

SURFACE VEHICLE RECOMMENDED PRACTICE

an American National Standard

SAE J48

REV.
SEP83

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(R) GUIDELINES FOR LIQUID LEVEL INDICATORS

1. PURPOSE:

SAE Recommended Practice to outline preferred methods of indicating liquid levels.

2. This recommended practice pertains to liquid level determination for any compartment of off-road machinery as defined in SAE J116 and J1057.

3. PRIORITY:

Priority of method is assigned on the basis of service convenience.

3.1 Sight gage.

3.2 Mechanical or electrical indicators.

3.3 Dip stick.

3.4 Plug, cap or cover.

4. GENERAL REQUIREMENTS:

4.1 Indicator reading should be consistent with compartment level.

4.2 The indicator shall be read with the machine level, in the machine manufacturer's recommended parked position.

4.3 The indicator should be marked "FULL" and "ADD" (except fuel indicator).

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- 4.4 Fuel indicator should show the fraction of container capacity remaining (in increments of one-fourth container capacity).
- 4.5 The full level mark should be at a point at least 1/2 L above the add mark on compartments with less than 4 L capacity. On large compartments, the full level mark should be a whole number of liters above the add mark.
- 4.6 Special instructions should be avoided; however, if necessary for checking liquid level, the instructions should be located on or near the indicator.
- 4.7 Liquid level indicators should be mounted in a protected, easily accessible location.

5. RECOMMENDATIONS:

- 5.1 Sight gages should use reflector backed level gage for readability.
- 5.2 Mechanical or electrical gages.
 - 5.2.1 Use green for allowable ranges and red for add when colors are used.
 - 5.2.2 The marking on the right side of the gage face represents full, the left side represents empty, or the top of gage represents full, the bottom represents empty.
- 5.3 Dip Stick: See SAE J614.
 - 5.3.1 Where "CHECK ENGINE RUNNING" is used, the opposite side of the dip stick should show the starting range "CHECK ENGINE STOPPED."
 - 5.3.2 Where "CHECK HOT" is used, the opposite side of the dip stick should show the starting range "CHECK COLD."
 - 5.3.3 The dip stick cap should prevent contaminant entry.
 - 5.3.4 The dip stick bayonet guide should be designed to prevent false readings due to interference, oil drippage, pressure or suction.
 - 5.3.5 The dip stick should be restrained from vibrating or rattling in the bayonet guide.
 - 5.3.6 The dip stick and guide should be rust resistant.
 - 5.3.7 The dip stick should be removable without tools.
- 5.4 Plug, Cap or Cover: See SAE J371, J531, J532, J829, and J868.
 - 5.4.1 Liquid level checks by plug should be used only on machines with engine(s) stopped.
 - 5.4.2 To avoid injury to fingers, if inserted, make hole sizes for level check plugs larger than 25 mm or smaller than 12 mm.

5.4.3 Level check caps on pressurized compartments shall provide a method to vent the compartment before the cap is free to be removed.

5.4.4 Level check caps should be removable by hand (preferred) or by common hand tools.

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The (R) is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.

RATIONALE:

This is a revision of this document of a similar title and the same number approved in October, 1972. Revisions were made to confine the scope of the document to off road machinery as defined in SAE J1116 and J1057, to eliminate incorrect references to "safe" and "safety" terms, and to define caps to be used on pressurized compartments.

Principal revisions are detailed below:

1. Paragraph 2 changed to reference J1116 and J1057.
2. Paragraph 4.2 references the manufacturer's recommended position for liquid level checks.
3. Paragraph 4.5 recommends minimum add quantity of 1/2 liter.
4. Paragraph 4.6 on original document removed -- not applicable to mobile equipment.
5. Paragraph 4.8 replaced with 4.7 on revision, reference to "safe" location replaced by "protected".
6. Paragraph 5.2.1 changed to replace "safe" with "allowable".
7. Paragraphs 5.3.1, 5.3.2 - references to "safe" ranges eliminated.
8. Paragraphs 5.4 through 5.4.3 deleted from original document as not applicable to mobile equipment.
9. Paragraph 5.4.1. (on revised document) limits checks by plug to machines with stopped engines.
10. Paragraph 5.4.2 (on revised document) replaces 5.5.1 on original -- defines minimum check plug size. That size was selected to minimize the possibility of finger injuries.
11. Paragraph 5.4.3 (on revised document) replaces 5.5.2 on original -- provides for venting of pressurized compartments before cap is free to be removed.
12. Paragraph 4.1 changed to read, "Indicator reading should be consistent with compartment level."

RELATIONSHIP OF SAE STANDARD TO ISO STANDARD:

Not applicable.