

## FIRE PREVENTION



**When working in a forest environment**, it is impossible to prevent combustible debris from collecting in tight corners of the machine. This debris, in itself, may cause a fire; however, when mixed with fuel, oil or grease in a hot or confined place, the danger of fire is greatly increased.

The following fire prevention guidelines should be used to supplement the operator's fire prevention efforts. In no case should the guidelines be used, or assumed, as replacements for diligent operator efforts at preventing fires.

The following guidelines will help to keep your equipment up and running efficiently **and keep the risk of fire to a minimum.**

- 1. Maintain a CHARGED fire extinguisher** on the machine at all times and **KNOW HOW TO USE IT.**
- 2. Remove debris and blow out dust regularly** from the air intake doors, engine radiator and charge air cooler, hydraulic oil cooler, diesel fuel cooler and air conditioning condenser core to prevent overheating of the engine and hydraulics and to maintain efficient operation of the machine.
- 3. Blow off all forest debris and fine organic material accumulated** near hot engine exhaust components (turbocharger and exhaust manifold as well as exhaust pipes and muffler) at the completion of each work shift or more frequently when working in logging conditions where large amounts of combustible forest debris are present. Visual inspection after blow off to ensure thorough cleanliness is vital. Engine exhaust systems provide numerous small pockets where saw dust, small wood chips and other flammable forest debris can gather. Even small accumulations close to hot exhaust components can ignite and smolder. If dislodged this smoldering debris can fall into other areas of the machine and thereby spread a fire.
- 4. Clean out all accumulated forest debris** (twigs, pine needles, branches, bark, leaves, saw dust, small wood chips) and any other combustible materials from inside the machine belly pans or lower machine structures as well as from areas in proximity to the engine, fuel and hydraulic oil systems no less frequently than at the completion of each work shift.
- 5. Inspect the machine regularly** for any signs of diesel fuel or hydraulic system leakage. Check for worn or eroded fuel or hydraulic lines before starting up any equipment.
- 6. Clean up any grease, diesel fuel, hydraulic and lubricating oil** accumulation and spillage immediately.
- 7. Steam clean the engine**, transmission, brake, fuel and hydraulic tank compartments of all equipment at least once a month or more frequently when working in logging conditions where large amounts of combustible forest debris are present.
- 8. Use only nonflammable solutions for cleaning** the machine and components.
- 9. Inspect the exhaust system daily** for any signs of **leakage**. Check for worn, cracked, broken or damaged pipes or muffler. Also check for missing or damaged bolts or clamps. Should any exhaust leaks or defective parts be found, repairs must be made immediately. Engine exhaust leaks can cause fires. **Do not operate** the machine until the exhaust leak is repaired.
- 10. During daily operation** of the machine, the occurrence of **exhaust leaks** are usually accompanied by a **change or increase in engine exhaust noise levels**. These **audible warnings** cannot be ignored. Should any exhaust leaks occur during operation, the machine must be **shut down immediately** and not put back to work until the necessary repairs have been completed.
- 11. Park the machine at least 50 feet away** from other equipment at the end of each shift.
- 12. Never leave the machine parked with boom, arch or blade suspended off the ground.** Should their supporting hydraulic hoses burn through during a fire, pressurized hydraulic oil may be injected into the fire and the boom, arch or blade will fall rapidly to the ground.

## FIRE PREVENTION continued

13. **Turn the battery disconnect switch to OFF** at shut down to de-energize all electrical circuits.
  14. **Remain with the machine** for at least 45 minutes at the end of operations while the machine cools.
- # CAUTION


  - FIRE PREVENTION.
  - READ, UNDERSTAND AND FOLLOW FIRE PREVENTION SECTION IN OPERATOR'S MANUAL.
  - DO NOT ALLOW COMBUSTIBLE WOOD DUST AND FOREST DEBRIS TO BUILD UP. CLEAN ENGINE AND EXHAUST COMPONENTS FREQUENTLY. EMPTY AND WASH OUT BELLY PANS AND MACHINE COMPARTMENTS OFTEN.
  - REPAIR AND CLEANUP FLUID LEAKS AND SPILLS IMMEDIATELY.
  - INSPECT EXHAUST COMPONENTS, HYDRAULIC HOSES AND ELECTRICAL CABLES REGULARLY FOR DAMAGE.

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15. **Remove all keys**, lock equipment and fuel cap at the end of operations to reduce the risk of vandalism.
  16. **Be cautious when smoking.** An open flame, a lighted cigarette, etc., should not be permitted around any vehicle, especially during fuelling operations or when the fuel system is open to the atmosphere or when servicing batteries.

17. **AFTER transporting (trucking) a machine** from one job site to the next, open all doors and access panels and blow off any debris that may have repositioned itself onto the engine and exhaust parts due to wind turbulence caused by the journey.
18. **Before starting repair work**, such as welding, the surrounding area should be cleaned and a fire extinguisher should be close by.
19. **Store rags and other combustible materials** in a safe, fireproof location.
20. **Do not use the machine** on top of or to push piles of burning timber. A machine fire will most probably result.

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EQUIPMENT FIRES ADVERSELY EFFECT YOUR ABILITY TO LOG, MAY INCREASE YOUR INSURANCE PREMIUMS DRAMATICALLY OR PREVENT YOU FROM OBTAINING INSURANCE COVERAGE AT ALL.

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### WHAT TO DO TO PREPARE FOR A MACHINE FIRE

- Prevent the fire from happening in the first place by ensuring that all machine systems are frequently inspected and always well maintained.
- Ensure that any hand held fire extinguishers are charged and in working order. Fire extinguishers require routine care. Follow the manufacturer's instructions for inspection and maintenance shown on the label of the fire extinguisher and in the extinguisher manufacturer's manual.
- Ensure that any pressurized water systems on the machine (if applicable) are charged and in working order.
- Ensure that you have the proper fire extinguishers on site. Most fires involving mobile forestry equipment will be Class **A** or **B**.

Dry chemical extinguishers should be rated **ABC** and pressurized water extinguishers should be rated **A**.

Class **A** fires involve ordinary combustibles such as wood, cloth, paper, rubber and many plastics, Class **B** fires occur with flammable liquids such as diesel fuel, oil and grease and Class **C** fires apply to energized electrical equipment.

## FIRE PREVENTION continued

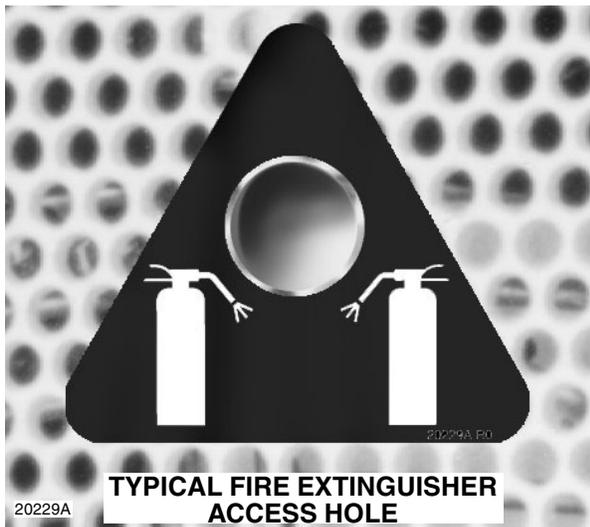
- Ensure that the nozzle of any hand held extinguisher and pressurized water system available on the machine and at the work site fits within the access holes in the doors of the machine.
- Ensure that your fire detection system\* is in working order.
- Ensure that your fire suppression system\*\* is charged and in working order.
- Ensure that you are familiar with the recommended procedures for fire contained in the emergency action plan of your company.
- Ensure that you follow all national, state / provincial and local regulations dealing with fire fighting in effect in your specific geographic region. Regulations will vary from region to region but most will usually require that:
  1. Workers assigned to fire fighting duties must be physically capable of performing them safely and effectively.
  2. Workers designated to use fire fighting equipment as part of an emergency action plan must receive full and proper training from a qualified instructor.
  3. Whenever portable fire extinguishers are provided for use in the workplace, training must be provided to familiarize workers with the general principles of fire extinguisher use and the hazards involved with fire fighting.
  4. Training must be provided upon initial employment and at least annually thereafter.
- Ensure that after you have received the training as outlined above, that you know how to use the fire extinguisher, the pressurized water system (if applicable) and the fire suppression system\*\* on your machine. There is not enough time available to read instructions during a fire emergency.
- Ensure that all information necessary for you to immediately contact all sources of help (local fire department, etc) in the event of a fire emergency is recorded and readily available at all times.

## WHAT TO DO WHEN A MACHINE FIRE OCCURS

- If operating the machine when a fire occurs:
  1. Lower all working attachments to the ground.
  2. Shut the engine off.
  3. Activate the fire suppression system\*\*.
  4. Radio or call for help. Be certain to report a fire immediately.
  5. Exit the machine taking fire extinguisher and pressurized water system hose (if applicable) with you.
  6. At all times ensure your own personal safety and the safety of anyone that may be in the area. Approach any fire with extreme caution. All fires can be very dangerous and life threatening.
  7. Only if you can safely do so, turn OFF the battery disconnect switch.
- Before deciding to fight the fire, be certain that:
  1. The fire is small and not rapidly spreading.
  2. There is always a clear, safe escape route to your back.
  3. You have received training in the use of the available fire extinguishing systems and are confident that you can operate them effectively.
- Be aware that engine coolant , diesel fuel or hydraulic hoses could fail during a fire. If this happens, hot coolant, fuel or oil could possibly be ignited by the fire.
- If in any doubt about whether or not to fight the fire – DON'T. Instead stand well clear of the fire and wait for help to arrive.
- If possible a dry chemical fire extinguisher or fire suppression system\*\* should be used first to fight a machine fire. Then immediately afterwards use the pressurized water hose supplied with the machine (if applicable) or a pressurized water extinguisher (if available). A fire suppressed by dry chemical may re-ignite from the heat retained by any debris in the area. The water will cool the area, reducing the chances of re-ignition.

## FIRE PREVENTION continued

- Use the **PASS** method. This is the most effective use of a fire extinguisher.
  - **P**ull the pin at the top of the extinguisher that keeps the handle from being pressed. Break the plastic seal as the pin is pulled.
  - **A**im the nozzle at the base of the fire. Do not aim the nozzle at the flames. In order to put out the fire, you must extinguish the fuel, not the flames. Hose nozzles are often clipped to the extinguisher body. Release the hose before taking aim.
  - **S**queeze the handle to release the pressurized extinguishing agent. The handle can be released at any time to stop the discharge.
  - **S**weep from side to side at the base of the fire until the fire is completely out or the fire extinguisher is empty



- Place the nozzle of the fire extinguisher into the appropriate fire extinguisher access hole and discharge the extinguisher.
- Only if you can safely do so, open the access panels to the machine in the area of the fire.
- Failing all attempts to access the machine compartment, discharge the extinguisher through the mesh or any available openings on the machine.
- Ensure that the machine and all components have cooled down sufficiently after a fire so that re-ignition does not occur.
- Remain with the machine until help arrives.

## WHAT TO DO AFTER A MACHINE FIRE HAS OCCURRED

- Before returning the machine to work.
  1. Ensure that the cause of the fire is determined and all appropriate repairs are completed.
  2. Ensure that the fire detection system\* or the fire suppression system\*\* is properly serviced and in working order (if applicable).
  3. Ensure that all extinguishers used in fighting the fire are replaced or recharged.
- Notify your equipment dealer and / or **Tigercat Industries Inc.** by completing an incident report, Tigercat form number 5101.

**\*NOTE:** Fire detection systems are offered by Tigercat as an optional installation on some Tigercat product lines. Please disregard any references made to fire detection systems if not installed on your machine.

**\*\*NOTE:** Dry chemical fire suppression systems are offered by Tigercat as an optional installation on some Tigercat product lines. Please disregard any references made to fire suppression systems if not installed on your machine.

**DRY CHEMICAL CLEANUP PROCEDURES**

Both ABC dry chemical fire extinguishers and fire suppression systems discharge a chemical powder to extinguish the fire. The chemical makeup and the small particle size of the powder as well as the force of the discharge all contribute to the fire fighting capability. These same characteristics also permit the powder to penetrate into and fully cover all components in the vicinity of the discharge.

The following are recommendations for the cleanup and neutralizing of areas exposed to dry chemical powder.

Workers performing this work should wear protective clothing, safety goggles and a fine particle dust mask to minimize their personal exposure to the dry chemical powder.

Ensure that all electrical systems have been completely de-energized prior to any cleanup.

1. In areas of the machine that remained cool and dry during the fire, the dry chemical will stay in powder form.

Be certain to clean these areas immediately to prevent any settled residual powder from coming into contact with moisture whether through direct contact or humidity in the air.

Remove the powder residue by blowing off with air, sweeping, dusting or vacuuming using a HEPA filter capable of trapping the small dry chemical particles. Then wipe all surfaces with a damp cloth.

2. In areas exposed to moisture, the dry chemical powder will combine with water to form a paste that is mildly acidic. Note that all surfaces covered by this dry chemical paste including electrical contacts are vulnerable to corrosive attack.

To neutralize the acidic paste on large surfaces, spray or wash these areas with a mixture of 3 parts hot water to 1 part baking soda. Allow this mixture to stand for several minutes before rinsing with warm water.

Wash the area with a mild soap and water solution. Rinse thoroughly with water. Blow-dry to remove all residual water.

Cleaning of electrical contacts should be done using an electrical contact cleaner that has no flash or fire point and is non-corrosive and non-conductive such as CRC Contact Cleaner 2000.

3. In areas exposed to heat during the fire, the dry chemical powder will melt forming a coating that cakes or crusts on all surfaces.

To break down the caked dry chemical, spray or wash these areas with a 50/50 mixture of hot water and isopropyl alcohol. Allow this mixture to stand in place for several minutes.

The caked dry chemical when exposed to moisture is also mildly acidic. Therefore when the break down procedure has been completed, follow this immediately with the neutralizing procedure as described in step 2.