

## Magphan® EMR051 Manual

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### WARNING

To avoid phantom damage:

- This phantom should be stored at room temperature. Do not allow this phantom to be frozen or subjected to high heat. If this phantom is frozen the housing and spheres will be damaged beyond repair.
- Do not allow phantom to sit without water. If the phantom sits empty the contrast spheres will dry out and develop air bubbles and cracks. If for some reason the phantom is drained it should not be allowed to dry out and must be filled quickly.
- This phantom is not intended to be shipped from site to site. If you have to ship the phantom you must insert the pressure expansion balloon screw into the top of the phantom. If this is not installed the housing seal may release and the phantom will drain.

To avoid fire:

- This product has an FH3-4 mm/min flame rating and is considered to be flammable. It is advised not to expose this product to open flame or high temperature (over 125° Celsius or 250° Fahrenheit) heating elements.

Disregarding these warnings will nullify the Warranty.

## EMR051



# T h e   P h a n t o m   L a b o r a t o r y

## **Magphan® EMR051 Manual**

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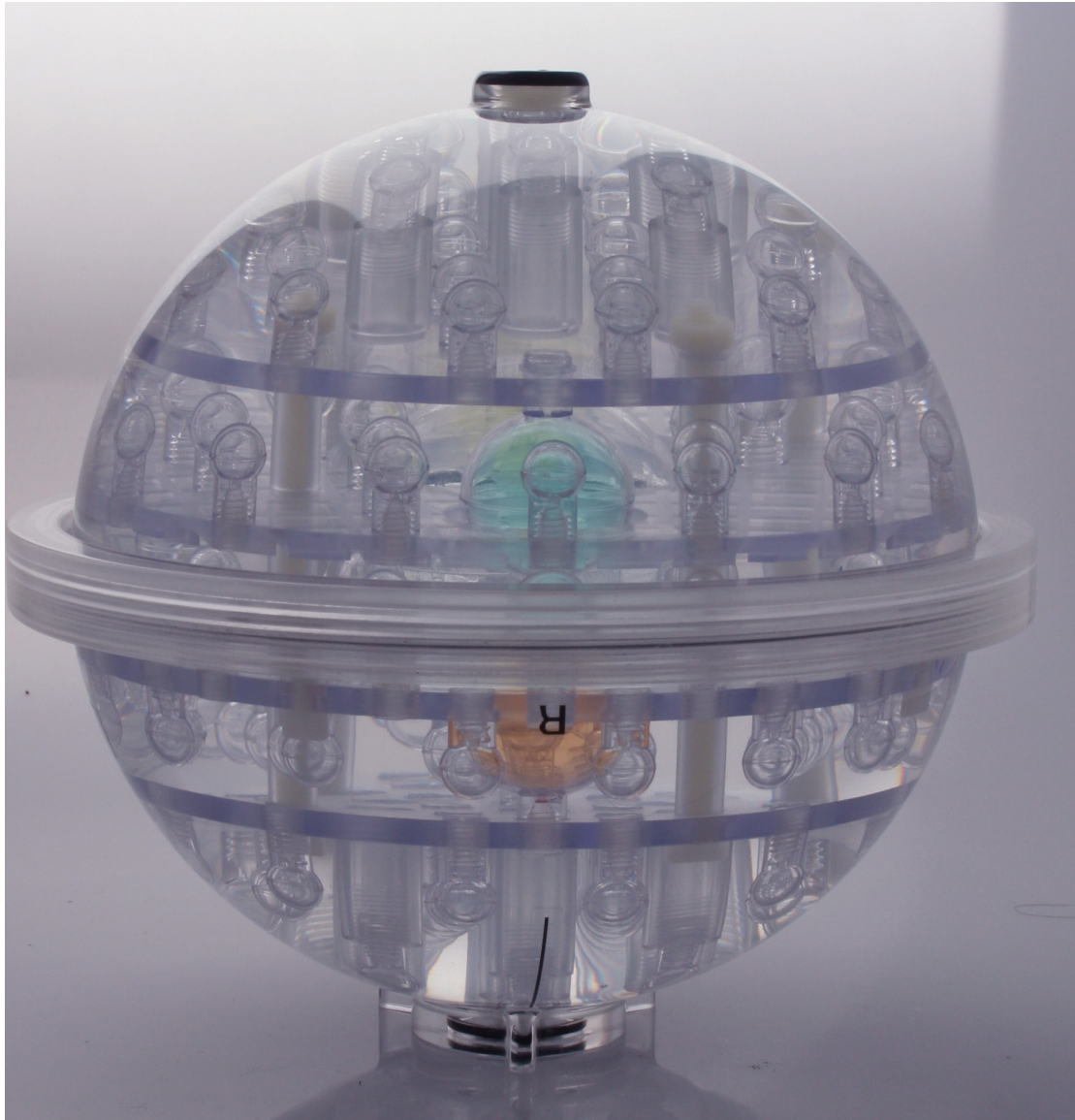
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**Magphan® EMR051**

## Introduction

The Phantom Laboratory and physicist, Richard Mallozzi, Ph.D., with GE Global Research worked together to develop a phantom for detailed mapping of image distortion. The phantom and analytical software was presented to the ADNI MR Image Core for use in the Alzheimer's Disease Neuroimaging Initiative (ADNI) study. The ADNI MR Image Core added a 2-axis grid and modified the housing. This phantom is often referred to as the ADNI phantom.

This phantom is designed for use with an automated analytical analysis. Image Owl Inc. offers its customers the ability to analyze image sets of the Magphan® EMR051 with their web based processing tools.

Image Owl Inc.  
[www.imageowl.com](http://www.imageowl.com)

We do not make specific recommendations on the content of your quality assurance program because each imaging study has its own unique set of requirements.

If you have any additional questions please contact The Phantom Laboratory at:  
Phone: 800-525-1190 or 518-692-1190  
Fax: 518-692-3329  
email: [sales@phantomlab.com](mailto:sales@phantomlab.com)  
Additional product information is available at: [www.phantomlab.com](http://www.phantomlab.com)

**Initial Phantom Setup**

The Magphan® EMR051 phantom is shipped with all spheres filled. Upon receipt of the phantom open the case, remove and discard the aluminum foil wrap and inspect the phantom to see that it is full of water. It is normal for the phantom's water level to be around 1cm below the top of the phantom. However, if the water level is more than 2cm below the top, the phantom has drained during shipment, in this case fill the phantom with distilled water and contact The Phantom Laboratory.

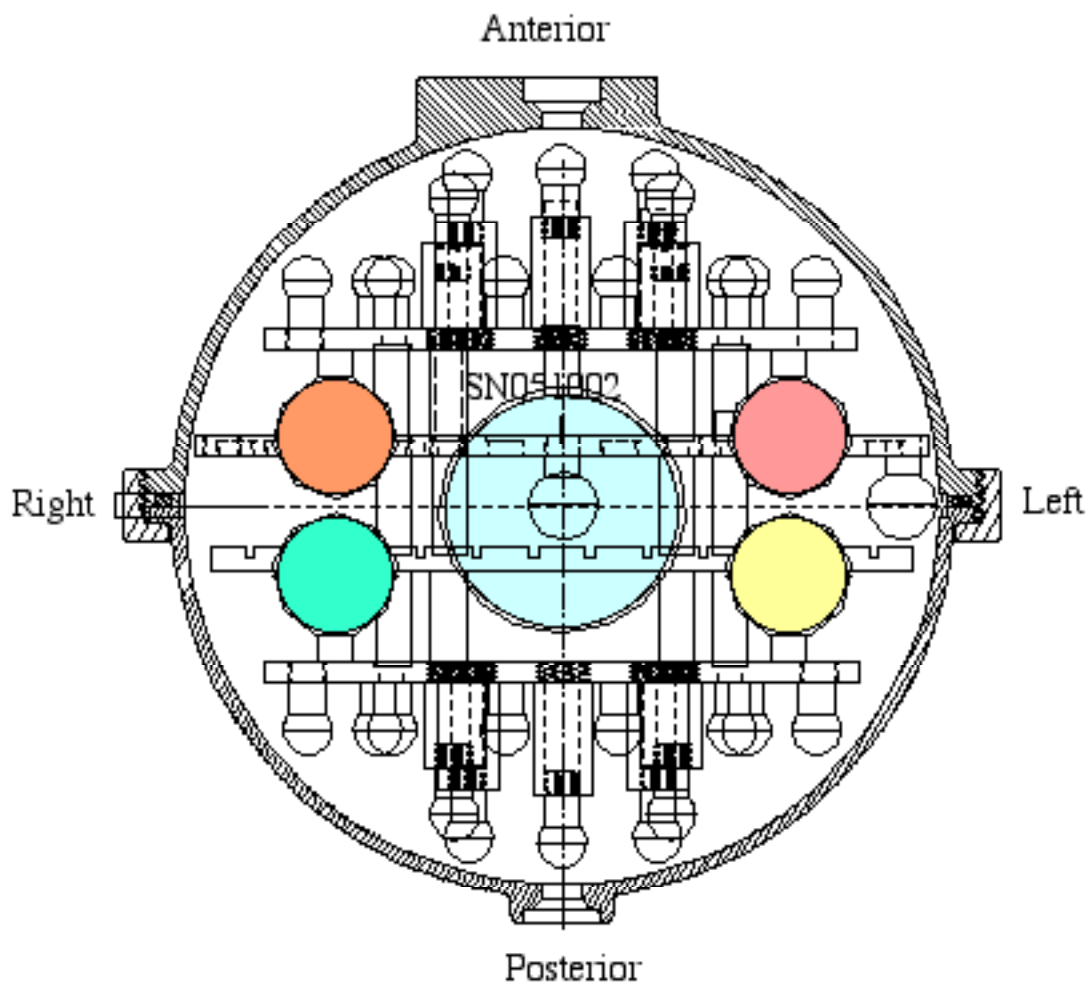
After unpacking the phantom allow the phantom to reach room temperature, then remove the pressure expansion balloon screw from the top of the phantom. Top off the phantom with distilled water (the water may be approximately 1cm below the top) and insert the flat head screw with o-ring into the phantom.

## Scanning the Phantom

The Magphan® EMR051 phantom has a flat end enabling it to be placed on a shelf or table without rolling off. Because each coil is unique there is no standard method for positioning the phantom in a coil.

The established protocol for the ADNI study is to position the phantom's flat side on anterior and then rotate the phantom on the rounded fill port until the L, R (for left and right) and I, S (for inferior and superior) are in the correct position with regard to the patient table. Positioning pads or foam can be used to stabilize the phantom in the correct orientation.

Scans should be done following the patient protocols for which you are verifying the scanner's performance.



Partial cross section view from inferior side

### Sphere Contrast Liquids

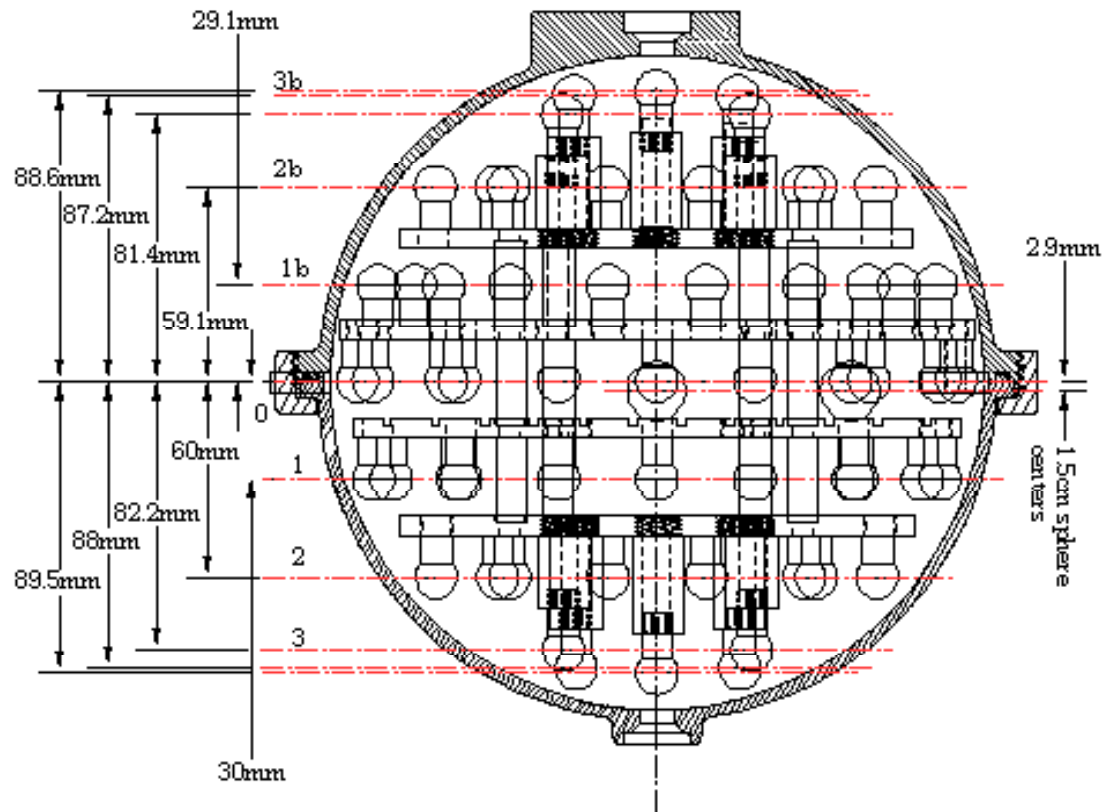
The Magphan® EMR051 phantom contains 165 spheres.

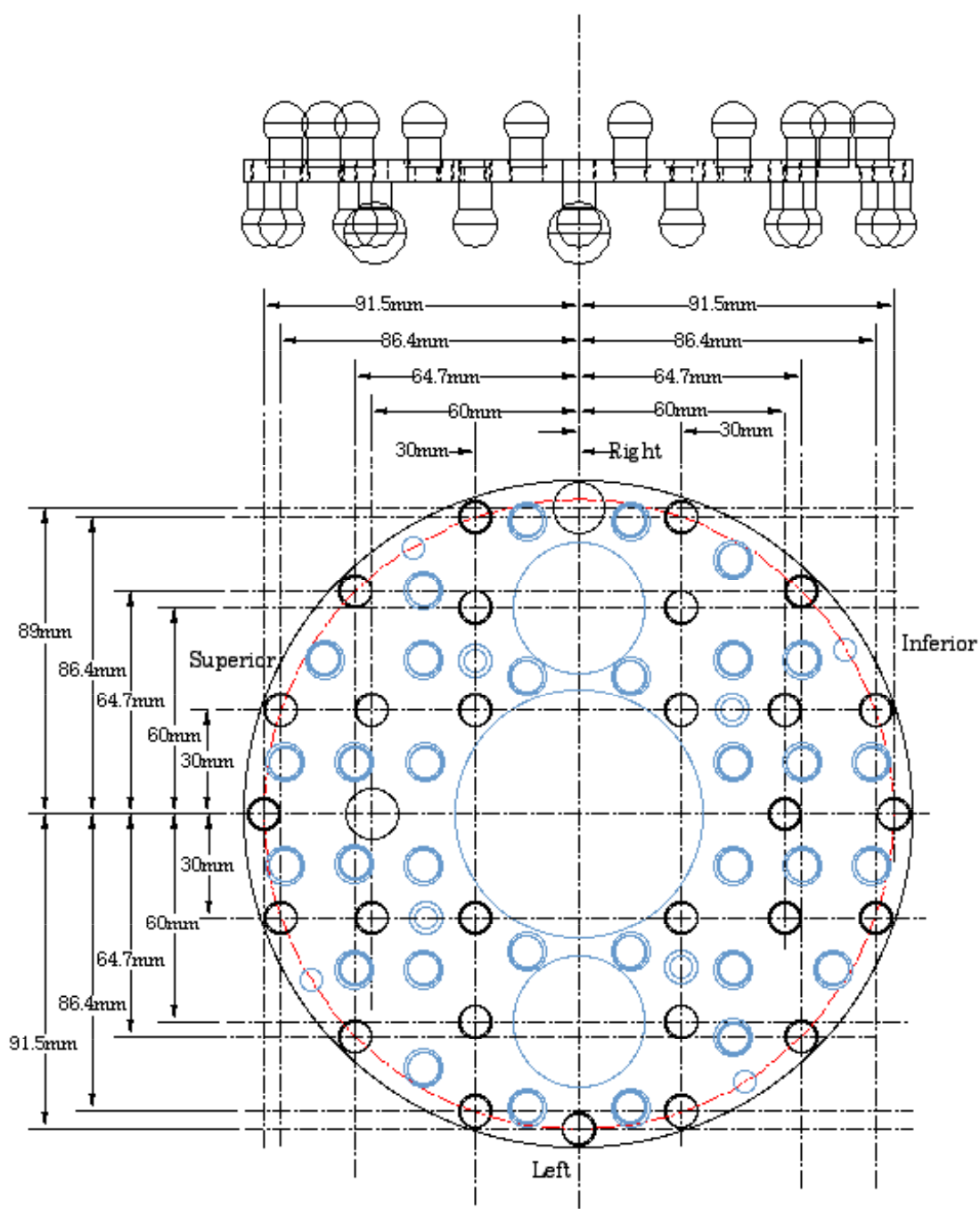
Sphere ID	Color	Number of Spheres	Grams of Copper Sulfate Penta Hydrate per liter	Target T1 (ms)
1.0cm	none	158	0.820	
1.5cm	none	2	0.820	
3.0cm	green	1	0.220	900
3.0cm	yellow	1	0.295	750
3.0cm	red	1	0.430	600
3.0cm	orange	1	0.590	450
6.0cm	none	1	0.820	



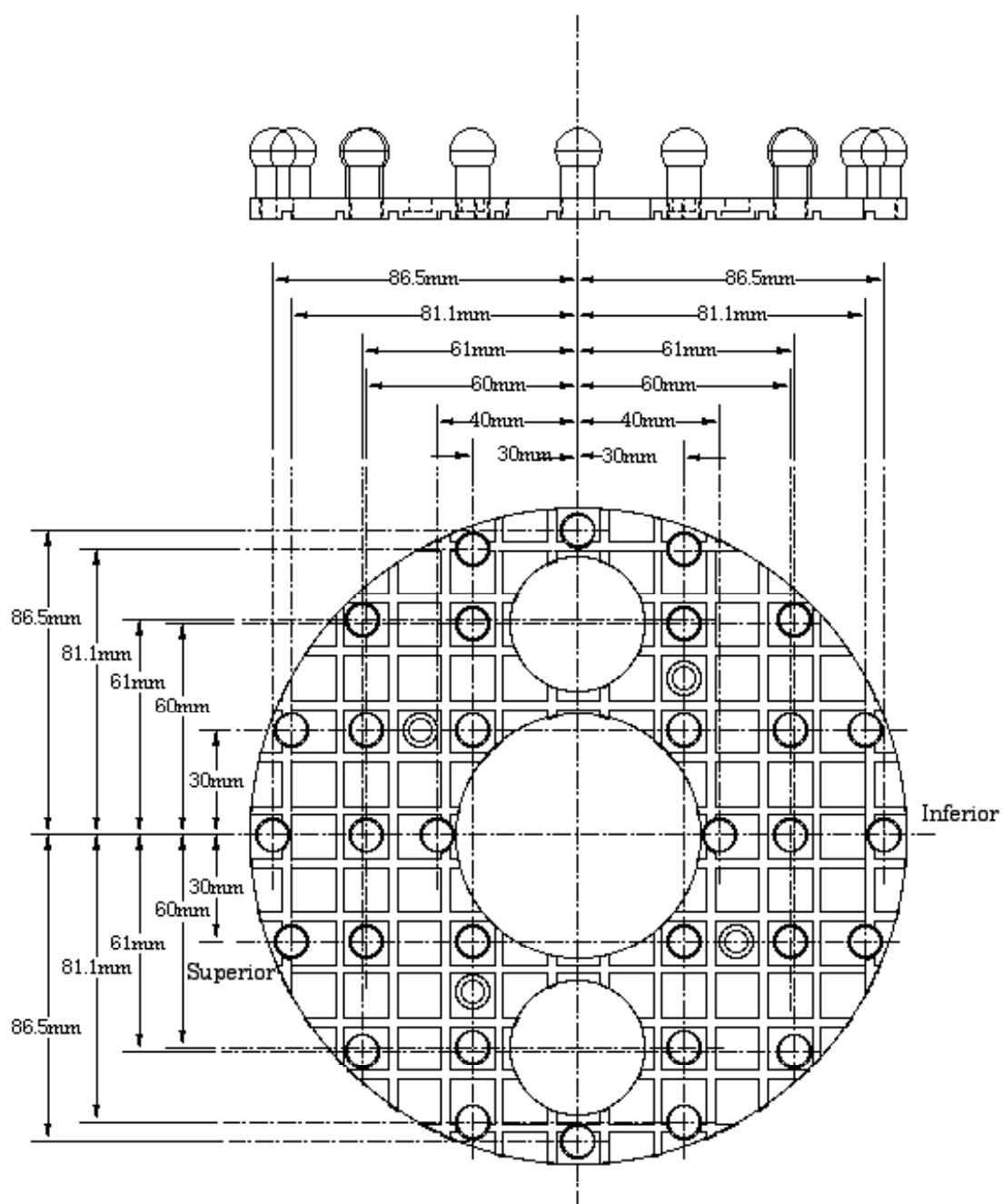
## Sphere Locations

This phantom has 7 test planes (note 3 and 3b are made from multiple planes). The drawing below shows the different planes within the phantom. On the following pages are drawings with the layout of each plane.



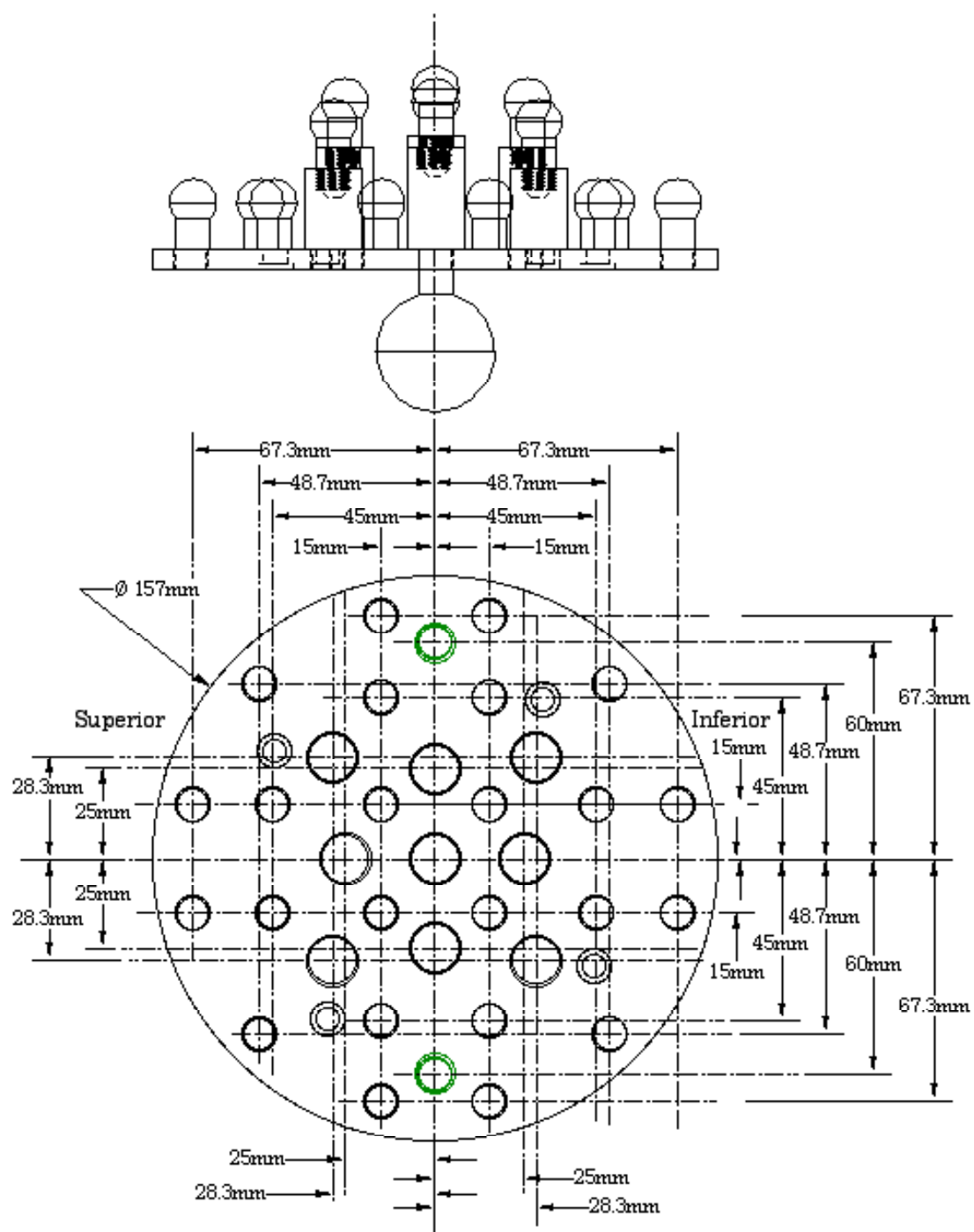


Plane 0



Plane 1





Plane 2, 2b, 3 and 3b

**WARRANTY**

THE PHANTOM LABORATORY INCORPORATED ("Seller") warrants that this product shall remain in good working order and free of all material defects for a period of one (1) year following the date of purchase. If, prior to the expiration of the one (1) year warranty period, the product becomes defective, Buyer shall return the product to the Seller at:

By Truck

The Phantom Laboratory, Incorporated  
2727 State Route 29  
Greenwich, NY12834

By Mail

The Phantom Laboratory, Incorporated  
PO Box 511  
Salem, NY 12865-0511

Seller shall, at Seller's sole option, repair or replace the defective product. The Warranty does not cover damage to the product resulting from accident or misuse.

IF THE PRODUCT IS NOT IN GOOD WORKING ORDER AS WARRANTED, THE SOLE AND EXCLUSIVE REMEDY SHALL BE REPAIR OR REPLACEMENT, AT SELLER'S OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT. THIS LIMITATION APPLIES TO DAMAGES OF ANY KIND, INCLUDING, BUT NOT LIMITED TO, DIRECT OR INDIRECT DAMAGES, LOST PROFITS, OR OTHER SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER FOR BREACH OF CONTRACT, TORT OR OTHERWISE, OR WHETHER ARISING OUT OF THE USE OF OR INABILITY TO USE THE PRODUCT. ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANT ABILITY AND FITNESS FOR PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED.