PACIFIC FIRE LIGHTER MK II

HAND HELD DRIP TORCH

INSTRUCTION AND SAFETY MANUAL

1. EMERGENCIES, SAFETY AND FIRST AID

At all times, safety must come first. In an emergency, preservation of life becomes paramount. Observe wind movement and all other elements effecting fire behaviour, abandon equipment if necessary, take action to save yours and others lives. Hand held drip torches operate using a flammable liquid, designed to operate in a controlled manner to light fires in controlled burning programs or assist in containing out of control fire. When in operation the fuel outlet nozzle and wick can become hot and should be treated with caution, otherwise serious burns may be the result. Flammable fuels are hazardous if not handled with care. The fuel tank must never be opened while the wick is flaming or hot. Until the wick is cool the torch must not be refueled. Refer to refilling instructions for further safety information. Comply with storage and emergency procedures appropriate for flammable liquids. Take precautions to avoid spilling fuel, clean up spilt fuel promptly and apply environment care in the work. If fuel is spilt on the body or parts of clothing, work is to cease immediately and the area of spilt fuel must be thoroughly cleaned with detergent and water and rinsed with clean water. Do not work in clothing that is contaminated with fuel.
Do not inhale fumes or vapor from fuel. Regardless of cause, treat any burn promptly.
If fuel gets into your eyes, immediately carry out eye procedure for flammable liquid. At the work place provide a first aid kit with burns and eye wash items, also have a person on hand with first aid training.

Personnel are to be aware of emergency, safety and first aid procedures appropriate to lighting fire with drip torches and on the safe use of flammable liquids prior to taking part in fir lighting operations. All use is to comply with OH&S requirements and the agency or employers instructions for the task to be undertaken.
Personnel protection equipment (protective clothing) is a fundamental requirement for any work.

Comply with agency or employer requirements for all aspects of the work when using a Pacific Fire Lighter. The clothing worn by users must comply with any risk assessment for work to be done. Where there is no specific advice, if lighting in vegetation it is a good idea for users to be fully clothed in low flammability clothing (feet and body), preferably in clothing that meets appropriate standards eg. AS/NZS 4821 AS/NZS 4824.
Sun protection, head protection, eye protection, hearing and respiratory protections requirements may also apply. Avoid working in hot dusty or smoky conditions, operating a Pacific Fire Lighter can be hard work, remember to drink plenty of water. The additional heat from the sun and nearby fires increases the risk of dehydration. Remember that when lighting a fire in addition to safety there are legal requirements. Plans for burning may have to be approved and complied with, and the may require firebreaks to be used with equipment and adults to be on hand to assist in controlling any fires. Neighbours and fire agencies may have to

be notified prior to lighting. A permit to light a fire may be required. At the time of the year burning or lighting a fire may be prohibited by a local bylaw, by a fire ban, a seasonal fire restriction or by a fire regulation. Regardless of the measures you take, fire may escape and endanger other people or damage or destroy livestock and property. This could result in a claim for damages against you. It is a good idea to take additional measures to be safe with the use of fire and check the weather forecast prior to lighting.

If assisting with the control of a wild fire, you need to comply with directions of the fire agency or fire controller. There are additional risks associated with wild fires that usually require people to have had fire training and specific personal equipment and protective clothing.

2. GENERAL INFORMATION ABOUT LIGHTING FIRES

The Pacific Fire Lighter is designed to efficiently light fires in the open, in vegetation and forest litter (class A fuels). Apart from the specific instruction of how to use a Pacific Fire Lighter and the general requirements for flammable liquids, users should follow all agency or employer instructions for use and work practices.

Handling flammable liquids and lighting fires in some vegetation types requires formal qualifications and needs to be closely supervised by an experienced person. Even with due care and attention to safety, lighting fires under some circumstances is not without risks. The risk increases where vegetation gets drier, thicker, more difficult to walk through or when visibility is reduced. Walking through rough or remote terrain in smoke or poor visibility with burning vegetation is generally a very high risk.

When lighting fires in vegetation it is not a good idea to work alone. Always have a buddy, work out an escape route should the fire you light spread faster or cut off the path you intended to light alone. Fires you light may unexpectedly become hazardous to yourself and others. Be prepared to take evasive action. Plan how to light the target area and also plan how to control or extinguish any fires you light. Spotting or fires caused by firebrands may be of additional concern in some types of vegetation.

3. RECOMMENDED FUEL MIXING

Manufacturers of Pacific Fire Lighter, specifies that flammable liquids are used to operate it. Personnel not experienced with flammable liquids are most at risk and advised not to handle mixed fuel or refuel torches. Only trained and experience people should carry out these tasks. Mixing flammable liquids need to be carried out systematically and all safety precautions for handling flammable liquids must be adhered to.

The specific hazards of flammable liquids are known, careless handling or incorrect mixtures or mixing will cause serious accidents. Smaller fuel containers like Jerry cans have "fill line" for a given capacity, where as larger containers such as 200 litre drums do not - in all instances do not overfill, allow space for expansion. All mixing of fuel or transfer into fuel containers is to be carried out in a safe outdoor location, well away from flames, sparks or embers. Keep clear of all electrical equipment that could cause a spark. Be aware to keep away from all wind blown embers. Do not smoke. If there is danger or static electricity present, bond and earth containers prior to opening. Where an agency or employer has specific

instructions for flammable liquids they must be followed. Consider the current conditions.

There are two recommended flammable liquids to use in the Pacific Fire Lighter.

No.1 - 25% unleaded petrol and 75% diesel.
This recommended fuel mix is, one part petrol to three parts diesel. Ensure that the mixture of petrol into the diesel is through and the appropriate proportion of petrol is to be added to the appropriate portion of diesel. The fuel mixture can be tested; a small quantity of fuel on a rag can be taken to a safe location and lit with a match. It should ignite easily and burn steadily - vapor should not detonate or the fuel burn violently (incorrect fuel mix - too much petrol). It is not appropriate to mix this fuel in the tank of a Pacific Fire Lighter. Fill by measured volume, maximum 4.5 litres, do not guess the quantities.

No.2 - 100% Kerosene
This is a suitable alternative; however kerosene may not be readily available in all areas. As it does not require mixing, this is a simpler operation. Kerosene does have a higher flash point and lower vapor pressure than petrol so when straight kerosene is used there is less chance of fumes detonating.

An approved fuel container should be used for mixing, transport and storage. Take care to prevent fuel spills, use funnel with strainer in place.

Checks Prior to Refueling

Select a safe refueling area, which could be a large open area, clear off vegetation and dry litter. No naked flames, sparks, radio, mobile phones, electrical equipment or smoking within 10 meters during refueling. All vehicles or internal combustion engines in the general area and any electrical accessories must be switched off during refueling.

Where there is any doubt about the correct fuel mixture do not use it. Remix a fresh batch of recommended mixture.

Do not attempt to directly decant unmixed fuel into the fuel tank or to mix petrol and diesel fuel in the fuel tank. Petrol and diesel must be mixed in an approved, labeled container in sufficient quantity to complete the planned burning operation.

Shake or agitate the bulk fuel container prior to decanting, to mix thoroughly.

To confirm the batch of fuel is safe to use, soak a small piece of rag (5cm x 10cm) with a sample of the bulk fuel mix (5ml) and take it away from the refueling area to test light it using a stick to hold the rag. The sample should readily ignite and burn steadily, but not flash over and flare.

Where there is a risk of static electricity, correctly bond and earth bulk container prior to decanting.

Any sealed container that may have been exposed to heat must be opened carefully. Place the fuel container on the ground with the cap at the highest point and slowly release any pressure, avoid spilling or spraying fuel.

5. REFUELING THE PACIFIC FIRE LIGHTER

A recently used Pacific Fire Lighter must be extinguished and allowed to cool down for at least one minute prior to refueling. Check that the wick is out and cool. All refueling is to be carried out in a safe outdoor location, well away from sparks, flames and embers. Keep clear of al electrical equipment or internal combustion engines that could cause a spark. Be aware to keep away from a source of wind blown embers. Do not smoke.

The Pacific Fire Lighter must be in direct contact with the ground when refueling. Do not refuel the Pacific Fire Lighter on the tray of a transport vehicle. Wear gloves and safety glasses if fuel could be splashed. Take care to prevent fuel spills. Place fuel container on the ground before opening. If a hose is to be used for a large container, the nozzle must be in contact with the fuel tank of the Pacific Fire Lighter before dispensing commences.

A large rag will soak up spilt fuel and keep components clean. Place the rag on level ground and set the Pacific Fire Lighter on it in an upright position, well away (3m) from dry vegetation or dry forest litter. Unscrew the filler bung and place in the rag to keep it clean, and commence refueling, using a funnel with strainer fitted. Carefully decant the correct fuel mixture from a bulk container, avoid overfilling and allow for expansion by leaving (3cm) below the thread for the filler bung. Wipe the outer surface and handle of the Pacific Fire Lighter with a piece of rag to ensure it is clean and dry. Firmly reseal the bulk container after refilling is complete, (where a hose is used, replace the hose to its storage position n the bulk fuel container).

6. CHECKS TO BE MADE PRIOR TO LIGHTING PACIFIC FIRE LIGHTER

Ensure the outer surface of the Pacific Fire Lighter is clean and dry and handle is clean and dry. Check for leaks and do not light a torch if a leak is evident. Move well clear of refueling location or opened fuel containers. Check wick casing to ensure it is clean from ash, carbon or other foreign matter.

7. LIGHTING AND EXTINGUISHING

In an area where Pacific Fire Lighter is to be used, point nozzle to the ground at approximately 30 to 35 degrees, open valve at the base of the wand, allowing fuel to run onto the wick then onto litter or vegetation on the ground. Ignite fuel and dampened litter or vegetation with a match. Apply the wick to this small fire to light the Pacific Fire Lighter.

To relight the Pacific Fire Lighter during use (with nozzle pointing downwards and fuel dribbles over the wick) place the wick over a fire. To extinguish a Pacific Fire Lighter, smother the wick in loose earth, or leave it standing upright and the wick will burn dry.

8. OPERATING THE PACIFIC FIRE LIGHTER

Ensure sufficient fuel for carrying out a burning operation is on hand in containers readily available for refueling torches as required. Carry the torch to the area where burning is to commence, unscrew the bleed screw one to two turns counter clockwise (allowing air into the tank replacing fuel being used). Open valve at base of wand, lower want assembly towards the ground until fuel runs over the wick and

onto vegetation on the ground. Light the vegetation on the ground, apply the wick to the vegetation, the torch is now ready for use. Do not leave a burning torch unattended.

9. POINTERS TO SUCCESSFUL BACK BURNING OPERATIONS

When walking with the torch alight, keep the wick away from your body and clothing, with the angle of the want at approximately 35 to 40 degrees forward of your body. Burning fuel falling to the ground will ignite vegetation away from and parallel to your path of travel. Do not drag the torch behind you as this is a very dangerous exercise. Should the operator stumble, trip or fall over an unseen object in the burning path ignition of clothing may occur.

At all times be conscious and careful of where you are walking. Do not run. Put the torch down or pass it to a buddy when climbing over an obstruction. In vegetation difficult to ignite, pause to ignite one patch at a time by lowering the wand close to the targeted area, allowing fuel to run over the target vegetation. Swinging the torch in a horizontal arc to one side of your path while walking will give an increased rate of ignition and distance. Lighting a continuous line of fire tends to cause a hotter and faster spreading fire, than lighting separate fires. Spacing fires further apart tends to slow down the speed of fire and reduce the heat of fire until they join, when burning in very dry materials, take care not to light more than you can control. If lighting fires in conjunction with another person, maintain a safe separation but stay in contact. When working on a slope be very careful not to light below other people as fire travels uphill very rapidly.

9. CHECKS WHILE IN USE

Constantly be aware and observe any fuel leaks that may occur, should a leak become apparent dropping more than one drop per second, other than coming from the nozzle, extinguish the torch immediately and fix the leak, any leak that causes fuel to come in contact with the hands or body is potentially dangerous. If a leak cannot be fixed, the torch should be emptied of fuel, labeled as defective and removed from service for repair.

10. INSPECTION CARE AN MAINTENANCE

Most checking and maintenance of the Pacific Fire Lighter is simple and can be carried out by an experience operator. However some maintenance by a more qualified person may be required and this should be carried out by a person authorized by the agency or employer, or the torch returned to the manufacturer (cost of freight, insurance and maintenance to be carried by the owner). It is worthy of note that all Pacific Fire Lighter torches are fitted with two safety features to eliminate the possibility of a flash back into the tank.

No1. Anti-flas loop located in extension wand
This loop while correctly positioned on the lower side of the wand remains full of fuel while in operation and will stop a vapor flash down the want into the tank when the torch is becoming low in fuel, this is extremely important when incorrect fuel mixtures are used.

No2. Non return ball valve located at the commencement of fuel flow from the tank.

With the two valves correctly positioned, with the correct fuel mixture used eliminates the possibility of a flash back.

The owner of a Pacific Fire Lighter is responsible for inspecting, conducting maintenance and testing so the tool always operates correctly. Preventative maintenance also has a roll in safety. Spare parts are readily available, use only genuine spare parts from the manufacturer's parts list for the Pacific Fire Lighter included in this manual.

ROUTINE INSPECTION BY THE USER

Check filler bung and air bleed screw O rings for damage. Inspect for tank weld damage, leaks, dents and cracking. Check wick is clean on outer surface, clean with wire brush if necessary. Check all threads are in good condition, not stripped or damaged. Inspect want for alignment (not bent or out of line). Check brass nozzle, wick mount and wick bolt are secured properly. Ensure the fuel you are filing your torch tank with is absolutely clean, containing no water or residue of foreign matter. The most important factor is the correct mixture of 25 per cent petrol to 75 per cent diesel (1 part petrol to 3 parts diesel).

DEFECTIVE TOOLS ARE DISPOSED OF IN ACCORDANCE WITH THE AGENCY OR EMPLOYERS GUIDELINES.

11. STORAGE AND TRANSPORTATION BY AIRCRAFT, VEHICLE OR BOAT

The Pacific Fire Lighter and fuel are to be stored and transported in accordance with agency or employers requirements. Where there is no such advice use the following for guidance.

Prior to storage, empty all fuel from the Pacific Fire Lighter's tank into an approved and labeled container. Store Pacific Fire Lighters in a cool dry area, secured and in an upright position. When transporting the Pacific Fire Lighter it must be empty of fuel and in and upright position. Torches may be transported in the normal bracket provided. These are the most likely requirements of the relevant transport and dangerous good regulations. Transportation with residual fuel in the torch tank could cause spillage that might contribute to a fire or make the work surface slippery or unsafe.

An approved type of flammable liquids container is required for storage and transporting fuel mixture. This container must be correctly labeled with volume and contents (type of fuel mix) marked, with the filler cap securely closed. The container should not be filed past the filer line or as recommended by the manufacturer, labels are a 'Class 3 Flammable Liquids Label'. Additionally for aircraft transportations, it requires 2 orientation labels, a UN shipping label with UN No1203 (fuel mix) and a maximum of 60 litres per flight.

12. BULK FUEL CONTAINERS

If conducting large scale burning operations it may be more practical to transport the fuel mix in a bulk container rather than smaller hand held fuel containers. An appropriately designed fuel tank (steel, aluminum or plastic) or closed head (up to 200 litres) steel drums in good condition that are designed to store flammable

liquids are also suitable for storage and transport of fuel mix. Each tank or drum is to be in good condition appropriately labeled as containing a flammable liquid, the type of fuel contents (eg mix ratio petrol and diesel) and capacity. An appropriate dip stick is required where partial sue of fuel is likely. Tanks or drums are to be securely mounted to the transport vehicle (tray body or trailer) in a position as far forward as possible. All other equipment on the transport vehicle is to be secured.

Each tank or drum is to be secured in vertical position, unless specifically designed to be mounted horizontally with its own mounting frame. If the fixture is not of a permanent nature t must have it own straps specifically designed to secure cargo. Dispensing via tap at the bottom of the container is not permitted for petrol diesel mix.

All hoses and nozzles are to be an approved type for flammable liquids. The hose must be long enough to reach the fuel tank of the Pacific Fire Lighter when it is on the ground for refueling. Pumps and hose must not be stored or transported in the bed of the tray of the transport vehicle because of potential for fuel spills, contamination of other equipment and accumulation of dirt.

An approved type of fire extinguisher is to be located on the outside of the transport vehicle, within reach of filling area before dispensing fuel. MSDS is required for the flammable liquid or other hazardous substances that are to be carried in the transport vehicle. The information to be provided includes; description of hazardous materials and guidance that describes the hazards and response action that should be taken in the event of a fire, spill or accident. An emergency response information telephone number is also to be displayed.

13. SERVICE LIFE CULLING

Remove from service if a torch is defective, leaks or is structurally unsound eg. Dents or creases in the fuel tank, distorted cracked or leaking fuel tank, stripped or damaged threads on the fuel tank. Repair by only fitting genuine parts. Do not attempt to repair a damaged fuel tank as this could be very dangerous. Replace the fuel tank if it is defective, damaged or worn, cull the entire unit.

Useable parts from torches at the end of their service may be retained for repairing equivalent units. Recycle all metal after culling.

14. LIMITATIONS

No modifications are to be made to a Pacific Fire Lighter with out the approval of the manufacturer. The user must read and follow the manufacturer's instructions for using the tool and where there are agency or employer instructions, those must also be complied with. Flammable fuels can be dangerous and can cause severe burns or death if care and safety precautions are not observed. Use only fuel mix recommended by the manufacturer.

The tool is not to be used for any other purpose or to light any type of fire in the open air, in native or introduced vegetation (generally class fuels) in terrain that is accessible on foot. This tool is not to be used from a vehicle boat or aircraft. Any use other than stated in this manual may have severe safety consequences. This tool is not to be used by children or untrained persons. Children are not to be near this tool when it is being refueled or used. It is only to be used by a trained adult as a hand held tool.

Only one tool in sound operating condition is to be used at a time, and the torch is to be held in one hand only as described in this manual. If any work using this tool becomes unsafe the use of this too must cease immediately and must not recommence until the safety issues have been rectified. It is recommended that a risk assessment is done for the work. Where there is any risk to safety identified by a risk assessment for the work, the user must be appropriately trained and supervised in using a Pacific Fire Lighter in the situation and then briefed about the hazards and additional safety requirements prior to using this torch, including safety to others.

The specific work practice for using the Pacific Fire Lighter is the responsibility of the person, employer or agency in charge of the work place. Follow all employer or agency instructions for associated work practices. Under poor visibility conditions the user could face higher risks or become disorientated and create additional hazards. The Pacific Fire Lighter is not recommended in use in poor visibility unless the Pacific Fire Lighter operator is wearing high visibility clothing and can be easily seen by others. Each tool will be subject to a range of use, treatment and conditions that will cause wear and eventually this will cause failure of various parts. Regular checks of the tool are essential to detect the first sign of parts nearing the end of their service life. Flammable fuel leaking from a loose, damaged or worn part is a risk. The purchaser is responsible for monitoring and managing the servicing and inspection of this tool, supervising all repairs and withdrawing unsound tools from service.

14. OPERATION FUNDAMENTALS

1. Safety comes first (plan your movements before commencing operations)
2. Correct fuel mixture (25% petrol to 75% diesel)
3. Use clean fuel only
4. Torch in good working conditions (no fuel leaks)
5. Keep torch clean (wipe off surface fuel with a rag)
6. Keep wick clean (use wire brush to remove carbon and dirt build up)
7. Operate torch correctly (aim wand 25 to 45 degrees forward of 90 degrees in the direction you are walking. Do not drag the torch behind you, this can be extremely dangerous).

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