

Contrast Injector First Look Troubleshooting

Stellant, Solaris, Mark-7 Arterion, & Mark-V Provis

Prepared for



MDEXPO

New England • October 8-10, 2024

presented by Steve Maull

➤ Level-II Maintenance Training Course

- Stellant D
- Solaris, Solaris EP
- Mark-V Provis
- Mark-7 Arterion



Medrad Stellant

- Stellant Sx
 - Single barrel injector
- Stellant D
 - Dual barrel injector



Stellant/ Certegra



Certegra Gen 1



Legacy



Certegra Gen 2



Certegra / Flex Gen 3

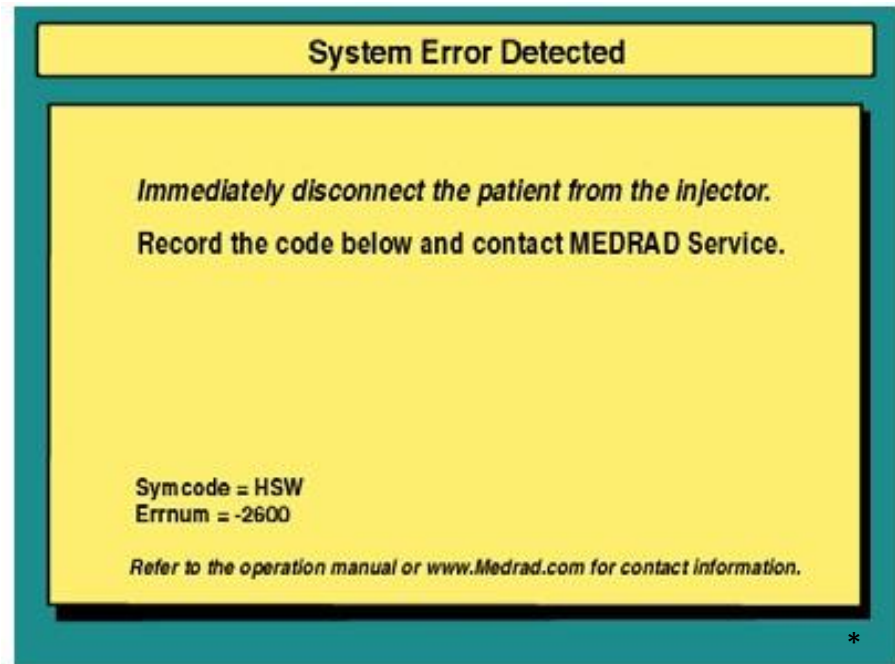
Medrad Stellant

- Safety Screen
- Calibrations
Reminder



Medrad Stellant

- Type 3 Message – Hard Failure
 - Record Symcode and Errnum



Medrad Stellant

- White Screen or Medrad Logo Screen
 - Mismatch between head and remote software
 - Damaged or loose cable (Remote, Head, Head ext)
 - Corrupt software file
 - Almost inevitably leads to a Medrad Service Call

Medrad Stellant

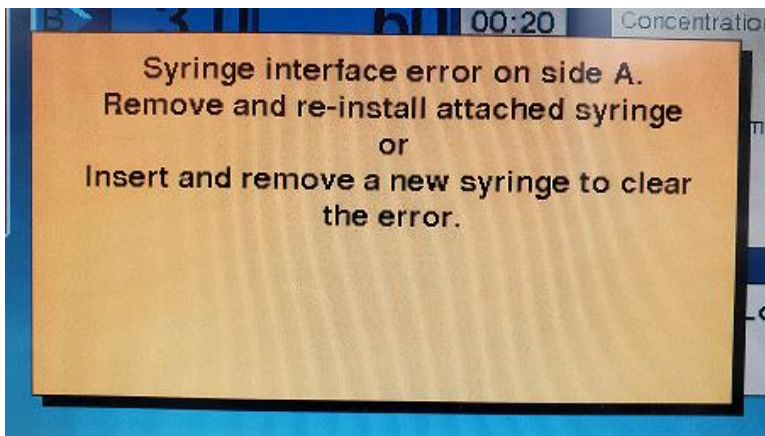
<https://www.dropbox.com/scl/fi/du8bohe158m4zo5n7338k/Stellant-Operation-Video-1-Overview-of-Injector-Head-and-Display-Part-1.mp4?rlkey=xi4se5fousgfv0qm8yfuqjw3z&st=rp7yfe7h&dl=0>

<https://www.dropbox.com/scl/fi/buv4biz5w5fliy6zy8rzt/Stellant-Operation-Video-5-Performing-an-Injection-and-Description-of-Auto-Fill-Functions.mp4?rlkey=4mbgixwb6prfu6fl3lpemho6&st=6kpqpu7n&dl=0>



- Front End Problems

- “Unknown Syringe Attached” – Clean Size Sensors
- “Syringe Interface Error” – Remove and re-insert a syringe 4-5 times
- “Syringe Not Docked” - Move piston forward to actuate docking pin



Medrad Stellant

- SW 311 – Communications Failure
 - Possible cable connectivity issue
 - Check all cable connections
 - Check cables for signs of damage
 - Intermittent failures point to cable issues
 - Hard failures point to board issue
 - Highly intermittent failures

- SW 1319 – Communications Failure
 - Possible cable connectivity issue
 - Check all cable connections
 - Check cables for signs of damage
 - Suspect failure of Display CPU board
 - Possible Main power box failure

Medrad Stellant

- TCHSCR 1114 – Touch Screen Error
 - Screen touched during power up
 - Screen is dirty or requires recalibration
 - Touch screen requires replacement
- ENCA 1806 / ENCB 1818 – Motor encoder Failure
 - Failure of either the A or B motor
 - Check if seized
 - Swap/Replace motors between A and B
 - Failure of either the A or B power drive card
 - Swap/Replace power drive cards between A and B

Medrad Stellant

- SYRSENA 2104 / 2015 – Syringe Sensor Failure
 - Clean optical sensor
 - Swap/Replace optical sensor and ribbon between A and B
- SYRSENB 2113 / 2114 – Syringe Sensor Failure
 - Clean optical sensor
 - Swap/Replace optical sensor and ribbon between A and B

Medrad Stellant

- HOVER 1004 – Keypad depressed
 - Clean buttons on head and remote
 - Exercise each button 3-4 times
 - Button can be stuck under front casting
 - Loose connection internal to the head
 - Contrast spill has damaged the keyboard

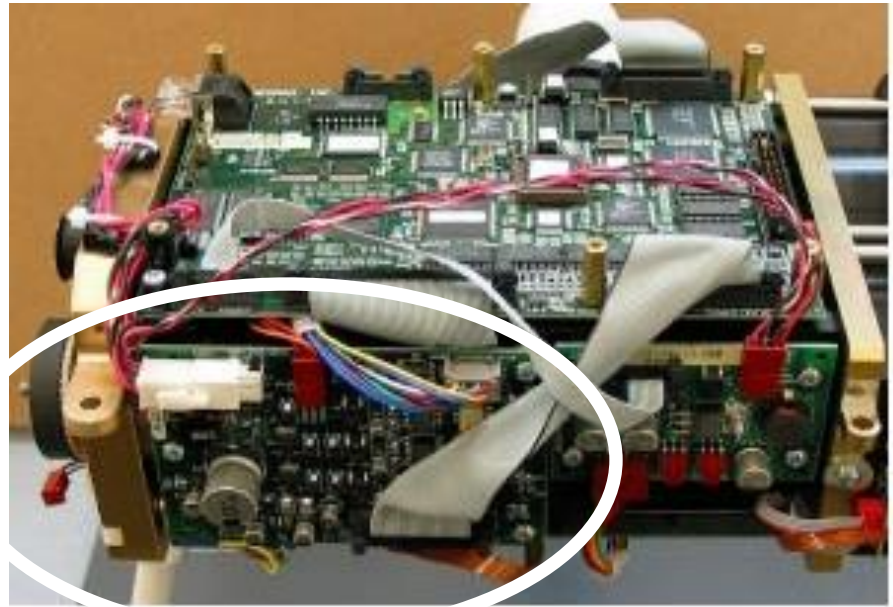
Medrad Stellant

- POWR 3026 and 3028 – Power Failure
 - Remove power at wall outlet for 15 sec
 - Test voltages at power supply to ensure 15V and 48V are present



Medrad Stellant

- POWR 3026 and 3028 – Power Failure
 - Test voltages at power drive cards to ensure 15V and 48V are present
 - Swap/Replace power drive cards
 - Swap/Replace motors



Medrad Solaris/EP



Medrad Solaris/EP

<https://www.dropbox.com/scl/fi/w5tcpyej4b1u4hmvf7j6j/Spectris-Solaris-Operation-Video-1-MRI-Safety-and-Overview-of-Injector-Head-and-Display.mp4?rlkey=nutxrwwyzsfn0wpmq2oh26ur7&st=5mc5hqgf&dl=0>

Medrad Solaris/EP

- Batteries
 - Single Handle (901001064)
 - Dual Handle (3012070)
 - Rebuilt batteries available
 - Should be replaced approx every 2 years



Medrad Solaris/EP

- Battery Level Indicator

- 3 Bars $\geq 12.2V$

- 2 Bars $\geq 11.5V$

- 1 Bars $\geq 11.4V$

- 0 Bars $\leq 11.3V$



- Full Charge



- Medium Charge



- Low Charge



- Fully Depleted
 - Not Connected
 - Communication Not Detected

*

- The iCBC will not charge a battery level lower than 10.7V

Medrad Solaris/EP

- Cycle Power
 - Turn off and unplug the remote
 - Remove battery from head unit
 - Unplug iCBC (as applicable)
 - Insert battery and check for lights
 - Plug in Remote and turn on
 - Confirm system is communicating
 - Plug iCBC back in
- Verify FO connectivity and continuity
 - FO testing cable

Medrad Solaris/EP

- HOVER 1004 – Keypad depressed
 - Clean buttons on head and remote
 - Exercise each button 3-4 times
 - Loose connection internal to the head
 - Contrast spill has damaged the keyboard
- HOVER 1001 – Keypad error
 - Head cable through riser tube disconnected
 - Interface card in base unit

Medrad Solaris/EP

- TCHSCR 314 – Touch screen error
 - Screen touched during power up
 - Screen is dirty or requires recalibration
 - Touch screen requires replacement
- POWR 3003 – Power Failure
 - Remove power at wall outlet for 15 sec
 - Perform full power cycle
 - Swap/Replace motors
 - Check head cards for a blown components

Medrad Solaris/EP

- PRSSRA 1811 / PRSSRB 1817
 - Strain gauge is performing out of tolerance
 - Replace sensor interconnect card in the head
 - Replace strain gauge – requires replacement of mechanical drive assy.



Medrad Solaris/EP

- SYRSENB 2109 / 2112 – B-Side Syringe sensor Failure
 - Check sensor and ribbon for connectivity and damage
 - Replace Sensor
 - Replace Sensor Interconnect card
- SYRSENA – A-Side Syringe sensor Failure
 - Duplicate above

Mark-7 Arterion



Mark-7 Arterion

- Ser-310
 - CPU Servo unplugged at P301
 - Hard reboot to clear transient power issue.
 - Hard reboot fails, then a bad CPU Servo Card
- TCHSCR-311
 - Don't touch the touchscreen
 - Cal the touchscreen
 - Verify connections from SBC to Touchscreen
 - Replace Touchscreen
 - Replace SBC
- ENCA-1806
 - 50-pin ribbon wire
 - Potentiometer (Pot) wire

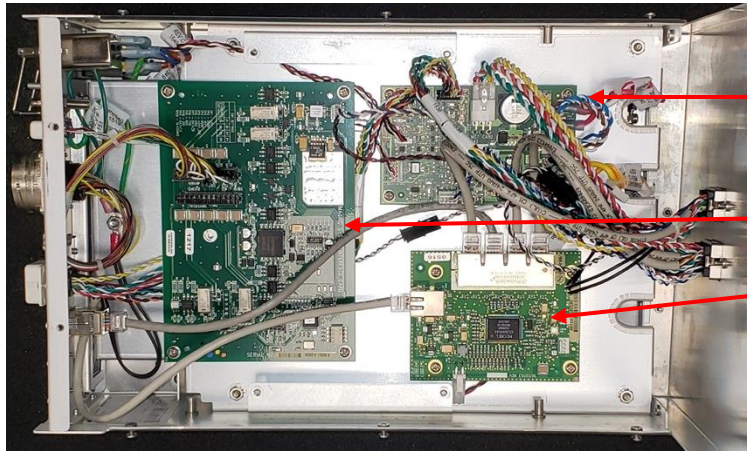
Mark-7 Arterion

- POWR-3003
 - Check power supply
- ERRNUM-3016
 - Bad Head Cable
 - Hall/Motor Encoder at P335
- MOTA-3038
 - Replace Motor Drive Card
 - Replace motor

Mark-7 Arterion

- HDC-4004
 - Touching head keypad while system is booting
 - Hard fail with orange screen-Replace Signal Management Card
- HDC-4005
 - SWB PWR COMM unplugged
- HDC 4005/4006
 - Replace Head Display Card

Mark-7 Arterion



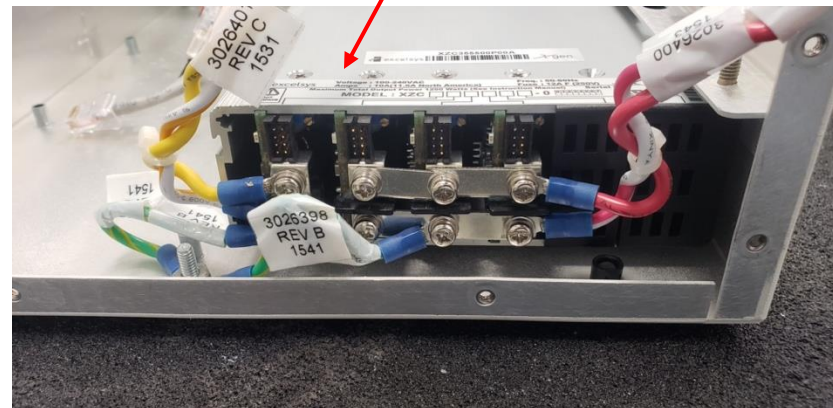
Power Box with:

Power Management Card (PMC)
(193-103)

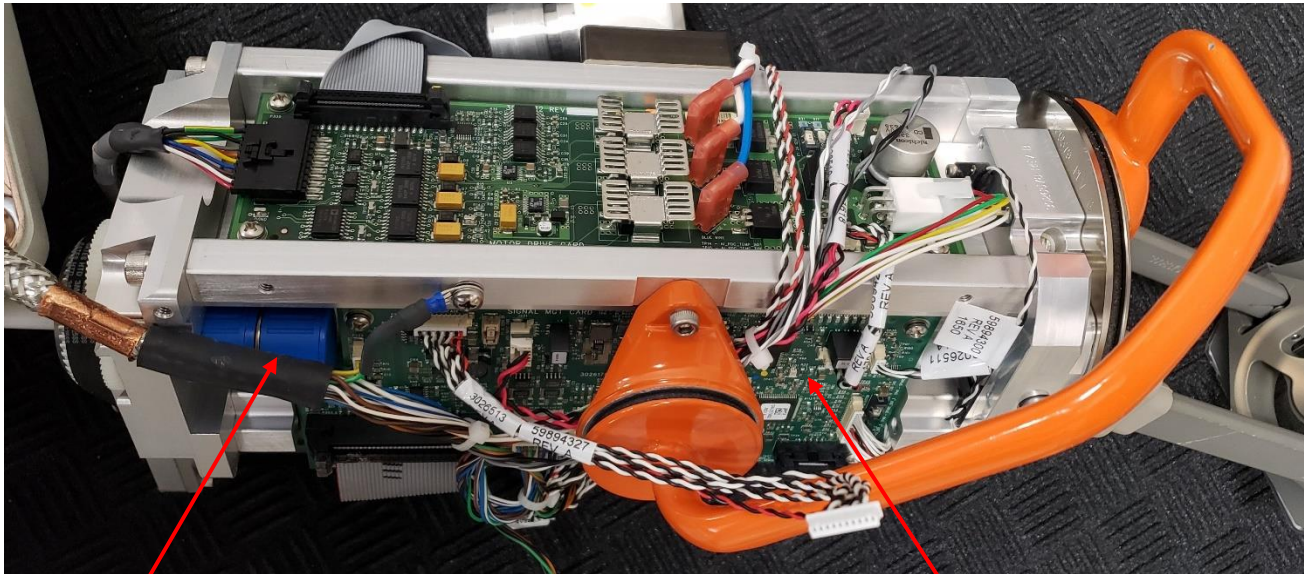
ISI Card (193-105)

Ethernet Card (083-111-U)

Power Supply is located below the
tray holding the PMC, ISI and
Ethernet card



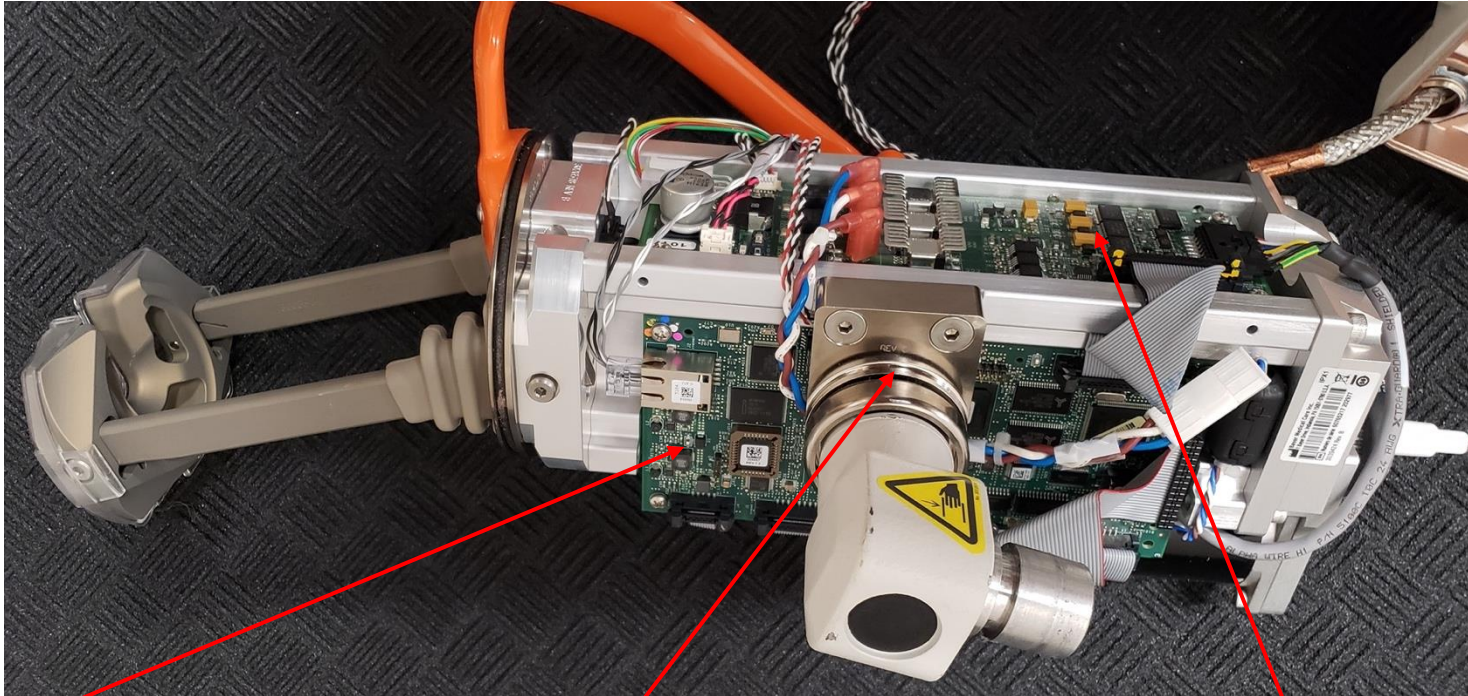
Mark-7 Arterion



Potentiometer (Pot) (190-173)
(3026512 / 59894319)

Signal Management Card (193-108)
(3026179 / 59893223)

Mark-7 Arterion



SBC- Same as Stellant SX

Tilt Sensor (Inside of
knuckle assy mounting
bracket)

Motor Drive Card
(093-101)

Medrad Mark V Provis



Pedestal (All-in-one) Configuration



Rack Mount Configuration

Medrad Mark V Provis

<https://www.dropbox.com/scl/fi/jcu9xzw3k9p8o9g71no1h/ProVis-Operation-Video-3-Installing-a-Syringe-and-Programming-a-Protocol.mp4?rlkey=ot9swo6pk5v1q9pdmt76pco02&st=ofrek965&dl=0>

Medrad Mark V ProVis

- Rise/Fall
- Flow Scale
- Delay



Medrad Mark V Provis

- PPI errors
 - PPI Memory compare error
 - PPI Checksum error
 - PPI: Primary memory
 - PPI: Backup memory
- Possible causes
 - Corrupt internal memory
 - Reset memory
 - Memory storage battery too low
 - Check battery voltage on PPI Card – replace as needed
 - Reset memory

Medrad Mark V Provis

- Manual memory reset
 - Locate JU1 on PPI Card
 - Short the pins together



- Provis Pedestal – Depress S1 on back of unit (inside the right door)

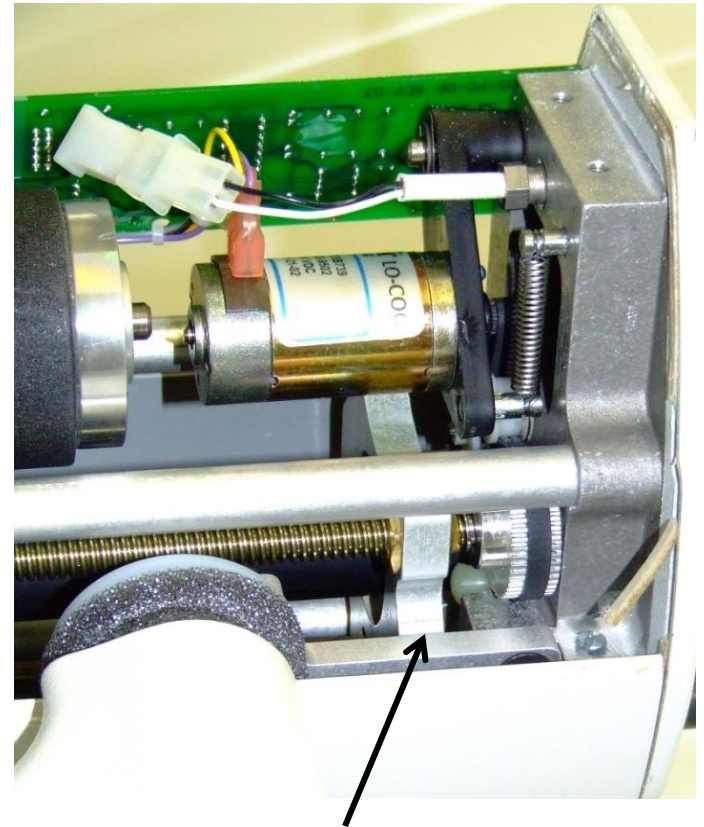
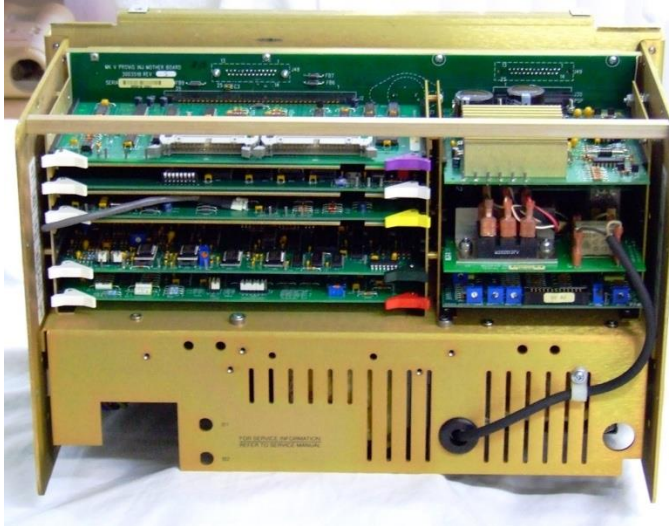
Medrad Mark V Provis

- Check Injector Head Cable PL
 - Manually rotate motor knob to ensure easy motion
 - Check head cable and head ext cable for loose or intermittent connections
 - Check injector internal wiring for loose or intermittent connections
 - Replace plunger potentiometer

Medrad Mark V Provis

- Establishing Communications
- Check Inj Head Cable MS

Reseat all boards



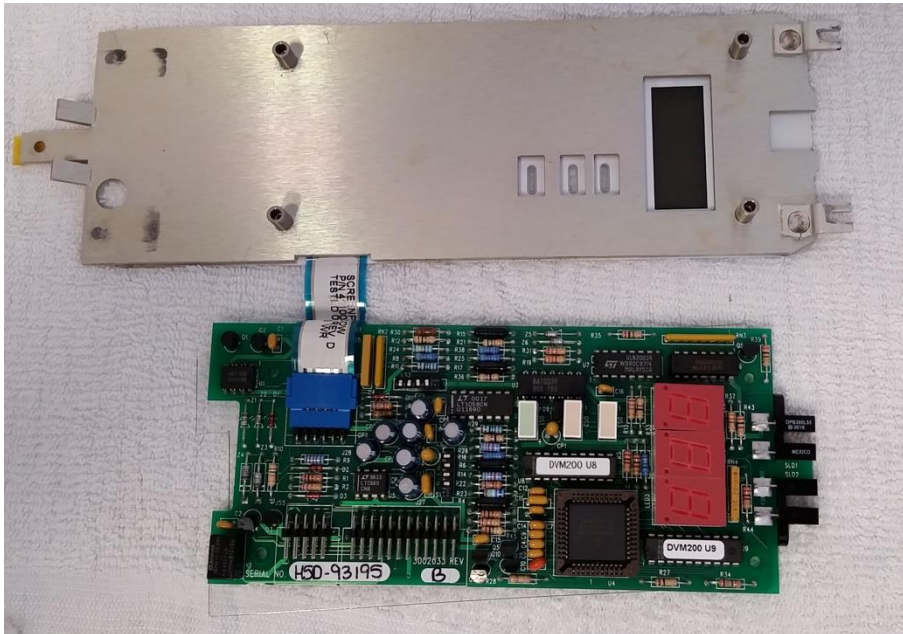
Ensure the MS plate moves freely

Medrad Mark V Provis

- No Fwd or Arming, but Reverse is operational
 - Likely MS microswitch
 - Likely Turret alignment
 - Likely Turret sensor
- Fwd and Reverse Drive Reverse
 - Fwd and Reverse both drive fwd
 - Fwd and Reverse both drive in reverse
 - Likely PDCi or DRCi replacement

Medrad Mark V Provis

- Head readout numbers fluctuating
 - Replace Head Display card



Medrad Mark V Provis

- System Voltage Checks

CAUTION: Heat-sink located behind test points

Power Supply Card Voltages

- +15V $\pm 0.6V$
- -26V $\pm 2.6V$
- -15V $\pm 0.6V$
- +5V + 0.2V / - 0.1V
- +26V $\pm 3.0V$

PPI Card CMOS Battery

- 3.0V - 0.2V

