

KOREAN INDUSTRIAL STANDARD

Windshield Wiper Motors for Automobiles

1. Scope

This Korean Industrial Standard specifies the wiper motors for automobiles, hereinafter referred to as the "wiper motors".

Remark In this standard, units and numerical values in { } are in accordance with the International System of Units, and are given for reference only.

2. Definition

The terms and the meanings in this standard shall comply with KS R 0019 (Glossary of Terms Relating to Electric Equipment for Automobiles) and the followings:

(1) Single Speed Type

The type that the revolution speed of the motor shaft is variable.

(2) Double Speed Type

The type with 2 revolution speeds of the motor.

Related Standards:	KS A 0006	Standard Atmospheric Conditions for Testing
	KS A 0701	Method of Measurement of Sound Level
	KS B 0211	Limits of Sizes and Tolerances for Metric Coarse Screw Threads
	KS B 0214	Limits of Sizes and Tolerance for Metric Fine Screw Threads
	KS R 0013	General Rules of Electroplating for Automobile Parts
	KS R 0016	Method of High and Low Temperature Test for Automobile Parts
	KS R 1034	Vibration Testing Method for Automobile Parts
	KS R 5002	Standard Voltage for Automobiles
	KS C 1502	Sound Level Meters
	KS C 3311	Low Voltage Cables for Automobile
	KS C 4004	Classification of Materials for Insulation of Electrical Machinery and Apparatus

(3) Non-Stepped Variable Speed Type

The type that the revolution speed of the motor shaft is variable without any speed step.

(4) Cooled State

The state when the inner and the ambient temperature of the motor is at the normal temperature in the same.

(5) Restricted Torque

The torque when the motor shaft of R type or final revolution shaft of P type or F type is stopped in the cooled state (See Table 1 in 3.)

(6) Nominal Torque

The restricted torque indicated by the manufacturers of the wiper motor. The unit shall be expressed in kgf. cm {newton meter (N. m)}. For the double speed type, the nominal torque shall be the torque at low speed and for the non-stepped variable speed type, the torque at lower limit speed.

(7) Starting Torque

In the P type (See Table 1 in 3), the maximum starting torque of the motor shaft at the cooled state.

(8) Regular Position Stopping system

The system which make the motor shaft stopped automobically at the regular position when the wiper switch is OFF.

(9) Lower Position Stopping System

The system which make the wiper arm go down and stopped at specified position from the wiping angle in the regular stopping position of (8) (See Fig. 1).

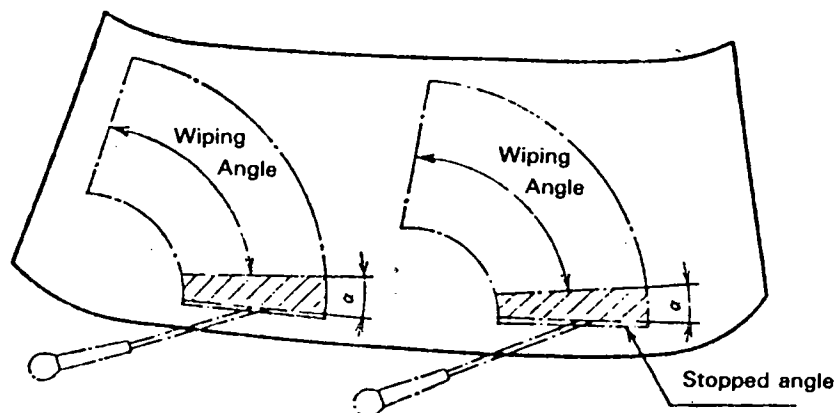


Fig. 1

α : Lowered Angle

3. Class and Accessories

Classification, accessories, its symbol and construction shall be as given in Table 1 and Table 2.

Table 1

Classification	Symbol	Construction
Reciprocation type	P	Construction that the motor shaft is reciprocated
Revolution type	R	Construction that the motor shaft is revolved
Belt type	F	Construction that the wiper shaft is worked by the belt.

Table 2

Accessory	Symbol	Construction
Regular position stopping system	T	See 2. (8)
Lower position stopping system	U	See 2. (9)

4. Voltage

4.1 Nominal Voltage

The nominal voltage shall be 6V, 12V and 24V in accordance with KS R 5002.

4.2 Test Voltage

The test voltage shall comply with Table 3.

Table 3

Unit: V

Nominal voltage	6	12	24
Standard working test voltage	6.5 ± 0.2	13.5 ± 0.3	27 ± 0.6
Durability test voltage	7.0 ± 0.5	14.0 ± 0.5	28.0 ± 1.0

5. Number of No -Load Revolutions

The number of no -load revolutions is the number of revolutions after the wiper motor is worked at no -load state for 30 minutes or more and when the revolutions are stabilized. It shall be as given in Table 4. The unit shall be expressed in revolution per minute or number of reciprocations.

Table 4

Unit: cycle/min {min⁻¹}

Speed type	Symbol	Number of no-load revolutions		
Single speed type	S	55		
Double speed type	D	High speed	40	50 55
		Low speed	70	75 80
Non-step variable speed	V	45 to 90		

Remark The voltage at the terminal of the wiper motor shall be the standard working test voltage specified in 4.2.

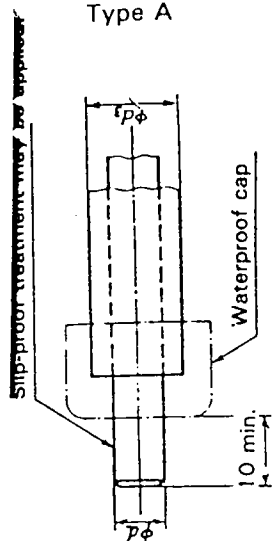
6. Construction

Construction shall be as follows:

- (1) All parts of the wiper motor shall be rigid and fabricated perfectly.
- (2) The wiper shaft and its shaft pipe shall be of waterproof construction and the dimensions of each part shall comply with Fig. 2, as a rule.
- (3) As a rule, the mounting dimensions of the wiper motor shall comply with Fig. 3.
- (4) As a rule, the lead wire and the terminal arrangement of the wiper motor shall comply with Fig. 4.

Type A

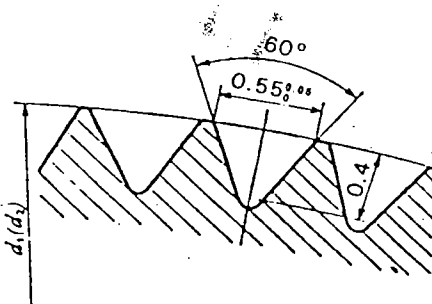
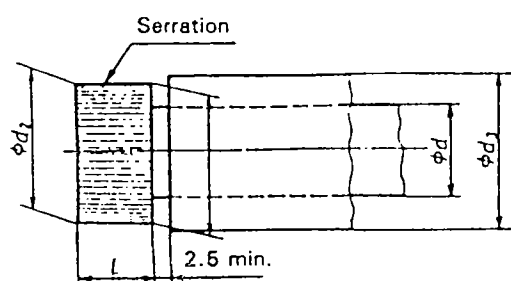
Unit: mm



Designation	ϕd	ϕd_1	In case 0.75 d_1 is screw
6	$6^{+0.03}_{-0.03}$	9	M 9 × 0.75
		12	M 12 × 1
8	$8^{+0.03}_{-0.03}$	12	M 12 × 1
		14	M 14 × 1
10	$10^{+0.03}_{-0.03}$	14	M 14 × 1
		16	M 16 × 1

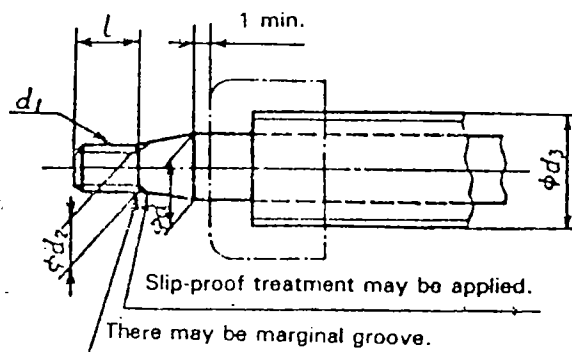
Type B

Sectional view of serration part



Designation	ϕd	ϕd_1	ϕd_2	ϕd_3	l	No. of tooth	When d is screw threaded
14	6	$13.9^{+0}_{-0.1}$	$13.7^{+0}_{-0.2}$	16	9.5	72	M16 × 1 or M16 × 1.5
	8						
16	8	$15.9^{+0}_{-0.15}$	$15.7^{+0}_{-0.15}$	18	12.5	84	M18 × 1 or M18 × 1.5
	10						

Type C



Designation	ϕd	d_1	ϕd_2	d_3	l	Taper	When d is screw threaded
6	$\begin{matrix} +0.03 \\ 6 \\ -0.05 \end{matrix}$	M5 $\times$ 0.8	5	9	6.5	1/5	M9 $\times$ 0.75
				12			M 12 $\times$ 1
8	$\begin{matrix} +0.03 \\ 8 \\ -0.10 \end{matrix}$	M 6	6.5	12	8	1/3	M 12 $\times$ 1
				14			M 14 $\times$ 1
10	$\begin{matrix} +0.03 \\ 10 \\ -0.10 \end{matrix}$	M 8	8.5	14	9	1/3	M 14 $\times$ 1
				16			M16 $\times$ 2 or M 15 $\times$ 1.5
				18			M18 $\times$ 1 or M18 $\times$ 1.5

Remark The tolerance of screw thread shall be Class 3 specified in KS B 0211 and KS B 0214. When the screw is plated the accuracy on screw thread shall be such that the upper deviation is 0.

Fig. 2 Shapes and Dimensions of Wiper Shaft and Shaft Pipe