INDUSTRY STANDARDS

The Society of Automotive Engineers of Japan (JSAE) has been approved by the Japanese Industrial Standards Committee (JISC) as the Japanese domestic deliberative organization for the Automobile Technical Committee (TC 22) ITS Technical Committee (TC 204) of the International Organization for Standardization (ISO). Under these standards organizations, the JSAE has contributed to creating ISO standards through activities such as dispatching committee members to international conferences, taking over as the international chair and the secretariat nation of the sub committees (SCs) and working groups (WGs) under the umbrella of the TC 22 and TC 204.

In addition, the JSAE contributes to technological advances, the securing of safety, and higher production efficiency with respect to vehicles and ITS through activities such as the preparation of drafts of the national Japanese Industrial Standards (JIS standards), the establishment of the organizational Japanese Automotive Standards Organization (JASO standards), and the provision of information on standards to consumers as well as the automotive industry as a whole.

In fiscal 2020, these standardization activities led to the publication of 64 ISO standards, with Japan taking the lead for 25 of them, which represents forty percent of the total. For example, the ISO 21202 (Partially automated lane change systems (PALS)) standard was issued, and is expected to help commercialize and popularize autonomous vehicles. Japan also proposed a New Work Item Proposal (NIP) on automatic emergency notification systems (D-Call Net).

One JIS standard was submitted, and JASO issued three standards and three technical papers. Examples include the JASO standard on electromagnetic compatibility (EMC), and the JASO technical paper providing guidelines on replaceable batteries for electric motorcycles.

It will be necessary to promote further standardization activities in the automotive and ITS fields to make contributions aligned with the various long-term plans not just in Japan, but throughout the world.

ISO Standards Issued in Fiscal 2020 | *Bold: Standards issued under Japanese leadership or active participation.

<table>
<thead>
<tr>
<th>ISO number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC 22 (Road vehicles (RV)): 64 standards</td>
<td></td>
</tr>
<tr>
<td>ISO TR 4804 : 2020</td>
<td>RV — Safety and cybersecurity for automated driving systems — Design, verification and validation</td>
</tr>
<tr>
<td>SC 31 (Data communication field)</td>
<td></td>
</tr>
<tr>
<td>ISO 21111-3 : 2020</td>
<td>RV — In-vehicle Ethernet — Part 3: Optical 1-Gbit/s physical entity requirements and conformance test plan</td>
</tr>
<tr>
<td>ISO 21111-5 : 2020</td>
<td>RV — In-vehicle Ethernet — Part 5: Optical 1-Gbit/s physical entity requirements and conformance test plan</td>
</tr>
<tr>
<td>ISO 23132 : 2020</td>
<td>RV — Extended Vehicle (ExVe) time critical applications — General requirements, definitions and classification methodology of time-constrained situations related to Road and ExVe Safety (RExVeS)</td>
</tr>
<tr>
<td>ISO 21806-1 : 2020</td>
<td>RV — Media Oriented Systems Transport (MOST) — Part 1 : General information and definitions</td>
</tr>
<tr>
<td>ISO 21806-4 : 2020</td>
<td>RV — Media Oriented Systems Transport (MOST) — Part 4 : Transport layer and network layer</td>
</tr>
<tr>
<td>ISO 21806-5 : 2020</td>
<td>RV — Media Oriented Systems Transport (MOST) — Part 5: Transport layer and network layer conformance test plan</td>
</tr>
<tr>
<td>ISO 21806-6 : 2020</td>
<td>RV — Media Oriented Systems Transport (MOST) — Part 6 : Data link layer</td>
</tr>
<tr>
<td>ISO 21806-7 : 2020</td>
<td>RV — Media Oriented Systems Transport (MOST) — Part 7 : Data link layer conformance test plan</td>
</tr>
<tr>
<td>ISO 15118-8 : 2020</td>
<td>RV — Vehicle to grid communication interface — Part 8 : Physical layer and data link layer requirements for wireless communication</td>
</tr>
<tr>
<td>ISO 20794-6 : 2020</td>
<td>RV — Clock extension peripheral interface (CXPI) — Part 6: Transport and network layer conformance test plan</td>
</tr>
<tr>
<td>ISO 20794-5 : 2020</td>
<td>RV — Clock extension peripheral interface (CXPI) — Part 5 : Application layer conformance test plan</td>
</tr>
<tr>
<td>ISO 20794-7 : 2020</td>
<td>RV — Clock extension peripheral interface (CXPI) — Part 7: Data link and physical layer conformance test plan</td>
</tr>
<tr>
<td>ISO 21111-1 : 2020</td>
<td>RV — In-vehicle Ethernet — Part 1 : General information and definitions</td>
</tr>
<tr>
<td>ISO number</td>
<td>Title</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ISO 21111-2 : 2020</td>
<td>RV ─ In-vehicle Ethernet ─ Part 2 : Common physical entity requirements</td>
</tr>
<tr>
<td>ISO 21806-8 : 2020</td>
<td>RV ─ Media Oriented Systems Transport (MOST) ─ Part 8 : 150-Mbit/s optical physical layer</td>
</tr>
<tr>
<td>ISO 13216-4 : 2020</td>
<td>RV ─ Anchors in vehicles and attachments to anchorages for child restraint systems ─ Part 4 : Lower tether anchorages</td>
</tr>
<tr>
<td>ISO/TS 7637-4: 2020</td>
<td>RV ─ Electrical disturbance by conduction and coupling ─ Part 4 : Electrical transient conduction along shielded high voltage supply lines only</td>
</tr>
<tr>
<td>ISO 8820-11 : 2020</td>
<td>RV ─ Fuse-links ─ Part 11 : Fuse-links with tabs (blade type) Type M (medium-high current)</td>
</tr>
<tr>
<td>ISO 12098 : 2020</td>
<td>RV ─ Connectors for the electrical connection of towing and towed vehicles ─ 15-pole connector for vehicles with 24 V nominal supply voltage</td>
</tr>
<tr>
<td>ISO 19453-6 : 2020</td>
<td>RV ─ Environmental conditions and testing for electrical and electronic equipment for drive system of electric propulsion vehicles ─ Part 6 : Traction battery packs and systems</td>
</tr>
<tr>
<td>ISO 25981 : 2020</td>
<td>RV ─ Connectors for the electrical connection of towing and towed vehicles ─ Connectors for electronically monitored charged systems with 12 V or 24 V nominal supply voltage</td>
</tr>
<tr>
<td>ISO 21780 : 2020</td>
<td>RV ─ In-vehicle Ethernet ─ Part 48 : General information and definitions</td>
</tr>
<tr>
<td>ISO 8820-10 : 2020</td>
<td>RV ─ Fuse-links ─ Part 10 : Fuse-links with tabs Type L (high current miniature)</td>
</tr>
<tr>
<td>ISO 8092-5 : 2021</td>
<td>RV ─ Connections for on-board electrical wiring harnesses ─ Part 5 : Test methods and general performance requirements for wiring harness connector operation</td>
</tr>
<tr>
<td>ISO 6969 : 2004 / AMD 1 : 2021</td>
<td>RV ─ Sound signaling devices ─ Tests after mounting on vehicle ─ Amendment 1</td>
</tr>
<tr>
<td>ISO 2534 : 2020</td>
<td>RV ─ Engine test code ─ Gross power</td>
</tr>
<tr>
<td>ISO 19724 : 2020</td>
<td>Gasoline engines with direct injection ─ Cleanliness assessment of fuel injection equipment</td>
</tr>
<tr>
<td>ISO 12103-3 : 2020</td>
<td>RV ─ Test contaminants for filter evaluation ─ Part 3 : Soot contaminant</td>
</tr>
<tr>
<td>ISO 1585 : 2020</td>
<td>RV ─ Engine test code ─ Net power</td>
</tr>
<tr>
<td>ISO 5011 : 2020</td>
<td>Inlet air cleaning equipment for internal combustion engines and compressors ─ Performance testing</td>
</tr>
<tr>
<td>ISO 22561 : 2020</td>
<td>Gasoline engines with direct fuel injection (GDI engines) ─ Installation of the injectors to the engine</td>
</tr>
<tr>
<td>ISO 21498-1 : 2021</td>
<td>Electrically propelled RV ─ Magnetic field wireless power transfer ─ Safety and interoperability requirements</td>
</tr>
<tr>
<td>ISO 21498-2 : 2021</td>
<td>Electrically propelled RV ─ Electrical specifications and tests for voltage class B systems and components ─ Part 2 : Electrical tests for components</td>
</tr>
<tr>
<td>ISO 17479 : 2013 / AMD 1 : 2020</td>
<td>Motorcycles ─ Measurement methods for gaseous exhaust emissions during inspection or maintenance ─ Amendment 1</td>
</tr>
<tr>
<td>ISO 18243 : 2017 / AMD 1 : 2020</td>
<td>Electrically propelled mopeds and motorcycles ─ Test specifications and safety requirements for lithium ion battery systems ─ Amendment 1</td>
</tr>
<tr>
<td>ISO 6727 : 2021</td>
<td>RV ─ Motorcycles and mopeds ─ Symbols for controls, indicators and tell-tales</td>
</tr>
<tr>
<td>ISO 15007 : 2020</td>
<td>RV ─ Measurement and analysis of driver visual behaviour with respect to transport information and control systems</td>
</tr>
<tr>
<td>ISO 20176 : 2020</td>
<td>RV ─ H-point machine (HPM-II) ─ Specifications and procedure for H-point determination</td>
</tr>
</tbody>
</table>

Copyright© 2021 Society of Automotive Engineers of Japan, Inc. All rights reserved
<table>
<thead>
<tr>
<th>ISO number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC 40</td>
<td>(Commercial vehicles, busses and trucks fields)</td>
</tr>
<tr>
<td>ISO 21308-2</td>
<td>RV — Product data exchange between chassis and bodywork manufacturers (BEP) — Part 2: Dimensional bodywork exchange parameter</td>
</tr>
<tr>
<td>ISO 21308-3</td>
<td>RV — Product data exchange between chassis and bodywork manufacturers (BEP) — Part 3: General, mass and administrative exchange parameters</td>
</tr>
<tr>
<td>ISO 13044-2</td>
<td>RV — Fully automatic coupling systems 24 V (FACS) for heavy commercial vehicle combinations — Part 2: Electrical and pneumatic interface for 50 mm fifth wheel couplings</td>
</tr>
<tr>
<td>SC 41</td>
<td>(Gas vehicle field)</td>
</tr>
<tr>
<td>ISO 15500-3</td>
<td>RV — Compressed natural gas (CNG) fuel system components — Part 3: Check valve</td>
</tr>
<tr>
<td>ISO 15500-6</td>
<td>RV — Compressed natural gas (CNG) fuel system components — Part 6: Automatic valve</td>
</tr>
<tr>
<td>ISO 15500-9</td>
<td>RV — Compressed natural gas (CNG) fuel system components — Part 9: Pressure regulator</td>
</tr>
<tr>
<td>ISO 15500-16</td>
<td>RV — Compressed natural gas (CNG) fuel system components — Part 16: Rigid fuel line in stainless steel</td>
</tr>
<tr>
<td>ISO 15500-18</td>
<td>RV — Compressed natural gas (CNG) fuel system components — Part 18: Filter</td>
</tr>
<tr>
<td>ISO 15500-19</td>
<td>RV — Compressed natural gas (CNG) fuel system components — Part 19: Fittings</td>
</tr>
<tr>
<td>ISO 15500-14</td>
<td>RV — Compressed natural gas (CNG) fuel system components — Part 14: Excess flow valve</td>
</tr>
<tr>
<td>ISO 15500-4</td>
<td>RV — Compressed natural gas (CNG) fuel system components — Part 4: Manual valve system</td>
</tr>
<tr>
<td>ISO 15500-5</td>
<td>RV — Compressed natural gas (CNG) fuel system components — Part 5: Manual valve system</td>
</tr>
<tr>
<td>ISO 15501-1</td>
<td>2016 / AMD 1: 2021 — RV — Compressed natural gas (CNG) fuel systems — Part 1: Safety requirements — Amendment 1</td>
</tr>
<tr>
<td>ISO 15501-14</td>
<td>2016 / AMD 1: 2021 — RV — Compressed natural gas (CNG) fuel systems — Part 1: Safety requirements — Amendment 1</td>
</tr>
<tr>
<td>ISO 17572-4</td>
<td>ITS — Location referencing for geographic databases — Part 4: Precise relative location references (precise relative profile)</td>
</tr>
<tr>
<td>ISO 20524-2</td>
<td>ITS — Geographic Data Files (GDF) GDF5.1 — Part 2: Map data used in automated driving systems, Cooperative ITS, and multi-modal transport</td>
</tr>
<tr>
<td>TC 204</td>
<td>(Intelligent transport systems (ITS)): 28 standards</td>
</tr>
<tr>
<td>ISO 17572-4</td>
<td>ITS — Location referencing for geographic databases — Part 4: Precise relative location references (precise relative profile)</td>
</tr>
<tr>
<td>ISO 20524-2</td>
<td>ITS — Geographic Data Files (GDF) GDF5.1 — Part 2: Map data used in automated driving systems, Cooperative ITS, and multi-modal transport</td>
</tr>
<tr>
<td>WG 5</td>
<td>(Automatic fee collection field) Highway Industry Development Organization</td>
</tr>
<tr>
<td>ISO/TS 17573-2</td>
<td>Electronic fee collection — System architecture for vehicle related tolling — Part 2: Vocabulary</td>
</tr>
<tr>
<td>ISO 19299</td>
<td>2020 — Electronic fee collection — Security framework</td>
</tr>
<tr>
<td>ISO 13143-1</td>
<td>2020 — Electronic fee collection — Evaluation of on-board and roadside equipment for conformity to ISO 12813 — Part 1: Test suite structure and test purposes</td>
</tr>
<tr>
<td>ISO 14907-2</td>
<td>2021 — Electronic fee collection — Test procedures for user and fixed equipment — Part 2: Conformance test for the on-board unit application interface</td>
</tr>
</tbody>
</table>

Copyright © 2021 Society of Automotive Engineers of Japan, Inc. All rights reserved
<table>
<thead>
<tr>
<th>ISO number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>WG 16 (Comm.)</td>
<td>ITS — Fast service announcement protocol (FSAP) for general purposes in ITS</td>
</tr>
<tr>
<td>ISO 22418 : 2020</td>
<td>ITS — Localized communications — Optical camera communication</td>
</tr>
<tr>
<td>ISO 17515-2 : 2020</td>
<td>ITS — Evolved universal terrestrial radio access network (E-UTRAN) — Part 2: Device to device communications (D2D)</td>
</tr>
<tr>
<td>ISO 21217 : 2020</td>
<td>ITS — Station and communication architecture</td>
</tr>
<tr>
<td>WG 17 (Nomad)</td>
<td>ITS — Vehicle interface for provisioning and support of ITS Services — Part 4: Unified vehicle interface protocol (UVIP) conformance test specification</td>
</tr>
<tr>
<td>ISO 22738 : 2020</td>
<td>ITS — Localized communications — Optical camera communication</td>
</tr>
<tr>
<td>ISO 17515-2 : 2020</td>
<td>ITS — Evolved universal terrestrial radio access network (E-UTRAN) — Part 2: Device to device communications (D2D)</td>
</tr>
<tr>
<td>ISO 20530-1 : 2020</td>
<td>ITS — Information for emergency service support via personal ITS station — Part 1: General requirements and technical definition</td>
</tr>
</tbody>
</table>

| WG 18 (Coop.) | Cooperative ITSs (C-ITS) — Position, velocity and time functionality in the ITS station |
| ISO/TS 21176 : 2020 | Cooperative ITSs (C-ITS) — Position, velocity and time functionality in the ITS station |
| ISO/TS 21184 :2021 | Cooperative ITS (C-ITS) — Global transport data management (GTDM) framework |

### JASO Standards, JASO Technical Papers, and JIS Standards Issued in Fiscal 2020

<table>
<thead>
<tr>
<th>Type</th>
<th>Standard No. or Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issued by JASO (14 standards)</td>
<td>[Established] Three standards</td>
</tr>
<tr>
<td>D008 : Low-frequency magnetic field measurement method for human exposure of automobile electrical and electronic components (1 Hz-400 kHz)</td>
<td></td>
</tr>
<tr>
<td>D019 : Performance test method for semiconductor EMC performance etc. for automatic vehicles</td>
<td></td>
</tr>
<tr>
<td>D624-4 : Automotive parts – Automotive cables – Part 4 : Low pressure aluminum cables</td>
<td></td>
</tr>
<tr>
<td>[Revised] Eight standards</td>
<td>D015-1 : Automobiles – Clock extension peripheral interface (CXPI) – Part 1 : General information and use cases definition</td>
</tr>
<tr>
<td>C407 : Truck and bus – Braking device – Dynamometer test procedures</td>
<td></td>
</tr>
<tr>
<td>D616 : Automotive parts – Test methods and general performance requirements for wiring harness connectors</td>
<td></td>
</tr>
<tr>
<td>D623-3 : Auto Parts – High Voltage Fuse Part 3 : Screw Tightening Type (H Type and J Type) and Plug Type (Q Type) High Voltage Fuse</td>
<td></td>
</tr>
<tr>
<td>F120 : Automotive parts - Tapping screw and plain washer assemblies</td>
<td></td>
</tr>
<tr>
<td>M355 : Automotive Diesel Engine Oils</td>
<td></td>
</tr>
<tr>
<td>T905 : Motorcycles – Fuel Tanks Made of Plastic Material – Testing Methods and Performance Requirements</td>
<td></td>
</tr>
<tr>
<td>T906 : Motorcycles – Fuel tanks – Test methods on air-tightness and sealing</td>
<td></td>
</tr>
<tr>
<td>[Slightly revised] Three standards</td>
<td></td>
</tr>
<tr>
<td>E014 : Automobiles – Requirements and evaluation methods of chassis dynamometers – Supplement to fuel consumption tests</td>
<td></td>
</tr>
<tr>
<td>E015 : Automobiles – Road load determination method for variation model vehicles using chassis dynamometer</td>
<td></td>
</tr>
<tr>
<td>F208 : Automotive Parts - Plastic Clips for Interior and Exterior</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical papers issued by JASO (3 papers)</th>
<th>[Established] Three standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP21001 : Automobiles – Classification of power failure modes for auxiliary equipment</td>
<td></td>
</tr>
<tr>
<td>TP2202 : Macro analysis of accidents caused by fallen objects on expressways and classification of fallen objects for the development of advanced driver support systems</td>
<td></td>
</tr>
<tr>
<td>TP21003 : Guidelines for replaceable batteries for electric motorcycles</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>JIS submission (one)</th>
<th>[Established] One standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-014 : Direct injection gasoline engines – Assembly method for high pressure fuel pumps</td>
<td></td>
</tr>
</tbody>
</table>

Copyright © 2021 Society of Automotive Engineers of Japan, Inc. All rights reserved