Instruction Manual
NO. 7820-00 Event Recorder

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EK-R03001-1

This instrument is used connecting a tipping bucket type rainfall sensor with a cable. Numbers of electric contacts (pulse) are recorded on a chart that wounded around a cylinder.

Main Component Parts

1. Cylinder type clock : Quartz clock driven by a battery
2. Recording pen : Cartridge pen (violet)
3. DC solenoid
4. Snail cam and ratchet mechanism
5. Damping device : Liquid type
6. Base and cover
7. Battery for clock : C battery x 1 pc.
8. Batteries for counter : D battery x 2 pcs

Specifications

1.	Type	: Electromagnet activated ratchet
2.	Cylinder speed	: 1-day rotation: 12.0mm per hour 7-day rotation: 43.5mm per day
3.	Effective width of chart	: 100mm
4.	Min. graduation	: 2mm
5.	Movement width of pen per pulse	: 1mm (a half of the scale)
6.	Movement of pen	: The pen moves up a half of the scale per pulse. When the pen reaches 100 pulses, it automatically returns to zero to begin another traverse.
7.	Min. operative electric current	: 60mA
8.	Resistant of solenoid coil	: approx. 32ohm
9.	Power requirements	: ① 3VDC (2 D batteries are built into the unit) ② External battery (3 to 12VDC) ③ Allowable electric current: 400mA
10.	Width of input pulse	: More than 0.1sec. (ON. OFF signal by contact)
11.	Contact interval	: More than 0.2sec. (Interval between ON and OFF)
12.	Cylinder rotation	: 1-day and 7-day changed by the gears provided.
13.	Operation ambient	: -10 to +40°C
14.	Dimensions and Weights	: 300(W) x 140(D) x 200(H) mm, approx. 3.7kgs
15.	Standard accessories	: One C battery, two D batteries, 55 sheets of 7-day chart, one cartridge pen is a factory set

Cautions on installation place

Do not install the unit in a place subject to vibration, shocks and inclination.

How to Use

1. Wiring (refer to the drawing (DWG) No. 941-003)

2. Replacement of chart and other preparations (refer to DWG No. 860-016 and 860-014)

   (1) Pull the pen lifting bar toward you to separate the pen from cylinder.

   (2) Pull the chart holder upward and remove used chart. (DWG No. 860-014)

   (3) Wind the chart on to cylinder so that the lower edge of new chart is closely applied to the bottom lip of cylinder. Overlap both ends of chart at the chart holder and attach the chart holder to hold the chart (DWG No. 860-014)

   (4) Pour water or oil containing little viscosity into the vessel of damper. This is provided to slow the pen's descent when the pen returns to zero. (DWG No. 860-016)

   (5) To move the pen position by hand, push the suction plate of solenoid ⑤ downward and release. Ratchet wheel ⑮ forwards by one tooth and the pen rises for one pulse. (DWG No. 860-016)

   (6) Confirm that the pen tip is on the zero scale of chart. If the pen tip is deviated, loosen lock nut ⑨ and make adjustments turning zero adjustment screw ⑩. (DWG No. 860-016)

   (7) Remove cap of pen. (Be careful not to touch the pen tip with fingers or ink will not flow smoothly owing to grease.)

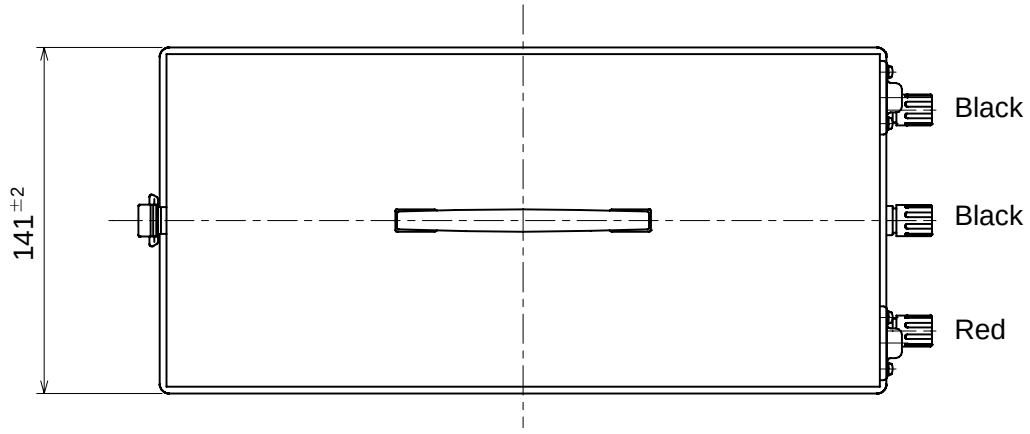
   (8) Install two C batteries into the battery compartment on top of cylinder being careful about the polarity of + and – . Battery life will be about one year, however in the place where temperature is below 0°C, its performance will drop. In such an ambient, use alkali batteries (DWG No. 860-014)

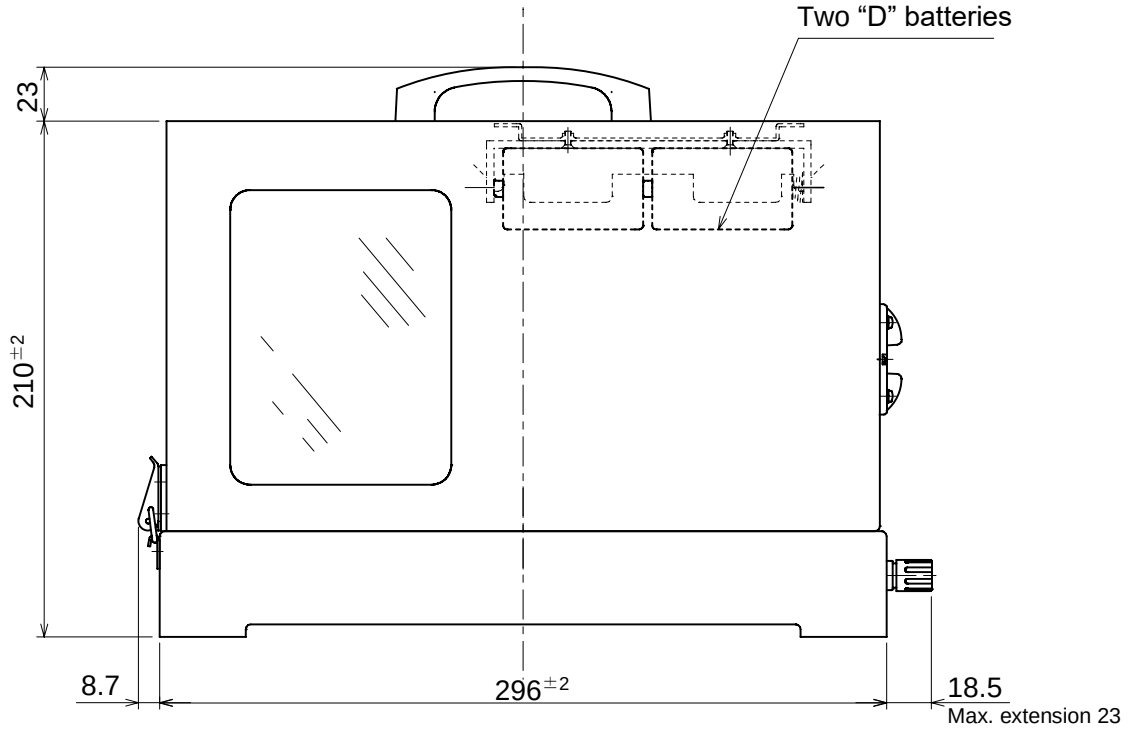
   (9) Align the pen tip with the time line of chart. Turn the cylinder seen from above counterclockwise so that the error by gear gap will be decreased.

   (10) Two D batteries (3VDC) are used for the counter to drive the solenoid. Install the batteries in the battery compartment located in the cover. The solenoid generates noise and surge absorber of 22V is inserted. (DWG No. 811-022, 941-003)

3. Change the Chart-forwarding Speed (DWG No. 860-015)
   There are two shafts on the bottom of the cylinder that are A (24H) for 1-day and B (168H) for 7-day period. Install the either of 1-day or 7-day pinion onto the proper shaft to change the recording period.

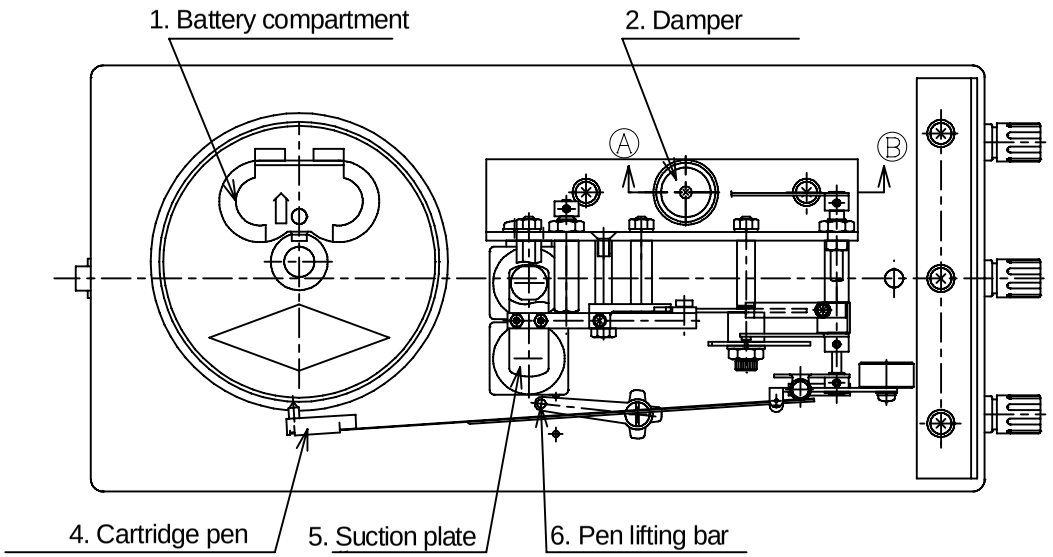
4. External supply of power (Refer to DWG No. 941-003)
   When the power is supplied from the external batteries (3 to 12VDC), be sure to remove the built-in batteries.
   The min. voltage is required so that the electric current flows within 85mA to 150mA.

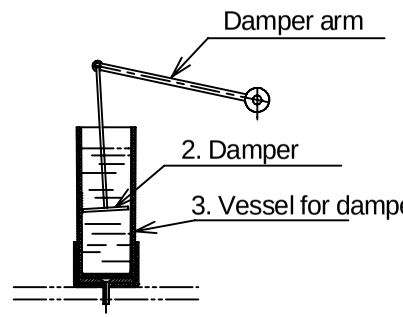




Material of cover and base
: Steel plate

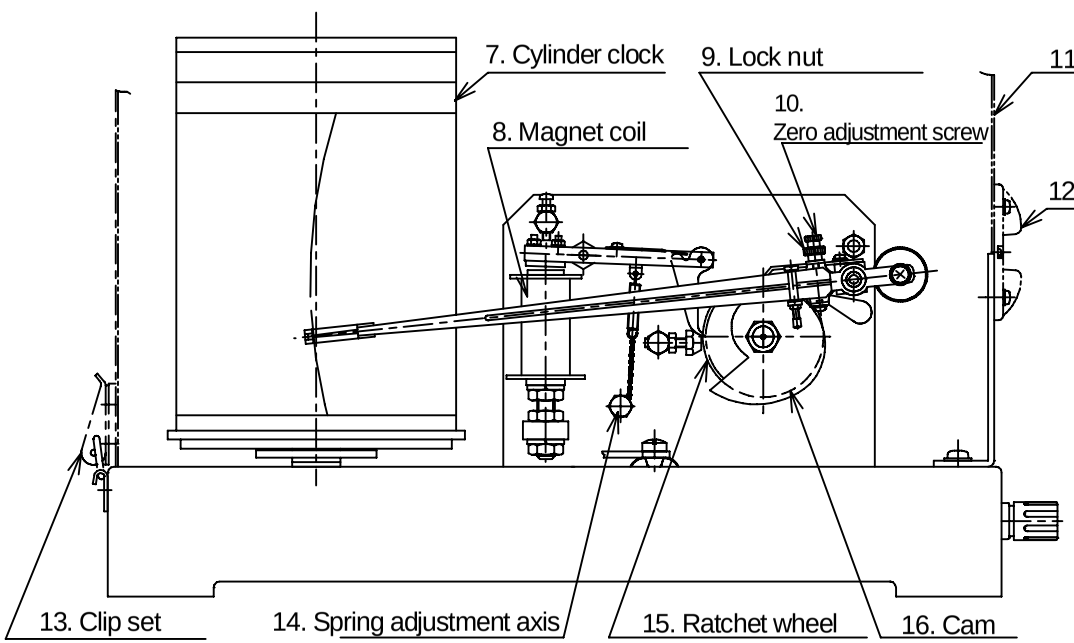
COLOR	MASS	CHIFE	CHECK	DRAWN	Event Recorder	
5GY6/1	4KG					
DATE	SCALE	REG. No.			DWG. No.	811-022
2000.12.12						

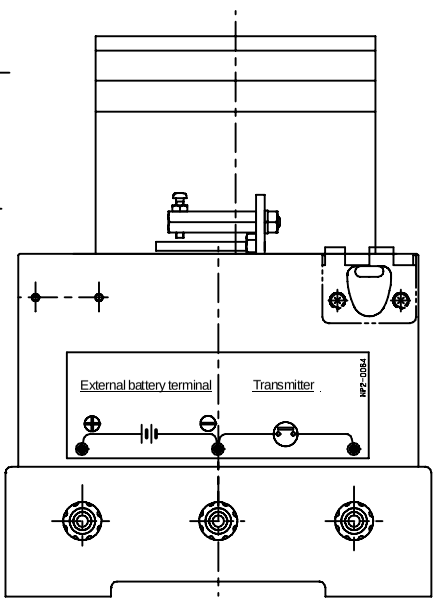




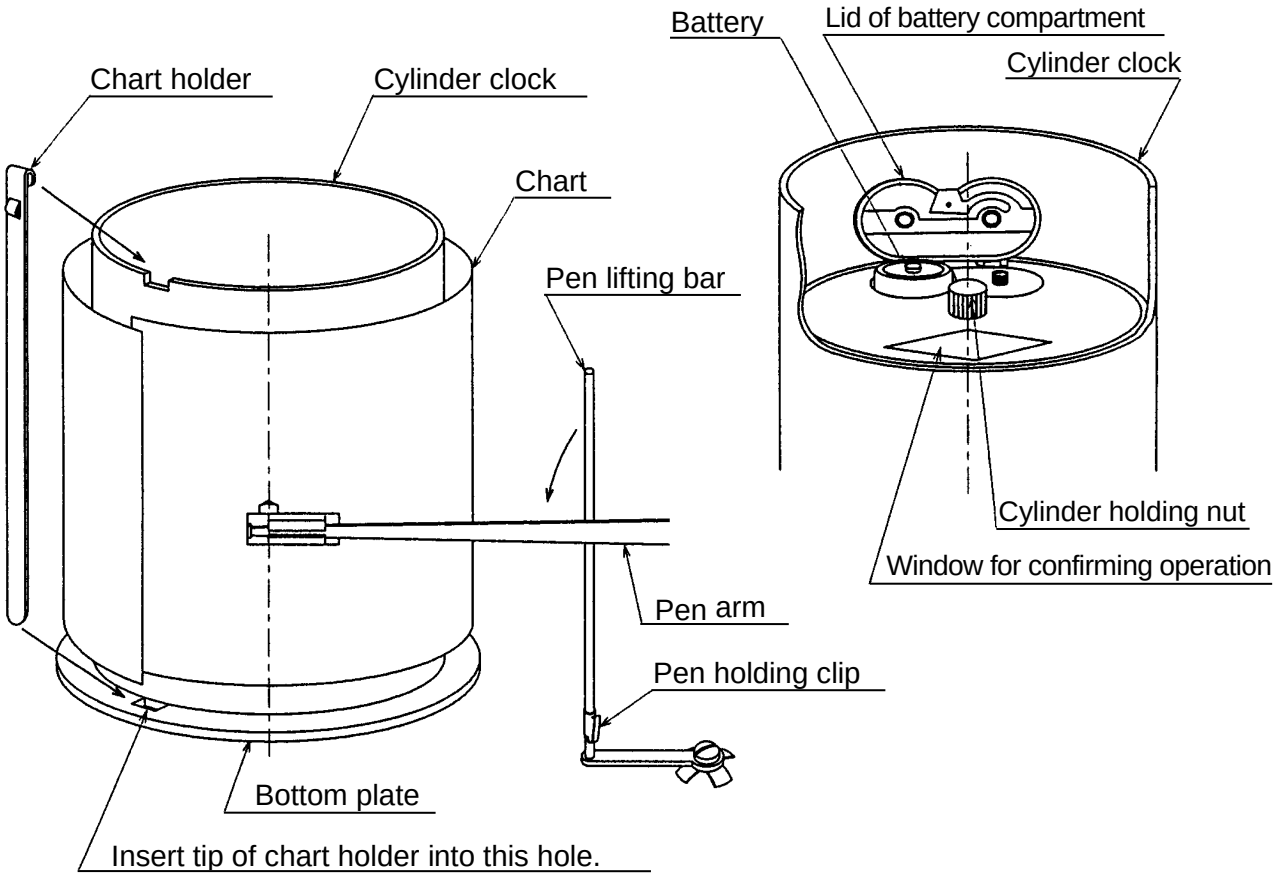
Ⓐ-ⒷCross Section

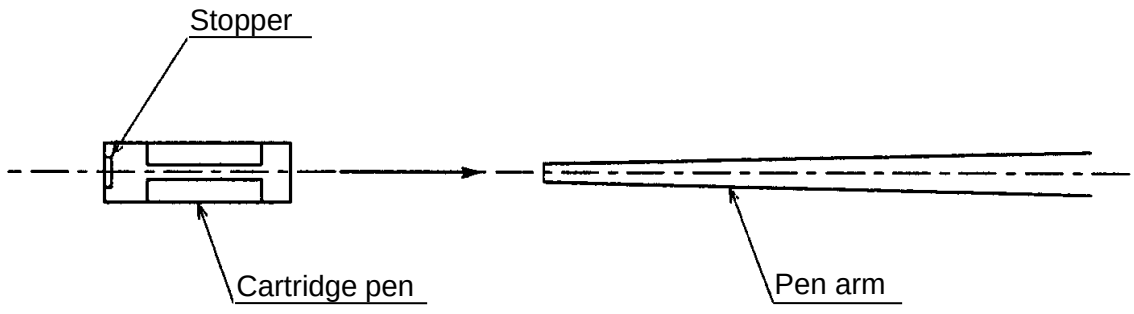
Pour water little more than the position that the damper goes up upmost.

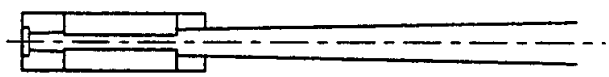




整番	Event Recorder	図番	860-016



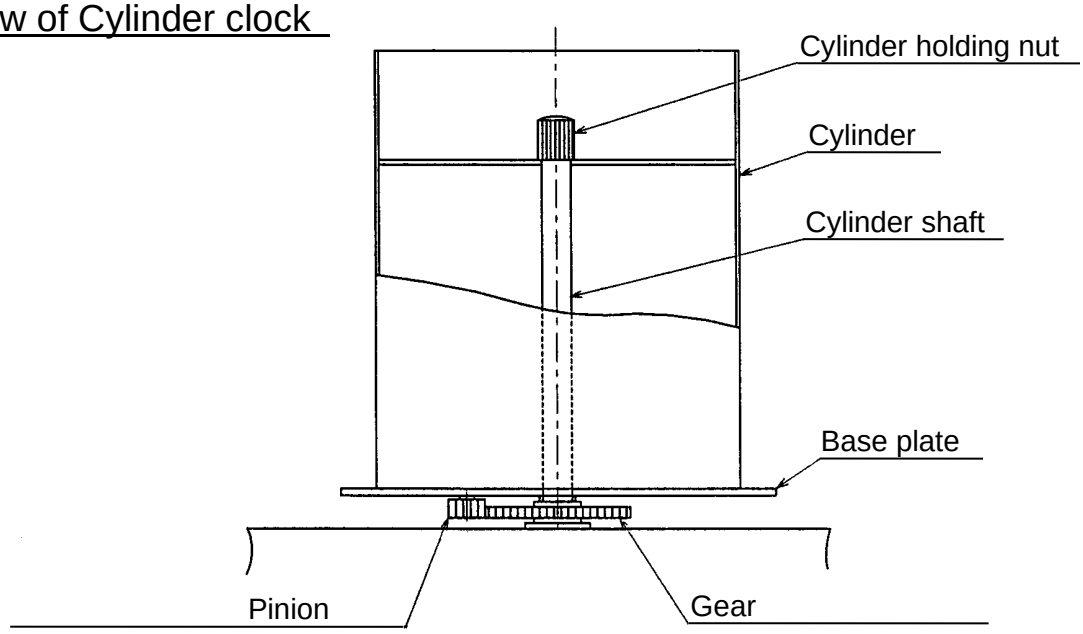




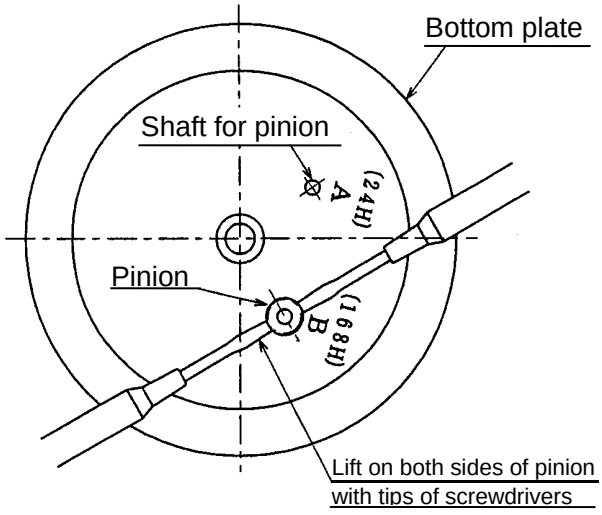
Cartridge pen is set on Pen arm

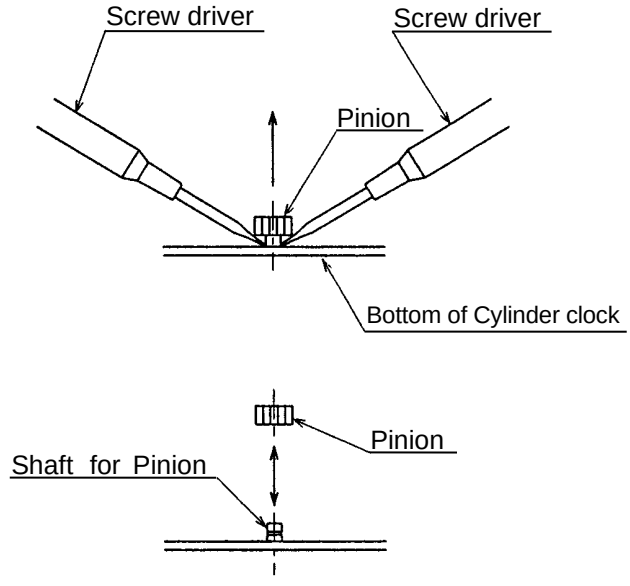
	整番	EX-12-3	図番	860-014

Side View of Cylinder clock



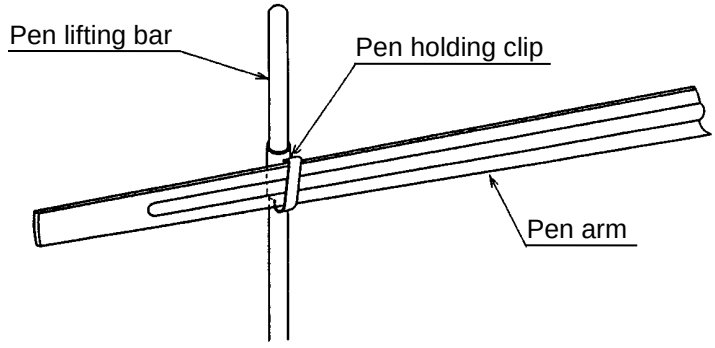
Bottom of Cylinder clock





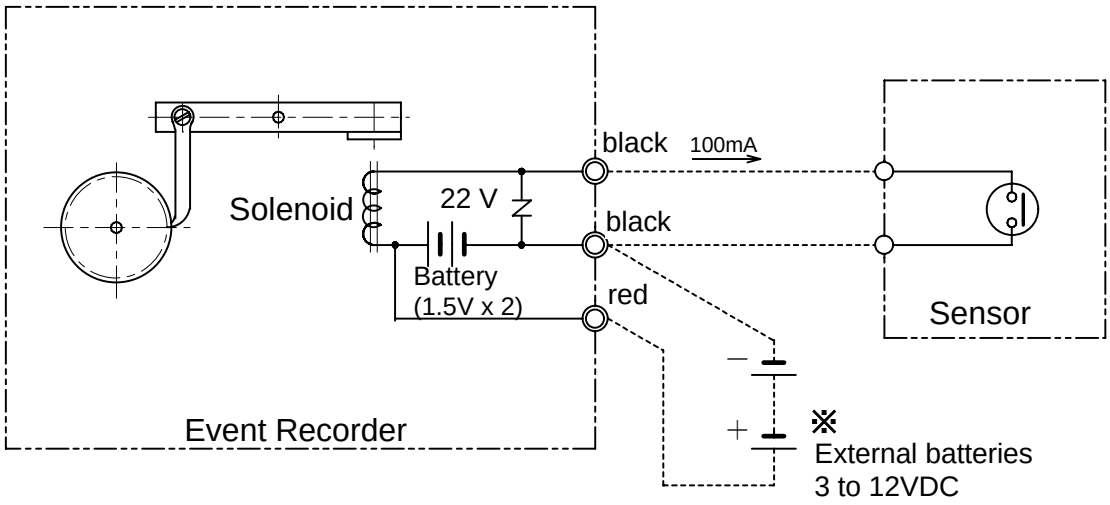
Pen arm

Pen arm is secured with a clip during transportation.
Remove the pen arm from the clip and move down the clip.



	整番	EXK17-4	図番	860-015

Wiring



※ Be sure to remove the built-in batteries when external batteries are used.

When the wiring resistance increases because the distance to the sensor is long, the voltage will drop and the unit will stop the performance. In this case, increase the voltage, but adjust the voltage so that the electric current flows within 85mA to 150mA.

$$\text{Electric current (mA)} = \frac{E\ (V)}{32\ (\Omega) + r\ (\Omega)} \times 1000$$

E: Voltage of battery
R: Both-way resistance of wire
32: Coil resistance of solenoid

COLOR	MASS	CHIFE	CHECK	DRAWN	Event Recorder	
DATE	SCALE				DWG. No.	941-003
2000.12.13						