

AUTOMOTIVE INDUSTRY STANDARD

**Approval of Vehicles with regard to
their Protection against
Unauthorized use - Four Wheeled Vehicles**

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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

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Status chart of the Standard to be used by the purchaser
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Sr. No.	Corr-igenda.	Amend-ment	Revision	Date	Remark	Misc.

General remarks:

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 Standard 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.

Protection of 4 wheeled vehicles from unauthorized use is a safety aspect. Uniform provisions are required to be established for approval of such devices as fitted on the 4 wheeler vehicles. Such devices, in the form of locks are already in use for quite some time. The committee felt the need to standardize the testing and approval requirements of such devices. International provisions were studied in details. The Committee reviewed the requirements specific to India and finalized the standard.

Accordingly, Part I of the standard covers requirements for M1/N1 and it is based on Part I of ECE R116.

Part II of the standard covers requirements for M2, N2, M3, N3 and it is based on Part II of ECE R 18.

While preparing this standard, guidance has been taken from the following National / International Standards.

EEC Directive 74/61/EEC	Protection against unauthorized use (4 wheelers)
ECE R 18 (Revision 3, 23 June, 2005)	Uniform provisions concerning the approval of motor vehicles with regard to their protection against unauthorized use (4 wheelers)
ECE R 116 (6 April, 2005)-	Uniform technical prescriptions concerning the protection of motor vehicles against unauthorized use - (Part I)
AIS-076 (Under formulation)	Approval of Vehicle Alarm Systems (VAS) and Motor Vehicles with regard to their Alarm Systems (AS)

The Automotive Industry Standards Committee responsible for preparation of this standard is given in Annex : 4.

**Approval of Vehicles with regard to their Protection against
Unauthorized use – Four Wheeled Vehicles**

1. SCOPE

This standard applies to

- 1.1 Part I: Motor vehicles of category M1 and N1 with regard to their protection against unauthorized use.
- 1.2. Part II: Motor vehicles of category M2, M3, N2 and N3 with regard to their protection against unauthorized use.

2. REFERENCES

- 2.1 AIS-053 Automotive Vehicles – Types - Terminologies.
- 2.5 AIS-076 Approval of Vehicle Alarm Systems (VAS) and Motor Vehicles with regard to their Alarm Systems (AS) (Under formulation)

PART I

**APPROVAL OF MOTOR VEHICLE OF CATEGORY M1 AND N1
WITH REGARD TO ITS DEVICES TO PREVENT
UNAUTHORIZED USE**

3. DEFINITIONS

For the purpose of Part I of this standard,

- 3.1. **"Vehicle type"** means a category of motor vehicles, which do not differ in such essential respects as:
 - 3.1.1 the manufacturer's type designation,
 - 3.1.2 the arrangement and design of the vehicle component or components on which the device to prevent unauthorized use acts,
 - 3.1.3 the type of device to prevent unauthorized use;

- 3.2 **"Device to prevent unauthorized use"** means a system designed to prevent unauthorized normal activation of the engine or other source of main engine power of the vehicle in combination with at least one system which:
- Locks the steering, or
 - Locks the transmission, or
 - Locks the gearshift control.
- 3.3 **"Steering"** means the steering control, the steering column and its accessory cladding, the steering shaft, the steering gearbox and all other components which directly affect the effectiveness of the device to prevent unauthorized use.
- 3.4 **"Combination"** means one of the specifically developed and constructed variations of a locking system which, when properly activated, permits operation of the locking system.
- 3.5 **"Key"** means any device designed and constructed to provide a method of operating a locking system, which is designed and constructed to be operated only by that device.
- 3.6. **"Rolling code"** means an electronic code consisting of several elements the combination of which changes at random after each operation of the transmitting unit.

4. APPLICATION FOR CMVR APPROVAL

- 4.1 Application for CMVR type approval for a vehicle type in respect of the devices to prevent unauthorized use.
- 4.1.1 The application for CMVR type approval of a vehicle type with regard to its devices to prevent unauthorized use must be submitted by the vehicle manufacturer or by his duly authorized representative.
- 4.1.2 It must be accompanied by the documents containing the information specified in Part I - Annex 1.
- 4.1.2.1 A detailed description of the vehicle type with regard to the arrangement and design of the control or of the unit on which the protective device acts must be given.
- 4.1.3 A vehicle representative of the type to be approved must be submitted to the testing agency.

- 4.1.4 A vehicle not comprising all the components proper to the type may be accepted provided that it can be shown by the applicant to the satisfaction of the test agency that the absence of the components omitted has no effect on the results of the verifications, so far as the requirements of this standard are concerned.

5. GENERAL SPECIFICATIONS

- 5.1. The device to prevent unauthorized use shall be so designed that it is necessary to put it out of action in order to enable:
- 5.1.1. The engine to be started by means of the normal control; and
- 5.1.2. The vehicle to be steered, driven or moved forward under its own power.
- 5.1.3. The requirements of para 5.1 can be achieved at the same time as or before to the actions described in paragraphs 5.1.1 and 5.1.2.
- 5.2. The requirements of paragraph 5.1 shall be met by the application of a single key.
- 5.3. Except in the case provided for in paragraph 6.1.5 a system operated with a key inserted in a lock shall not permit removal of the key before the device referred to in paragraph 5.1 has come into action or has been set to act.
- 5.4. The device to prevent unauthorized use referred to in paragraph 5.1 above, and the vehicle components on which it operates, shall be so designed that it cannot rapidly and without attracting attention be opened, rendered ineffective or destroyed by, for example, the use of low-cost, easily concealed tools, equipment or fabrications readily available to the public at large.
- 5.5. The device to prevent unauthorized use shall be fitted to the vehicle as an item of original equipment (i.e. equipment installed by the vehicle manufacturer prior to first retail sale). It shall be fitted in such a way that even after removal of its housing it cannot, when in the blocked condition, be dismantled otherwise than with special tools. If it was possible to render the device to prevent unauthorized use ineffective by the removal of screws, those screws shall, unless they are of the non-removable type, be covered by parts of the blocked protective device.
- 5.6. Mechanical locking systems shall provide at least 1,000 different key combinations or a number equal to the total number of vehicles manufactured annually if less than 1,000. In vehicles of one type (i.e. models and variants using the same device), the frequency of occurrence of each combination shall be roughly one per 1,000.

- 5.7 Electrical/electronic locking systems, e.g. remote control, shall have at least 50,000 variants and shall incorporate a rolling code and/or have a minimum scan time of ten days, e.g. a maximum of 5,000 variants per 24 hours for 50,000 variants minimum.
- 5.8 Regarding the nature of device to prevent unauthorized use, paragraphs 5.6 and 5.7 shall be applied.
- 5.9 The key and lock shall not be visibly coded in the installed condition on the vehicle.
- 5.10 The lock shall be so designed, constructed and fitted that turning of the lock cylinder, when in the locked position, with a torque of less than 2.45 Nm is not possible with any key other than the mating key, and
 - 5.10.1 For lock cylinders with pin tumblers no more than two identical tumblers operating in the same direction shall be positioned adjacent to each other, and in a lock there shall not be more than 60 % identical tumblers,
 - 5.10.2 For lock cylinders with disc tumblers no more than two identical tumblers operating in the same direction shall be positioned adjacent to each other, and in a lock there shall not be more than 50 % identical tumblers.
- 5.11 Devices to prevent unauthorized use shall be such as to exclude any risk of accidental operating failure while the engine is running, particularly in the case of blockage likely to compromise safety.
 - 5.11.1 It shall not be possible to activate devices to prevent unauthorized use without first setting the engine controls to a stop condition and then performing an action which is not an uninterrupted continuation of stopping the engine or without first setting the engine controls to a stop condition and when the vehicle is stationary with the parking brake applied or the speed of the vehicle does not exceed 4 km/h.
 - 5.11.2 In the case of devices to prevent unauthorized use, if the action of key withdrawal activates the device it shall either necessitate a minimum movement of 2 mm before activation of the device or incorporate an override facility to prevent accidental removal or partial withdrawal of the key.
 - 5.11.3 Paragraphs 5.10, 5.10.1, 5.10.2 and 5.11.2 are only applicable to devices which include mechanical keys.
- 5.12 Power assistance may be used only to activate the locking and/or unlocking action of the device to prevent unauthorized use. The device shall be kept in its operating position by any suitable means which does not need a power supply.

- 5.13 It shall not be possible to activate the motive power of the vehicle by normal means until the device to prevent unauthorized use has been deactivated.
- 5.14 Devices to prevent unauthorized use preventing release of the brakes of the vehicle shall not be permitted.
- 5.15 If the device to prevent unauthorized use is equipped with a driver warning feature it shall be activated when the operator opens the driver's side door, unless the device has been activated and the key removed by the operator.

6. PARTICULAR SPECIFICATIONS

In addition to the general specifications prescribed in paragraph 5, the device to prevent unauthorized use shall meet the particular conditions prescribed below:

6.1 Devices to prevent unauthorized use acting on the steering

- 6.1.1 A device to prevent unauthorized use acting on the steering shall render the steering inoperative. Before the engine can be started, the normal steering operation must be restored.
- 6.1.2 When the device to prevent unauthorized use is set to act, it shall not be possible to prevent the device from functioning.
- 6.1.3 The device to prevent unauthorized use must continue to meet the requirements of paragraphs 5.11, 6.1.1, 6.1.2 and 6.1.4 after it has undergone 2,500 locking cycles in each direction of the wear producing test specified in Part I - Annex 2 to this standard.
- 6.1.4 The device to prevent unauthorized use shall, in its activated position, satisfy one of the following criteria:
 - 6.1.4.1 It shall be strong enough to withstand, without damage to the steering mechanism likely to compromise safety, the application of a torque of 300 Nm about the axis of the steering spindle in both directions under static conditions.
 - 6.1.4.2 It shall incorporate a mechanism designed to yield or slip, such that the system will withstand, either continuously or intermittently, the application of a torque of at least 100 Nm. The locking system must still withstand the application of this torque after the test specified in Part II - Annex 2 to this standard.
 - 6.1.4.3 It shall incorporate a mechanism designed to permit the steering wheel to rotate freely on the blocked steering spindle. The blocking mechanism shall be strong enough to withstand the application of a torque of 200 Nm about the axis of the steering spindle in both directions under static conditions.

- 6.1.5 If the device to prevent unauthorized use is such that the key can be removed in a position other than the position in which the steering is inoperative, it shall be so designed that the maneuver required to reach that position and removal of the key cannot be effected inadvertently.
- 6.1.6. If a component fails such that the torque requirements specified in paragraphs 6.1.4.1, 6.1.4.2 and 6.1.4.3 cannot be easily applied, yet the steering system remains blocked, the system shall satisfy the requirements.

6.2. Devices to prevent unauthorized use acting on the transmission

- 6.2.1 A device to prevent unauthorized use acting on the transmission shall prevent the rotation of the vehicle's driving wheels.
- 6.2.2 When the device to prevent unauthorized use is set to act, it shall not be possible to prevent the device from functioning.
- 6.2.3 It shall not be possible for the transmission to be blocked inadvertently when the key is in the lock of the device to prevent unauthorized use, even if the device preventing starting of the engine has come into action or been set to act.
- 6.2.4 The device to prevent unauthorized use shall be so designed and constructed that it remains fully effective even after some degree of wear as a result of 2,500 locking cycles in each direction.
- 6.2.5 If the device to prevent unauthorized use is such that the key can be removed in a position other than the position in which the transmission is locked, it shall be so designed that the maneuver required to reach that position and remove the key cannot be effected inadvertently.
- 6.2.6 The device to prevent unauthorized use shall be strong enough to withstand, without damage likely to compromise safety, the application in both directions and in static conditions of a torque 50 per cent greater than the maximum torque that can normally be applied to the transmission. In determining the level of this testing torque account shall be taken not of the maximum engine torque, but of the maximum torque that can be transmitted by the clutch or by the automatic transmission.

6.3. Devices to prevent unauthorized use acting on the gearshift control

- 6.3.1. A device to prevent unauthorized use acting on the gearshift control shall be capable of preventing any change of gear.
- 6.3.2. In the case of manual gearboxes it must be possible to lock the gearshift lever in reverse only; in addition locking in neutral shall be permitted.
- 6.3.3. In the case of automatic gearboxes provided with a "parking" position it must be possible to lock the mechanism in the parking position only; in addition locking in neutral and/or reverse shall be permitted.

- 6.3.4. In the case of automatic gearboxes not provided with a "parking" position it must be possible to lock the mechanism in the following positions only: neutral and/or reverse.
- 6.3.5. The device to prevent unauthorized use shall be so designed and constructed that it remains fully effective even after some degree of wear as a result of 2,500 locking cycles in each direction.

7.0 ELECTROMECHANICAL AND ELECTRONIC DEVICES TO PREVENT UNAUTHORIZED USE

Electromechanical and electronic devices to prevent unauthorized use, where fitted, shall comply with the requirements of paragraphs 5 and 6 above and additional requirements of immobilizers / VAS mentioned in this para.

7.1 Operation Parameters and Test Conditions

7.1.1 Operation parameters

All components of the electromechanical and electronic devices shall comply with requirements given in paragraph 6 of AIS-076.

This requirement does not apply to:

- i) Those components that are fitted and tested as part of the vehicle, whether or not an immobilizer is fitted (e.g. lamps); or,
- ii) Those components that have previously been tested as part of the vehicle and documentary evidence has been provided.

7.1.2 Test conditions

All the tests shall be carried out in sequence on a single electromechanical and electronic device. However, at the discretion of the test agency, other samples may be used if this is not considered to affect the results of the other tests.

7.1.3 Operation test

Upon completion of all the tests specified below, the electromechanical and electronic device shall be tested under the normal test conditions specified in paragraph 6.2.1.2 of AIS-076 to check that it continues to function normally. Where necessary, fuses may be replaced prior to the test.

All components of the electromechanical and electronic devices shall comply with requirements given in paragraphs 6.2.2 to 6.2.8 and 6.2.12 of AIS-076.

- 7.2 If above mentioned requirements are met while testing immobilizers / VAS as per AIS-076, separate testing of electromechanical and electronic devices as per this standards is not required.

7.3 If the technology of the device is such that paragraphs 5 and 6 above and AIS-076 are not applicable, it shall be verified that care has been taken to preserve safety of the vehicle. The functioning process of these devices shall incorporate secure means to prevent any risk of blocking or accidental dis-functioning, which could compromise the safety of the vehicle.

8. MODIFICATION OF THE VEHICLE TYPE AND EXTENSION OF APPROVAL

8.1 Every modification of the vehicle type shall be notified to the approving authority which approved the vehicle type. The approving authority will consider the factors given in Table 1, 2, 3, or 4, depending upon the type of protective device used, while selecting a vehicle to represent a range of variants for testing a vehicle for type approval as per requirements of this standard and for extension of type approval certificate for changes affecting the performance related to these requirements.

8.2 If the changes affect some of the requirements, checks/tests need to be done only for those requirements.

8.3 No tests/ checks to be done if it is only a vehicle variant.

TABLE 1
FOR PROTECTIVE DEVICES WHICH LOCK THE STEERING

S.NO.	PARAMETER	CHANGE	TESTS/CHECKS TO BE CARRIED OUT
1	Type of Steering column assembly	Any change	Tests as per para. 6.1.4
2	Type of Protective Device	Completely new device Material and/or properties of Bolt	All requirements to be checked Tests as per para. 6.1.3 and 6.1.4 Note: If the protective device is approved on any other model, only test as per para. 6.1.4 need to be done.

TABLE 2
FOR PROTECTIVE DEVICES WHICH LOCK THE TRANSMISSION

S.NO.	PARAMETER	CHANGE	TESTS/CHECKS TO BE CARRIED OUT
1.	Protective device	Any change	All requirements to be checked as per para. 6.2

TABLE 3
FOR PROTECTIVE DEVICES WHICH LOCK THE GEAR SHIFT MECHANISM

S.NO.	PARAMETER	CHANGE	TESTS/CHECKS TO BE CARRIED OUT
1.	Location of Protective device	Mounting arrangement	All requirements to be checked as per para. 6.3

TABLE 4
FOR ELECTROMECHANICAL AND ELECTRONIC PROTECTIVE DEVICES

S.NO.	PARAMETER	CHANGE	TESTS/CHECKS TO BE CARRIED OUT
1.	Schematic/logic of Device	Any Change	Requirements to be checked as per para. 7
2.	Component(s) of device	Any Change	Requirements to be checked as per para. 7
3.	Software	Any Change	Requirements to be checked as per para. 7

9. CONFORMITY OF PRODUCTION REQUIREMENTS

As and when applicable Whole Vehicle CoP procedure laid down by the Ministry of Shipping, Road Transport and Highways (MoSRT&H) shall be applicable for the purpose of CoP through verification of required parameters.

PART II

**APPROVAL OF MOTOR VEHICLE OF CATEGORY M2, M3, N2 AND N3
WITH REGARD TO ITS DEVICES TO PREVENT UNAUTHORIZED USE****10. DEFINITIONS**

For the purpose of Part II of this standard,

- 10.1. **"Approval of a vehicle"** means the approval of a vehicle type with regard to its protection against unauthorized use
- 10.2. **"Vehicle type"** means a category of motor vehicles of categories M2, M3, N2 and N3, which do not differ in such essential respects as:
- 10.2.1 The manufacturer's indications of the vehicle type;
- 10.2.2 The arrangement and design of the vehicle component or components on which the protective device acts,
- 10.2.3 The type of protective device
- 10.3. **"Protective device"** means a system designed to prevent unauthorized normal activation of the engine or other source of main engine power of the vehicle in combination with at least one system which:
- locks the steering, or
 - locks the transmission; or
 - locks the gearshift control.
- 10.4. **"Steering"** means the steering control, the steering column and its accessory cladding, the steering shaft, the steering gearbox and all other components which directly affect the effectiveness of the protective device
- 10.5. **"Combination"** means one of the specifically planned and constructed variations of a locking system which, when properly activated, permits operation of the locking system.
- 10.6. **"Key"** means any device designed and constructed to provide a method of operating a locking system which is designed and constructed to be operated only by that device.

11. APPLICATION FOR CMVR APPROVAL

- 11.1 Application for CMVR type approval for a vehicle type in respect of the devices to prevent unauthorized use.
 - 11.1.1 The application for CMVR type approval of a vehicle type with regard to its devices to prevent unauthorized use must be submitted by the vehicle manufacturer or by his duly authorized representative.
 - 11.1.2 It must be accompanied by the documents containing the information specified in Part II - Annex 1.
 - 11.1.2.1 Detailed description of the vehicle type with regard to the arrangement and design of the control or of the unit on which the protective device acts.
 - 11.1.3 A vehicle representative of the type to be approved must be submitted to the test agency.
 - 11.1.4 A vehicle not comprising all the components proper to the type may be accepted provided that it can be shown by the applicant to the satisfaction of the test agency that the absence of the components omitted has no effect on the results of the verifications, so far as the requirements of this standard are concerned.

12. GENERAL SPECIFICATIONS

- 12.1 The protective device shall be so designed that it is necessary to put it out of action in order to enable:
 - 12.1.1 the engine to be started by means of the normal control; and
 - 12.1.2 the vehicle to be steered, driven or moved forward under its own power.
 - 12.1.2.1 The requirement of paragraph 12.1 can be achieved at the same time as or before the actions described in paragraphs 12.1.1 and 12.1.2.
- 12.2 The requirements of paragraph 12.1 shall be met by the single application of one key.
- 12.3 Except in the case provided for in paragraph 13.1.5 a system operated with a key inserted in a lock shall not permit removal of the key before the protective device referred to in paragraph 12.1 has come into action or has been set to act.
- 12.4 The protective device referred to in paragraph 12.1 above, and the vehicle components on which it operates, shall be so designed that it cannot rapidly and without attracting attention, be opened, rendered ineffective, or destroyed by, for example, the use of low cost, easily-concealed tools, equipment or fabrications readily available to the public at large.

- 12.5 The protective device shall be mounted on the vehicle as an item of original equipment (i.e. equipment installed by the vehicle manufacturer prior to first retail sale). It shall be fitted in such a way that even after removal of its housing it cannot, when in the blocked condition, be dismantled otherwise than with special tools. If it would be possible to render the protective device ineffective by the removal of screws, the screws shall, unless they are non-removable screws, be covered by parts of the blocked protective device.
- 12.6 The key locking system shall provide at least 1,000 different key combinations or a number equal to the total number of vehicles manufactured annually if less than 1,000, in vehicles of one type (i.e. models and variants using the same device) the frequency of occurrence of each combination shall be roughly one per 1,000.
- 12.7 The key and lock shall not be visibly coded in the installed condition on the vehicle.
- 12.8 The lock shall be so designed, constructed and fitted that turning of the lock cylinder, when in the locked position, with a torque of less than 2.45 Nm is not possible with anything other than the mating key, and
- 12.8.1 For lock cylinders with pin tumblers no more than two identical tumblers operating in the same direction shall be positioned adjacent to each other, and in a lock there shall not be more than 60 % identical tumblers.
- 12.8.2 For lock cylinders with disc tumblers no more than two identical tumblers operating in the same direction shall be positioned adjacent to each other, and in a lock there shall not be more than 50 % identical tumblers.
- 12.9 Protective devices shall be such as to exclude any risk, while the vehicle is in motion, of accidental blockage likely to compromise safety in particular.
- 12.9.1 It shall not be possible to activate devices to prevent unauthorized use without first setting the engine controls to a stop condition and then performing an action which is not uninterrupted continuation of stopping the engine or without first setting the engine controls to a stop condition when the vehicle is stationary with the parking brakes applied, or the speed of the vehicle does not exceed 4 km/h.
- 12.9.2 In the case of devices acting on the steering, transmission or gear shift control, if the action of key withdrawal activates the device, it shall either necessitate a minimum movement of 2 mm before activation of the device or incorporate an override facility to prevent accidental removal or partial withdrawal of the key.
- 12.9.3 Paragraphs 12.8, 12.8.1, 12.8.2 or 12.9.2 are only applicable to devices, which include mechanical keys.

- 12.10 Power assistance may be used only to activate the locking and/or unlocking action of the protective device. The device shall be kept in its operating position by mechanical means only.
- 12.11 It shall not be possible to activate the motive power of the vehicle by normal means until the protective device has been deactivated.
- 12.12 Protective devices preventing release of the brakes of the vehicle shall not be permitted.
- 12.13 If the protective system is equipped with a driver-warning feature it shall be activated, unless the protective device has been activated and any key removed by the operator, when the operator opens the driver's side door.

13. PARTICULAR SPECIFICATIONS

In addition to the general specifications prescribed in paragraph 12, the protective device shall comply with the particular conditions prescribed below:

- 13.1 Protective devices acting on the steering
 - 13.1.1 A protective device acting on the steering shall block the steering.
 - 13.1.2 When the protective device is set to act, it shall not be possible to prevent the device from functioning.
 - 13.1.3 The protective device must continue to meet paragraphs 12.9, 13.1.1, 13.1.2 and 13.1.4, after it has undergone 2,500 locking cycles in each direction of the wear producing test specified in Annex 3.
 - 13.1.4 The protective device shall, in its activated position, be strong enough to withstand, without damage to the steering mechanism likely to compromise safety, the application of a torque of 200 Nm about the axis of the steering shaft in both directions under static conditions.
 - 13.1.5 If the protective device is such that the key can be removed in a position other than the position in which the steering is locked, it shall be so designed that the maneuver required to reach that position and removing the key cannot be effected inadvertently.
- 13.2 Protective devices acting on the transmission
 - 13.2.1 A protective device acting on the transmission shall prevent the rotation of the vehicle's driving wheels.
 - 13.2.2 When the protective device is set to act, it shall not be possible to prevent the device from functioning.

- 13.2.3 It shall not be possible for the transmission to be blocked inadvertently when the key is in the lock of the protective device, even if the device preventing starting of the engine has come into action or been set to act.
- 13.2.4 The protective device shall be so designed and constructed that it remains fully effective even after some degree of wear as a result of 2,500 locking cycles in each direction.
- 13.2.5 If the protective device is such that the key can be removed in a position other than the position in which the transmission is locked, it shall be so designed that the maneuver required to reach that position and remove the key cannot be effected inadvertently.
- 13.2.6 The protective device shall be strong enough to withstand, without damage likely to compromise safety, the application in both directions and in static conditions of a torque 50% greater than the maximum torque that can normally be applied to the transmission. In determining the level of this testing torque account shall be taken, not of the maximum engine torque, but of the maximum torque that can be transmitted by the clutch or by the automatic transmission.
- 13.3 Protective devices acting on the gearshift control
 - 13.3.1 A protective device acting on the gearshift control shall be capable of preventing any change of gear.
 - 13.3.2 In the case of manual gearboxes it must be possible to lock the gearshift lever in reverse only; in addition locking in neutral shall be permitted.
 - 13.3.3 In the case of automatic gearboxes provided with a "parking" position it must be possible to lock the mechanism in the parking position only; in addition locking in neutral and/ or reverse shall be permitted.
 - 13.3.4 In the case of automatic gearboxes not provided with a "parking" position, it must be possible to lock the mechanism in the neutral and/or reverse positions only.
 - 13.3.5 The protective device shall be so designed and constructed that it remains fully effective even after some degree of wear as a result of 2,500 locking cycles in each direction.

14. MODIFICATION OF THE VEHICLE TYPE AND EXTENSION OF APPROVAL.

- 14.1 Every modification of the vehicle type shall be notified to the approving authority which approved the vehicle type. The approving authority will consider the factors given in Table 1, 2, 3, or 4, depending upon the type of protective device used, while selecting a vehicle to represent a range of variants for testing a vehicle for type approval as per requirements of this standard and for extension of type approval certificate for changes affecting the performance related to these requirements.

- 14.2 If the changes affect some of the requirements, checks/tests need to be done only for those requirements.
- 14.3 No tests/ checks to be done if it is only a vehicle variant.

**TABLE 1
FOR PROTECTIVE DEVICES WHICH LOCK THE STEERING**

S.NO.	PARAMETER	CHANGE	TESTS/CHECKS TO BE CARRIED OUT
1.	Type of Steering column assembly	Any change	Tests as per para. 13.1.3
2.	Type of Protective device	Completely new device Material and/or properties of Bolt	All requirements to be checked Tests as per para. 13.1.3 and 13.1.4 Note: If the protective device is approved on any other model, only test as per para. 13.1.4 need to be done.

**TABLE 2
FOR PROTECTIVE DEVICES WHICH LOCK THE TRANSMISSION**

S.NO.	PARAMETER	CHANGE	TESTS/CHECKS TO BE CARRIED OUT
1.	Protective device	Any change	All requirements to be checked as per para. 13.2

**TABLE 3
FOR PROTECTIVE DEVICES WHICH LOCK THE GEAR SHIFT MECHANISM**

S.NO.	PARAMETER	CHANGE	TESTS/CHECKS TO BE CARRIED OUT
1.	Location of Protective device	Mounting arrangement	All requirements to be checked as per para. 13.3

15.2.1 Devices provided additionally (if fitted)

- 15.2.2 Approval under this Part II of the standard may be granted with respect to a protective device additionally equipped with an acoustic or visual warning device, or with respect to the optional fitting of supplementary devices to prevent the unauthorized use of the vehicle, provided that the supplementary devices require a separate means of activation; the test agency shall give separate approval.
- 15.3 If the protective device is additionally equipped with an external acoustic and/or visual warning device, the signals emitted by the warning device shall be brief and shall end automatically after not more than 30 seconds; they shall recommence only if the device is actuated again. In addition,

- 15.3.1 if the signal is acoustic, it may be emitted by the audible warning device normally fitted to the vehicle;
- 15.2.2 if the signal is visual, either
 - 15.2.2.1 it shall be produced solely by flashing of the vehicle's passing lights or
 - 15.2.2.2 it shall comply with paragraphs 15.2.2.2.1 and 15.2.2.2.2 below:
 - 15.2.2.2.1 Duration of the optical signal: The optical signal shall have duration between 25 seconds and 5 minutes after the alarm has been activated. The unsetting of the alarm system shall immediately stop the signal.
 - 15.2.2.2.2 Type of optical signal: The flashing of all direction indicators and/or passenger compartment light of the vehicle, including all lamps in the same electrical circuit.

Trigger frequency 2 ± 1 Hz
In relation to the audible signal, also asynchronous signals are allowed.
ON time = OFF time $\pm 10\%$

16. CONFORMITY OF PRODUCTION REQUIREMENTS

As and when applicable Whole Vehicle CoP procedure laid down by the Ministry of Shipping, Road Transport and Highways (MoSRT&H) shall be applicable for the purpose of CoP through verification of required parameters.

PART I - ANNEX 1

(See 4.1.2)

**INFORMATION TO BE SUBMITTED FOR TYPE APPROVAL OF VEHICLE
OF CATEGORIES M1 AND N1 WITH REGARD TO ITS DEVICES
TO PREVENT UNAUTHORIZED USE**

S. No	Parameter	
1	Name of the Model(s)	
2	Variant(s)	
3	Vehicle category(s)	
4	Name and address of vehicle manufacturer	
5	Type of protective device(s) used (refer clause 3.2):	
6	Name and address of manufacturer of the protective device	
7	No. of combinations used in the protective device	
8	Description of the device or sketch showing location, relevant dimensions of protective device, material and physical properties of the locking element of the device which engages with the steering/ transmission/ gearshift (as the case may be).	
9	Explanation of the arrangement provided in design to satisfy requirements of clauses 6.1- Any device specific information 6.2- Engine peak torque Max. torque transmitted by clutch/ automatic transmission 6.3- Any device specific information	

PART II - ANNEX 1
 (See 11.1.2)
INFORMATION TO BE SUBMITTED FOR TYPE APPROVAL OF
M2, N2, M3 AND N3 WITH REGARD TO ITS DEVICES
TO PREVENT UNAUTHORIZED USE

S. No	Parameter	
1	Name of the Model(s)	
2	Variant(s)	
3	Vehicle category(s)	
4	Name and address of vehicle manufacturer	
5	Type of protective device(s) used (refer clause 10.3):	
6	Name and address of manufacturer of the protective device	
7	No. of combinations used in the protective device	
8	Description of the device or sketch showing location, relevant dimensions of protective device, material and physical properties of the locking element of the device which engages with the steering/ transmission/ gearshift (as the case may be).	
9	Explanation of the arrangement provided in design to satisfy requirements of clauses 13.1- Any device specific information 13.2- Engine peak torque Max. torque transmitted by clutch/ automatic transmission 13.3- Any device specific information	
10	Devices provided additionally (Ref. paragraph 15) Acoustic or visual If visual, duration and type of optical signal	

PART I - ANNEX 2

(See 6.1.3)

**WEAR PRODUCING TEST PROCEDURE FOR DEVICES
TO PREVENT UNAUTHORIZED USE ACTING ON THE STEERING****1. Test equipment**

The test equipment shall consist of:

- 1.1. A fixture suitable for mounting the sample steering complete with the device to prevent unauthorized use attached, as defined in paragraph 3.2. of this standard,
- 1.2. A means for activating and deactivating the device to prevent unauthorized use which shall include the use of the key,
- 1.3. A means for rotating the steering shaft relative to the device to prevent unauthorized use.

2. Test method

- 2.1. A sample of the steering complete with the device to prevent unauthorized use is attached to the fixture referred to in paragraph 1.1. above.
- 2.2. One cycle of the test procedure shall consist of the following operations:
 - 2.2.1. Start position. The device to prevent unauthorized use shall be deactivated and the steering shaft shall be rotated to a position, which prevents engagement of the device to prevent unauthorized use, unless it is of the type, which permits locking in any position of the steering.
 - 2.2.2. Set to activate. The device to prevent unauthorized use shall be moved from the deactivated to the activated position, using the key.
 - 2.2.3. * Activated. The steering spindle shall be rotated such that the torque on it, at the instant of engagement of the device to prevent unauthorized use, shall be $40 \text{ Nm} \pm 2 \text{ Nm}$.
 - 2.2.4. Deactivated. The device to prevent unauthorized use shall be deactivated by the normal means, the torque being reduced to zero to facilitate disengagement.
 - 2.2.5. * Return. The steering spindle shall be rotated to a position, which prevents engagement of the device to prevent unauthorized use.
 - 2.2.6. Opposite rotation. Repeat procedures described in paragraphs 2.2.2, 2.2.3, 2.2.4 and 2.2.5, but in the opposite direction of rotation of the steering spindle.

- 2.2.7 The time interval between two successive engagements of the device shall be at least 10 seconds.
- 2.3. The wear-producing cycle shall be repeated the number of times specified in paragraph 6.1.3. of this standard.

* If the device to prevent unauthorized use permits locking in any position of the steering, the procedure described in paragraphs 2.2.3 and 2.2.5 shall be omitted

PART II - ANNEX 2
(See 6.1.4.2)

TEST PROCEDURE FOR DEVICES TO PREVENT UNAUTHORIZED USE ACTING ON THE STEERING USING A TORQUE LIMITING DEVICE

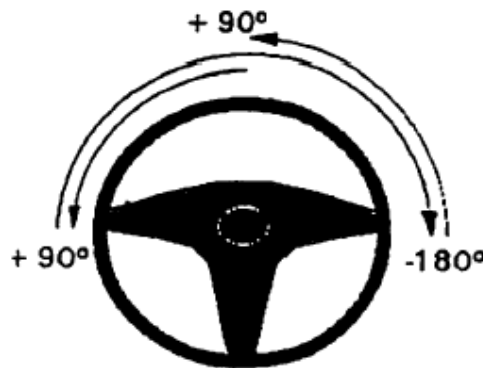
1. Test equipment

The test equipment shall consist of:

- 1.1 A fixture suitable for holding the relevant parts of a steering system or, if the test is carried out on a complete vehicle, a jacking system capable of lifting all the steered wheels clear of the ground, and
- 1.2 A device or devices capable of producing, and measuring, a torque applied to the steering control as prescribed in paragraph 2.3. The measurement precision must be less than or equal to 2 %.

2. Test procedure description

- 2.1 If the test is carried out on a complete vehicle, the test shall be carried out with all the steered wheels of the vehicle held clear of the ground.
- 2.2 The steering lock shall be activated such that the steering is blocked.
- 2.3 A torque shall be applied to the steering control such that it rotates.
- 2.4 The test cycle includes a rotation of the steering control of 90 degrees followed by a rotation in the opposite direction of 180 degrees, and a new rotation of 90 degrees in the original direction (see figure); 1 cycle = + 90 degrees / -180 degrees / + 90 degrees with a tolerance of $\pm 10\%$



- 2.5 A cycle duration is equal to $20\text{ s} \pm 2\text{ s}$.
- 2.6 Five test cycles shall be carried out.
- 2.7 During each of the test cycles the minimum recorded value of the torque shall be higher than that given in paragraph 6.1.4.2. of this standard.

ANNEX 3
(See 13.1.3)

**WEAR PRODUCING TEST PROCEDURE FOR
PROTECTIVE DEVICES ACTING ON THE STEERING**

1. Test equipment

The test equipment shall consist of:

- 1.1. A fixture suitable for mounting the sample steering complete with the protective device attached, as defined in paragraph 10.3 of this standard;
- 1.2. A means for activating and deactivating the protective device which shall include the use of the key;
- 1.3. A means for rotating the steering shaft relative to the protective device.

2. Test method

- 2.1. A sample of the steering complete with the protective device (Refer Fig. 1 below) is attached to the fixture referred to in paragraph 1.1. above.
- 2.2. One cycle of the test procedure shall consist of the following operations:
 - 2.2.1. Start position. The protective device shall be deactivated and the steering shaft shall be rotated to a position, which prevents engagement of the protective device, unless it is of the type, which permits locking in any position of the steering.
 - 2.2.2. Set to activate. The protective device shall be moved from the deactivated to the activated position, using the key.
 - 2.2.3.* Activated. The steering shaft shall be rotated such that the torque on it, at the instant of engagement of the protective device, shall be $5.85 \text{ Nm} \pm 0.25 \text{ Nm}$.
 - 2.2.4. Deactivated. The protective device shall be deactivated by the normal means, the torque being reduced to zero to facilitate disengagement.
 - 2.2.5.* Return. The steering shaft shall be rotated to a position which prevents engagement of the protective device.
 - 2.2.6. Opposite rotation. Repeat procedures described in paragraphs 2.2.2, 2.2.3, 2.2.4 and 2.2.5, but in the opposite direction of rotation of the steering shaft.
 - 2.2.7. The time interval between two successive engagements of the device shall be at least 10 seconds.
- 2.3. The wear producing cycle shall be repeated for the number of times specified in paragraph 13.1.3 of this standard.

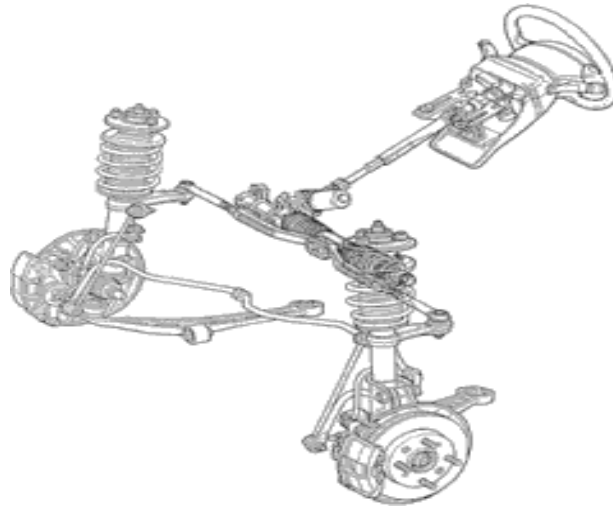


Figure 1
Steering System

Sample of steering system with devices attached to be submitted and the same would be fixed on fixture for wear producing test.

Note: This figure is only a representation of steering system. This does not suggest the kind of sample to be submitted.

* If the protective device permits locking in any position of the steering, the procedures described in paragraphs 2.2.3. and 2.2.5. shall be omitted.

ANNEX 4
(See Introduction)
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* At the time of approval of this Automotive Industry Standard (AIS)