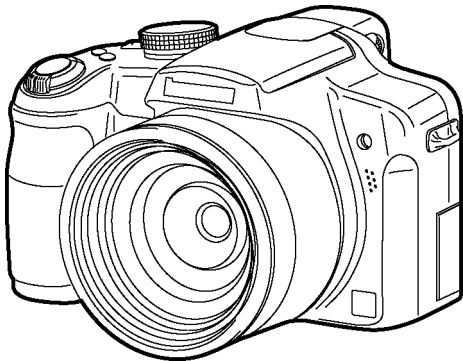


Service Manual

Digital Camera

LUMIX
LEICA
DC VARIO-ELMARIT



Model No. **DMC-FZ28P**
DMC-FZ28PC
DMC-FZ28PL
DMC-FZ28EB
DMC-FZ28EE
DMC-FZ28EF
DMC-FZ28EG
DMC-FZ28E
DMC-FZ28GC
DMC-FZ28GD
DMC-FZ28GK
DMC-FZ28GN
DMC-FZ28GT
DMC-FZ28GJ
DMC-FZ28SG

VOL.1

Colours

(S).....Silver Type (only DMC-FZ28P/PC/EB/
EE/EF/EG/E/GC/SG)
(K).....Black Type

WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic[®]

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TABLE OF CONTENTS

	PAGE	PAGE
1 Safety Precautions	3	
1.1. General Guidelines	3	
1.2. Leakage Current Cold Check	3	
1.3. Leakage Current Hot Check (See Figure 1).....	3	
1.4. How to Discharge the Capacitor on Main PCB	4	
2 Warning	5	
2.1. Prevention of Electrostatic Discharge (ESD) to Electrostatic Sensitive (ES) Devices	5	
2.2. How to Recycle the Lithium Ion Battery (U.S. Only).....	5	
2.3. Caution for AC Cord (For EB/GC/SG)	6	
2.4. How to Replace the Lithium Battery.....	7	
3 Service Navigation	8	
3.1. Introduction	8	
3.2. General Description About Lead Free Solder (PbF)	8	
3.3. Important Notice 1:(Other than U.S.A. and Canadian Market)	8	
3.4. How to Define the Model Suffix (NTSC or PAL model)	9	
4 Specifications	13	
5 Location of Controls and Components	16	
6 Service Mode	19	
6.1. Error Code Memory Function	19	
7 Service Fixture & Tools	23	
7.1. Service Fixture and Tools	23	
7.2. Clean Box	24	
7.3. When Replacing the Main PCB	24	
7.4. Service Position	24	
8 Disassembly and Assembly Instructions	26	
8.1. Disassembly Flow Chart.....	26	
8.2. PCB Location.....	26	
8.3. Disassembly Procedure	27	
8.4. Disassembly/Assembly Procedure for the Lens	32	
8.5. Removal of the CCD Unit	36	
9 Measurements and Adjustments	37	
9.1. Matrix Chart for Replaced Part and Necessary Adjustment.....	37	
10 Maintenance	39	
10.1. Cleaning Lens, Viewfinder and LCD Panel.....	39	

1 Safety Precautions

1.1. General Guidelines

1. IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by \triangle in the Schematic Diagrams, Circuit Board Layout, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock fire, or other hazards. Do not modify the original design without permission of manufacturer.

2. An Isolation Transformer should always be used during the servicing of AC Adaptor whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect AC Adaptor from being damaged by accidental shorting that may occur during servicing.
3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.2. Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1M\Omega$ and $5.2M\Omega$. When the exposed metal does not have a return path to the chassis, the reading must be infinity.

1.3. Leakage Current Hot Check (See Figure 1)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a $1.5k\Omega$, 10 W resistor, in parallel with a $0.15\mu F$ capacitor, between each exposed metallic part on the set and a good earth ground, as shown in Figure 1.
3. Use an AC voltmeter, with $1 k\Omega/V$ or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 V RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed $1/2$ mA. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

Hot-Check Circuit

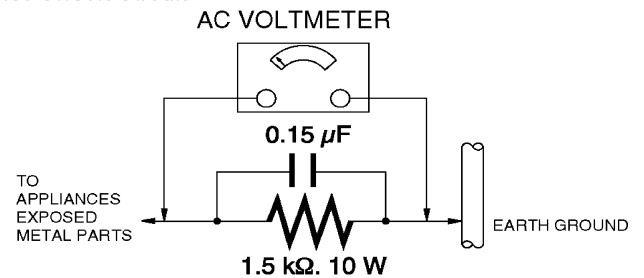


Figure 1

1.4. How to Discharge the Capacitor on Main PCB

- This unit equipped with two pieces of capacitors as flash charging capacitors.
“Either one of the capacitor discharging operation” makes discharging for others as well.

CAUTION:

1. **Be sure to discharge the capacitor on MAIN PCB.**
2. **Be careful of the high voltage circuit on MAIN PCB when servicing.**

[Discharging Procedure]

1. Refer to the disassemble procedure and remove the necessary parts/unit.
2. Put the insulation tube onto the lead part of Resistor (ERG5SJ102:1k Ω /5W).
(An equivalent type of resistor may be used.)
3. Put the resistor between both terminals of capacitor on MAIN PCB for approx. 5 seconds.
4. After discharging confirm that the capacitor voltage is lower than 10V using a voltmeter.

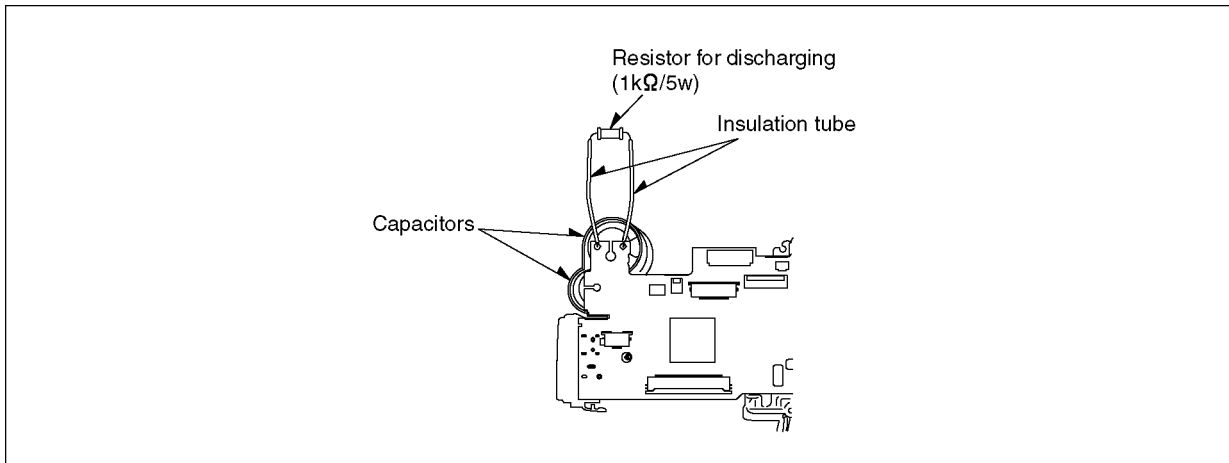


Fig. F1

2 Warning

2.1. Prevention of Electrostatic Discharge (ESD) to Electrostatic Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices.

Examples of typical ES devices are CCD image sensor, IC (integrated circuits) and some field-effect transistors and semiconductor "chip" components.

The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified as **antistatic (ESD protected)** can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION:

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

2.2. How to Recycle the Lithium Ion Battery (U.S. Only)

ENGLISH



A lithium ion/polymer battery that is recyclable powers the product you have purchased. Please call 1-800-8-BATTERY for information on how to recycle this battery.

FRANÇAIS



L'appareil que vous vous êtes procuré est alimenté par une batterie au lithium-ion/polymère recyclable. Pour des renseignements sur le recyclage de la batterie, veuillez composer le 1-800-8-BATTERY.