

**SERVICE MANUAL
FOR ASE MPSU
FOR
Vantage Elan MRT-2020
Vantage Titan MRT-1510, MRT-1504
(2D911-259EN*C)**

CANON MEDICAL SYSTEMS CORPORATION

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CONTENTS

	Page
1. OUTLINE -----	6
2. GENERAL SAFETY INFORMATION -----	6
2.1 Meaning of Signal Words -----	6
2.2 Meaning of Safety Symbol -----	7
2.3 Safety Precautions -----	7
3. OPERATING PROCEDURES -----	9
3.1 Description -----	9
3.1.1 Electronics chassis panel -----	9
3.2 Specifications of the MPSU and Accessory Case -----	10
3.3 Getting Started -----	11
3.3.1 Trolley description -----	11
3.3.2 Trolley operation -----	11
3.3.3 Uncrating the MPSU Case or Accessory Case -----	12
3.4 Preparing the MPSU for Operation -----	13
3.4.1 Details -----	13
3.5 Unpacking the Accessory Case for Operation -----	15
3.5.1 Detail -----	15
3.6 Connecting the Equipment to the MRI Magnet -----	17
3.6.1 FCL magnets -----	19
3.6.2 DCL type magnets -----	30
3.6.3 AC input and DC output cables -----	34
3.6.4 Use of multi-tap Auto-Transformer -----	35
3.7 Operation -----	40
3.7.1 Startup -----	40
3.7.2 Sequenced Control tab -----	45
3.7.3 Manual Control tab -----	54
3.7.4 Settings tab -----	55
3.7.5 Output log -----	56

3.7.6	Ramping up magnet from zero field -----	58
3.7.7	Ramping down magnet from full field-----	59
3.7.8	Changing the ramp-up frequency -----	61
3.7.9	FCL magnets-----	63
3.7.10	Fault conditions -----	65
3.8	Packing the Equipment After Use-----	66
3.9	Software Installation-----	69
4.	SERVICE PROCEDURES -----	74
4.1	Technical Discussion of Circuitry -----	74
4.2	Preventative Maintenance -----	74
5.	Troubleshooting-----	75
5.1	Troubleshooting tips-----	75
5.2	Measures To Be Taken if Operation Is Not Possible in FCL Mode When MPSU Firmware is V2.0 or Later -----	80
5.2.1	Outline -----	80
5.2.2	Procedure for changing the PC setting -----	80
5.2.3	Procedure for ramping the FCL magnet up/down in DCL mode-----	84

3.7.6 Ramping up magnet from zero field

- (1) Confirm that the LHe level in the magnet is higher than the specified level and that the helium pressure in the magnet is at the normal operating pressure level.

<For the DCL-type magnet>

Minimum LHe level for ramp-up : 58% (Normal condition)^{*2}

Magnet operating pressure^{*1} : Approx. 700 Pa to 1000 Pa

*1: Confirm the pressure before depressurizing the magnet to connect the DCL.

*2: Condition specified by the magnet manufacturer for quenching to be covered by warranty: 72%

<For the FCL-type magnet>

Minimum LHe level for ramp-up : 58% (Normal condition)^{*3}

Magnet operating pressure : Approx. 2900 Pa to 3200 Pa

*3: Condition specified by the magnet manufacturer for quenching to be covered by warranty: 69%

- (2) Mount the DCL to the magnet. (Refer to the magnet service manual 2D911-165EN for handling of the DCL and magnet.)
- (3) Ensure bypass valve is closed.
- (4) Verify that all connections between MPSU and magnet have been made as described in subsections 3.6 and 3.7.
- (5) Ensure ramp log's data is being input.
- (6) Click on [Settings] tab to verify that all parameters are correct.
- (7) Enter Magnet Type, Operator Name, and Magnet Serial Number as shown in figure 3.7-10.
- (8) Enter Demand Current as shown in figure 3.7-10. Demand Current value is found listed on the log attached to the magnet and is approximately 437 A. When the magnet is to be ramped up for the first time in the installation work, use the default value of 436.84 A.
- (9) Select Ramp Up under Select Operation.
- (10) Click on Start Ramp Up.

As action is automatically taken on each sequence step a green progress bar is shown indicating program status and progress. The following is performed automatically in sequential order.

- Heater Resistance Check – Checks the heater resistance to ensure that both heater values are within the minimum and maximum as defined in the [Settings] tab.
- Ramp to PreCheck Current – Applies the current to the current lead until the precheck current defined in the [Settings] tab is reached.
- Ramp to Zero Current – Reduces the lead check current value to zero (0 A).
- Wait for Persistent Switch to Warm – Waits for the persistent switch to warm up.

- Ramp to Overshoot Current – Ramps to overshoot current value as defined in the [Settings] tab.
 - Wait for Stability – Waits for the current value to become stable within 10 mA and Magnet Voltage to be 30 mV or less or a wait time as defined in the [Settings] tab (maximum 6 minutes for DCL magnets and 20 minutes for FCL magnets).
 - Reduce to Demand Current – Ramps down to demand current value as defined in the [Settings] tab.
 - Wait for Stability – Waits for the current value to become stable within 10 mA and Magnet Voltage to be 30 mV or less or a wait time as defined in the [Settings] tab (maximum 6 minutes for DCL magnets and 20 minutes for FCL magnets).
 - Wait for Persistent Switch to Cool – Waits for the persistent switch to cool (typically 60 seconds).
 - Ramp MPSU to Zero Current – Sweeps the MPSU output current to zero (0 A).
 - Finished – Session completed.
- (11) Next the service engineer may turn off the MPSU from the power chassis circuit breaker found at the rear of the MPSU.
- (12) The MPSU control program can now be shut down by selecting the X in the top right hand area of the program box.
- (13) The laptop computer should be shut off in accordance with proper Windows shutdown procedures.

3.7.7 Ramping down magnet from full field

- (1) Confirm that the LHe level in the magnet is higher than the specified level and that the helium pressure in the magnet is at the normal operating pressure level.

<For the DCL-type magnet>

Minimum LHe level for ramp-up : 58% (Normal condition)^{*2}

Magnet operating pressure^{*1} : Approx. 700 Pa to 1000 Pa

*1: Confirm the pressure before depressurizing the magnet to connect the DCL.

*2: Condition specified by the magnet manufacturer for quenching to be covered by warranty: 72%

<For the FCL-type magnet>

Minimum LHe level for ramp-up : 58% (Normal condition)^{*3}

Magnet operating pressure : Approx. 2900 Pa to 3200 Pa

*3: Condition specified by the magnet manufacturer for quenching to be covered by warranty: 69%

- (2) Mount the DCL to the magnet. (Refer to the magnet service manual 2D911-165EN for handling of the DCL and magnet.)
- (3) Ensure bypass valve is closed.
- (4) Verify that all connections between MPSU and magnet have been made as described in subsections 3.6 and 3.7.

- (5) Ensure Ramp Log's data is being input
- (6) Click on [Settings] tab to verify that all parameters are correct
- (7) Enter Magnet Type, Operator Name, and Magnet Serial Number as show in figure 3.7-10.
- (8) Enter Capture Current as shown in figure 3.7-10. The Capture Current value is the previous ramp-up current value recorded in the log that is attached to the magnet. This value can also be confirmed in the MPSU LOG for the previous ramp-up. When the magnet is to be ramped up for the first time in the installation work, the default value (436.84 A) should be used.
- (9) Select Ramp Down under Select Operation.
- (10) Click on Start Ramp Down.

As action is automatically taken on each Sequence step a green progress bar is shown indicating program status and progress. The following is performed automatically in sequential order.

- Heater Resistance Check – Checks the heater resistance to ensure that both heater values are within the minimum and maximum as defined in the [Settings] tab.
 - Lead Check – Up to Precheck Current – Applies the current to the current lead until the precheck current defined in the [Settings] tab is reached.
 - Lead Check – Ramp to Capture Current– Sweeps the MPSU output current to the Capture Current value defined in the [Settings] tab.
 - Wait at Capture Current – Waits for the current value to be stable.
 - Wait for Persistent Switch to Warm – Waits for the persistent switch to warm up.
 - Ramping Down – Ramps the current to zero (0 A).
 - Wait for Stability at Zero – Waits for the current value to be 10 mA or less.
 - Finished – Session completed.
- (11) Next the Service Engineer may turn off the MPSU from the power chassis circuit breaker found at the rear of the MPSU.
 - (12) The MPSU control program can now be shut down by selecting the X in the top right hand area of the program box.
 - (13) The laptop computer should be shutoff in accordance with proper Windows shutdown procedures.



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