1. **Principle**

Antihuman globulin (AHG) is inactivated readily by unbound immunoglobulin. Therefore, the antiglobulin tests must be done on RBC’s washed free of all proteins and suspended in a protein-free medium. Properly functioning cell washers must add large volumes of normal saline to each tube, resuspend the RBC’s adequately, centrifuge cleanly and decant the saline to leave a dry RBC button.

1. **Scope and Related Policies**
   1. Follow manufacturer’s instructions for maintenance schedule and procedures.
   2. The speed and time for centrifugation shall be checked at regular intervals as recommended by the manufacturer or every 6 months.9.1
2. **Specimen – N/A**
3. **Materials**

**Equipment:** Cell Washer

Block for test tubes

Photostrobe

**Supplies:** Test tubes – 10 x 75 mm

Serological pipettes

Worksheet for recording results

**Reagents:** Normal saline

Anti-IgG

IgG-coated cells known to give grade 1-2 reactions

Additive routinely used to potentiate antigen-antibody reactions.

Human plasma from patient or donor

Cleaning solution 5% Aqueous Sodium Hypochlorite

Distilled water

Isopropyl Alcohol

Water bath descaler

1. **Quality Control – N/A**
2. **Procedure**   
     
   Consult equipment specific instruction manual

**(Example DACII by DADE)**

|  |  |
| --- | --- |
| Daily | |
| * 1. During each workday the instrument should be inspected to: | * + 1. Ensure that the lid interlock is working properly. |
| * + 1. Determine if cleaning is needed. |
| * + 1. Determine if contamination is present. |
| * 1. Lid Inspection: | * + 1. Ensure lid is closed and latched. |
| * + 1. Press wash key. |
| * + 1. Press and hold saline prime key, saline pump should start. |
| * + 1. Open lid approximately ½ inch and saline pump should stop. If pump does not start with lid closed and stop when lid is opened contact a qualified service representative. |
| * 1. Saline Volume Dispense Check: | * + 1. Remove the rotor and place a graduated cylinder (100 mL minimum) under the saline nozzle on the inside of the lid. |
| * + 1. Press the test key located between the Power Switch and the Saline Prime key. |
| * + 1. Press the 1 key and "10 MM or 12 MM saline volume" will appear in the display. |
| * + 1. Press the start key and the saline pump will run through a saline pumping cycle (fill portion of the wash cycle). Dispensed volume will depend on the position of the saline volume switch. |
| * + 1. Check the volume is within the recommended limits:   10 mm 47-51 mL  12 mm 70-74 mL |
| * + 1. If the dispensed volume varies check for adequate saline supply or kinked hose. If all is in order perform move to step 6.4 |
| Weekly: (or as required) | |
| * 1. Cleaning and decontamination - the inner bowl and rotor (without test tubes) must be in place to perform this operation. | * + 1. Close the centrifuge cover and remove saline supply tubing from saline reservoir. |
| * + 1. Press and hold the saline prime key until all the saline is pumped from the system. |
| * + 1. Connect saline supply tubing to a minimum half liter of cleaning solution. |
| * + 1. Press and hold the saline prime key until cleaning solution fills entire system and starts exiting from the saline adapter in the cover. |
| * + 1. Press wash function key and then press 3; allow instrument to complete sequence. Let instrument sit idle for ten to fifteen minutes. |
| * + 1. Remove saline supply tubing from cleaning solution, press and hold saline prime key until all cleaning solution has exited from the entire system. |
| * + 1. Connect saline tubing to a minimum of two liters distilled water. Press and hold saline prime key until distilled water fills the entire system and starts exiting from the saline adapter in the cover. |
| * + 1. Run continuous wash cycles until distilled water is depleted. Thorough flushing is mandatory. |
| * + 1. Remove the rotor and inner bowl. Using a soft cloth and isopropyl alcohol carefully wipe the bowl area of the housing being careful not to splash any liquid under the rubber skirt of the magnet assembly. |
| * + 1. Replace the inner bowl and before installing the rotor, rotate the rotor drive by hand until it turns freely. |
| * + 1. If saline tubing is to be replaced into an unsealed saline container rinse outside surface of tubing thoroughly with distilled water and wipe dry with a clean lint-free cloth before insertion into saline. |
| * + 1. System should be reprimed completely with saline and a spin cycle should be run before resuming testing. |
| * 1. Repeat step 6.3 to ensure the correct volume of saline is dispensing.  |  |  | | --- | --- | | ***If*** | ***Then*** | | Correct saline volume is dispensing | Continue with step 6.6 | | Correct saline volume is not dispensing | Follow with a service call to manufacturer or contracted Bio-Med | | |
| * 1. Operational Sequence: | * + 1. Select Test 4 (press test key followed by 4 key) and observe number in the time window. On initial setup with 10/12 mm saline switch in the 10 mm position the number will be 1.10 and in the 12 mm position will be 1.60. |
| * + 1. If saline volume was low in steps 6.4.1-6.4.6 above then a higher number must be selected and entered via the ENT key. Each digit increase translates to approximately 0.35 mL   increase in saline volume delivery (e.g., if volume was 5 mL low then you would key in 1.24 if setting the 10 mm volume).   * + 1. If saline volume was high then a lower number must be selected and entered via the ENT key. |
| Monthly: | |
| * 1. Performance Testing monthly or as recommended by the manufacturer: | * + 1. To each of 12 tubes, add potentiator and human plasma in quantities that correspond to routine use, and 1 drop of IgG-coated red cells. |
| * + 1. Place the tubes in a centrifuge carrier, seat the carrier in the cell washer, and start the wash cycle. |
| * + 1. After addition of saline in the second cycle, stop the cell washer. Inspect the contents of all tubes. There should be an approximately equal volume of saline in all tubes (the correct volume will be indicated in the manufacturer’s directions). Tubes should not be more than 80% full, or as advised by the manufacturer, to avoid splashing and cross-contamination. Record observations. |
| * + 1. Observe all tubes to see that the red cells have been completely resuspended. Red cells should not stream up the sides of the test tubes. Record observations. |
| * + 1. Continue the washing cycle. |
| * + 1. After addition of saline in the third cycle, stop the cell washer and inspect tubes as above. Record observations. |
| * + 1. Complete the wash cycle. |
| * + 1. At the end of the wash cycle, inspect all tubes to see that saline has been completely decanted and that each tube contains a dry cell button. The size of the cell button should be the same size as at the start of the wash cycle and should be the same in all tubes. Record observations. |
| * + 1. Add AHG according to manufacturer’s directions, centrifuge, and examine all tubes for agglutination. If the cell washer is functioning properly, all tubes should show the same degree of agglutination. Record observations. |
| * + 1. Record identity of centrifuge, the date of testing, and the identity of the person performing the testing. See Procedural Notes 8.1 |
| * 1. Rotor Stain Removal (as required) | * + 1. Dilute a small amount of water bath descaler approximately 1:10 with distilled water. |
| * + 1. Using a cotton tipped swab and avoiding personal contact apply a small amount of the solution directly onto the stained area only. See Procedural Notes 8.2. |
| * + 1. Allow the solution to work until the stain is gone, or overnight. Thoroughly rinse the rotor with distilled water prior to reinstalling in the instrument. |
| Maintenance (6 Month or as specified by the manufacturer) | |
| * 1. Rotor Speed Check | |
| * 1. High Speed - pack and spin mode | * + 1. Press the spin key and press 2 minute 30 seconds onto the display. |
| * + 1. Press start key. |
| * + 1. Using the Photostrobe read the rotor speed by focusing on the 'X' and '0' on the tape referenced in the Service manual paragraph 3.4.1. High speed should be 3000-3200 RPM. |
| * + 1. When check is completed pressing the stop key will end the cycle. The spin function or any other cycle can then be selected. |
| * 1. Low Speed - decant mode. | * + 1. Press the decant key located between the Agitate function key and the Start/Stop key. This will display 'Decant 3.00' on the function and time display. |
| * + 1. Ensure the decant knob is fully clockwise as viewed from the rear of the instrument. |
| * + 1. Press the start key and the rotor will start turning. |
| * + 1. Using the Photostrobe as in step 6.10.3 above check the decant RPM. The reading should be 750-790 RPM. |
| * 1. Rotor Speed Adjustments. | * + 1. These are located at the rear right of the instrument and must only be adjusted by qualified service personnel. |

1. **Reporting** 
   1. All maintenance and performance testing must be documented on the appropriate forms
   2. Any deviation from the expected result must be reported to the laboratory manager or designate
2. **Procedural Notes**
   1. Further investigation is needed if:
      1. The amount of saline varies from tube to tube or cycle to cycle.
      2. The cell button is not resuspended completely after being filled with saline.
      3. Any tube has weak or absent agglutination in the antiglobulin phase.
      4. Any tube has a significant decrease in the size of the cell button.
   2. Water bath descaler is an acid and should not come into contact with skin, eyes or counter tops, etc.
3. **References**
   1. Standards for Hospital Transfusion Services Version 3; February 2011 Canadian Society for Transfusion Medicine,3.3.2.2
   2. Manufacturer’s Instruction Manual DACII.
   3. IQMH Accreditation Requirements and Guidance Information, December 2013, Version 6; IV
4. **Revision History**

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| **Revision Date** | **Summary of Revision** |
| September 1, 2015 | * Revised name of manual * Added section 2.2 * Revised and renumbered section 6.0 * Updated list of references to include most recent editions |