



Investigation of a Manufactured Article Cigarette Lighter

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This is part of a set of resources on the topic.

- Powerpoint summary
- Supervisor Guide
 - For teaching assistants or instructors giving a background and answers to likely student questions.
- For Students
 - MiniProject - Investigation of a manufactured article
 - Explaining the project
 - Instructions for Dismantling
 - How to do this safely
 - Data Booklet
 - With lab test data for reference
 - Materials Selection for a Lighter
 - Instructions on materials selection methodology and how to use CES EduPack.

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Instructions for Dismantling Ronson Gas Lighter

Safety

You have been provided with the necessary equipment for safely dismantling a drained lighter, including gloves and eye protection. Please watch *Introductory video* before conducting dismantling procedure.

Do not attempt to dismantle a lighter that still contains lighter fluid, nor drain a lighter yourself. If in doubt, please consult a demonstrator.

Procedure

The lighter contains many small parts, and trays are provided to help prevent loss. Whenever possible, perform the steps with the lighter in the tray.

(Numbers in brackets and component names refer to the component list and exploded diagram provided.)

- (a) Use a screwdriver to prise off the cap [40]. The gap between the electrodes can now be measured.
- (b) Pull off pole base [37]. This frees the lever [36], which can be shaken out.
- (c) Pull out pole leader [31].
- (d) Pull off spring B [39] and spring A [38] using the pliers, and remove the adjusting ring [35]
- (e) The bracket [32] can be removed by first scoring along the label, then using the screwdriver to prise off the bracket. The main fixing point is at the front edge of the lighter, next to the nozzle.
- (f) Separate the push button [34] from the bracket [32]. The conductor [33] is found inside the button.
- (g) Remove support stand [20], using the screwdriver if necessary.
- (h) The electronic assembly should now be removed, together with the electronic assembly stand [30]. **Do not operate the electronic assembly when it is out of the lighter casing.**

- (i) Unscrew the upper coil assembly, using the pliers. Tap the lighter upside down on the bench to release the parts underneath the upper coil assembly from the lighter body. Identify the T-disk [11], filter paper [12], wick [10] and wick holder [9].
- (j) Separate the upper coil [1] from the rest of the upper coil assembly by inverting the assembly and pushing down on the upper coil.
- (k) Remove the nozzle spring [3] and small 'o' ring [2] from the nozzle [4], and, if desired, separate the large 'o' ring [7] from the nozzle bottom [6].
- (l) The tank assembly [parts 8, 13, 14, 15, 16, 17, 18, 19] come away as one piece and cannot be separated, since the cover [8] is glued to the tank [13].

Dismantling the Electronic Assembly

- (m) Pull the inner case [21] away from the outer case [26]. The reset spring [25] will fall out.
- (n) The action spring [22] and hammer [24] can be **carefully** released from the inner case [21] by sliding out the hammer pin [23]. Be prepared for the spring action when the pin is removed.
- (o) Using a screwdriver, break open the end of the outer case [26] to release the backmass [29]
- (p) Stand the outer case [26] on one end, and use the screwdriver to push out the piezo unit[28] and head metal [27]. These components are glued into the outer case so some force may be required to remove them from the outer case and separate them from one another.

Author

We would like to thank Dr. Rob Wallach of the Materials Science and Metallurgy Department of the University of Cambridge for contributing this resource. You can contact him via the website www.msm.cam.ac.uk.

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