



SURFACE VEHICLE RECOMMENDED PRACTICE	J153™	APR2025
	Issued	1970-01
	Revised	2025-04
Superseding J153 SEP2018		
Operator Precautions		

RATIONALE

Removed agricultural tractors as defined in ANSI/SAE S390 from the scope of the document.

1. SCOPE

These general operator precautions apply to off-road work machines as defined in SAE J1116. These should not be considered as all-inclusive for all specific uses and unique features of each particular machine. Other more specific operator precautions not mentioned herein should be covered by users of this recommended practice for each particular machine application.

1.1 Purpose

The purpose of this recommended practice is to define a list of operator precautions that should be stressed in operator training and in the preparation of operator's manual(s) and training guide(s).

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J1116 Categories of Off-Road Self-Propelled Work Machines

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3. PERSONNEL PRECAUTIONS CONTENT FOR OPERATOR'S MANUAL(S) AND TRAINING GUIDE(S)

- 3.1 The operator's manual(s) and training guide(s) should utilize personnel precautions required for machine operation.
- 3.1.1 These provisions provide content for a well-trained and competent operator and circumstances for which personal protection equipment is necessary.
- 3.1.1.1 Avoid loose-fitting clothing, loose or uncovered long hair, jewelry, and loose personal articles.
- 3.1.1.2 Know and use the protective equipment that is to be worn when operating this machine. Hard hats, protective glasses with side shields, protective shoes, gloves, reflector-type vests, respirators, and ear protection are examples of types of equipment that may be required.
- 3.1.1.3 Know and use the hand signals required for particular jobs and know who has the responsibility for signaling.

4. OPERATOR GENERAL PRECAUTIONS CONTENT FOR OPERATOR'S MANUAL(S) AND TRAINING GUIDE(S)

- 4.1 The operator's manual(s) and training guide(s) should utilize operator general precautions for machine operations.
- 4.1.1 Furnish the manufacturer's instructions for operation of the machine and equipment and attachments permitted by the manufacturer to be used with it, including the precautions to be taken for minimizing hazards.
- 4.1.1.1 Machines should be operated only by qualified operators. It is the responsibility of the operator to read and understand the operator's manual(s) and training guide(s) and other information provided for the correct operating procedure.
- 4.1.1.2 Wear the seat belt to maximize the protection capability of a rollover protective structure (ROPS) when the machine is so equipped.
- 4.1.1.3 Do not permit riders on the machine if there is no manufacturer's designated place for a rider.
- 4.1.1.4 Make sure that all protective guards, canopies, doors, etc., are in place and secure.
- 4.1.1.5 Remove or secure all loose objects stored in the machine. Remove all objects which do not belong in or on the machine and its equipment.
- 4.1.1.6 If a fire extinguisher is available, know how to use it. Inspect and have it serviced as recommended on its instruction plate.
- 4.1.1.7 Do not ignore, interfere with, or misuse protective devices or equipment.
- 4.1.1.8 Prior to operating, inspect the machine to determine that items such as alarms, safety messages, seat belts, and other safety devices are in place, in good working condition, and properly adjusted.

5. OPERATOR MOUNTING AND DISMOUNTING PRECAUTIONS CONTENT FOR OPERATOR'S MANUAL(S) AND TRAINING GUIDE(S)

- 5.1 The operator's manual(s) and training guide(s) should employ operator mounting and dismounting precautions required for the machine.
 - 5.1.1 Use the recommended handholds and steps to maintain at least three points of support when getting on and off the machine. Keep steps, handholds, walkways, decks, and platforms free from debris and slippery material. Face the access system when climbing up and down.
 - 5.1.2 Do not jump off the machine.
 - 5.1.3 Do not mount or dismount while the machine is in motion.
 - 5.1.4 Inspect and, when necessary, clean and have repairs made to the steps and handholds before mounting and dismounting the machine.
 - 5.1.5 Do not climb on or off the machine when carrying tools or supplies. Use a handline to pull equipment up onto the machine.

6. OPERATOR STARTING AND STOPPING PRECAUTIONS CONTENT FOR OPERATOR'S MANUAL(S) AND TRAINING GUIDE(S)

- 6.1 The operator's manual(s) and training guide(s) should employ operator starting and stopping precautions required for the machine operation.
 - 6.1.1 Walk around the machine and warn all personnel who may be servicing the machine or are in the machine path prior to starting. Do not start until all personnel are clearly away from the machine.
 - 6.1.2 Check that the parking device is applied, place the transmission in neutral or park as specified by the manufacturer, and disengage the PTO before starting the machine.
 - 6.1.3 Adjust, secure, and latch the seat and fasten the seat belt (if provided) before starting the machine.
 - 6.1.4 Start and operate the machine only from the operator's station. Controls should be locked or contact avoided to prevent machine or equipment movement.
 - 6.1.5 Do not bypass the machine's neutral-start system by shorting across starter terminals. The neutral-start system must be repaired if it malfunctions.
 - 6.1.6 Use jumper cables only in the recommended manner. Improper use can result in battery explosion or unexpected machine motion. Batteries in series may be located in separate compartments. When using jumper cables, the first step is to always connect to the positive (+) terminal of the battery connected to the starter solenoid. Then, connect the negative (-) cable from the external source to the starter negative (-) terminal. If the machine is not equipped with a starter negative (-) terminal, connect to the engine block. Utilize the special electrical connector for auxiliary starting whenever available.
 - 6.1.7 Do not operate the engine in an enclosed area without adequate ventilation.

- 6.1.8 Park the machine on level ground whenever possible and apply the parking device. On grades, park the machine with the wheels or track securely blocked.
- 6.1.9 Before leaving the operator's station, place the transmission in the park position as specified by the manufacturer, lower the equipment tools and attachments to the ground or put in the locked position, disengage the PTO, set the parking device, and shut off the engine.
- 6.1.10 Remove the starter key or disconnect switch key and secure the machine against unauthorized starting or movement when leaving the machine parked or unattended.
- 6.1.11 If equipped, maintain windows, windshields, and sun visors properly. Keep these items clean and free of cracks, stickers, or other items which reduce visibility.
- 6.1.12 Ether (starting fluid) is poisonous and flammable. Follow the manufacturer's recommendations when using starting fluid.

7. OPERATING PRECAUTIONS CONTENT FOR OPERATOR'S MANUAL(S) AND TRAINING GUIDE(S)

- 7.1 The operator's manual(s) and training guide(s) should employ operating precautions required for the machine operation.
 - 7.1.1 Check brakes, steering, and other machine control devices in accordance with the manufacturer's instructions prior to starting operation. Observe all gauges or warning instruments for proper operation. Operate all controls to ensure proper operation. If any malfunctions are found, follow the shutdown procedure of 6.1.9 and 6.1.10 and report the malfunction for resolution.
 - 7.1.2 If a failure that causes loss of control such as steering, service brakes, or engine occurs, stop the machine motion as quickly as possible, follow the shutdown procedure of 6.1.9 and 6.1.10, and keep the machine securely parked until the malfunction is corrected or the machine can be safely towed.
 - 7.1.3 Understand the machine limitations and keep the machine under control.
 - 7.1.4 Drive the machine with care and at speeds compatible with conditions. Use extra caution when operating over rough ground, on slopes, and when turning the machine.
 - 7.1.5 Note and avoid all hazards and obstructions such as ditches, underground lines, trees, cliffs, overhead electrical wires, or areas where there is danger of a slide.
 - 7.1.6 Carry loads in recommended positions for maximum stability.
 - 7.1.7 Never lift loads in excess of capacity.
 - 7.1.8 Use the recommended machine ballast and counterweighting.
 - 7.1.9 Know and understand the jobsite traffic flow patterns and obey flaggers, road signs, and signals.
 - 7.1.10 Watch for bystanders and never allow anyone to be under or to reach through the machine and its equipment while operating.
 - 7.1.11 Select a gear and/or retarder application that will prevent excessive speed when going downhill. Do not coast downhill.
 - 7.1.12 When roading a machine, know and use the signaling devices required on the machine. Provide an escort for roading where required.
 - 7.1.13 On machines with independently operated wheel brakes, lock the brake pedals together when roading to provide equalized brake application.

- 7.1.14 Use the recommended transport devices when roading the machine.
- 7.1.15 Use the approved drawbar and/or attachment point when using the machine for towing. If a cable or chain is used, keep people away from the tow line (see 8.1.13).
- 7.1.16 Inspect tires periodically during your shift. Let all tires cool before inspecting them.
- 7.1.17 Report any needed repairs noted during operation to the supervisor or mechanic.
- 7.1.18 On the worksite, do not rush; walk and do not run. Focus; keep your mind on task.
- 7.1.19 Do not expose the machine to flames, burning brush, etc.
- 7.1.20 Make sure the machine is equipped with an adequate lighting system as required for the work conditions and as required by local regulations.
- 7.1.21 Instruct that the machine should be used within the environment of the appropriate jobsite organization, in coordination with other machines, vehicles, and people on the jobsite, and recommend that the machine user evaluate the specific jobsite where the machine is to be used and address any risk specific to that jobsite not covered in the machine operator's manual(s) and training guide(s).
- 7.1.22 Supply the necessary information for the operator regarding the stability of the machine (work on firm supporting ground, deviations such as soft and uneven ground, etc.) and its use under special hazardous conditions such as toxic gases while describing the measures the operator is to take to eliminate or reduce the hazard.
8. MAINTENANCE PRECAUTIONS CONTENT FOR OPERATOR'S MANUAL(S) AND TRAINING GUIDE(S)
- 8.1 The operator's manual(s) and training guide(s) should make use of maintenance precautions for machine maintenance.
- 8.1.1 Include instructions clearly requiring the operator to immediately remedy faults that would compromise safety.
- 8.1.2 Do not attempt repairs unless trained. Refer to manual(s) and training guide(s) and experienced repair personnel for help. Always use any special tools that are specified.
- 8.1.3 Wear protective glasses with side shields and other required safety equipment when servicing or repairing the machine.
- 8.1.4 Wear gloves to protect hands when handling cable and sharp or hot objects.
- 8.1.5 When working on the electrical system, always disconnect all the batteries.
- 8.1.6 Securely block the machine or any component that may fall before working on the machine or component.
- 8.1.7 To prevent unexpected movement, securely block working elements when repairing or changing working tool parts such as cutting edges.
- 8.1.8 Never make repairs on fluid, gas, or mechanical pressurized components until the pressure has been relieved according to the manufacturer's instructions.
- 8.1.9 Use extreme caution when removing radiator caps, drain plugs, grease fittings, or pressure taps. Park the machine and let it cool down before opening a pressurized compartment.
- 8.1.10 Release all pressure before working on systems which have an accumulator. Use a piece of cardboard or wood to check for pressurized leaks to prevent fluid penetrating the skin. Repressurize accumulators with the proper gas according to the manufacturer's recommendations.

- 8.1.11 When inflating tires, use a self-attaching inflation chuck with remote shutoff and stand clear of the tire.
- 8.1.12 When necessary to tow the machine, do not exceed the recommended towing speed. Be sure the towing machine has sufficient braking capacity to stop the towed load. If the towed machine cannot brake, a towbar must be used, or two towing machines must be used - one in the front pulling and one in the rear to retard. Avoid towing over long distances (see 7.1.15).
- 8.1.13 Observe proper maintenance schedules and procedures.
- 8.1.14 Whenever servicing or replacing hardened pins, etc., use a brass drift or other suitable material between the hammer and pin. Retainer pins, when struck with force, can fly out and injure nearby persons. Wear safety glasses with side shields and make sure the area is clear of people when driving retainer pins. Chips or other debris can fly off objects when struck. Make sure no one can be injured by flying debris before striking any object.
- 8.1.15 Keep the brakes and steering systems in good operating condition.
- 8.1.16 Replace all missing, illegible, or damaged safety signs. Keep all safety signs clean.
- 8.1.17 Perform all maintenance unless otherwise specified as follows:
- 8.1.17.1 The parking brake engaged.
- 8.1.17.2 The gear selector lever in neutral.
- 8.1.17.3 The park or neutral lock lever engaged.
- 8.1.17.4 The attachments or tools down or secured if raised (if applicable).
- 8.1.17.5 The engine stopped.
- 8.1.17.6 The start switch off and key removed.
- 8.1.17.7 The battery disconnected or disconnect switch off and the key removed.
- 8.1.17.8 Avoid maintenance lubrication or mechanical adjustments with the machine in motion or the engine operating. If the engine must be in operation to make certain adjustments, all the above steps should be carried out and exercise extreme caution.
- 8.1.18 Use proper hand tools that are in good condition.
- 8.1.19 Never put maintenance fluids into glass containers.
- 8.1.20 Use all cleaning fluids with care.
- 8.1.21 Pressure air can cause personal injury. When using pressure air for cleaning, wear a protective face shield, protective clothing, and protective shoes. The maximum air pressure must be below 205 kPa for cleaning purposes.
- 8.1.22 Stay clear of rotating and moving parts. Keep all guards in place and in good working condition.
- 8.1.23 Keep objects away from moving fan blades. Blades will throw or cut any object or tool that falls or is pushed into them.
- 8.1.24 Do not use kinked or frayed wire rope cable.