
ACCIDENT
PREVENTION
for
TRACKMEN

FORWARD

Safety is a fundamental of any railway system and the methods of operating trains have been carefully developed over the years to ensure maximum safety for the travelling public.

The Trackman has an important role in ensuring this safety as it is his first duty to maintain the permanent way in a safe condition for the passage of trains.

This booklet deals with the other important aspects of safety, in our case, the safety of the men working on the tracks. Accidents usually occur through doing things the **wrong** way, and throughout this booklet you will find descriptions and photographs of safety practices of performing some of the every day tasks that a Trackman encounters.

We ask you to learn the correct way to do the work and so help avoid the pain and loss that accidents cause.

You owe it to yourself, family, fellow workmates and the Authority.

CONTENTS

SAFEWORKING

As a Trackman you are required to work amongst trains and use track machines where required. To do so safely requires a knowledge of, and adherence to, the instructions and regulations which have been set down for your protection. These can be found in the General Appendix, Book of Regulations, Book of Instructions and Circulars which have been issued from time to time.

PROTECTION OF MEN WORKING ON OR NEAR TRACKS WHICH ARE IN USE.

Clause (f) of Regulation 296 sets out the protection required, and as it is of vital importance, it is printed here in full.

When employees are working singly or in Gangs, on or near lines in use for traffic, the Foreman, Ganger, or other employee in charge must **in all cases** where any danger is likely to arise, provide one or more employees, as may be necessary, to maintain a good look-out and to give warnings of any train approaching. The "look-out" man or men must be expressly instructed to act for such purpose, and must be provided with all appliances necessary to give effect to such "look-out".

This regulation and the explanatory Circular C.E. 13/58 should be read carefully and followed by all concerned.

SAFETY EQUIPMENT

Protective clothing and equipment has been designed to PROTECT YOU.

Make full use of the equipment.

Do not abuse the equipment as it is issued to save you from injury.

Ear protection – see C.E. Circular 7/80.

Eye protection – see C.E. Circular 41/72.

Head protection – see C.E. Circular 31/71.

Respiratory equipment – see C.E. Circular 9/65.

Various types of safety footwear are available.

Various types of gloves are available.

Details for the requisitioning of various items of safety equipment – consult the VicRail Safety Manual, which every gang has a copy.

Supervisors have the authority to instruct the wearing of safety equipment where it is deemed necessary and is not covered in C.E. Circulars.

REMEMBER!

THE LIFE YOU SAVE MAY BE YOUR OWN

MANUAL HANDLING

Many of our back injuries could be avoided by:—

Using the correct technique when using tools and handling material and equipment.

Using safe tools.

Using the right tools.

Using the aids provided.

By working with the feet correctly positioned when using tools.

The basic principles when handling tools, material and equipment.

THINK Can I handle it correctly?
Do I need assistance?
What aids are available?
The wrong way could cause a permanent back injury.

FEET *Position Feet Correctly for Balance*
Balance permits use of strength.
When lifting or lowering and using most tools have one foot ahead of the other.

HANDS Obtain a firm grip
(We don't want "piano players")

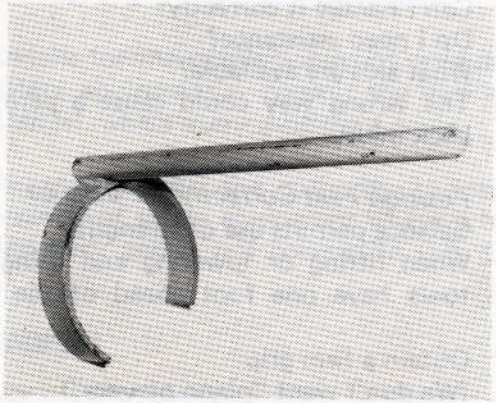
BODY *Keep the article close to the body*
This reduces the strain on the arms, shoulders and back especially if you have to carry the article some distance.

KNEES *Bend your knees*
Make the leg muscles do the work.
They are much stronger than your back muscles and can absorb the strain.

HEAD *Keep your head erect.*
(The normal upright position)
This **locks** the spine in the correct position and reduces the possibility of a bent back.

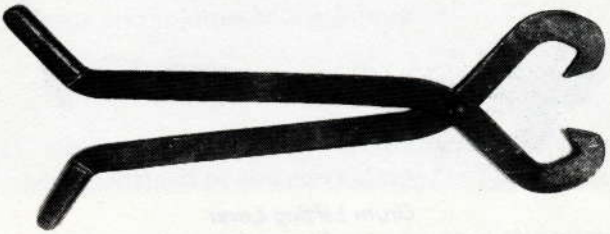
AIDS TO BE USED

Bottle Carrier — Is designed to assist in the handling of large oxygen cylinders.



Oxy Bottle Carrier

Sleeper Tongs – Save unnecessary lifting of sleepers and make the carrying of sleepers easier and safer.

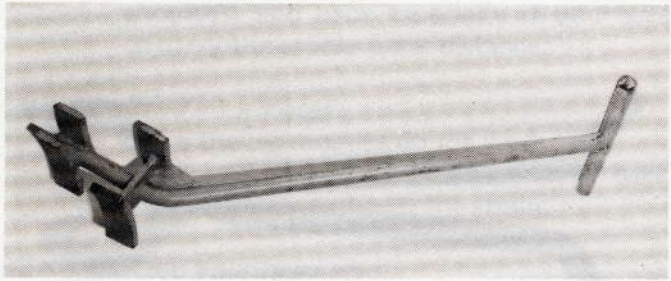


Sleeper Tongs

Sleeper Hooks – Ideal tool for the unloading of sleepers and the turning of sleepers for preboring.

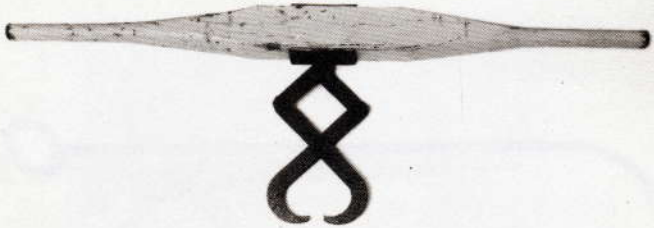
Sleeper Hook

Drum Lifting Lever – Is used for the raising or lowering of 200 litre drums.



Drum Lifting Lever

Rail Tongs – Can be used for handling various lengths of rail depending on the number of sets available.



Rail Tongs

HAND TOOLS

Statistics show that the misuse of hand tools is a cause of accidents and injuries. However, there are some simple rules which, if followed, will keep the accidents and injuries to a minimum.

1. USE THE RIGHT TOOL FOR THE WORK

How often do we see an improvised tool being used instead of the correct one?

Perhaps the right tool was some distance away and it was thought it would save time and effort not to go and get it. Unfortunately, such short cuts often end in injury. Some typical examples are:—

(a) A pipe extension on a spanner — this overloads the spanner which could cause it to break and the user/s to receive severe injuries.

(b) Using a piece of metal, wrench or some other heavy tool instead of a hammer.

2. SEE THAT THE TOOL IS IN GOOD ORDER

Tools that are in good order make work easier and safer resulting in a better job.

Wooden handles are to be fitted firmly in all appropriate tools, i.e. hammers, picks, shovels, adzes, hot sets and axes.

All tools are to be correctly placed in a safe and suitable place when not in use.

Before using wooden handled tools check for splinters, cracks and loose heads.

Wooden handles should be regularly smeared with linseed or mineral oil to prevent cracking and grain lifting (see book of Instructions – Instruction 148).

Do not use wooden handles as levers.

Make sure tools which are pointed or have chisel points are kept sharp to make work easier and lessen the chance of injury.

All strike tools, i.e. centre punches, doglifters, drifts, cold sates and hot sets to be checked for cracked and or mushroomed heads.

Have worn or damaged tools replaced.

3. USE THE TOOL THE RIGHT WAY

A tool used the wrong way can be more dangerous than the wrong tool.

Remember, if you are in doubt or you do not know what is the proper way to use a tool ask someone who does.

4. LOOK AFTER TOOLS

Proper storage and regular maintenance of tools ensures that they are in good order when you want to use them.

ADZE

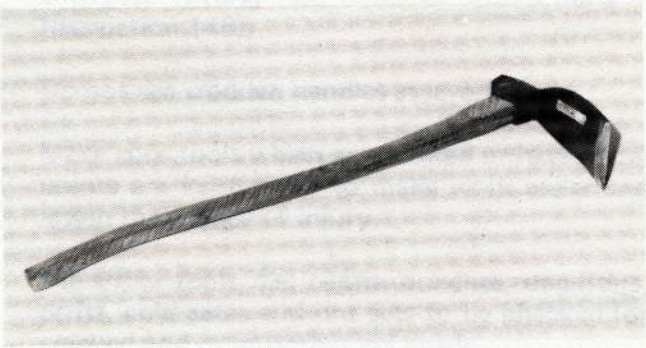
Before using an adze for the first time request instruction and a demonstration by the Supervisor or from an experienced employee.

Check that the blade is razor sharp.

Check that the handle is fitted firmly and that there are no cracks or splinters.

Stand squarely over the work area with the feet well apart.

The right elbow to rest on the right thigh to control the swing of the adze or left elbow — left thigh.



Adze

BUDA

Used in conjunction with a 35 ton bottle jack in the straightening or bending of rails.

This is an awkward tool to handle.

Repair handles immediately if damaged.

Have sufficient men available to handle it.

Extreme care is required as it weighs 82 kg.

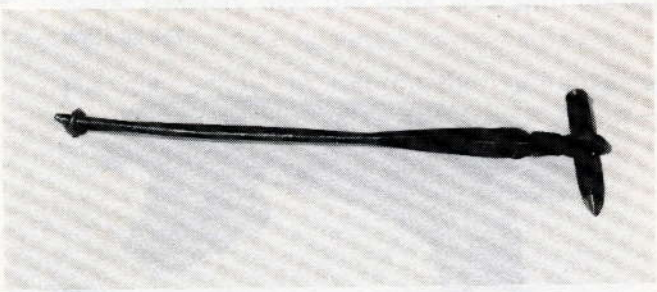
Buda and Jack

CENTRE PUNCH

Check centre punches for mushroomed or cracked heads.

Inspect the point for sharpness which should be ground at an angle of approximately 60^{o}.

A sharp centre punch is less likely to "fly" when struck with a hammer.



Centre Punch and Tongs

CLAW BAR

Claw bars are used primarily for lining track plus holding up sleepers and pulling dog spikes.

Inspect for:—

Worn and jagged claw points.

Worn point (of pointed end) will not permit the bar to penetrate the ballast sufficiently when lining the track or holding up sleepers.

Using:—

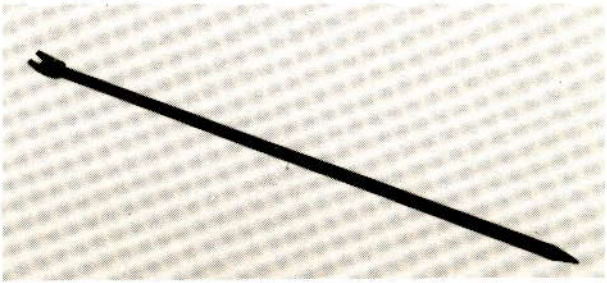
Only one man to use.

Stand beside the bar — do not straddle.

Pulling dogs, take care that no one is struck by the pointed end.

Do not sit on the claw bar when holding up sleepers or timbers.

Use a piece of timber as a fulcrum when holding up sleepers or timbers.



Claw Bar

COLD SATE

Cold sates to be held by the handle attached or the tongs designed for the purpose.

Sates with "mushroomed" or cracked heads should be replaced.

Use the rail as a guard.

Use eye protection.

Cold Sate and Tongs

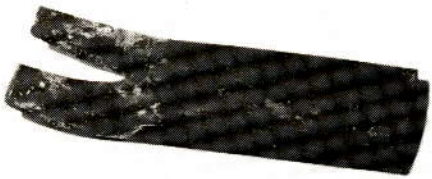
DOG LIFTER

Before using a dog lifter check to see that the flow of metal on the head is not excessive.

Excess flow of metal on the head could permit metal to fly and cause serious injury.

Check that the dog spike will not jam in the claw.

When removing a dog spike the front foot must be on top of the rail with the centre of the sole above the dog spike.



Dog Lifter

DRIFTS

Drifts with mushroomed heads or cracks at either end are to be replaced or the excessive metal flow removed.

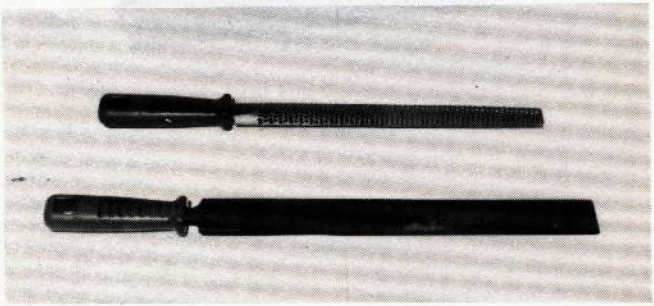
Drift

FILES AND RASPS

Check the teeth of the files and rasps for wear or filled with filings.

A correctly manufactured handle is to be fitted to all files or rasps before using.

Hand injuries may occur if a file is used without a handle.

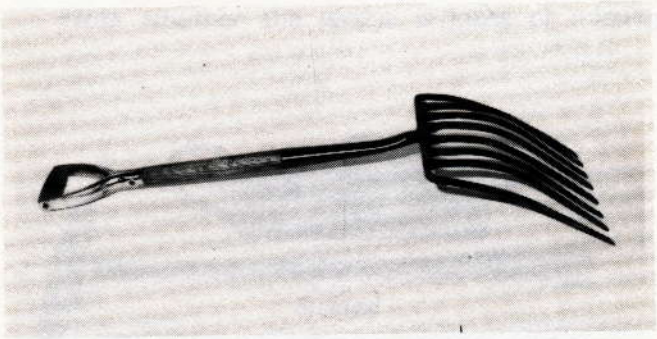


File and Rasp

FORKS

Check the fork handle for a tightness, splinters and cracks.

Inspect for bent or broken prongs.

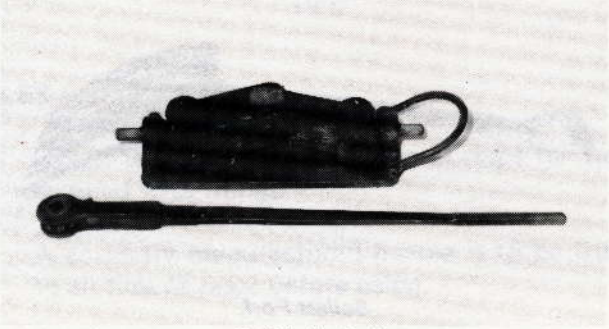


Ballast Fork

GOLIGHTLY JACK

The golightly jacks are available from the Road Foreman's Depot.

These jacks are suited for lifting points and crossing work as they can be left in position while trains pass over.



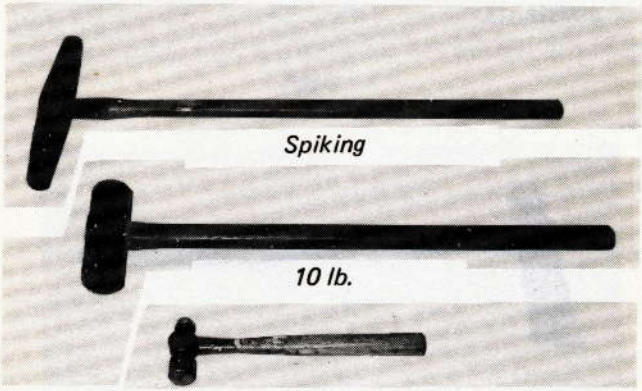
Golightly Jack

HAMMERS

Before attempting to use a hammer check the head for metal flow, cracks and chips.

Check the handle for splinters, cracks and tightness.

Note whether the wedge is loose or missing.



Engineers

HOT SET

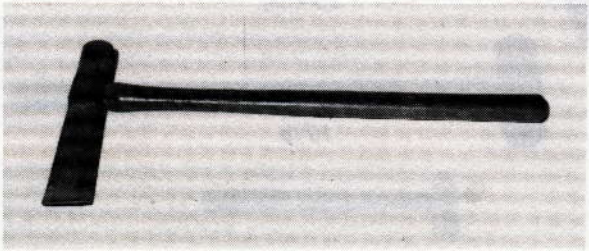
Check that the wooden handle is a tight fit and that the wedge is in place.

Check for loose, splintered or cracked handles.

Check for mushroomed head.

Check the cutting edge is sharp and has no visible cracks.

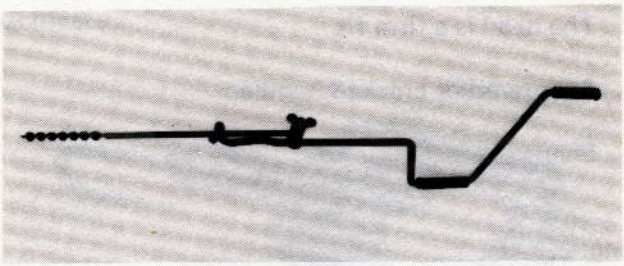
Eye protection is to be worn by welders and assistants.



Hot Set

JIGGERS

Care is to be taken when extracting the auger after completion of the hole, if not a back injury could occur.



Jigger

PICKS

Picks are used when cribbing out or handling sleepers.

Inspection:—

The head is a firm fit.

Splintered or cracked handle.

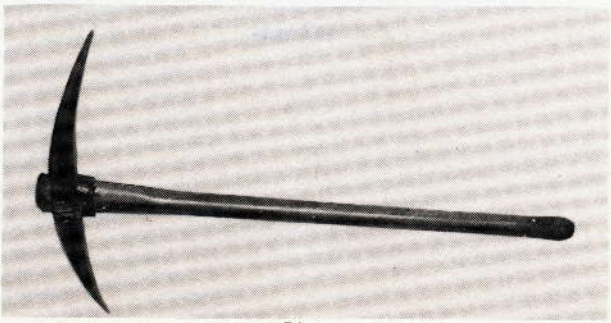
Sharp points.

Using:—

When cribbing out, using a pick, make sure gang members are not working **immediately** behind or in front.

Drive securely into sleepers before pulling.

Legs braced to offset falling backwards when pulling sleepers and timbers.



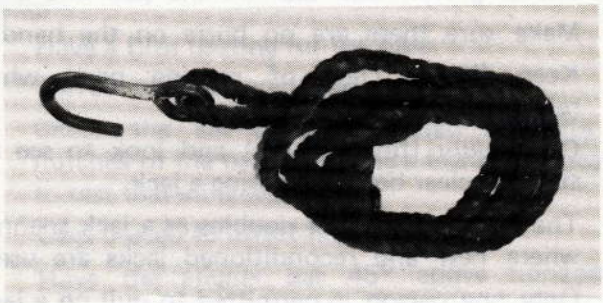
Pick

PULL ROPE AND HOOK

Pull rope and hook to be stored in a dry place.

Inspect for wear, rot and damage.

Keep the rope out of the path of vehicles and machinery.



Pull Rope and Hook

TRACK JACK

The track jack is designed to lift 3½ tonnes which can be achieved by one man.

Before using a jack check for wear on the pawl, and also the wear and tear on the gear attached to the pinion.

Gauges are available from the Roadmaster for checking wear and tear on the pall and gear.

Make sure there are no burrs on the handle.

Keep fingers clear of moving parts when releasing or winding down jacks.

Call loudly (fingers, toes) and look to see all staff are clear before releasing a jack.

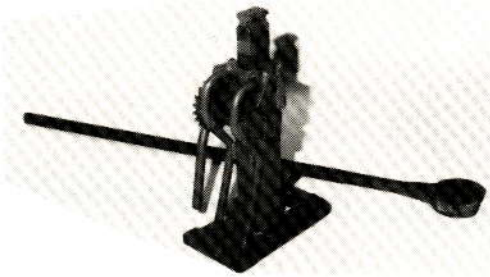
The fish bolt spanner doubles as a jack spanner where new and reconditioned jacks are used.

Only one person is permitted to pull on a jack spanner.

Place one foot on top of the jack or on the rail when pulling on the spanner.

Do not leave the spanner on the jack.

Pipe extensions are strickly forbidden.



Track jack and jack spanner.

TRACK ALIGNER

INSPECTION:–

Check bar pins for wear or cracks.

Check notches for worn pins.

Check the carrying handle is holding securely.

Using:–

Have a firm footing for the base.

Correct positioning of the base.

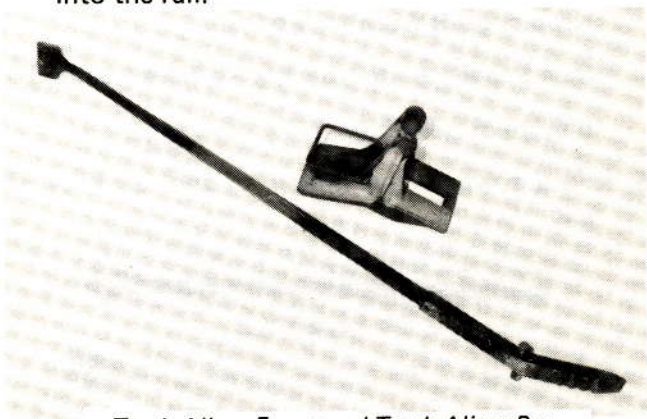
Check the bar pins are seated correctly in notches of the base by giving a few gentle heaves to test that all is secure.

Legs braced to offset falling backwards.

Have the aligner bar 45^{o} above horizontal.

When the bar is down to 20^{o} above horizontal relocate the base.

Check the track aligner bar groves are fitting into the rail.



Track Aliner Frame and Track Aliner Bar

TURNING BAR

Check the correct bar has been selected as two bars are available:—

1. Rail up to 53 kg.
2. 60 kg rail.

Inspect for:—

Worn or damaged jaws.

Burrs on the handle caused by the turning bar being thrown down.

Using:—

The "Caller" to be in the middle of the rail.

Keep jaws fitting square to the rail.

Make sure no oil or grease is on the rail.

Note worn ball or foot on the rail.

Keep clear of worn ends of rail.

Stand side on to the bar — never behind it.

Beware of rail whip.

Face towards the middle of the rail if on the end.

47 kg to 53 kg

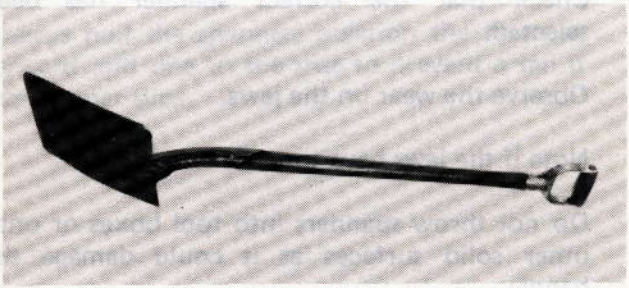
Yellow Handle 60 kg

SHOVELS (SQUARE MOUTH)

Check the handles for splinters or cracks.

Check the 'D' handle for firmness.

Check the mouth for cracks.



Square Mouth ¾ Length Handled Shovel

SPANNERS

Track spanners which are currently in use include 60 lb., 80 lb. or one inch (also used for track jacks) 'Y' layout, 'T' and double ended track spanners (suitable for both one inch imperial and M24 metric nuts).

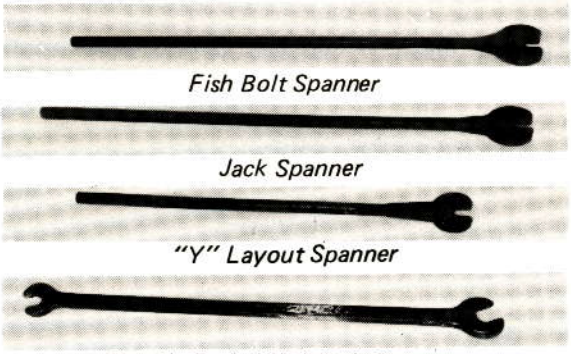
Check that the correct spanner has been selected.

Observe the wear on the jaws.

Note if the jaws have spread.

Do not throw spanners into tool boxes or onto other solid surfaces as it could damage the handle.

A spanner handle is designed for a specific load. Pipe extension are **not permitted,** see C.E. 7/72.



Fish Bolt Spanner

Jack Spanner

"Y" Layout Spanner

Double Ended Fish Bolt Spanner

Only one person is permitted to use a spanner.

Always pull on a spanner, never push.

Do not use spanners as hammers.

Double ended spanner not to be used on track jacks.

Always pull the spanner, position the feet one forward and one to the rear to prevent a fall if the spanner slips.

TRACK VEHICLES

Most of the accidents which occur with track vehicles are caused by collisions with trains, other machines, livestock or road motors and by obstructions on the line.

Unfortunately, the injury from such accidents is often serious.

You can reduce the number of these accidents by:–

Making proper enquiries regarding the running of trains in accordance with instructions in the General Appendix, before placing a vehicle on the line. (see pages 143 to 146)

Keep a more careful lookout for other rolling stock on the track.

Keeping a more careful lookout for road traffic at level crossings.

Stopping the vehicle and pushing it across level crossings where there is a possibility of a wheel flange fouling the road surface or visibility is poor.

Watching for obstructions on the track and for livestock or dogs on/or adjacent to the track, particularly at level crossings.

Eye protection is to be worn at all times on track vehicles.

Keeping within the speed limits defined within the General Appendix, particular care being taken not to exceed the speed when crossing over points and crossings.

Frequently checking the wheel settings on inspection vehicles which should be:—

Leading Wheel —
Inspection Vehicle, and
Motorised Tricycle
5 mm toe in towards the rail

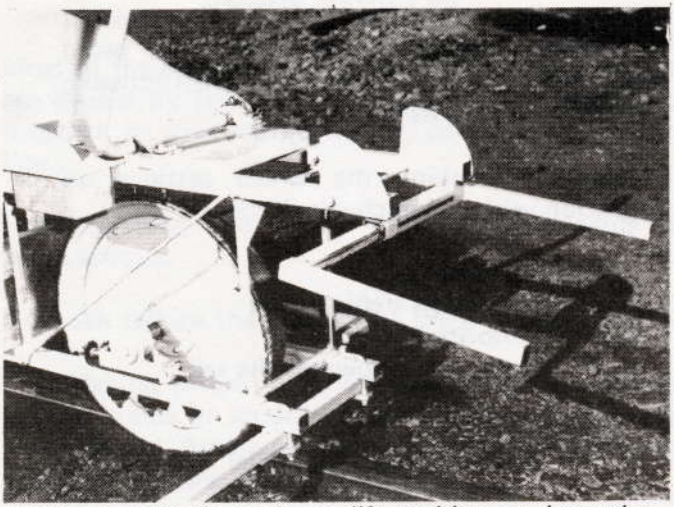
Back Wheel —
All machines — Parallel to the Rail

In the case of 6W and 8W track vehicles whenever possible with the "loose" wheel in the TRAILING position.

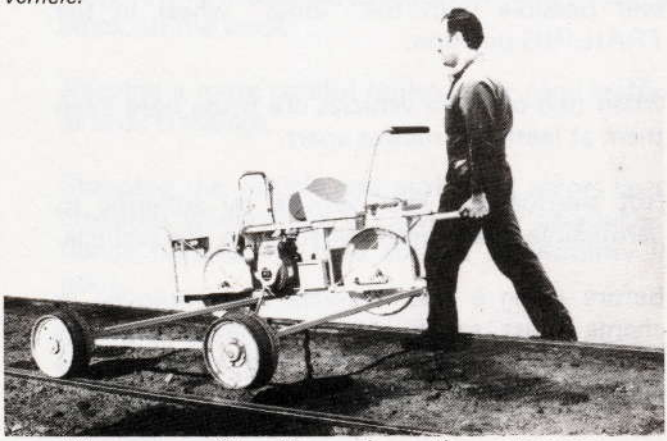
When two or more vehicles are being used keep them at least 100 metres apart.

Not overloading your vehicle by adhering to permissible load limit written on the vehicle.

Before using a track vehicle the employee in charge must satisfy himself that the brakes are in good order and that the vehicle is safe and mechanically sound to operate on the line.

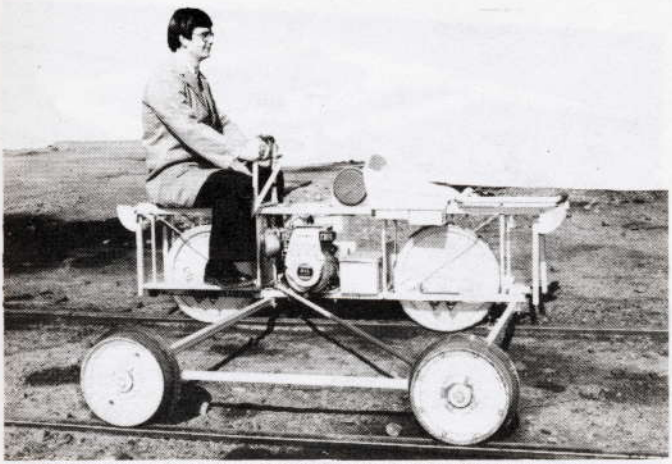


Lifting handles in ready to lift position on inspection vehicle.



When on or off tracking on inspection motor use:—

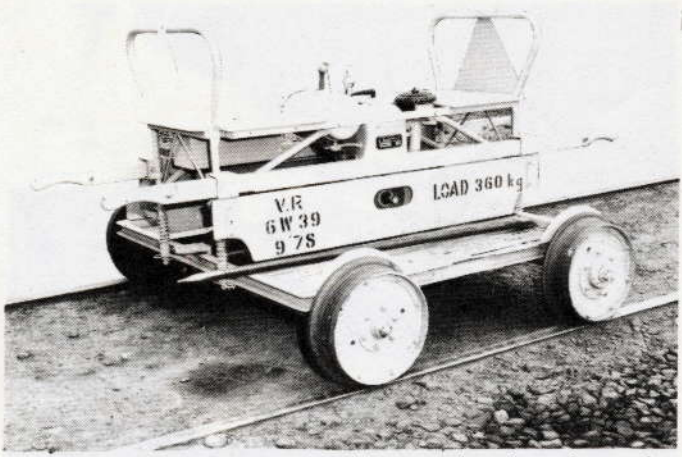
1. *Lifting handles correctly.*
2. *Correct manual handling technique.*



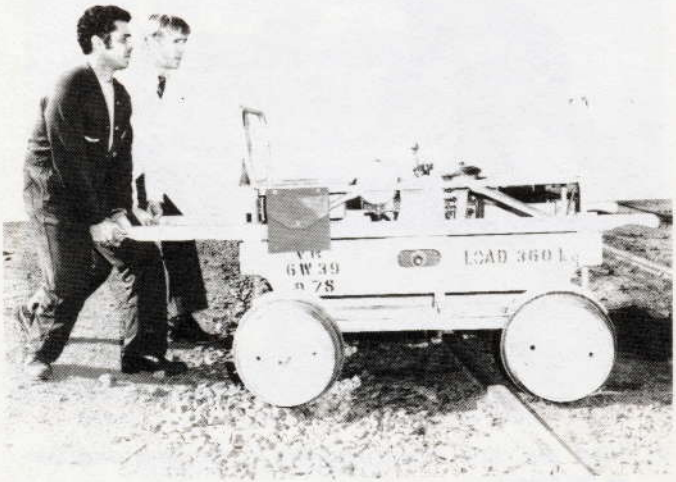
The correct way to sit astride an inspection vehicle.

When cranking a 6W or KS motor:—

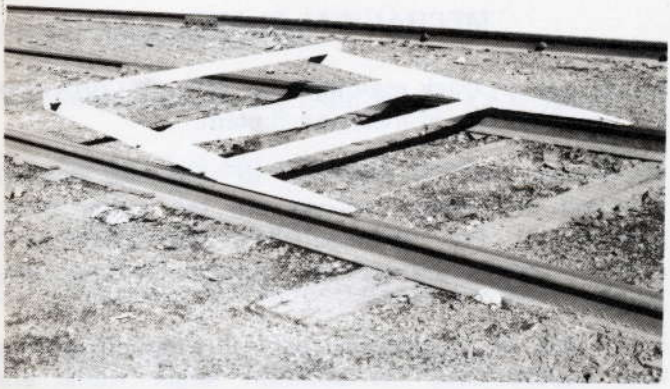
1. *Pull the crank handle up.*
2. *Have the right thumb pointing in the same direction as the fingers.*
3. *Use the correct manual handling technique.*



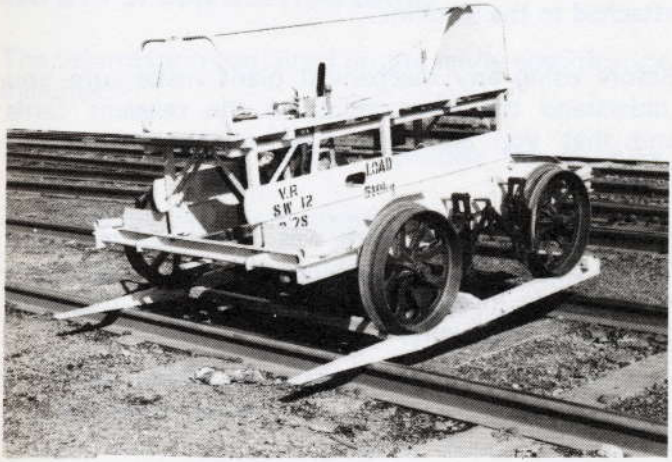
All tools and equipment should be so placed on the track vehicle that they will not fall off. With long tools or material it is especially important to see that overhang is in the trailing position and if necessary securely tied.



Lifting a 6W or KS motor.



Turntable for on and off tracking 6W and 8W motors.



8W or K motor on a turntable.

MECHANICAL PLANT

Employees on track maintenance today are provided with a wide range of mechanical plant.

Mechanical plant is provided to minimise manual handling and labour as an aid for doing track maintenance. For best results and safe operation it must be used within its rated capacity and regularly serviced.

Every unit of mechanical plant is supplied with a field record card. In addition larger items are provided with safety specification and emergency procedure cards.

These cards are kept in either a metal or plastic tube container. This container is either in the tool box or attached to the machine.

Before using any mechanical plant make sure you understand the instructions on the relevant cards and that you are quite clear on the method of operation.

Remember all track work was performed manually before the advent of machines therefore treat them according to insturctions. If machines fail the work can proceed manually.

FIELD RECORD CARD

The information on the Field Record Card includes:—

1. Correct fuel and lubricants to use.
2. Service instructions.
3. The tools required for the service of the machine.
4. Spare hydraulic hoses to be carried.
5. Operating instructions in the case of smaller machines.

SAFETY SPECIFICATION CARD

The information contained on the safety specification includes:—

1. Safety checks before travelling the machine.
2. The maximum safe speed.
3. The minimum safe distance to be maintained between other machines while travelling.
4. The maximum number of passengers that can be safely carried.

EMERGENCY PROCEDURE CARD

The information contained on this card oulines the correct procedure to be used to remove a machine from the track when disabled by engine or hydraulic failure.

This procedure should be practiced at least 3 times per year so that delays to trains will be minimised in the case of machine failure.

SOME OF THE COMMON CAUSES OF ACCIDENTS RELATED TO THE USE OF MACHINES ARE:–

1. Smoking or using a naked flame when handling fuel or refuelling while the engine is running.

2. Wearing loose clothing when operating wood-borers or other revolving tools increases the risk of clothing becoming entangled in moving parts.

3. Removing any protective guards. If they have to be removed to service the plant make sure they are replaced.

4. Using compressed air for purposes other than those for which it is provided. Misuse increases the risk of foreign bodies being blown into eyes, dirt into cuts and can cause air to enter the bloodstream, sometimes with fatal results.

SOME OF THE COMMON CAUSES OF ACCIDENTS RELATED TO THE USE OF MACHINES ARE:– *continued* –

5. Using petrol as a cleaning medium. This is a highly dangerous practice that can lead to severe burns.

6. Using machines with defective brakes. After placing the machine on the track and before proceeding to the work point the brakes must be tested.

7. Carelessness with hydraulic oil. Hydraulic oil can cause severe injuries from the following causes:–

   (a) High Temperature – Oil in hydraulic systems can reach very high temperatures and carelessness can result in burns and scalds.

   (b) High Pressure – Hydraulic systems operate at high pressures and leakeage of these pressures can result in skin and eye injuries.

   (c) Spillage – Pools of spilt oil should be cleaned up immediately as they are a safety hazard.

8. Mounting and dismounting from moving machines. Wait until the machine has stopped.

OFF-TRACK STANDS

Off-track stands are required so that on-track maintenance plant may be set off to permit trains to pass.

When setting up off-track stands the following should be noted:—

1. Stands must be set up on firm ground on prepared sites.

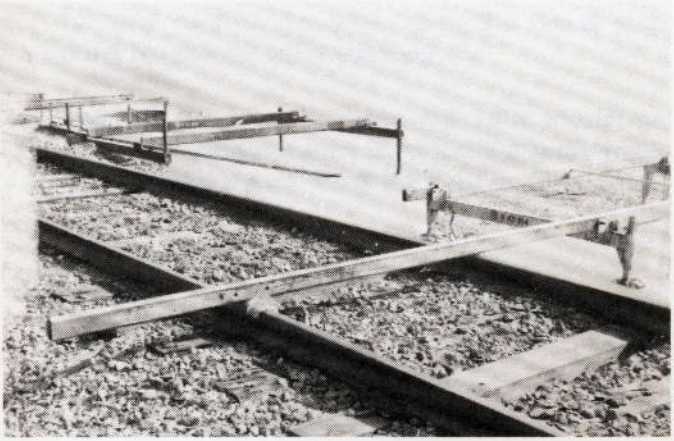
2. The stand must be set up at the correct distance from the running rail. The set off rails should be used to check this.

3. The off track rails should be level to the running rail.

4. Anchor ropes and clamps are provided with most stands to ensure stability and assist in maintaining the correct position in relation to the track.

5. Ensure that only the correct components are used to assemble off-track stands and not such items as rail drills, sleeper augers, fencing wire, rotten sleepers, etc.

Anchor ropes and clamps attached to ensure stability and assist in maintaining the correct position in relation to the track.



Stands set up on a prepared site with off tracking rails level to the running rail.

Wheel stop in position.

When using off-track stands:—

1. Make sure that the stand you are using is the correct one for your machine.

2. Most machines are provided with a centre jack that raises the machine and allows the set off rails to be placed in position under the machine.

3. When the set off rails are in position make sure that they are correctly attached to the off-track stand and that the spreader bar is in position at the outer end.

4. When the machine is on the off-track stand the wheel stop must be placed and pinned in position. If the machine is to be left unattended for any reason (e.g. overnight) the wheel stop must be padlocked in position.

5. The set off rails are provided with insulation pads to protect against interference with track circuits. Make sure these are kept in good order.

FIRST AID

If you or your mate had an accident would you know what to do?

FOR BLEEDING Clean wound thoroughly and apply pressure over the wound with sterile dressing or band aid.

FRACTURE Immobilise the limb and seek medical aid.

SNAKE BITE Bandage the whole limb firmly, Immobilise the limb and seek medical aid.

First Aid equipment is available to you. It is your responsibility to make sure it is up to date.

Any injury and material used most be recorded in book provided.

For replacement contact the Ambulance Office Spencer Street.

All accidents must be reported to your Supervisor as soon as possible.

For any further information regarding first aid contact the Ambulance Office Spencer Street extension 1845 or 1328.