

## General Rules:

### Loading/Unloading:

1. When loading, do not over tighten your sample it will fracture.
2. Do not transfer a substrate out of the process chamber until the indicated temperature is less than 150C.
3. Check and double-check vacuum condition and arm location before opening or closing the load lock isolation valve.

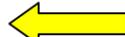
### Recipes:

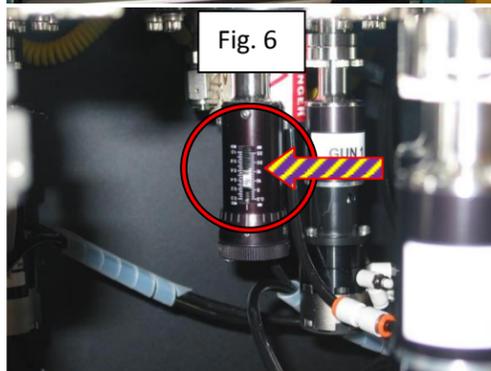
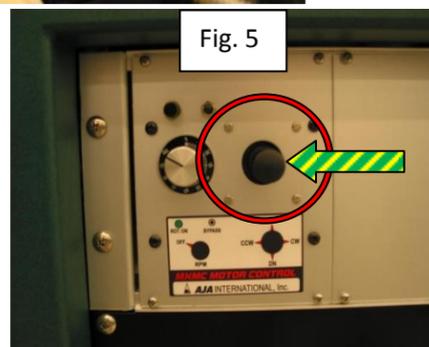
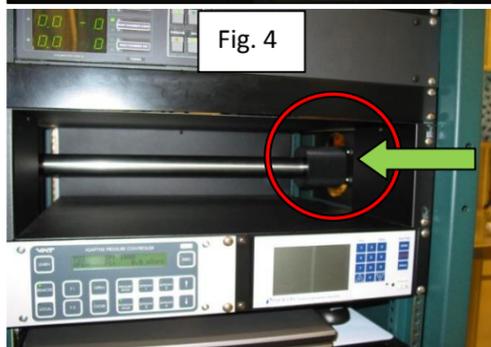
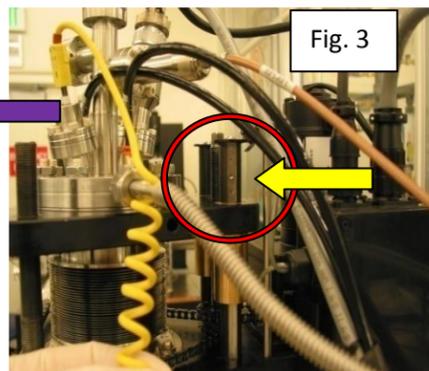
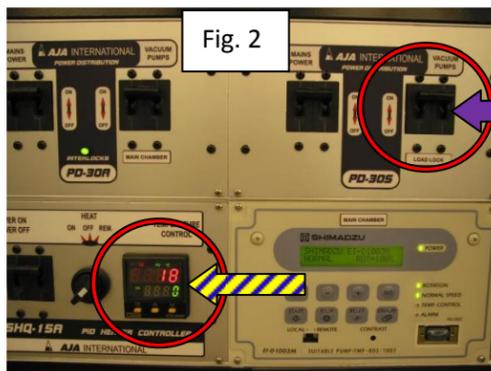
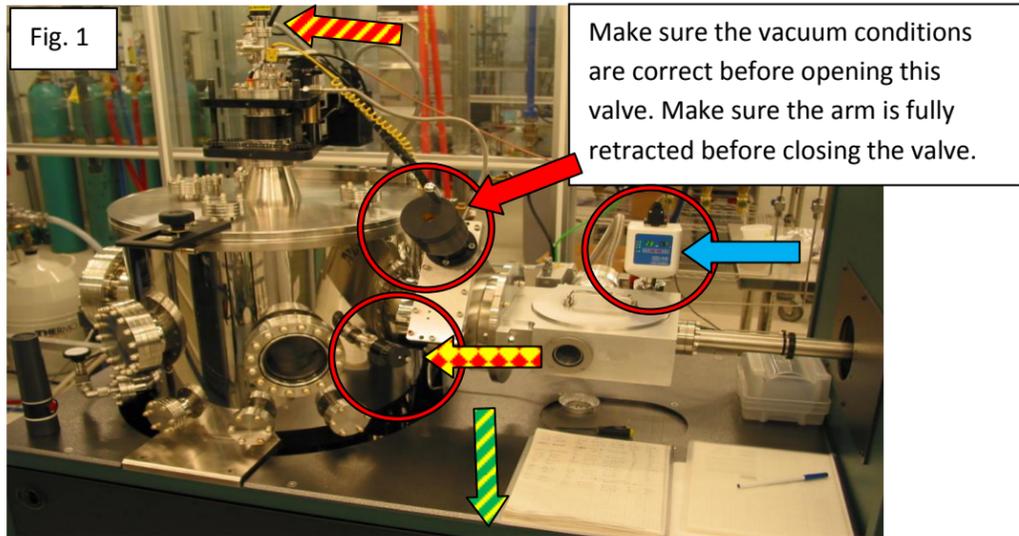
1. Set the "Ramp Up/Down" time to 60 seconds for every 100w of power requested.
2. Light all targets at 30mtorr with 25sccm of Ar.
3. Run a 10 minute target clean after depositing with N2 or O2.

### General:

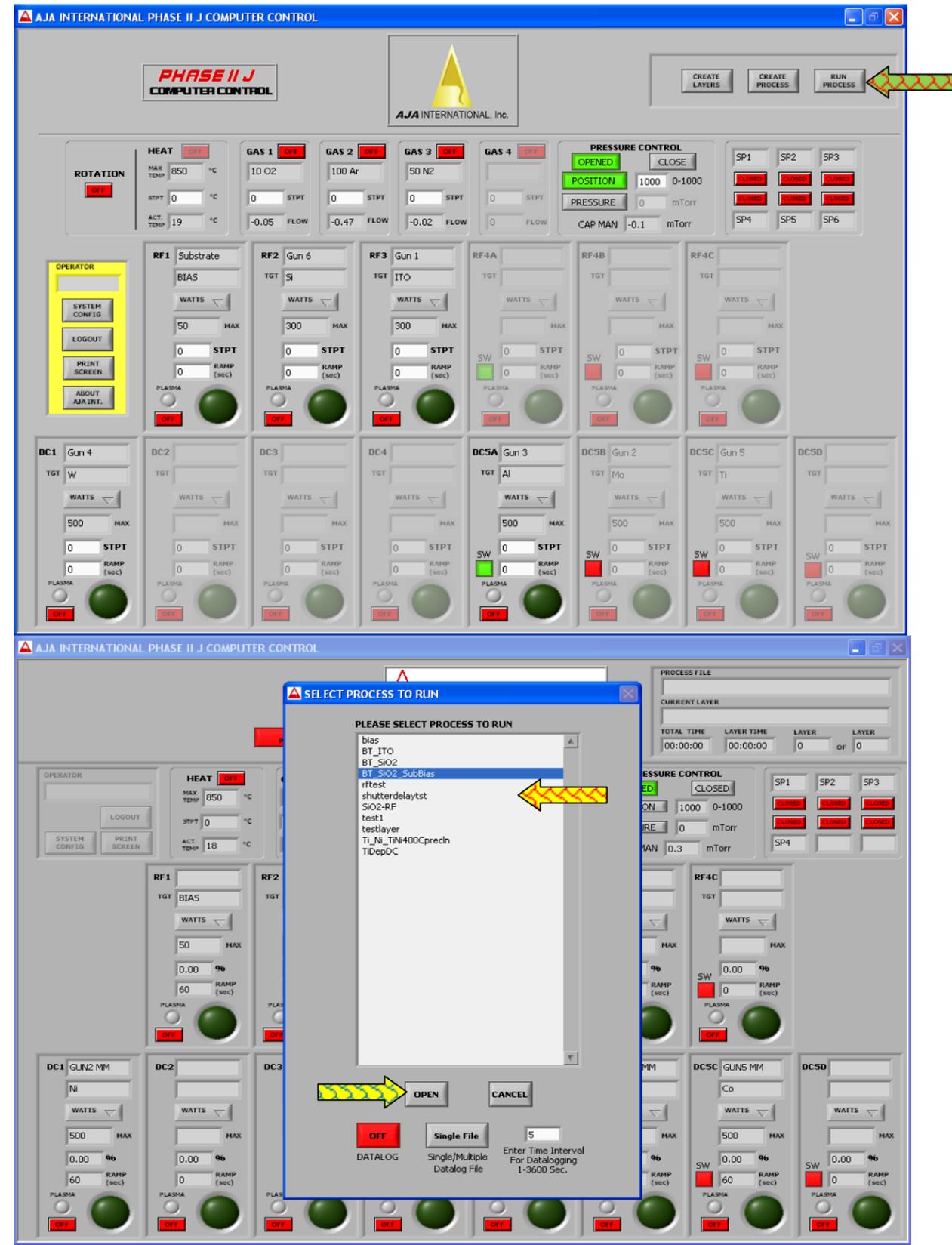
1. If you change the hardware or software configuration you must return it to our default settings before you leave the system.
2. Do not vent the process chamber.
3. Log into the correct user account (or you won't find your recipes).
4. Never deposit without the carrier loaded.

## Sputter #3 Operation Procedure

1. Ensure the Load Lock isolation valve is closed (gently turn hand crank fully CW). 
2. Vent the Load Lock by turning off the "Load Lock" "Vacuum Pumps" breaker. 
3. Mount your substrate to the carrier, place back into the Load Lock and verify orientation. (See "[How to load the carrier](#)" on page 5)
4. Pump down the Load Lock by turning on the "Load Lock" "Vacuum Pumps" breaker.
5. Set the substrate height to 35mm (as indicated by the scale)  and rotate the propeller to the load position (one of the blades should be pointing at you). 
6. When the Load Lock vacuum has reached 5.0E-5  open the Load Lock isolation valve (turn fully CCW). 
7. Slowly slide the transfer arm into the process chamber until it stops. 
8. Slowly lower the propeller into the recess in the carrier (45mm on the scale). 
9. If the arm starts to deflect downward stop and go up slightly.
10. By hand, rotate the propeller shaft CW 60° (you will feel it resist when engaged). 
11. Raise the substrate and propeller off of the load arm slightly.
12. Rotate the carrier slowly to ensure proper loading (it should not wobble).
13. If it wobbles lower the carrier back onto the arm and try again.
14. Once successfully loaded, slide the load arm out of the process chamber (make sure it is fully retracted). 
15. Close the LOAD LOCK isolation valve (slowly turn fully CW). 
16. Set your substrate working height, rotation speed  and gun angle. 
17. If you are depositing with RF make sure the RF cable is attached to the correct target and the "[System Configuration](#)" is updated. (see page 4)
18. From the "Main" screen (see page 3) select and run the process you wish to execute using the "Run Process" button.  If you do not see your process listed make sure you are logged in under your designated user I.D. (see illustration on page 3) 
19. Select the "OPEN" button to begin the run. (see illustration on page 3) 
20. Once the plasma lights close the view-port shutter. 
21. **Do not transfer your substrate to the Load Lock until the substrate temperature is below 150C. If your sample was heated use extreme caution when unloading or you may get burned!** 
22. When your process has completed, unload the carrier, vent the Load Lock and remove your substrate(s).
23. Place the carrier back into the Load Lock and pump it down. 
24. If you had to alter the "[System Configuration](#)" reset all values to default (see page 7) and put all RF and DC cables back to their standard/default locations.



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Operational Procedure.

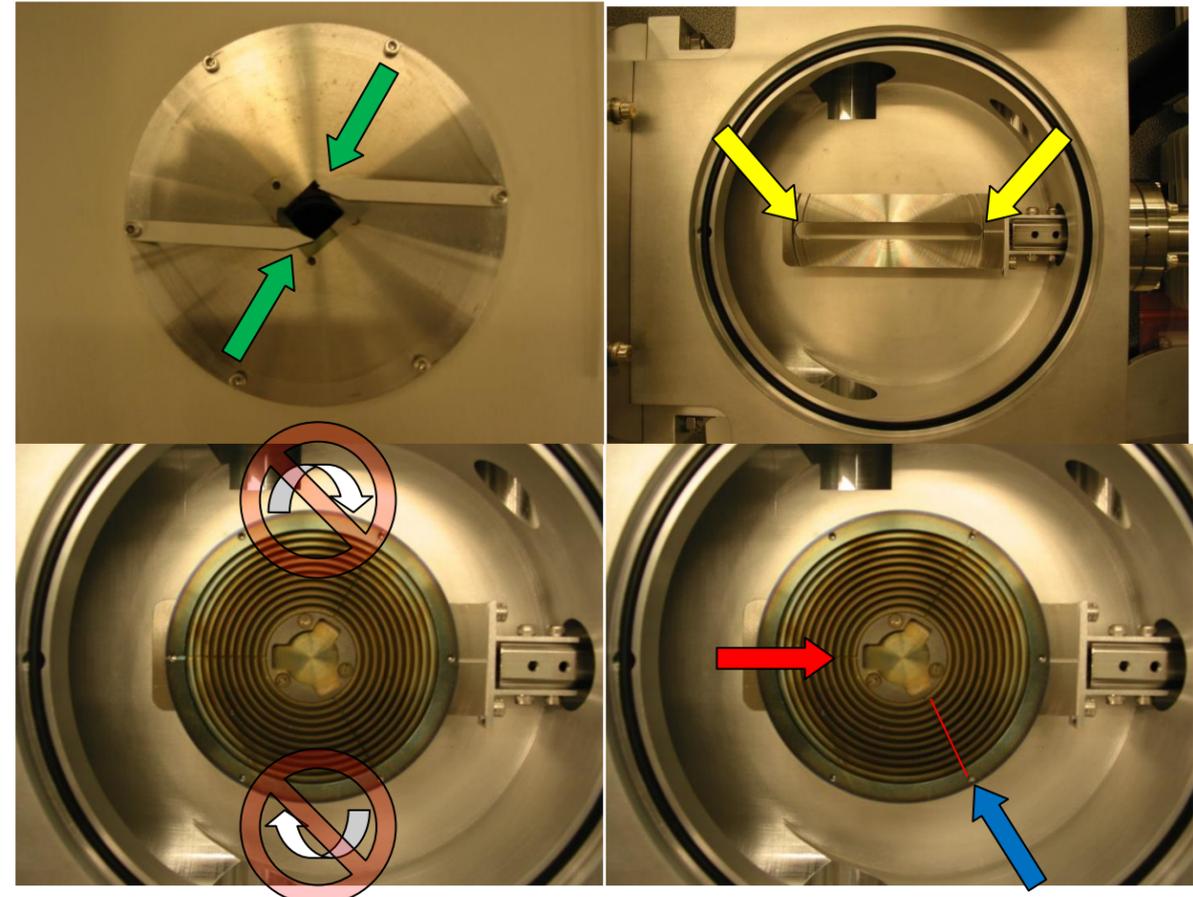
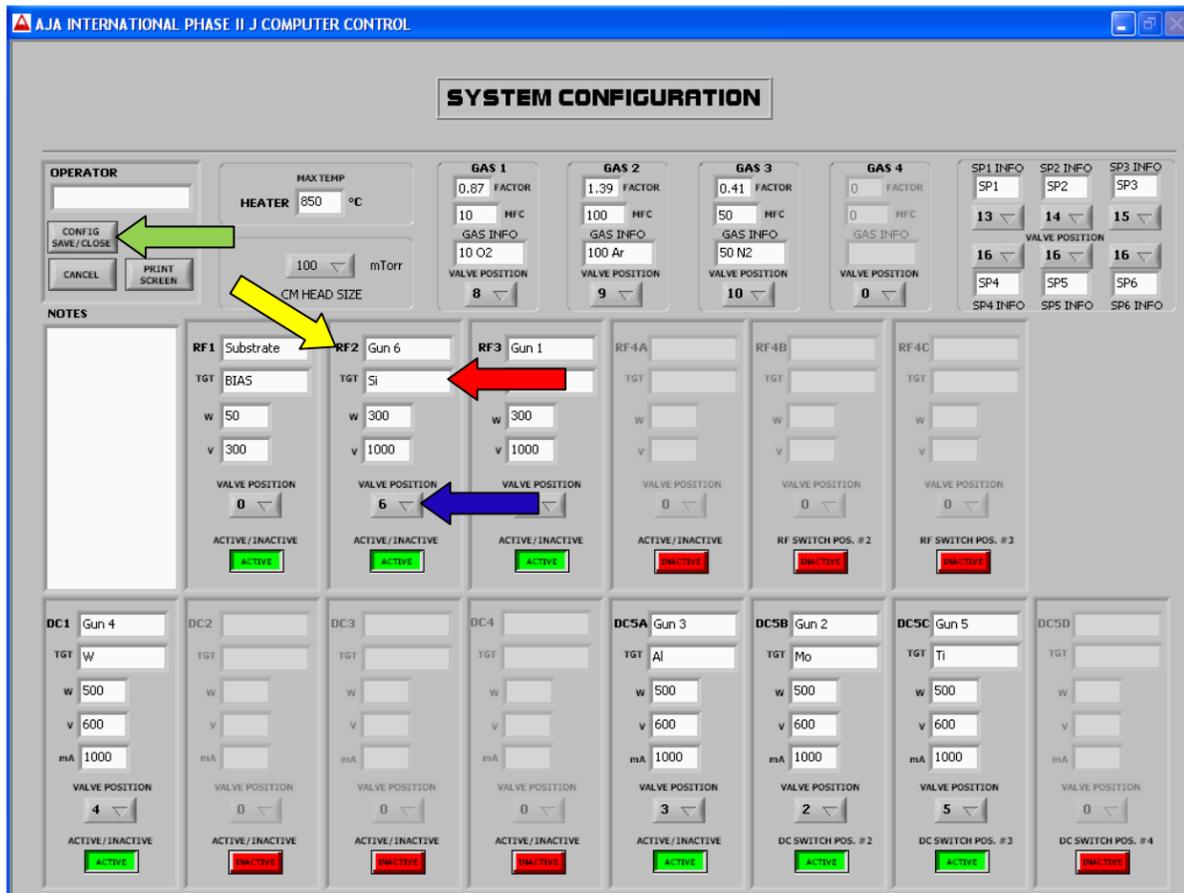


## System Configuration:

1. Within the System Configuration screen you should only edit the following 3 fields under the "RF2" or "RF3" data field.
2. In the "RF2" or "RF3" field enter the gun number that the RF cable is connected to.
3. In the "TGT" field enter the target material that the RF cable is attached to.
4. In the "Valve Position" field enter the valve position that corresponds to the target you connected the RF cable to (the value should be equal to the Gun#, i.e. Gun #6 = Valve Position 6, Gun #2 = Valve Position 2).
5. Select the "Config Save/Close" button.
6. Attach the RF cable to the correct target. Be very careful not to cross thread the connector. Make sure the connector is snug.

## How to load the carrier:

1. Lay the carrier on a flat surface with the clip side up.
2. Place the clips over the edges of your sample and tighten the SHCS. **Do not over tighten or you will fracture your sample.** If you are running a process with substrate bias it may be desirable to mount your sample to a 100mm wafer that has been coated with the same material you are sputtering. Then mount the 100mm wafer to the carrier.
3. Place the carrier onto the load arm carefully. The orientation of the carrier is specific and critical. One of the propeller interface recesses should be facing the process chamber and one of the 3 radial channels should be facing toward you and to the right.
4. Make sure two of the SHCS set into the open slot in the load arm and the carrier doesn't wobble.



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## System Configuration Default Values:

AJA INTERNATIONAL PHASE II J COMPUTER CONTROL

### SYSTEM CONFIGURATION

**OPERATOR**  
[ ]

MAX TEMP  
HEATER 850 °C

100 mTorr  
CM HEAD SIZE

**GAS 1**  
0.87 FACTOR  
10 MFC  
GAS INFO  
10 O2  
VALVE POSITION  
8

**GAS 2**  
1.39 FACTOR  
100 MFC  
GAS INFO  
100 Ar  
VALVE POSITION  
9

**GAS 3**  
0.41 FACTOR  
50 MFC  
GAS INFO  
50 N2  
VALVE POSITION  
10

**GAS 4**  
0 FACTOR  
0 MFC  
GAS INFO  
[ ]  
VALVE POSITION  
0

SP1 INFO SP2 INFO SP3 INFO  
SP1 13 SP2 14 SP3 15  
VALVE POSITION  
SP4 16 SP5 16 SP6 16  
SP4 INFO SP5 INFO SP6 INFO

**NOTES**

<b>RF1</b> Substrate TGT BIAS w 50 v 300 VALVE POSITION 0 ACTIVE/INACTIVE ACTIVE	<b>RF2</b> Gun 6 TGT Si w 300 v 1000 VALVE POSITION 6 ACTIVE/INACTIVE ACTIVE	<b>RF3</b> Gun 1 TGT ITO w 300 v 1000 VALVE POSITION 1 ACTIVE/INACTIVE ACTIVE	<b>RF4A</b> [ ] TGT [ ] w [ ] v [ ] VALVE POSITION 0 ACTIVE/INACTIVE INACTIVE	<b>RF4B</b> [ ] TGT [ ] w [ ] v [ ] VALVE POSITION 0 ACTIVE/INACTIVE INACTIVE	<b>RF4C</b> [ ] TGT [ ] w [ ] v [ ] VALVE POSITION 0 ACTIVE/INACTIVE INACTIVE		
<b>DC1</b> Gun 4 TGT W w 500 v 600 mA 1000 VALVE POSITION 4 ACTIVE/INACTIVE ACTIVE	<b>DC2</b> [ ] TGT [ ] w [ ] v [ ] mA [ ] VALVE POSITION 0 ACTIVE/INACTIVE INACTIVE	<b>DC3</b> [ ] TGT [ ] w [ ] v [ ] mA [ ] VALVE POSITION 0 ACTIVE/INACTIVE INACTIVE	<b>DC4</b> [ ] TGT [ ] w [ ] v [ ] mA [ ] VALVE POSITION 0 ACTIVE/INACTIVE INACTIVE	<b>DC5A</b> Gun 3 TGT Al w 500 v 600 mA 1000 VALVE POSITION 3 ACTIVE/INACTIVE ACTIVE	<b>DC5B</b> Gun 2 TGT Mo w 500 v 600 mA 1000 VALVE POSITION 2 ACTIVE/INACTIVE ACTIVE	<b>DC5C</b> Gun 5 TGT Ti w 500 v 600 mA 1000 VALVE POSITION 5 ACTIVE/INACTIVE ACTIVE	<b>DC5D</b> [ ] TGT [ ] w [ ] v [ ] mA [ ] VALVE POSITION 0 ACTIVE/INACTIVE INACTIVE

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Operational Procedure.](#)