

**AUTOMOTIVE INDUSTRY STANDARD**

**Automotive Vehicles  
– Control Location and  
Operation Requirements**

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ON BEHALF OF

AUTOMOTIVE INDUSTRY STANDARDS COMMITTEE

UNDER

CENTRAL MOTOR VEHICLE RULES – TECHNICAL STANDING COMMITTEE

SET-UP BY

MINISTRY OF SHIPPING, ROAD TRANSPORT & HIGHWAYS  
(DEPARTMENT OF ROAD TRANSPORT & HIGHWAYS)  
GOVERNMENT OF INDIA

June 2009



## INTRODUCTION

The Government of India felt the need for a permanent agency to expedite the publication of standards and development of test facilities in parallel when the work on the preparation of the standards is going on, as the development of improved safety critical parts can be undertaken only after the publication of the standard and commissioning of test facilities. To this end, the erstwhile Ministry of Surface Transport (MOST) has constituted a permanent Automotive Industry Standards Committee (AISC) vide order No.RT-11028/11/97-MVL dated September 15, 1997. The standards prepared by AISC will be approved by the permanent CMVR Technical Standing Committee (CTSC). After approval, the Automotive Research Association of India, (ARAI), Pune, being the Secretariat of the AIS Committee, has published this standard. For better dissemination of this information ARAI may publish this document on their web site.

This standard is intended to cover the fitment and operational requirements of controls and to ensure reduction in safety hazards caused by the diversion of the driver's attention from the driving task and by mistake in selecting unintended controls.

In preparation of this standard considerable assistance is derived from following national and international standards:

1.	Base EEC Directive 78/316/EEC as amended by directives 93/91/EEC and 94/53/EC	On the approximation of the laws of the Member States relating to Interior Fittings of Motor Vehicles ( Identification of Controls, Tell-tales and Indicators )
2.	93/29/EEC as amended by Directive No. 2000/74/EC	On the Identification of Controls, Tell-tales and Indicators for Two – or Three – wheel Motor Vehicles
3.	86/415/EEC	On the Installation, Location, Operation and Identification of the Controls of Wheeled Agricultural or Forestry Tractors
4.	ECE R 121	Uniform provisions concerning the Approval of Vehicles with regard to the Location and Identification of Hand Controls, Tell-tales and Indicators
5.	ISO 2575: 2000 / Amd.1 : 2001, Amd 4 : 2001, Draft Amd 5 : 2000	Road Vehicles - Symbols for Controls, Tell-tales and Indicators

6.	ISO 6727-1981 (E)	Road Vehicles – Motorcycles- Symbols for Controls, Indicators and Tell-tales
7.	SAE J 1362	Graphical Symbols for Operator Controls and Displays on Off-Road Self – Propelled Work Machines
8.	Safety Standards No. 12.1	Tell Tale Systems and Controls for all Motor Vehicles other than 3 Wheeled Vehicles upto Engine Capacity 500 cc, 2 Wheeled Vehicles and Tractors
9.	IS 6283 (Part 1) :2006	Tractors and Machinery for Agriculture and Forestry, Powered Lawn and Garden Equipment - Symbols for Operator Controls and Other Displays Part 1 : Common Symbols
10.	IS 14413 : 1996	Automotive Vehicles-Telltale Symbols and Controls on Two-wheeled and Three-wheeled Vehicles
11.	ISO 4129-1990 (E)	Mopeds – Symbols for Controls, Indicators and Tell-tales
12.	IS 8133 : 1995	Guidelines for Location and Operation of Operator Controls on Agricultural Tractors and Machinery
13.	ECE R 60	Uniform provisions concerning the Approval of Two-Wheeled Motor Cycles and Mopeds with regard to Driver Operated Controls Including the Identification of Controls, Tell-tales and Indicators.
14.	ISO 3767	Tractors, Machinery for Agriculture and Forestry, Powered lawn and Garden Equipment – Symbols for Operator Controls and other displays - Part 1: Common Symbols.

The Automotive Industry Standards Committee (AISC) responsible for preparation of this standard is given in Annex : II

## Automotive Vehicles – Control Location and Operation Requirements

### 1.0 SCOPE

- 1.1 This standard specifies requirements for the location and operation of controls used in motor vehicles of category L, M, N, A and C as defined in AIS-053.

### 2.0 REFERENCES

- 2.1 AIS-007 Information on Technical Specifications to be submitted by the Vehicle Manufacturer
- 2.2 AIS-053 Automotive Vehicles – Types – Terminology

### 3.0 DEFINITIONS

For the purpose of this standard, the following definitions shall apply.

- 3.1 **“Vehicle Type”** means motor vehicles, which do not differ in respect of the internal arrangements (as the case may be), which may affect the location and operation of controls.
- 3.2 **“Control”** means that part of a device that enables the driver to bring about a change in the state or functioning of a vehicle or vehicle’s sub-system.
- 3.3 **“Selector switch”** means a device by which the supply of electric current can be transferred from one or two or more circuits to others without the possibility of disconnection of the common supply line.
- 3.4 **“Combination on/off - Selector switch”** means a multifunction device which on first being actuated or put into position operates as an on/off switch and on each of the subsequent occasion when it is actuated or put into position operates as a selector switch.
- 3.5 **“Handlebars”** means any part of the bar or bars connected to the fork top by means of which the vehicle is steered.
- 3.6 **“Handgrip”** means a part of the handlebars, farthest from the centre, by which the driver holds the handlebars.

- 3.7 **“Lever”** means a device consisting of an arm turning on a fulcrum, by means of which some functional mechanism of the vehicle is operated.
- 3.7.1 **“Hand lever”** means a lever operated by the hand of the driver.
- Note :** In the case of L-category vehicles, levers mounted on the handle bar, unless otherwise stated, hand lever is operated by compression (i.e. moving the apex of the lever towards the supporting structure), for example, for braking or declutching.
- 3.7.2 **“Foot lever”** means a lever operated by contact between the driver’s foot and a spur projected from the lever arm.
- 3.7.3 **“Pedal”** means a lever operated by contact between the driver’s foot and pad on the lever, so placed as to allow pressure to be applied to the lever arm.
- Note:** Unless otherwise stated a pedal is operated by depression, for examples for braking.
- 3.8 **“Footrest”** means a projection on which the driver places his feet when seated in the driving position.
- 3.9 **“Combined brake”** in case of two wheeler and three wheeler means a system of operation whereby both the front and the rear brakes of the vehicle are brought into operation, at least partially, by the use of only one control.
- 3.10 The **“Right side / Left side”** designations pertain to orientation of the vehicles with respect to the driver or rider in case of L category vehicles with handle bar when seated normally on the driver’s or rider’s seat.
- 3.11 **“Service brake control”** is a control which actuates the brakes to operate on at least two wheels on the same axis.
- 3.12 Clockwise means the direction of rotation around the axis of the part considered under installed condition, following the motion of the hands of a clock when viewed from the upper or the outer side of the part considered.
- 3.13 Counter-clockwise has the inverse meaning of the clause 3.12.

## **4.0 GENERAL REQUIREMENTS**

### **4.1 For L category vehicles only**

The following controls when fitted on the vehicle, shall comply with the following requirements.

#### **4.1.1 Throttle Control**

##### 4.1.1.1 Hand Operated

The throttle shall be hand operated and located on the right side of the handlebar. When rotated around its axis in a counter-clockwise direction, as viewed from the right end of the bar, the engine speed shall increase. Hand operated control may be self return type.

##### 4.1.1.2 Foot Operated

Shall be operated by right foot, the engine speed shall increase when the pedal is depressed.

#### **4.1.2 Brake Control**

##### 4.1.2.1 Front Wheel Brake Control (for Vehicles with Handlebar)

The front wheel brake control lever shall be located on the right side of the handlebar and so arranged that the control lever may be actuated without completely removing the hand from the throttle control. This requirement applies only when the front wheel brakes controlled independently from the rear brake control.

##### 4.1.2.2 Rear Brake Control

The rear brake control shall be operated by the right foot and so located that is convenient to the operator when the foot is normally positioned on the foot rest or foot board. In the case of two wheelers, without a manual clutch operation, the rear brake control may alternatively be located on the left side of handlebar, and so arranged that it is convenient to operate without removing the hand from the normal position.

##### 4.1.2.3 Combined Brake Control

Combined brake control shall be as that prescribed for the front brake control or rear brake control.

#### **4.1.3 Clutch Control**

##### 4.1.3.1 Hand Operated

The control shall be operated by the left hand of the operator. The control shall be so located that it is convenient to operate without removing the hand from the normal position.

##### 4.1.3.2 Foot Operated

Shall be operated by the driver's foot.

#### 4.1.4 **Manual Transmission - Gear Change Control**

##### 4.1.4.1 In Case of Vehicles with Handlebar

The transmission gear change control shall be operated with either the left foot or the left hand. Each change position, except neutral, shall have a positive relaxation action. If three or more gears are provided, it shall not be possible to shift directly from the highest gear to the lowest gear or vice-versa, while vehicle is in motion. In case of hand operated control mounted on the handlebar, an counter-clockwise motion of operator's hand and in case of foot operated control, clockwise or counter-clockwise motion of operator's toe shall shift the transmission towards lower numerical gear ratios (commonly referred to as higher gears) that is, from first to second, second to third and third to fourth, etc, and in opposite direction towards higher numerical gear ratios (commonly referred to as lower gears) that is, from fourth to third gear, third to second gear and second to first gear, etc.

##### 4.1.4.2 In case of Vehicles with Steering Wheel

The manual transmission gear change control shall be operated by the left hand of the driver.

#### 4.1.5 **Control for Horn, Headlight, Upper Beam/Lower Beam and 'Turn Signal'**

4.1.5.1 These controls shall be so located that they can be conveniently operated in the normal sitting position of the operator. In the case of vehicles with handlebar, they shall be operated without complete removal of operator's hand from handlebar.

#### 4.1.6 **Ignition Cut-off (in case of vehicles with SI Engines)**

4.1.6.1 The ignition cut-off shall be located such that it is easily accessible. The cut-off shall be achieved by push type switch or by counter-clockwise rotation or by an engine electrical power supply cut off.

#### 4.1.7 **Fuel Shut Off Control (in case of vehicles with SI engines)**

4.1.7.1 Fuel shut off may be automatic or manual.

4.1.7.2 If manual, the control shall be so located that it is easy for operation.

#### 4.1.8 **Turn Signal Switch**

In the case of vehicles with handlebars, it shall be located on the handle bars (left or right) and for operation-either turn or slide.

#### 4.1.9 **Control Location and Operation**

Each control located on the right side of handlebar shall be operable by the operator's right hand throughout its full range without removal of the operator's right hand from the throttle. Each control located on the left side of the handlebar shall be operable by the operator's left hand throughout its full range without removal of the operator's left hand from the handle grip.



**4.2 For M & N category vehicles only****4.2.1 Location**

In the normal seating position and with seat adjusted to the convenience of the driver where possible, each of the controls incorporated in the vehicle, shall be operable by the driver.

**4.3 For A & C category vehicles only**

The following controls when fitted on the vehicle, shall comply with the following requirements.

**4.3.1 Throttle Control****4.3.1.1 Hand Operated**

Shall be located within easy reach and preferably in front of, or to the right side of the operator. The direction of motion of the control shall be towards or away from the operator for increasing the engine speed.

**4.3.1.2 Foot Operated**

Shall be readily accessible to the operator's right foot and preferably to the right side of the operator. Push pedal forward and/or downward to increase engine speed.

**4.3.2 Brake Control****4.3.2.1 Service brake****4.3.2.1.1 Foot operated**

The brake pedal(s) shall be located convenient to the operator's right foot. The direction of motion shall be generally forward and/or downward for engagement. Where separate brake pedals are provided on wheeled tractors for the independent right-hand and left-hand brake control, it shall be possible to obtain combined control so that there is no undue deviation from a straight path of travel.

**4.3.2.1.2 Hand operated**

Location shall be convenient to the operator. Application of pull motion is preferred. Where means are provided for independent right hand and left hand operation, it shall be possible to obtain combined control so that there is no undue deviation from a straight path of travel.

**4.3.2.2 Parking brake****4.3.2.2.1 Hand operated**

Location shall be convenient to the operator. Application of pull motion is preferred. A device shall be provided to retain brake(s) in the applied position. The device shall not be liable to accidental release.

**4.3.2.2.2 Foot operated**

Location shall be convenient to the operator. Depress brake pedal and lock in position.

4.3.3 **Clutch Control (Includes combined transmission and power take off)**

4.3.3.1 Foot operated

The control shall be so located that it is convenient to operator's left foot. Push pedal forward or downward for disengagement. In case of a combined traction-drive/ power take-off clutch, the power take-off disengagement shall be at second stage.

4.3.3.2 Hand Operated

The control shall be so located that it is within convenient reach of the operator. Move rearward for disengagement. Positive means shall be provided for holding the clutch control in the disengaged position so that it is incapable of being re-engaged unless manually operated. It is recommended that the clutch be operable only from the operator's seat.

4.3.4 **Manual Transmission - Gear Change Control**

The control shall be so located that it is within convenient reach of the operator. Shifting pattern shall be simply and clearly marked. In particular, the neutral position shall be clearly identified and easy to select.

4.3.5 **Differential lock**

Location shall preferably be convenient to the operator's right foot or right hand. Move forward or downward for engagement. There shall be clear indication when differential lock is engaged.

4.3.6 **Control for Horn, Headlight, Upper Beam/Lower Beam and 'Turn Signal'**

4.3.6.1 These controls shall be so located that they can be conveniently operated in the normal sitting position of the operator.

4.3.7 **Engine starter switch (Compression ignition engines)**

The starter switch shall be located such that it is easily accessible. Move control to start position. If a rotational switch is provided, rotate clockwise to operate engine starter.

4.3.8 **Fuel Shut Off Control (in case of vehicles with SI engines)**

4.3.8.1 Fuel shut off may be automatic or manual.

4.3.8.2 If manual, the control shall be so located that it is easy for operation.

## 5.0 MANDATORY REQUIREMENTS

### 5.1 L1 & L2 category

#### 5.1.1 Hand Operated Controls

- 1) Throttle Control;
- 2) Front wheel brake control, when the front wheel brake is controlled independently from the rear brake;
- 3) Clutch control, if the clutch operation is not automatic;
- 4) Control for horn, headlight upper beam/lower beam and turn signal;
- 5) Ignition cut-off for SI engines; and
- 6) Fuel shut off control, if not automatic, for SI engines.

#### 5.1.2 Foot Operated or Hand Operated Controls

- 1) Gear shifting control if transmission is not automatic; and
- 2) Rear brake or combined brake control.

### 5.2 L5M & L5N category

#### 5.2.1 Hand Operated Controls

- 1) Steering control (Steering wheel or handlebar)
- 2) Ignition cut-off for SI engines
- 3) Horn
- 4) Head lamp
- 5) Tail lamp
- 6) Rear registration mark illuminating lamp
- 7) Turn signal
- 8) Hazard warning signal (in case of L5N category vehicles)
- 9) Manual transmission shift lever, if the transmission is not automatic.
- 10) Wind shield wiper

**Note** : Tail lamp, rear registration mark illuminating lamp and parking lamp/front position lamp shall be combined as a single unit for control purposes. The combination of other controls is optional.

#### 5.2.2 Foot Operated Controls

- 1) Service brake control;
- 2) Accelerator control (in the case of vehicles with steering wheel); and
- 3) Clutch control; if the transmission is not automatic as in the case of vehicle with steering wheel.

#### 5.2.3 Foot / Hand Operated Controls

The following controls may be operated by the hand or foot:

- 1) Parking brake;
- 2) High beam/low beam control;
- 3) Accelerator control, in the case of vehicles with handlebar;
- 4) Clutch control, in the case of vehicles with handlebar, if the transmission is not automatic.

### 5.3 For M & N category vehicles only

#### 5.3.1 Hand Operated Controls

5.3.1.1 The following will be the obligatory requirements -

- 1) Steering wheel
- 2) Ignition
- 3) Horn
- 4) Head lamp
- 5) Tail lamp
- 6) Number plate lamp on/off control
- 7) Direction Indicators
- 8) Manual Transmission shift lever
- 9) Windshield Wiper
- 10) High beam/low beam (not obligatory if provided as foot operated control)
- 11) Parking brake (if not foot operated)
- 12) Master Switch Electrical (mandatory only for tankers and vehicles carrying explosives).
- 13) Hazard warning signal

**Note:** The tail lamp, parking lamp and number plate lamp shall be combined as a single unit for control purposes. The combination for other controls is optional.

5.3.1.2 The following will be the optional requirements:

- 1) Windshield washer
- 2) Windshield defrosting and demisting system
- 3) Rear window defrosting and demisting system
- 4) Manual choke
- 5) Automatic transmission control
- 6) Clearance lamps
- 7) Hand throttle
- 8) Exhaust brake control
- 9) Master Switch Electrical.
- 10) Any other

#### 5.3.2 Foot Operated Controls

5.3.2.1 The obligatory requirements will be as under-

- 1) Service brake
- 2) Accelerator
- 3) Clutch (unless fitted with automatic transmission)
- 4) High beam  
(Not obligatory if already provided in hand operated controls)
- 5) Windshield wiper  
(Not obligatory if provided as hand operated control)
- 6) Parking brake (if not hand operated)

5.3.2.2 The following will be the optional requirements -

- 1) Windshield washer.
- 2) Exhaust brake control.
- 3) Any other

5.4 **For A & C category vehicles only**

5.4.1 **Hand Operated Controls**

5.4.1.1 The following will be the obligatory requirements -

- 1) Steering wheel
- 2) Ignition
- 3) Horn
- 4) Head lamp
- 5) Tail lamp
- 6) Parking lamp
- 7) Number plate lamp on/off control
- 8) Turn Signal
- 9) Manual Transmission shift lever
- 10) Windshield Wiper if provided
- 11) High beam/low beam
- 12) Parking brake (if not foot operated)
- 13) Hazard warning signal

**Note:** The tail lamp, parking lamp and number plate lamp shall be combined as a single unit for control purposes. The combination for other controls is optional.

5.4.1.2 The following will be the optional requirements:

- 1) Windshield washer
- 4) Manual choke
- 5) Automatic transmission control
- 6) Clearance lamps
- 7) Hand throttle
- 8) Exhaust brake control
- 9) Master Switch Electrical.
- 10) Any other

5.4.2 **Foot Operated Controls**

5.4.2.1 The obligatory requirements will be as under-

- 1) Service brake
- 2) Accelerator
- 3) Clutch (unless fitted with automatic transmission)
- 4) Parking brake (if not hand operated)

5.4.2.2 The following will be the optional requirements -

- 1) Exhaust brake control.
- 2) Any other

**6.0 OPTIONAL CONTROLS**

For the other equipments provided, such as decompression, fog lights, etc. suitable control shall be provided.

**7.0 DISPLAYS**

7.1 The following displays are mandatory requirements for two wheeler, three wheeler and four wheeler other than agriculture tractor.

- 1) Speedometer;
- 2) Odometer;

7.2 The following display is mandatory requirement for agriculture tractor

- 1) Hour meter;

7.3 The following displays are mandatory requirements for CEV

- 1) Hour meter;
- 2) Speedometer if maximum speed exceeds 30 km/h

7.4 The following displays will be the optional requirements.

- 1) Gear Position
- 2) Any other

**8.0 TECHNICAL INFORMATION TO BE SUBMITTED BY THE VEHICLE MANUFACTURER**

8.1 The technical information with regard to vehicle shall be provided as per respective clauses of AIS-007 (Rev.3).

8.2 Drawings or photographs showing the layout of controls and location of controls in the vehicle shall be provided.

**9.0 CHANGES IN THE TECHNICAL SPECIFICATIONS ALREADY TYPE APPROVED**

9.1 Every modification pertaining to the information declared in accordance with Para 8 shall be intimated by the manufacturer to the certifying agency.

9.2 If the changes are in parameters not related to the provisions, no further action need be taken.

If the changes are in parameters related to the provisions, the Testing Agency shall then consider, whether,

a) the model with the changed specifications still complies with provisions;

or

b) any further verification is required to establish compliance.

For considering whether any further verification is required or not, guidelines given in Annex I (Criteria for extension of approval) shall be used.

- 9.3 In case of 9.2 b), verification for only those parameters which are affected by the modifications needs to be carried out
- 9.4 In case of fulfillment of criterion of Para 9.2 a) or after results of further verification as per Para of 9.2 b) are successful, the approval of compliance shall be extended for the changes carried out.

**10.0 CONFORMITY OF PRODUCTION REQUIREMENTS**

- 10.1 Whole Vehicle COP procedures, as and when lay down by the Ministry of Road Transport and Highways shall be applicable.
- 10.2 Vehicle approved under this standard shall be so manufactured as to conform to the type approved specifications.

**ANNEX I**

(See 9.2 b)

**CRITERIA FOR EXTENSION OF APPROVAL**

<b>Sr. No.</b>	<b>Parameter</b>	<b>Remark</b>
1	Addition of variant if no change in location and/or operation of control compared to approved base model.  if change in location and/or operation of control compared to approved base model	Document check  Check required
2	Addition of control(s)	Check required
3	Deletion of control(s)	Document check



**ANNEX II**  
(See Introduction)

**COMMITTEE COMPOSITION \***

**Automotive Industry Standards Committee**

<b>Chairman</b>	
Shri Shrikant R. Marathe	Director The Automotive Research Association of India, Pune
<b>Members</b>	<b>Representing</b>
Representative from	Ministry of Shipping, Road Transport & Highways (Dept. of Road Transport & Highways), New Delhi
Representative from	Ministry of Heavy Industries & Public Enterprises (Department of Heavy Industry), New Delhi
Shri S. M. Ahuja	Office of the Development Commissioner, MSME, Ministry of Micro, Small & Medium Enterprises, New Delhi
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Representatives from	Society of Indian Automobile Manufacturers
Shri T.C. Gopalan	Tractor Manufacturers Association, New Delhi
Shri K.N.D. Nambudiripad	Automotive Components Manufacturers Association of India, New Delhi
Shri Arvind Gupta	Automotive Components Manufacturers Association of India, New Delhi

Member Secretary  
Mrs. Rashmi Urdhwareshe  
Deputy Director  
The Automotive Research Association of India, Pune

\* At the time of approval of this Automotive Industry Standard (AIS)