

CIVIL DEFENCE ORGANISATION
SOUTH AUSTRALIA

USE OF JACKS, HOLDFASTS AND PICKETS

OBJECT

The object of this Precis is to outline some equipment used in rescue to gain power, i.e. Jacks, Levers, Holdfasts and Pickets.

JACKS USED FOR RESCUE

- (a) Hydraulic Rescue Kit - 20 tons capacity ("Porto-Power").
- (b) Jack, journal - 20 tons capacity (with handle).

USE OF JACKS

For the effective and safe use of jacks, the following points must be observed:-

- (a) The Jacks should stand on timber or other sound footing of sufficient size to distribute the load, otherwise instead of lifting the load, the jacks will be forced into the ground.
- (b) As the weight is raised, it should be safely supported by timber packing or other solid material in case the jack should fail. The jacks should be relieved of the load as soon as possible. (Pack as you Jack).
- (c) Suitable packing, such as hard timber and double wedges should always be used between the head of the jacks and the surface of any load liable to slip, such as when metal to metal contact occurs.
- (d) Every effort should be made to operate the jacks in an upright position, but if this is not possible suitable packing should be used to prevent slipping or skidding when the load is applied.
- (e) When two or more jacks are used simultaneously to raise the same load, they must be operated in unison to avoid tilting the load and also to avoid bringing too much weight onto one jack with consequent risk of failure.

HOLDFASTS AND PICKETS (See Figure 2).

These are used in Rescue for the purpose of making fast a line, rope, wire rope or chain which will be under strain. They will fall into two main classes:-

- (a) Those found on the site, e.g. reinforced concrete or metal standards, metal framework of buildings.
- (b) Those which have to be set up, e.g. by use of pickets or beams set in manholes in the street and wedged into position and timber placed across openings in buildings.

Precautions:- In using any type of holdfast, care must be taken to pack it in such a manner as to prevent chafing, usually by means of sacking wrapped round the holdfast when it is proposed to use a fibre or wire rope. Pickets should be of sound materials, if possible of steel. In most cases five (5) feet is a suitable length, with a diameter of one inch or more, hardwood three (3) inches and softwood more than four (4) inches.

PICKETS USED AS HOLDFASTS

In ordinary soil pickets are suitable as holdfasts for strains of up to 2 tons. They may be used as single pickets or, when formed into a holdfast, may be arranged as 1 and 1; 2 and 1; 3, 2 and 1, according to need. The following points should be observed:-

- (a) The pickets should be driven into the ground at 90° to the line of pull, and two thirds of their length into the ground. The strongest picket should be nearest the weight of the load being taken.
- (b) The lashings connecting the pickets should be at 90° to the pickets and should go from the head of the one in front to the ground level on the one behind. This determines the distance between the pickets, which should never be less than 3' apart.
- (c) Since the weakest part of the rig in use is normally at the picket, a man should be stationed to watch this as it may give early indication of overloading or of excessive strain in the guy.

IMPROVISED HOLDFASTS

A heavy vehicle can be successfully used as a temporary holdfast, providing brakes are good or wheels blocked. Pieces of timber placed across opening in buildings or between trees or other objects strong enough to stand the strain, may be utilised.

PICKET LASHINGS (See Figure 2)

The lashing should be started by a clove hitch with a wire bond or ½ inch lashing about 7 inches from the head of the front picket, placing these above the clove hitch. Frapping turns should be applied around the lashing, finishing off with a clove hitch around the lashing, thus using up whatever spare rope is left. The lashing must be tightened before commencing the frapping turns.

LEVERS (See Figure 1)

The purpose of all lifting or hauling devices is to gain sufficient power to lift or hold a large load with a small force suitably applied. The simplest appliance for gaining this power is the lever. The ability of the lever depends on:-

- (a) Length
- (b) Centre of Load
- (c) Fulcrum's position.

FULCRUM BLOCKS

A fulcrum should be of hardwood, never of brick or other crushable material. It must be resting on a firm base which should be as large as practicable so as to distribute the weight to be lifted. The fulcrum must be placed as near to the weight as is possible under the circumstances, and it should not be placed at any point where there is a possibility of a casualty being buried immediately below. An appreciation must be made before using the lever to ensure the equipment is strong enough as a collapse would be disastrous to a casualty.

LIFTING

Power should be applied as near to the end as practicable. When more than one lever is used, the weight should be lifted evenly.

LEVERS USED FOR RESCUE

- 1 lever, ironshod toe 10 feet; Crowbar, 10 feet x 1½ inch
- 1 crowbar, 5 feet; chisel.

Figure 1. The Correct Use of a Lever.

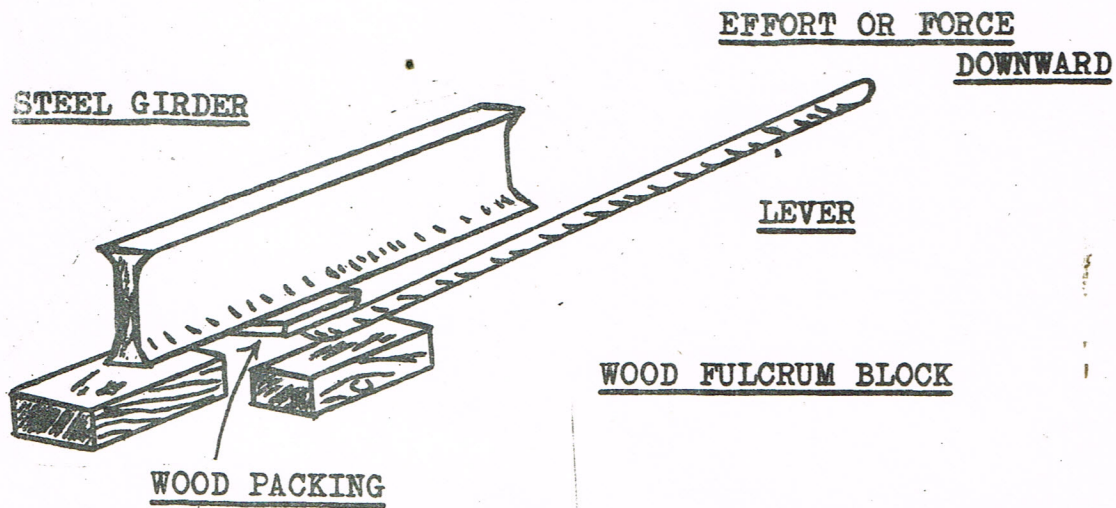


Figure 2. Pickets Used as Holdfasts.

