe place the rescuer abseils or climb up to the casualty, preferably on a separate rope system, and arranges himself slightly above the casualty on his descending equipment.

The rescuer attaches his central mailon directly to the casualty's central mailon with with a karabiner. For extra safety the rescuer's short cows tail could be clipped onto the casualty, but not onto his mailon as the rescuer is already attached to this so it would not act as an independent safety attachment, or preferably the casualty's long cows tail transferred to the rescuer's shunt.

The quickest method of releasing a casualty from his equipment is to cut his ropes if, however this is not possible, and he is on his stop, simply release his stop transferring his weight onto the rescuer. If the casualty is on his ascending gear and it is not possible to cut his ropes, this will get a lot more complicated (see section 2.1.1).

After releasing the casualty's equipment the rescuer can abseil down with person (an extra karabiner may be needed below the stop for extra friction).

Required Equipment:

Separate rope system for rescuer (not essential), Knife, and 1 or 2 extra karabiners.

Summary:

An exceptional fast method for rescue, and also very good for giving immediate first aid treatment, this method is very limited as a clear vertical path from the casualty's position to a safe place is required.

2.1.1 Method of Releasing Casualty from Ascending Equipment

The casualty is attached onto his rope system by his ascending gear and there is a clear vertical path from the casualty's position to a safe place.

DIRECT LIFT:

The rescuer should position himself slightly above the casualty on his descending gear and also have his jumar and foot loop attached the rescuer can then attach himself to the casualty by either his short cows tail or directly mailon to mailon by means of a karabiner. For extra safety the casualty's long cows tail could be transferred to the rescuer's shunt. After removing the casualty's jumar and ensuring his own jumar and shunt are not too high, the rescuer can then stand, using both feet, in his foot loop and release the casualty from his croll. The rescuer can then sit down on his stop, release his croll and proceed down with the casualty and if needed an extra karabiner for friction.

Required equipment:

Separate rope system for rescuer (not essential) and 1 or 2 extra karabiners.

Summary:

This is the quickest way of rescuing a casualty but can be quite strenuous if the casualty is heavy.

2.2 Vertical Lift By Accompanying Rescuer

The casualty is attached on to his rope system by his ascending gear. The rescuer should climb or abseil down to the casualty, the main advantage of the rescuer descending on a separate rope system is that he can reach the person quicker, and also when he reaches the casualty there is less likely hood of him being entangled in the casualty's equipment. The rescuer should arrange himself just above the casualty and be on his ascending gear. There are a number of different ways of proceeding.

DIRECT LIFT:

The rescuer attaches himself directly to the casualty using his cows tail and karabiner (hard link and soft link) putting both feet in his foot loop the rescuer climbs up to take the casualty's weight then he can release the persons gear from the rope and continue climbing upwards using both hands and both feet.

Required equipment:

Separate rope system for rescuer (not essential)

Summary:

This method is the quickest way of rescuing someone from there croll there is alternative ways of this system using pulley systems 2 to 1 or 3 to 1.

2.3 Pitch head Haul, Direct Manual Pull

As in the following Vertical Rescues (section 2.3 to 2.5) the casualty is attached to his rope system by either his ascending or descending gear with the rescuer at the pitch head. If using the pulley version it will normally be necessary to use a separate rope.

After the rig is set up it is important to check that the locking jammer is correctly installed so that the recovery rope will pull up, but cannot be dropped down. To get the end of the recovery rope to the casualty it might be necessary to attach the rope to the casualty's working rope with a jumar, attaching a few karabiners foe extra weight so that the jumar will decend easily to the casualty. After ensuring that the locking jammer is closed the casualty can be raised.

It is possible, using the pulley system, that one person can pull up the casualty, if instead of just pulling on a hauling jammer he attaches his croll and "climbs" the rope using his full body weight to lift the casualty.

Required equipment:

Independent rope, 3 or more jammers, 1 pulley, 5 or more karabiners, 1 extra jammer plus anchor for back up on safety rope and more people to pull.

Summary:

This method is very fast and effective if sufficient assistance is available, and if there are no obstructions in the casualty's way.

2.4 Pitch head Haul, 2 To 1 System

An independent rope of at least 2 x the lift length is required. This is basically the same as 2.3 but instead of attaching the casualty to the end of the rope he is attached to a loop of rope, preferably directly clipped on via a pulley, but if not by a pulley attached to his working ropes by a jumar which has been lowered to him.

After the locking jammer is closed the casualty can then be raised. This can be done easily by two people, or can do it by adding on a foot loop.

Required equipment:

Rope (2 x lift length), 4 or more jammers, 2 pulleys, 1 foot loop or a sling and 6 or more karabiners.

Summary:

A very efficient, reasonably fast and useful system that can with minor modifications, be used in a lot of situations.

3.0 HORIZONTAL RESCUES

These are potentially more difficult than vertical ones. It is sometimes possible for an operative to climb laterally with relative ease into a situation that would require considerable effort and ingenuity to rescue him from.

NOTE:

Bear in mind that, as with a vertical rescues, it is not always best to effect a rescue along a reverse route to that taken by the person it may be sometimes a lot easier to carry him onwards to the next access point.

Horizontal rescues may also sometimes require a combination of methods, eg. A side haul to a point from which a vertical rescue may be effected.

3.1 Keel Haul

This will often be the best method for straight forward horizontals, such as on clear under deck work. The casualty has climbed horizontally from the bely point on double 9mm dynamic rope and a static backup rope. The dynamic rope is clipped through runners as he goes but the static back up rope is not. The principle is that the casualty is lowered off on his climbing rope and keel hauled back to the bely point on a trailed back up rope.

It is essential that the climbing rope is long enough to allow this. It must be at least twice as long as the distance from the belay point to the last runner. Also remember that it will often be necessary to pull the casualty back up the bely so a vertical lift system may be needed on the back up rope.

If leader falls:

A:

Take in the slack on the trailed rope. Stop off with a jammer and rig up a lift system if required.

B:

Lower off the casualty on the climbing rope simultaneously pulling in on the back up rope until the casualty reaches a safe access point.

Required equipment:

Double 9mm dynamic rope (2 x length of climb), 1 static rope, 1 hauling system (jammers, pulleys etc see section 3).

Summary:

A quick and effective method for rescuing from a straight forward under deck traverses (traverses). However, this method runs into problems when the person has directly attached himself to the structure before sustaining his injury making it near impossible unless someone goes out to releases him from the attachment point.

COMBINATION METHODS.

In some circumstances both horizontal and vertical lift methods might be needed sequentially to retrieve a casualty. This should normally be avoided as it is likely to be slow. As an alternative it may be better for a rescuer to traverse or otherwise reach a point above the casualty from where he can abseil to the casualty or effect a fast, vertical lift in order to give prompt assistance or first aid.

4.0 GENERAL METHODS

These can be used to cover situations that are not specifically vertical or traverse ones but equally they may be useful for adapting or simplifying them.

4.1 Lateral Haul

A very simple method that is highly effective in many situations. It can be particularly useful where the operative has been using a side rope for positioning any way as he should normally have his haul rope pre-attached.

A:

By pulling in the side (Hauling) rope the casualty can easily hauled sideways to a safe position. However, in moving the casualty sideways he will move vertically and it may be necessary to either lower him down or lift him vertically before he can reach the rescue point.

B:

Remember that with the swing he will move vertically and it may be necessary to either slack him down or lift him to the rescue point.

Required Equipment:

1 static rope, 2 jammers, 2 pulleys, and 3 karabiners

Summary:

A quick and effective method if there is an available rescue point horizontally from the worksite. However, problems may arise if the casualty has to be raised or lowered.