

International Standard



7398

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Road vehicles — Motorcycles — D.C. flasher units

Véhicules routiers — Motocycles — Centrales clignotantes en courant continu

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7398 was prepared by Technical Committee ISO/TC 22, *Road vehicles*.

Road vehicles — Motorcycles — D.C. flasher units

1 Scope

This International Standard defines the electrical characteristics with which D.C. flasher units for motorcycles shall comply when submitted for type testing.

2 Field of application

This International Standard applies to flashers intended for use on motorcycles (as defined in ISO 3833) with 6 V or 12 V systems.

3 References

ISO 3833, *Road vehicles — Types — Terms and definitions*.

IEC Publication 809-2, *Lamps for road vehicles — Part 2: Performance requirements*.¹⁾

4 General

4.1 Identification

Each flasher shall show, legibly and indelibly, the trade name or mark of the manufacturer, the rated voltage, and the identification numbers of the terminals in accordance with table 1, and the wattages of the lamps for which the flasher is designed.

Table 1 — Identification of the flasher unit terminal

Identification number of the terminals ¹⁾	Allocation
1	Current supply
2	To the turn signal switch
4	Common return
5	To the tell-tale lamp
7	"Off" circuit of the operating tell-tale
8	Return for the turn signal switch, left side
9	Return for the turn signal switch, right side
10 ²⁾	Indicator lights to the left
11 ²⁾	Indicator lights to the right

1) Other terminal identifications are allowed.

2) When front and rear direction indicator lights of a motorcycle are individually connected to the flasher, the corresponding terminals shall each have the same identification number.

4.2 Functions

The functions of the flashers may be the following :

- flasher exclusively for direction indicator lights;
- flasher exclusively for hazard warning signalling;
- combined flasher for direction indicator lights and hazard warning.

1) At present at the stage of draft.

5 Electrical characteristics

5.1 Working voltage

The working voltage is the voltage existing between points D and E of the test circuit according to 5.3, with the flasher short-circuited.

5.2 General test conditions

If not otherwise specified, the flasher shall be tested in a room at an ambient temperature of $23 \pm 5 \text{ }^{\circ}\text{C}$, at a working voltage of 6,5 V or 13 V.

The flashers shall be tested in the position (or positions) indicated by the manufacturer.

5.3 Test circuitry and equipment

5.3.1 Wiring diagram

The resistance in the circuitry shall have the values indicated in the wiring diagram shown in figure 1. The resistances of the cables and the ammeter are included in the resistances indicated in the wiring diagram. To check these resistances, the flasher and the filament lamps shall be short-circuited by two shunts with a resistance not exceeding 0,005 Ω each.

5.3.2 Filament lamps

Only filament lamps in accordance with IEC Publication 809-2 shall be used. This does not apply to tell-tale lamps when they are not connected in parallel to the main lamps.

5.3.3 Measuring equipment

The measuring equipment used to measure the flash-rate, the "on"-time, the starting time, and the voltage drop in the flasher shall not disturb the circuit.

5.3.4 Power supply

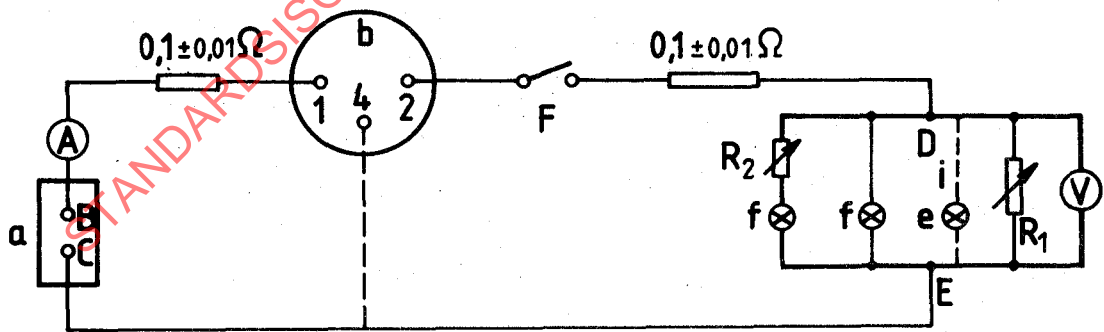
The stabilized power supply used for the measurements shall comply with the following requirements :

5.3.4.1 For all tests, except for the test conducted according to 6.10 :

- a) the stabilized power supply shall be capable of supplying the steady load current continuously and the inrush current necessary for the tests;
- b) the voltage between B and C (see figure 1) shall not deviate by more than 1,0 V when the load is raised from 0 to the maximum value (inrush current included). The voltage variation shall not exceed 370 mV after 100 μs ;
- c) static regulation : the voltage between B and C (see figure 1) shall not deviate by more than 2 % with changes in static load from 0 to the maximum stabilized value (not including inrush current), or for static input line voltage variations;
- d) ripple voltage : maximum 75 mV, peak to peak.

5.3.4.2 For the durability test (see 6.10) :

- a) the voltage between B and C (see figure 1) shall be 7 V or 14 V and 6,5 V or 13 V according to the mode of use of the flasher (see 6.10.1 and 6.10.2);



- | | |
|-----------------------------|--|
| a = stabilized power supply | f = main lamps |
| b = flasher unit | F = switch |
| e = tell-tale lamp | R ₁ , R ₂ = trimming resistors |

Figure 1 — Example of a wiring diagram to test flashers

b) the voltage between B and C (see figure 1) shall not deviate by more than 1,0 V when the load is raised from 0 to the maximum load (inrush current included) : the voltage variation shall not exceed 370 mV after 100 μ s;

c) static regulation : the voltage between B and C (see figure 1) shall not deviate by more than 2 % with changes in static load from 0 to the maximum load (not including inrush current), or for static input line voltage variations;

d) ripple voltage : maximum 300 mV, peak to peak.

5.4 Adjustments (see figure 1)

5.4.1 The voltage at the terminals D and E of the filament lamps shall be adjusted to 6,75 V or 13,5 V after the flasher has been short-circuited by a shunt in accordance with 5.3.1.

The lamps used for the tests shall be selected so that the sum of the wattages does not deviate by more than + 2 % and - 6 % from the sum of the corresponding mean wattage value at 6,75 V or 13,5 V.

The current to obtain the electrical load of the motorcycle shall be adjusted, exact to 0,5 %, to the sum of the corresponding mean wattage values at test voltage, by adjusting one of the trimmer resistors R_1 or R_2 , with the other neutralized.

The filament lamps of the tell-tales shall be included when they are connected in parallel to the main lamps.

For the tests, the power supply shall be so adjusted to obtain the voltages specified at the terminals D and E at the different test temperatures without re-adjustment of the trimming resistors R_1 or R_2 .

5.4.2 Where an operating tell-tale is fitted, it shall be connected in the test circuit as indicated by the manufacturer.

5.4.3 Where used as hazard warning signals, an additional filament lamp shall be provided corresponding to the tell-tale for the hazard warning signal in accordance with the manufacturer's instructions.

6 Test procedure

6.1 Starting time

6.1.1 By convention, the following terms apply :

— **beginning of the current "on"-time** : the moment when, starting from a voltage equal to or less than 1,5 V (or 3 V), the working voltage reaches 5,5 V (or 11 V);

— **beginning of the current "off"-time** : the moment when, starting from a voltage equal to or exceeding 5,5 V (or 11 V), the working voltage reaches 1,5 V (or 3 V).

6.1.2 The beginning of the first current "on"-time shall be not more than 1,0 s after closing the switch F at a previously set working voltage of 6,5 V or 13 V.

6.1.3 The period of time for the first current "on"-time shall be at least 0,2 s.

6.1.4 The beginning of the first current "off"-time shall be not more than 1,5 s after closing the switch F at a previously set working voltage of 6,5 V or 13 V.

6.1.5 The requirements of 6.1.2, 6.1.3 and 6.1.4 shall be complied with averaged over three starts, separated by a cooling interval of at least 5 min. The same requirement shall be complied with for one start only after 5 min of continuous operation.

6.2 Frequency and current "on"-time

6.2.1 Flash-rate

6.2.1.1 Functioning as a direction indicator

With the lowest and the highest electrical load (i.e. for the smallest and the greatest number of lamps for which the flasher involved is designed), the flash-rate shall comply with the requirements of table 2 when, after at least five consecutive cycles, the mean value of at least three consecutive cycles is determined.

Table 2 — Flash-rate for flashers functioning as direction indicator signals

Working voltage V		Stabilized temperature °C	Flash-rate cycles/min
6	12	- 18 $\pm$ 2,5	60 to 120
7,5	15	- 18 $\pm$ 2,5	
5,5	11	52 $\pm$ 2,5	
7	14	52 $\pm$ 2,5	
6,5	13	23 $\pm$ 5	

Measurements shall be taken after 2 h stabilization at the specified temperatures. The time of operation at the temperature of - 18 °C shall not exceed 15 s. At the temperature of 52 °C, measurements shall be taken after 5 $\pm$ 1 min of continuous operation.

6.2.1.2 Functioning as a hazard warning

With the lowest and the highest electrical load specified by the manufacturer, the flash-rate shall comply with the values of table 3 when, after at least five consecutive cycles, the mean value of at least three consecutive cycles is determined.

Table 3 — Flash-rate for flashers functioning as hazard warning signals

Working voltage V		Stabilized temperature after 2 h °C	Flash-rate cycles/min
5,5 and 6,5	11,0 and 13,0	- 18 $\pm$ 2,5 23 $\pm$ 5 52 $\pm$ 2,5	60 to 120

6.2.2 Current "on"-time

The current "on"-time (ratio, as a percentage, of the current "on"-time over one cycle) shall be measured after at least five consecutive cycles by determining the mean value of at least three consecutive cycles under the conditions of temperature and voltage defined in 6.2.1.1 and 6.2.1.2.

Under these conditions, the current "on"-time shall remain between 30 % and 75 %.

6.3 Checking

6.3.1 Normal conditions (all lamps operating)

When all lamps are operating normally, the audible and/or optical operating tell-tale(s) (if any) shall operate, at the rate of the main filament lamps, in phase or in counterphase at temperatures of $-18 \pm 2,5$ °C, 23 ± 5 °C and $52 \pm 2,5$ °C, and in the range of working voltages between 5,5 V and 7 V or between 11 V and 14 V. The tell-tale(s), if any, need not function when in hazard warning.

This test shall be carried out in accordance with 5.4, but without re-adjustment of the resistors R_1 and R_2 .

6.3.2 Indication of a filament lamp failure

In the case of a failure of a main filament lamp at temperatures of -18 °C $\pm 2,5$ °C, 23 ± 5 °C and $52 \pm 2,5$ °C, and in the range of working voltages between 5,5 V and 7 V or between 11 V and 14 V, the audible and/or optical operating tell-tale(s) (if any) shall indicate this failure either by ceasing to function or by a change of frequency.

In the case of a tell-tale lamp, it is considered that the tell-tale ceases to function when it remains either constantly extinguished or lit.

The unaffected main filament lamp shall either remain lit or continue to flash, in which case a change in frequency is permitted.

This test shall be carried out in accordance with 5.4, but without re-adjustment of resistors R_1 and R_2 .

6.4 Voltage drop

Measurements shall be carried out after at least five complete cycles. With the flasher supplied with 6,5 V or 13 V, the smallest voltage drop measured between the input and output terminals considered shall not exceed 0,4 V when operating for direction indicating and 0,5 V when operating for hazard warning.

6.5 Dielectric strength

When new and in an ambient air relative humidity of 45 % to 75 %, the flashers shall be capable of withstanding for 1 min a voltage of 1 000 V r.m.s. with a frequency of 50 Hz or 60 Hz between the terminals and the exterior metallic parts (mounting

brackets, housing, rivets), if these parts are not electrically connected to one of the terminals.

This test is not required where such exterior metallic parts do not exist or if an electrical connection exists as stated above.

6.6 Overload strength

Before the test, the flasher terminals considered shall be shunted by 5 m Ω max. With the resistor R_3 , the current shall be adjusted to 25 A (see figure 2). The shunt shall then be removed for the test.

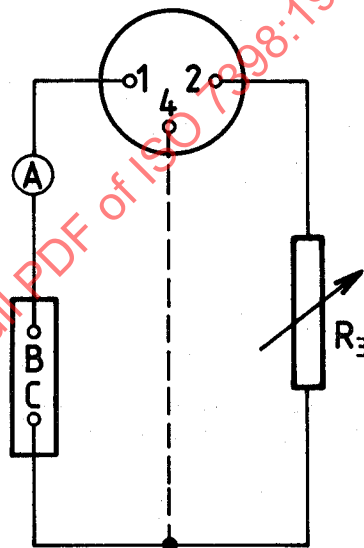


Figure 2 — Wiring diagram for overload strength test

With a voltage of 6,5 V or 13 V, the flasher shall be capable of resisting a maximum current of 25 A¹⁾ once only for 10 s between the input and output terminals considered, with the exception of tell-tale circuits.

6.7 Vibration test

The flasher shall be mounted on a test bench in the position and with the mounting method corresponding to that on the vehicle. The test shall be carried out at an ambient temperature of 23 ± 5 °C.

6.7.1 Operating tell-tales

With sinusoidal vibrations between 20 and 200 Hz with an acceleration amplitude of 50 m/s², the flash-rates of the main filament lamps shall comply with the specifications of 6.2.1. However, this test is only required at a temperature of 23 ± 5 °C. The tell-tales shall also still function. Momentary

1) This value will be increased to 35 A one year after the issue of this International Standard.