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Safety for Agricultural Equipment

—SAE J208c

SAE Standard
Last Revised June 1977

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OF THE SAE HANDBOOK

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Report of Tractor Technical Committee approved July 1970 and last revised June 1977. Approved by FIEI and ASAE.
Rationale statement available.

1. Purpose and Scope

1.1 This Standard is a guide to provide a reasonable degree of personal safety for operators and other persons during the normal operation and servicing of agricultural equipment.

2. Definitions

2.1 **Agricultural Equipment**—means agricultural tractors, self-propelled machines, implements, and combinations thereof designed primarily for use in agricultural operations.

2.2 **Propelling Machine**—means a tractor or self-propelled machine.

2.3 **A Shield (or Guard)**—means a barrier which minimizes inadvertent personal contact with hazards created by moving machinery parts.

2.4 **Inadvertent Contact**—means contact between a person and a moving machinery part hazard, or other type of hazard, resulting from the person's unplanned actions during normal operation or servicing.

2.5 **Moving Machinery Part Hazard**—means a source of potential injury created by moving machinery parts which can cause serious injury upon direct contact or by entanglement of personal apparel. This includes but is not limited to the nip-points of power driven gears, belts and chains, and projections on rotating parts.

2.6 **Nip Point**—means the pinch point of gears and the run-on point where a belt or chain contacts a sheave, sprocket, or idler.

2.7 **Guarded by Location**—means a hazard is guarded when it is covered by other parts or components of the machine, or because of its remote location, inadvertent contact is minimized during normal operation or servicing.

2.8 **Power Take-Off (PTO)**—means an external shaft on the rear of a tractor to provide rotational power to implements.

2.9 **Auxiliary Power Take-Off (Aux. PTO)**—means an external shaft on a tractor, other than the rear PTO, to provide rotational power to implements that are usually front or side mounted.

2.10 **Implement Drive Line**—means the shafts, universal joints, connectors, and fasteners provided with the implement to transmit rotational power from the tractor PTO to the first component, on the implement, such as a gear set, pulley, sprocket, or flywheel.

2.11 Refer to SAE Standard J1150, Terminology for Agricultural Equipment, for additional definitions.

3. Operator's Manual

3.1 Operator's manuals shall be supplied with each piece of equipment.

3.2 Operator's manuals shall provide general safety instructions for normal operation and servicing of the equipment.

4. Operator Controls

4.1 Location and movement of operator controls shall be in accordance with SAE Standard J841, Operator Controls on Agricultural Equipment.

4.2 Symbols used to identify controls shall be in accordance with SAE Standard J389, Symbols for Operator Controls on Agricultural Equipment. Controls for functions that are not obvious should be identified.

4.3 Foot operated controls shall be of adequate size, spacing, and appropriate configuration for proper operation. A slip-resistant means shall be provided to minimize the possibility of the operator's foot slipping off the controls.

4.4 Hand-operated controls shall be of appropriate configuration and size to permit adequate grasp and hand clearance throughout the operating range.

5. Operation and Servicing Provisions

5.1 A suitable station shall be provided for each person required for the operation of the equipment.

5.2 All equipment shall have steps and handholds, or other means to facilitate entry and exit from the operating and servicing positions.

5.3 If the mounting step(s), ladder(s), or handhold(s) of the propelling machines are made inaccessible by the installation of equipment, alternate facilities shall be provided.

5.4 Handholds, hand rails, guard rails, or barrier type safeguards shall be provided to minimize the possibility of falling during normal

operation or servicing, unless means are provided by other parts of the equipment.

5.4.1 Guard rails when provided shall have a top rail 900–1050 mm (35.4–41.3 in) above the working walkway or platform with a rail approximately midway between the platform and the top rail.

5.5 The height of the first step should not exceed 686 mm (27.0 in), preferably 550 mm (21.6 in). The vertical distance between the steps should not exceed 406 mm (16.0 in), preferably 300 mm (11.8 in), and adequate toe clearance should be provided for each step.

5.6 Steps and operator platforms shall have a slip-resistance surface.

5.7 Shielding shall be provided on the back of steps or ladders wherever a protruding hand or foot may contact a moving machine part hazard.

5.8 Glazing material, such as glass or plastic used in operator enclosures, shall be in accordance with the SAE Standard J674, Safety Glazing Materials.

6. Power Take-Off and Implement Drive Line

6.1 The tractor shall be equipped with a PTO master shield when provided with a PTO shaft in accordance with SAE Standard J1170, Rear Power Take-Off for Agricultural Tractors. Although not intended as a step, the master shield shall not permanently deform if used as a step by a 120 kg (265 lb) operator.

6.2 Provisions shall be made on the tractor to shield the Aux. PTO when it is connected to an implement drive line.

6.3 Shields or other protective means shall be provided on the tractor for the PTO and Aux. PTO when they are not connected to an implement drive line.

6.4 PTO driven implements shall be equipped with shielding for the implement drive line.

6.5 PTO driven implements that require removal of the tractor master shield shall include comparable shielding.

6.6 A safety sign(s) shall be provided at a prominent location on the implement specifying the normal PTO operating speed and that implement drive line shields are to be kept in place.

6.7 A safety sign(s) shall be provided at a prominent location on the tractor specifying the normal PTO operating speed and that PTO shields are to be kept in place.

7. **Tractor Roll-Over Protection**—Tractor Roll-Over Protection if installed, shall be in accordance with SAE Standard J1194, Roll-Over Protective Structures (ROPS) for Wheeled Agricultural Tractors.

8. Shields (or Guards)

8.1 The following shall be shielded or shall be guarded by location to minimize inadvertent contact with hazards created by:

8.1.1 Moving traction elements.

8.1.2 Revolving engine components.

8.1.3 Nip-points of exposed gears, belts, chain drives and idlers.

8.1.4 Outside faces of pulleys, sheaves, sprockets, and gears on drives that rotate when the engine is running with all clutches disengaged.

8.1.5 Revolving parts with projections such as exposed bolts, keys or set screws.

8.1.6 Revolving shafts, except smooth shaft ends protruding less than 0.5 the diameter of the shaft and its locking means.

8.1.7 Ground drives if operating personnel are exposed to them while the drives are in motion.

8.1.8 Surfaces hot enough to cause personal injury during normal operation or servicing.

8.2 Functional components, such as snapping or husking rolls, straw spreaders and choppers, cutterbars, flail rotors, rotary beaters, augers, feed rolls, rotary tillers, and similar units, which must be exposed for proper function shall be shielded to the maximum extent permitted by the intended function of the component(s).

8.3 Equipment with access doors and shields which can be opened or removed while components continue to rotate after the power is disengaged, shall have:

(1) in the immediate area, a readily visible evidence of rotation or audible indication of rotation and,

(2) a suitable safety sign.