

1.0 SCOPE

This Document covers water flow and hydrostatic testing of Fermilab manufactured coils, magnets and other water cooled devices produced by vendors.

2.0 EQUIPMENT USED

- 2.1 Flow test cart with a current calibration sticker.
- 2.2 Applicable Coil/Magnet Traveler or vendor/requisitioner requirements.

3.0 FLOW PRETEST EQUIPMENT/COIL/MAGNET SETUP

- 3.1 Ensure that the electrical power is turned off.
- 3.2 Ensure that valve #3 (coil bypass valve) is in the open position. (Refer to diagram #1)
- 3.3 Ensure that valve #17 (pump pressure valve) is in the closed position.
- 3.4 Ensure that valve #8 (return bypass valve) is in the open position.
- 3.5 Install 1 male quick disconnect to the return and 1 female quick disconnect to the supply to the return of the coil/magnet/device. Don't over tighten the ferrule.
- 3.6 Ensure that the water level in the water reservoir is at the full mark.
- 3.7 Plug the flow cart into the electrical outlet.
- 3.8 Connect the flow cart quick disconnects to the device under test quick disconnects.

4.0 FLOW TEST

- 4.1 Momentarily turn on the electrical power to the flow cart, turn the electrical power off. Do this several times to prime the coil.
- 4.2 Turn on the electrical power to the flow cart.
- 4.3 Adjust/close the #3 (coil bypass valve) so that the differential pressure gauge reads about 40 PSI.
- 4.4 Visually check the flow cart and device under test for water leaks. If any leaks are found, quickly turn off the electrical power to the flow cart and repair the leak.

REV.	DESCRIPTION	DRAWN	DATE
		APPD.	DATE
A	CHANGED VALVE #18 TO #8 IN 3.4. UPDATED DIAGRAM TO CURRENT CONFIGURATION. CHANGED SPECIFICATION PREFIX TO 5525 (TOOLING) & ES TO OP (OPERATING PROCEDURE). CHANGED TITLE TO REFLECT USE ON CART #1 & #2. TRR NO.0553	T.S.	8/26/96

UNLESS OTHERWISE SPECIFIED			ORIGINATOR	W. ISIMINGER	9/17/93
FRACTIONS	DECIMALS	ANGLES	DRAWN	D. GAW	8/4/94
"	"	"	CHECKED	D. GAW	8/10/94
1. BREAK ALL SHARP EDGES 1/64 MAX. 2. DO NOT SCALE DWG. 3. DIMENSIONING IN ACCORD WITH ANSI Y14.5 STD'S. <input checked="" type="checkbox"/> MAX. ALL MACHINED SURFACES			APPROVED	B. JENSEN	8/10/94
			USED ON		
			MATERIAL		
 FERMI NATIONAL ACCELERATOR LABORATORY U.S. DEPARTMENT OF ENERGY					
TS/MAGNET DESIGN & FABRICATION TEST CART #1 & #2 WATER FLOW & HYDROSTATIC INSPECTION PROCEDURE					
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- 4.5 Adjust the #3 (coil bypass valve) to read approximately 20 PSI over the first target pressure limit.
- 4.6 Adjust the #3 (coil bypass valve) to read the target pressure, maintain the target pressure until the flow rate meter #15 (Omega Eng. Inc. 0-18 GPM. Flow meter) has stabilized.
- 4.7 Check for leaks at all joints and connections, if any leaks are found switch off the electrical power to the flow cart and repair any leaks, repeat steps 4.1 through steps 4.4. If no leaks are found continue with the remaining steps.
- 4.8 After the flow meter has stabilized for 1 minute, observe the flow rate meter and record the test results in the traveler or supplied documentation.
- 4.9 Adjust the #3 (coil bypass valve) to read approximately 20 PSI over the second target pressure limit.
- 4.10 Adjust the #3 (coil bypass valve) to read the target pressure, maintain the target pressure until the flow rate meter #15 (Omega Eng. Inc. 0-18 GPM. Flow meter) has stabilized.
- 4.11 Check for leaks at all joints and connections, if any leaks are found switch off the electrical power to the flow cart and repair any leaks, repeat steps 4.7 and 4.8. If no leaks are found continue with the remaining steps.
- 4.12 After the flow meter has stabilized for 1 minute, observe the flow rate meter and record the test results in the traveler or supplied documentation.
- 4.13 Switch off the electrical power to the flow cart and disconnect the supply and return lines do not remove the quick disconnects from the coil.

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5.0 HYDROSTATIC TESTING

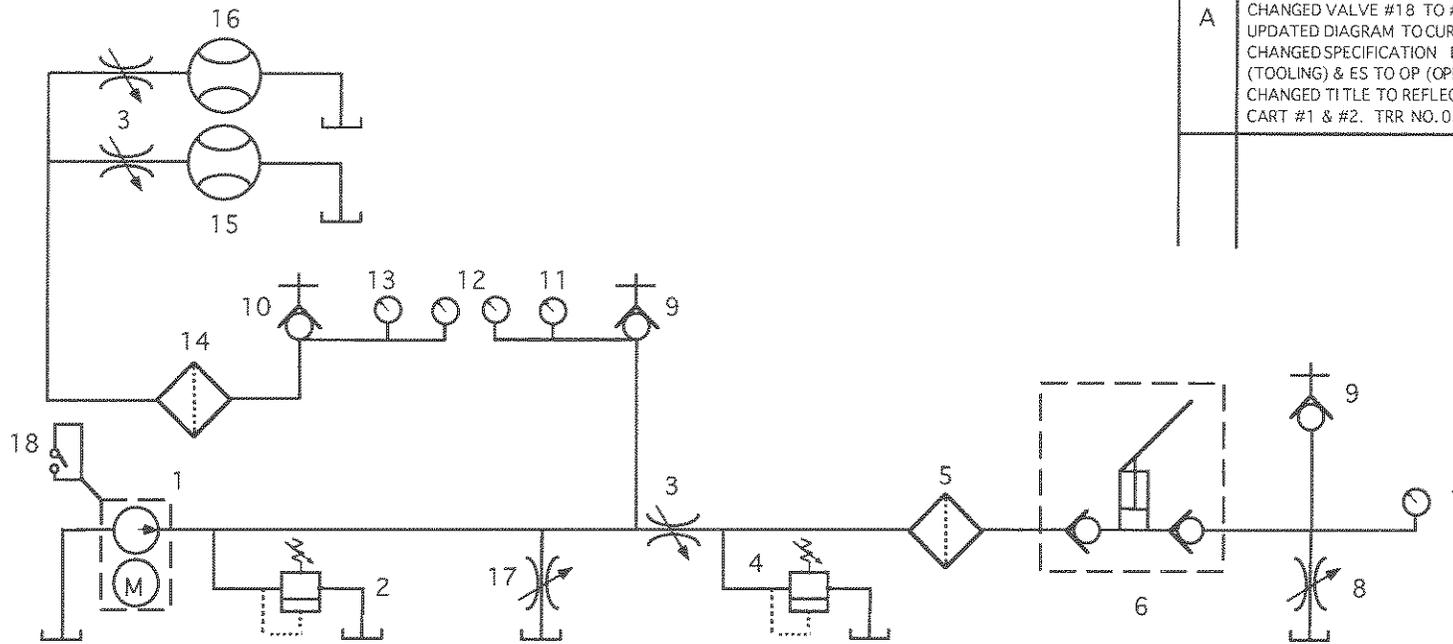
- 5.1 Adjust valve #3 to the closed position.
- 5.2 Adjust valve #17 to the open position.
- 5.3 Adjust valve #8 to the closed position.
- 5.4 Connect the hydro hose to the mating quick disconnect on the coil.

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- 5.5 Switch on the flow pump motor and observe the #7 3000 PSI gauge and pump the coil using the #6 (Teledyne Sprague) hand pump to the pressure listed in the traveler or supplied documentation. Switch off the flow pump and check all connections and joints for leaks, if any leaks are found, relieve the pressure by opening valve #8 and repair the leaks.
- 5.6 Leave the pressure on the coil for 30 minutes, or required time limit. There is no allowable leakage.
- 5.7 Record the hydrostatic test results in the traveler, or supplied documentation.
- 5.8 Relieve the pressure by opening valve #8.
- 5.9 Disconnect the flow cart from the coil and remove the quick disconnects from the coil.
- 5.10 Disconnect the flow cart from the electrical outlet.
- 5.11 Clean up any water that might have been spilled during the test.

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1. AURORA PUMP MODEL 93-06630-1 5 HP MOTOR
2. CASH ACME RELIEF VALVE TYPE K 10 1 1/4 INCH
3. 3/4 INCH WORCHESTER BALL VALVE
4. RELIEF VALVE
5. TEEL FILTER
6. TELEDYNE SPRAQUE HAND PUMP S-525-100-SS
7. 3000 PSI GAUGE
8. RETURN BYPASS VALVE
9. 1 INCH MALE QUICK DISCONNECT
10. 1 INCH FEMALE DISCONNECT
11. 200 PSI GAUGE
12. DYISCO PRESSURE SENSOR AB-50-000-250C-K-2
13. 60 PSI GAUGE
14. ROSEDALE PRODUCTS FILTER 4-6-11-2-200-D-S-V-N-B
15. OMEGA ENG. INC. 0-18 GPM FLOWMETER
16. PUMP PRESSURE VALVE
17. PUMP PRESSURE VALVE
18. ON/OFF SWITCH

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