

JIS

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JAPANESE INDUSTRIAL STANDARD

Starter Switches for Automobiles

JIS D 5806-1979
(Reaffirmed: 1983)



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JAPANESE INDUSTRIAL STANDARD

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Starter Switches for Automobiles

D 5806-1979

(Reaffirmed: 1983)

1. Scope

This Japanese Industrial Standard specifies starter switches for automobiles, hereinafter referred to as the "switches".

Remark: Abovementioned starters mean the following:

- (1) Ignition starter switches of nominal voltage 12 V used for switching of ignition primary circuit, starting circuit and other circuits of electrical machinery and apparatus of gasoline automobiles.
- (2) Rotary-type starting switches used for switching of engine starting circuit and other circuits of electrical machinery and apparatus of Diesel engine automobiles.

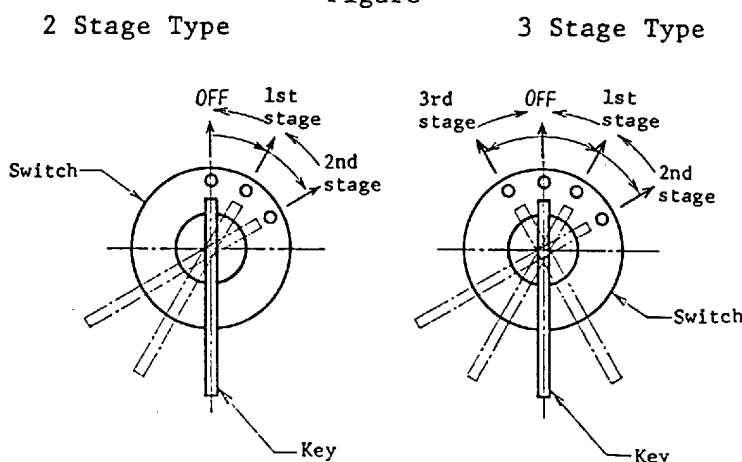
The starting switches for Diesel engine automobiles (Rotary-type) are shown in Appendix.

- (3) The units and numerical values given in { } in this standard are in accordance with the International System of Units (SI), and are appended for reference.

2. Classification and Symbols

The switches are classified and symbolized according to the type denoting switching stages (refer to Figure), the maximum load for each connection, connecting terminal and terminal marks as shown in Table 1.

Figure



Applicable Standards and Reference Standard: See page 19.

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Table 1

Class	Type	Symbol	Existence of R terminal and high or low load	Connecting terminal, terminal mark and maximum load				
				Battery	Ignition coil	Ignition coil (starting time) ⁽¹⁾	Starter relay or starter magnetic coil	Radio, air conditioner etc.
				B	IG	R	ST	ACC
Class G 1	2 stage type	1 LR	For low load with R	—	120	60	120	—
		1 L	For low load without R	—	120	—	120	—
		1 HR	For high load with R	—	240	60	120	—
		1 H	For high load without R	—	240	—	120	—
Class G 2	3 stage type	2 LR	For low load with R	—	120	60	120	120
		2 L	For low load without R	—	120	—	120	120
		2 HR	For high load with R	—	240	60	120	240
		2 H	For high load without R	—	240	—	120	240

Note (1) Terminal connected to ignition coil, without passing through resistor, at the time of starting.

3. Performances

3.1 Insulation Resistance The insulation resistance between outer frame and terminals as well as that between terminals each other of the switch shall be not less than 1 MΩ at ordinary temperature and ordinary humidity.

3.2 Contact Resistance The voltage drop due to contact resistance shall be not more than the appropriate value shown in Table 2, when the load current of 10 A is passed through the input terminal and output terminal, with the switch under ON condition.

Table 2

Unit: V

Item	Voltage drop
Before endurance inspection	0.15
After endurance inspection	0.25

3.3 Resistance to Temperature The switch shall not cause abnormality on each part under the temperature range of -30 to 80°C , and shall operate over the temperature range of -20 to 60°C .

Further the contact resistance shall satisfy the value of before the endurance inspection specified 3.2.

3.4 Temperature Rise Under ON condition of the switch, apply a load of 19 A for low load switches, 38 A for high load switches, between input terminal and output terminal until the temperature of each part becomes almost stabilized. The difference between the temperatures of current carrying part before and after application of load shall not exceed the appropriate value given in Table 3. However, ST terminal and I G terminal with R terminal are excluded.

Table 3

Unit: $^{\circ}\text{C}$

Contact material	Temperature difference
Copper or copper alloys	40
Silver or silver alloys	65

3.5 Resistance to Vibration When the switch is subjected to the vibration test of Stage 4 specified in JIS D 1601 at its working position, no unsteady contact and harmful abnormal sound shall occur.

3.6 Durability The switch shall satisfy the provisions of 3.1, 3.2 and 4.3 even after use of 25000 times under the normal working condition.

The operation is counted as one time when the knob is reciprocated once.

4. Construction

4.1 General Construction The switch shall be so constructed that it is operated by a key, the handling is simple as far as possible, it is durable and does not cause loosening at each point during working.

Moreover, at each stage other than OFF position, the key shall not come out.

4.2 Circuits to which Connection is Changed-Over The circuits of switch to which connection is changed-over shall be as shown in Table 4.

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Table 4

Type	Position of key	Connecting terminal														
		Without R terminal				With R terminal					With R terminal					
		B	IG	ST	ACC	B	IG	R ⁽²⁾	ST	ACC	B	IG	R	ST	ACC	
2 stage type	OFF															
	1st stage	○	○			○	○									
	2nd stage	○	○	○		○	○	○	○							
3 stage type	OFF															
	1st stage	○	○		○	○	○			○	○	○	○	○	○	
	2nd stage	○	○	○		○	○	○	○		○	○	○	○	○	
	3rd stage	○			○	○				○	○				○	

Note (2) Broken line in this table shows that the connection overlaps in the midway of switching.

4.3 Operation, Position Feeling and Automatic Return In the switch, the operation is smooth, and the correct stop positions (means the position of the key shown in Fig. of 2., hereinafter referred to as the "stop position"), of OFF and 1st stage of 2 stage type switch and of OFF, 1st stage and 3rd stage of 3 stage type switch shall easily and effectively be felt, hereinafter referred to as the "position feeling". The maximum operating torque of key at each intermediate of stop positions of OFF → 1st stage → OFF and OFF → 3rd stage → OFF shall be 1.5 to 3.5 kgf·cm {0.15 to 0.34 N·m}.

Further, at each intermediate of stop positions, there shall be no harmful scratch, rasping, play or the like.

The 2nd stage of key position of 2 stage type and 3 stage type switches shall be attained by rotating the key smoothly from 1st stage stop position in clockwise direction and during this operation, if let go of one's hold, the key shall return automatically to the stop position of 1st stage surely.

Moreover, the maximum operating torque at that time shall be not more than 6 kgf·cm {0.59 N·m}.

4.4 Shape and Dimensions The shape and principal dimensions of the switch shall be as shown in Attached Figure.

4.5 Play of Key The angle of play at each stage between outer frame and key of the switch in the rotation direction shall be not more than 10°. However, 2nd stage is excluded.

4.6 Robustness of Terminal The terminal of switch shall not caused harmful deformation, play of terminal fixed part or other abnormality, when a vertical static load of 5 kgf {49 N} is applied to the lead wire fixed part of the terminal for 1 min under the normal working condition.

Further, for the flat terminal or the ones soldered to lead wire, however, carry out the test by applying a static load of 5 kgf {49 N} in the outgoing direction of the lead wire.

4.7 Robustness of Mounting Part No abnormality on the mounting part and others shall take place, even if a vertical static load (W) of 5 kgf {49 N} is applied to the extreme point of body (refer to Attached Figure) for 1 min, with the switch mounted as in the normal working condition.

5. Materials and Electroplating

The materials and electroplating of main part of switch shall, as a rule, be as shown in Table 5.

The electroplating shall comply with the specification of JIS D 0201.

Table 5

Part name	Material	Electroplating
Key cylinder	Brass	MBCr 5
	Zinc alloys	MZCr 10 or MZNi 15
Key	Mild steel	MFNi 5 or MFCr 10
	Brass	MBCr 5 or MBNi 5
	German silver	—
	Stainless steel	—
Contact	Copper or copper alloys	MBAg 5 in the case of silver plating
	Silver or silver alloys	—
Terminal	Copper	—
	Brass	—
	Mild steel	MFZn 5
Machine screw for terminal	Brass	—
	Mild steel	MFZn 5
Outer frame	Mild steel	MFZn 5
	Aluminium	—
	Zinc alloys	—
	Synthetic resin	—
Face nut	Brass	MBCr 5 or MBNi 5
	Mild steel	MBNi 5 or MFCr 10
	Zinc alloys	MZCr 10 or MZNi 15
	Aluminium	MACr 20
	Synthetic resin	—
Insulation	Synthetic resin	—

Remark: In the case of MFZn 5, apply chromate treatment B or C.

6. Appearance

The appearances of face nut, key cylinder and key of the switch shall be as specified in JIS D 0201. The limit of injury shall, however, be as shown in Table 6.

Table 6

Condition of appearance	Limit
Mat spot of bruise	Width 0.5 mm max., length up to 3 mm, 2 lines max.
Bruise of basis	Length 1 to 4 mm, 2 points max.
Scratch	Length 3 to 10 mm, 2 lines max.

Remark: Table 6 is not applicable for mat spot of bruise and scratch on visible plane of rotating part of key cylinder, however, it is preferable that there is no injury as far as possible.

7. Inspection

7.1 Type Inspection The type inspection is carried out to confirm that whether the newly designed and manufactured switches demonstrate the performance just as designed or not, or that whether the switch at the time of new acceptance, demonstrate the performance complying with design specification. The type inspection shall be carried out for the following items on the same test specimen and the specimen shall pass all of the inspections. However, the test for (7), may be carried out on separate test specimen.

- (1) Construction
- (2) Materials
- (3) Appearance
- (4) Insulation resistance
- (5) Contact resistance
- (6) Resistance to temperature
- (7) Temperature rise
- (8) Operation, position feeling and automatic return
- (9) Resistance to vibration
- (10) Durability
- (11) Marking

7.2 Acceptance Inspection The acceptance inspection is that carried out at the time of manufacture or acceptance, on the switches of the same type already accepted by the type inspection, and shall be carried out on the same test specimen, for the following items and the specimen shall pass all the inspections. The inspections of the robustness of terminal specified in 4.6 and the robustness of mounting part specified in 4.7, are not carried out.

Some parts of inspection items may be omitted, subject to the agreement between parties concerned with the acceptance.

- (1) Construction
- (2) Appearance
- (3) Insulation resistance
- (4) Operation, position feeling and automatic return
- (5) Marking

7.3 Inspection Conditions

7.3.1 Standard Atmospheric Condition for Inspection Unless otherwise specified, the atmospheric conditions shall be the ordinary temperature and ordinary humidity specified in JIS Z 8703.

7.3.2 Electrical Measuring Instruments The voltmeter and ammeter, of Grade 0.5 or better specified in JIS C 1102, and the 500 V insulation resistance tester, specified in JIS C 1301 or JIS C 1302 shall be used.

7.3.3 Inspection Voltage Unless otherwise specified, the inspection voltage shall be nominal voltage 12 V.

7.3.4 Inspection Current Unless otherwise specified, the inspection current shall be 10 A.

7.3.5 Inspection Load Unless otherwise specified, use resistance load (including incandescent lamp).

7.4 Inspection Method

7.4.1 Construction Inspection The construction shall comply with the provision of 4.

7.4.2 Materials Inspection The materials shall comply with the provision of 5.

7.4.3 Appearance Inspection The appearance shall comply with the provision of 6.

7.4.4 Insulation Resistance Inspection The insulation resistance shall comply with the provision of 3.1.

7.4.5 Contact Resistance Inspection. Measure the contact resistance three times, and the mean value of them shall comply with the provision of 3.2.

7.4.6 Inspection of Resistance to Temperature

- (1) Put the switch in a low temperature chamber, under OFF condition of the switch, lower the ambient temperature inside of chamber down to -30°C , after the temperature has been almost stabilized keep it for about 60 min, then raise the temperature gradually up to -20°C . After the ambient temperature has been almost stabilized keep it for about 30 min, then operate the key of switch 10 times. Carry out the operation inspection, and the switch shall comply with the provision of 3.3.
- (2) Put the switch in a high temperature chamber, under OFF condition of the switch, raise the ambient temperature inside of chamber up to 80°C , after the temperature has been almost stabilized keep it for about 60 min, then lower the temperature gradually down to 60°C . After nearly stabilized the ambient temperature has been almost stabilized keep it for about 30 min, then operate the key of switch for 10 times. Carry out the operation inspection, and the switch shall comply with the provision of 3.3.

7.4.7 Temperature Rise Inspection Connect wires to the terminals of switch, apply a load of 19 A for low load switch or 38 A for high load switch, measure the temperature of each part using thermocouple after the temperature has been almost stabilized. The maximum temperature rise of the current carrying part shall not exceed appropriate value given in Table 3.

Carry out the measurement on the terminal nearest to the contact.

7.4.8 Inspections of Operation, Position Feeling and Automatic Return The operation of current change-over shall be reliable, there shall be no abnormality during burning of lamp and the provision of 4.3 shall be satisfied.

7.4.9 Inspection of Resistance to Vibration The resistance to vibration of switch shall comply with the provision of 3.5.

The period of vibration endurance test means the total hour of the test periods at every switching positions.

Remark: In the case of applying vibration on switch in the right and left direction, it may be applied in up-and-down direction by mounting the switch rotated by 90° from the normal working condition so that the original right and left direction of switch becomes vertical.

7.4.10 Durability Inspection When the durability test is carried out by operating the switch in accordance with the condition shown in Table 7, the switch shall show no abnormality in any part and shall comply with the provision of 3.6. Measure the contact resistance 3 times and obtain the means value.

Table 7

Item	Test condition																			
Times of operation	15 to 30 times per minute, 25000 times																			
Test voltage (between lamp terminal)	14.0 ± 0.5 V																			
Terminal load current	<table border="1"> <thead> <tr> <th>Terminal</th> <th>R</th> <th>IG</th> <th>ST</th> <th>ACC</th> </tr> </thead> <tbody> <tr> <td>For low load</td> <td>6</td> <td>10</td> <td>12</td> <td>10</td> </tr> <tr> <td>For high load</td> <td>6</td> <td>20</td> <td>12</td> <td>20</td> </tr> </tbody> </table>					Terminal	R	IG	ST	ACC	For low load	6	10	12	10	For high load	6	20	12	20
	Terminal	R	IG	ST	ACC															
	For low load	6	10	12	10															
For high load	6	20	12	20																
Unit: A, lamp or actual load.																				

7.4.11 Marking Inspection The marking shall comply with the provision of 9.

8. Designation

The switch shall be designated by the standard name or standard number, class or symbol and class of terminal or terminal mark.

Example: Starter switch for automobile 2 stage type for low load with R terminal screw terminal or JIS D 5806-1 LRS

9. Marking

Mark the following information clearly on each switch in a conspicuous place by an indelible way.

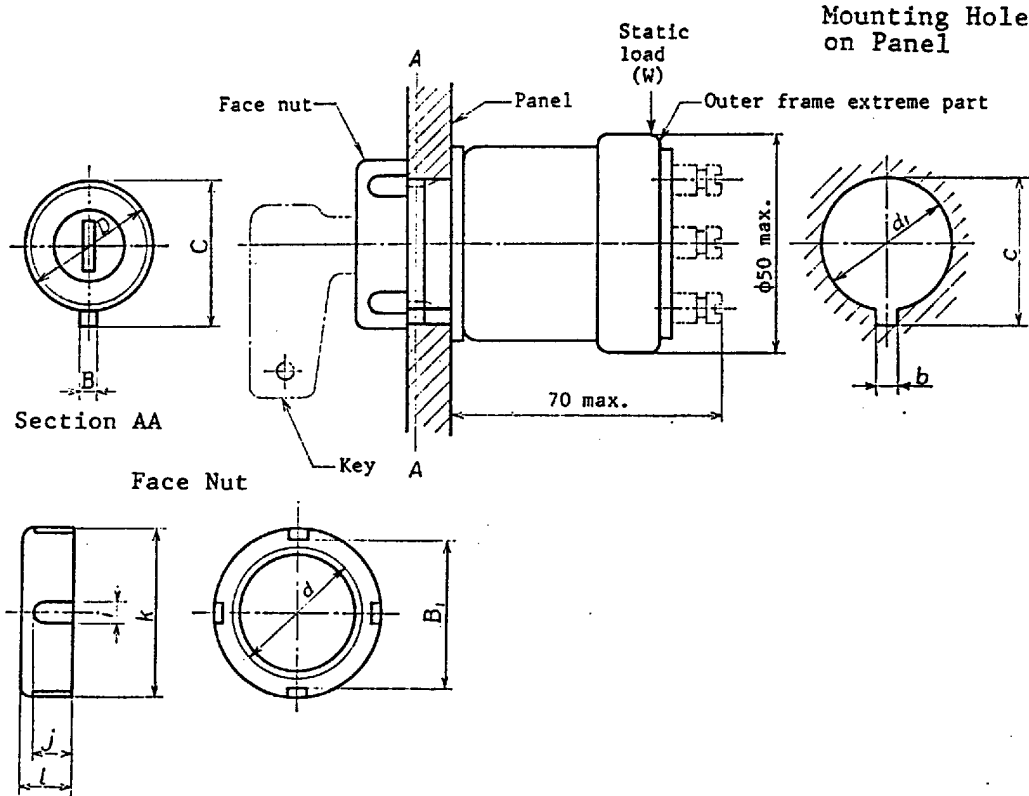
- (1) Manufacturer's name or its abbreviation
- (2) Year and month of manufacture or their abbreviation
- (3) Load (mark L for low load, not mark for high load)
- (4) Terminal mark (need not mark for the switch with multi-way type connector)

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Attached Figure

1. Principal Dimensions and Dimensions of Mounting Part

Unit: mm



Nominal size	Section of mounting part AA			Face nut						Mounting hole on panel (Reference)			
	D	C	B	d	B ₁	i	j	k	l	d ₁	c	b	
25	M 25×1	27.5	3.2 ⁰ _{-0.3}	M 25×1	26.5	3	5.5	30	8	25.5	27.5	3.5 ^{+0.1} ₀	
(22)	M 22×1	24.5		M 22×1	24.0			28		22.5			24.5
20	M 20×1	22.5		M 20×1	22.0			26		20.5			22.5
(18)	M 18×1	20.5		M 18×1	20.0			23		18.5			20.5

- Remarks
1. Dimensions of face nut show the dimensions of general use.
 2. Nominal size given in parentheses is desirable not to be used as possible.
 3. Accuracy of screw of D and d is Grade 2 specified in JIS B 0211.

2. Terminal Dimensions

- (1) The screw (Mark S) of screw terminal shall be, as a rule, Grade 2 of M4 x 0.7 or M5 x 0.8 specified in JIS B 0209.
- (2) Plug shall be the CA specified in JIS D 5403.
- (3) Male blade shall be the PA specified in JIS D 5403.

Appendix

Starting Switches for Diesel Engine Automobiles (Rotary-type)

1. Scope

This appendix specifies the rotary type starting switches, hereinafter referred to as the "switches", used for switching of engine starting circuit and other circuits of electrical machinery and apparatus of Diesel engine automobiles.

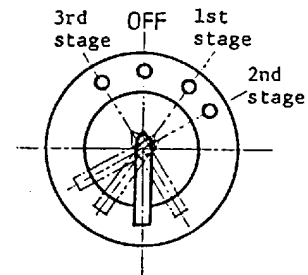
Remark: The units and numerical values given in { } in this appendix are in accordance with the International System of Units (SI), and are appended for reference.

2. Classification

2.1 Number of Switching Stages, Connection Terminal, Terminal Mark and Connection Circuit The switches shall have three switching stages and shall be classified according to the connecting terminal, terminal mark and connecting circuit as shown in Appendix Table 1.

Appendix Table 1

Class	Position of key	Connecting terminal (Terminal mark)				
		Battery (B)	Meter, lighting, radio etc. (M)	Glow Plug		Starter engage relay (S)
				(G1)	(G2)	
Class D1	3rd stage	○	—	○		
	OFF					
	1st stage	○	○			
Class D2	2nd stage	○	○		○	○
	3rd stage	○	○	○		
	1st stage	○	○			
Class D2	2nd stage	○	○		○	○
	3rd stage	○	○	○		
	1st stage	○	○			



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2.2 Connectable Maximum Load The maximum working loads connectable with M, G and S terminals shall consist of a combination of the appropriate values given in Appendix Table 2. However, the values other than the thick ones are not desirable to use as possible.

Appendix Table 2

Unit: A

Connecting terminal		
M	G	S
	5	
5	30	5
20	50	20
30	60	

Remark: In the case of using a load exceeding the value specified in the Table, it is desirable to use relay in the circuit.

3. Performances

3.1 Insulation Resistance The insulation resistance between outer frame and terminals as well as between terminals each other of the switch shall be not less than 1 MΩ at ordinary temperature and ordinary humidity.

3.2 Contact Resistance The voltage drop due to the contact resistance shall not exceed the appropriate value shown in Appendix Table 3 when the appropriate load given in Appendix Table 2 is applied between the input terminal and output terminal of switch under ON condition.

Appendix Table 3

Unit: V

Item	Voltage drop	
	Electric machine circuit	Preheater circuit
Before endurance inspection	0.15	0.15
After endurance inspection	0.25	0.4

3.3 Resistance to Temperature The switch shall not cause abnormality on each part under the temperature range of -30 to 80°C, and operate normally over the temperature range of -20 to 60°C.

Further, the insulation resistance shall satisfy the provision of 3.1, and contact resistance, the value of before the endurance inspection of 3.2.

3.4 Temperature Rise Apply the appropriate maximum load shown in Appendix Table 2 between input terminal and output terminal of the switch under ON condition, and the temperature difference between the current carrying part and the ambient temperature measured when the temperature of each part is almost stabilized shall be not more than the appropriate value given in Appendix Table 4. At the switching positions of 2nd stage and 3rd stage, the switch shall be placed ON for 30 sec.

Appendix Table 4
Unit: °C

Contact material	Temperature difference
Copper or copper alloys	40
Silver or silver alloys	65

3.5 Resistance to Vibration When the switch is subjected to the vibration test of Stage 4 specified in 5.3 (1) of JIS D 1601 at each switching position, no unsteady contact and harmful abnormal sound shall occur. For the switching position of automatic return, however, this test is not carried out.

3.6 Durability When the switch under normal working condition is tested in accordance with the test conditions of Appendix Table 5, the switch shall show no abnormality on each part and shall satisfy the provisions of 3.1, 3.2 and 4.3.

Moreover, operation number is counted as one when the key is reciprocated once.

Appendix Table 5

Item	Test condition
Times of operation number	15 to 30 times per minute, 25000 times
Test voltage	14.0 ± 0.5 V for 12 V rated voltage 28.0 ± 1.0 V for 24 V rated voltage
Terminal load	Use lamp or actual load, the value of load shall be as specified in Appendix Table 2. However, for G circuit, it shall be 120 % of the value in appendix Table 2. Resistance load may be used.

4. Construction

4.1 General Construction The switch shall be so constructed that the handling is simple, it is durable and does not cause loosening at each point during working.

Moreover, at the positions other than OFF, the key shall not come out.

4.2 Circuits to which Connection is Changed-over The circuit to which the connection is changed over shall be as shown in Appendix Table 1.

4.3 Operation, Position Feeling and Operating Force In the switch, the operation shall be smooth, and the correct stop positions (means the position of the key shown in Figure of this text, hereinafter referred to as the "stop position".) shall easily and effectively be felt. At the intermediate of stop positions, these shall be no harmful scratch, rasping, play or the like, if let go of one's hold between OFF → 3rd stages as well as 1st stage → 2nd stage, the key shall surely return automatically to OFF or 1st stage respectively.

Moreover, the maximum torque of operation at the intermediate position of OFF → 1st stage as well as 1st stage → OFF shall be 1.5 to 6 kgf·cm {0.15 to 0.59 N·m} and that at OFF → 3rd stage as well as 1st stage → 2nd stage shall be not more than 10 kgf·cm {0.98 N·m}.

4.4 Shape and Dimensions The shape and principal dimensions of the switch as shown in Appendix Figure.

4.5 Play Angle of Key At OFF and ON positions, the play angle of key to the outer frame shall be not more than 10°.

4.6 Robustness of Mounting Part No abnormality on the mounting part and others shall take place even if a vertical static load 7 kgf {69 N} is applied to the extreme point of outer frame (refer to Appendix Figure) for 1 min with the switch mounted as in the normal working condition.

4.7 Robustness of Key Under the condition of inserting the key in key cylinder, when applied a torque of 20 kgf·cm {1.96 N·m} on the knob part for 10 sec., there shall be no remarkable deformation.

4.8 Robustness of Terminal The terminal of switch, shall not caused harmful deformation, play and other abnormality when a vertical static load of 7 kgf {69 N} is applied on the lead wire fixed part of terminal for 1 min.

Further, for the flat terminal or the ones with lead wire, however, carry out the test by applying a static load of 7 kgf {69 N} in the outgoing direction of the lead wire.

5. Appearance

There shall be no failure such as crack, harmful injury to function, unevenness, rust or the like on the appearance of switch.

6. Electroplating

The electroplating applied on the switch shall comply with JIS D 0201.

7. Inspection

7.1 Type Inspection The type inspection is carried out to confirm that whether the newly designed and manufactured switches demonstrate the performance just as designed or not, or that whether the switches, at the time of new acceptance, demonstrate the performance complying with the design specification or not. The type inspection shall be carried out for the following items on the same test specimen and the specimen shall pass all the inspections. However, the test for (7), may be carried out on the separate test specimen.

- (1) Construction
- (2) Appearance
- (3) Electroplating
- (4) Insulation resistance
- (5) Contact resistance
- (6) Resistance to temperature
- (7) Temperature rise
- (8) Resistance to vibration
- (9) Durability
- (10) Marking

7.2 Acceptance Inspection The acceptance inspection is that carried out at the time of manufacture or acceptance, on the switches of the same type, accepted by the type inspection, and shall be carried out on the same test specimen, for the following each items and the specimen shall pass all of the inspections. The inspections of robustness of mounting specified in 4.6, robustness of key in 4.7 and robustness of terminal in 4.8, however, are not carried out.

Some parts of inspection items may be omitted subject to the agreement between parties concerned with the acceptance.

- (1) Construction
- (2) Appearance
- (3) Insulation resistance
- (4) Marking

7.3 Inspection Conditions

7.3.1 Standard Atmospheric Condition for Inspection Unless otherwise specified, the condition shall be the ordinary temperature and ordinary humidity specified in JIS Z 8703.

7.3.2 Electrical Measuring Instruments The voltmeter and ammeter of Grade 0.5 or better specified in JIS C 1102, and the 500 V insulation resistance tester specified in JIS C 1301 or JIS C 1302 shall be used.

7.3.3 Inspection Voltage Unless otherwise specified, the inspection voltage shall be nominal voltage.

7.3.4 Inspection Current Unless otherwise specified, the inspection current shall have the appropriate value given in Appendix Table 2.

7.3.5 Inspection Load Unless otherwise specified, use resistance load (including incandescent lamp.).

7.4 Performance Inspection

7.4.1 Insulation Resistance The insulation resistance shall comply with the provision of 3.1.

7.4.2. Contact Resistance Inspection Measure the contact resistance three times, and the mean value of them shall comply with the provision of 3.2.

7.4.3 Inspection of Resistance to Temperature

- (1) Insert the key into the switch, put switch into a low temperature chamber with the key placed at OFF position lower the ambient temperature inside of chamber down to -30°C , keep the ambient temperature for about 60 min after nearly stabilized, raise the temperature gradually up to -20°C . After the ambient temperature has been almost stabilized, keep it for 30 min, then operate the key 10 times. The switch shall comply with the provision of 3.3.
- (2) Under the same condition with (1), put the switch into a high temperature chamber, raise the ambient temperature inside of chamber up to 80°C , keep it for about 60 min after nearly stabilized, lower the temperature gradually down to 60°C . After the ambient temperature has been almost stabilized, keep it for about 30 min, operate the key 10 times. The switch shall comply with the provision of 3.3.

7.4.4 Temperature Rise Inspection The temperature rise of the switch shall comply with the provision of 3.4.

Further, carry out the measurement on the terminal nearest to the contact.

7.4.5 Inspection of Resistance to Vibration The resistance to vibration of switch shall comply with the provision of 3.5.

Remark: In the case of applying vibration on switch in the right and left direction or front and rear direction, it may be applied as up-and-down vibration by mounting the switch so that the longitudinal axis or right and left axis will become vertically.

7.4.6 Durability Inspection The durability shall comply with the provision of 3.6.

Moreover, measure the contact resistance 3 times and obtain the mean value.

7.5 Construction Inspection The construction shall comply with the provision of 4.

7.6 Appearance Inspection The appearance is inspected visually and shall comply with the provision of 5.

7.7 Electroplating The electroplating shall comply with the provision of 6.

7.8 Marking Inspection The marking shall comply with the provision of 9.

8. Designation

The designation of switch shall be done by the standard name or standard number, and class.

Example: Starting Switch for Diesel Engine Automobiles
(Rotary Type) Class D1 or
JIS D 5806-Class D1.

9. Marking

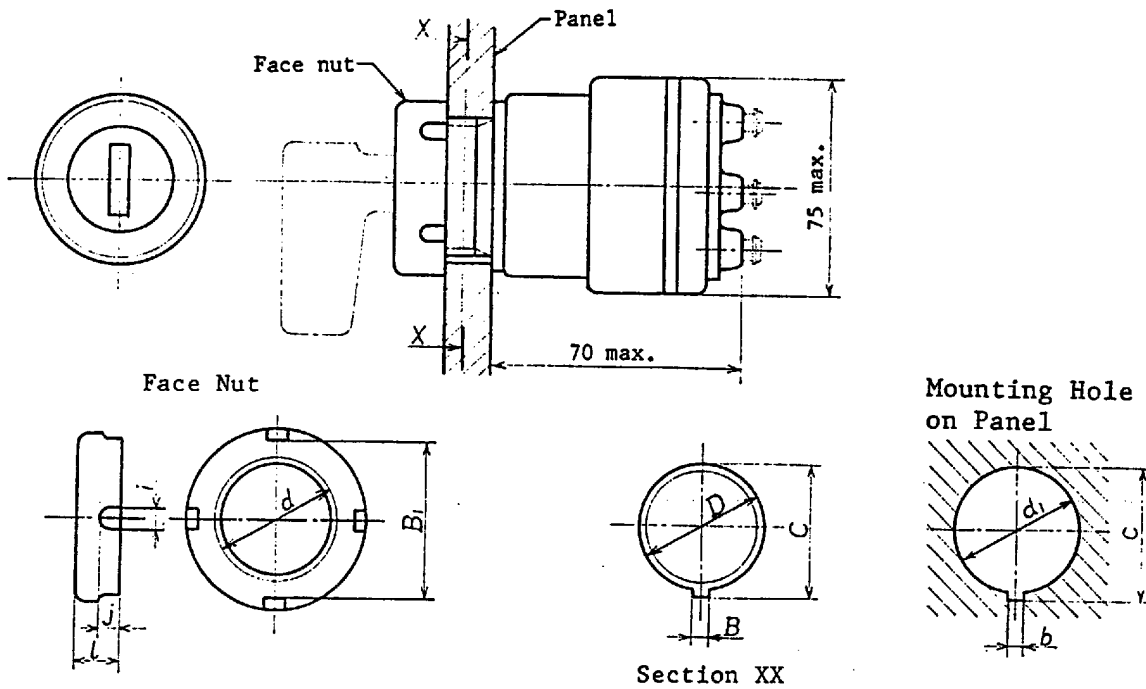
Mark the following information clearly on each switch, as simple substance, in a conspicuous place by an indelible way.

- (1) Manufacturer's name or abbreviation
- (2) Year and month of manufacture or their abbreviation
- (3) Terminal mark (need not mark for the switch with multi-way type connector.)
- (4) Nominal voltage (for the switch with nominal voltage 12 V/24 V, marking is not needed.)

Appendix Figure

Unit: mm

1. Principal Dimensions and Dimensions of Mounting Part



Nominal size	Face nut (Reference)					Section XX			Mounting hole on panel (Reference)		
	d	B_1	i	j	l	D	C	B	d_1	c	b
20	M 20×1	22.0	3	5.5	8	M 20×1	$22.5_{-0.4}^{-0.1}$	$3.2_{-0.3}^0$	$20.5_{0}^{+0.2}$	$22.5_{0}^{+0.2}$	$3.5_{0}^{+0.1}$
25	M 25×1	26.5	3	5.5	8	M 25×1	$27.5_{-0.4}^{-0.1}$	$3.2_{-0.3}^0$	$25.5_{0}^{+0.2}$	$27.5_{0}^{+0.2}$	$3.5_{0}^{+0.1}$
28	M 28×1	29.5	3	5.5	8	M 28×1	$30.5_{-0.4}^{-0.1}$	$3.2_{-0.3}^0$	$28.5_{0}^{+0.2}$	$31.0_{0}^{+0.2}$	$3.5_{0}^{+0.1}$

- Remarks
- Dimensions of face nut show the dimensions of general use.
 - Accuracy of screw of d and D is Grade 2 specified in JIS B 0211.

2. Terminal Dimensions

- The screw (Mark S) of screw terminal shall be, as a rule, Grade 2 of M4 x 0.7 or M5 x 0.8 specified in JIS B 0209.
- Plug shall be the CA specified in JIS D 5403.
- Male blade shall be the PA specified in JIS D 5403.

Applicable Standards:

JIS B 0209-Limits of Sizes and Tolerances for Metric Coarse Screw
Threads

JIS B 0211-Limits of Sizes and Tolerances for Metric Fine Screw
Threads

JIS C 1102-Electrical Indicating Instruments

JIS C 1301-Insulation Resistance Testers (Magneto Generator Operated)

JIS C 1302-Insulation Resistance Testers (Battery Operated)

JIS D 0201-General Rules of Electroplating for Automobile Parts

JIS D 1601-Vibration Testing Method for Automobile Parts

JIS D 5403-Cable Terminals for Automobiles

JIS Z 8703-Standard Atmospheric Conditions for Testing

Reference Standard:

JIS D 5812-Steering Locks with Ignition Switches for Automobiles