# Isolator Air Mixing Module

# for

# Vapor Hydrogen Peroxide decontamination of

# Barrier Isolator Systems

Manufactured by:

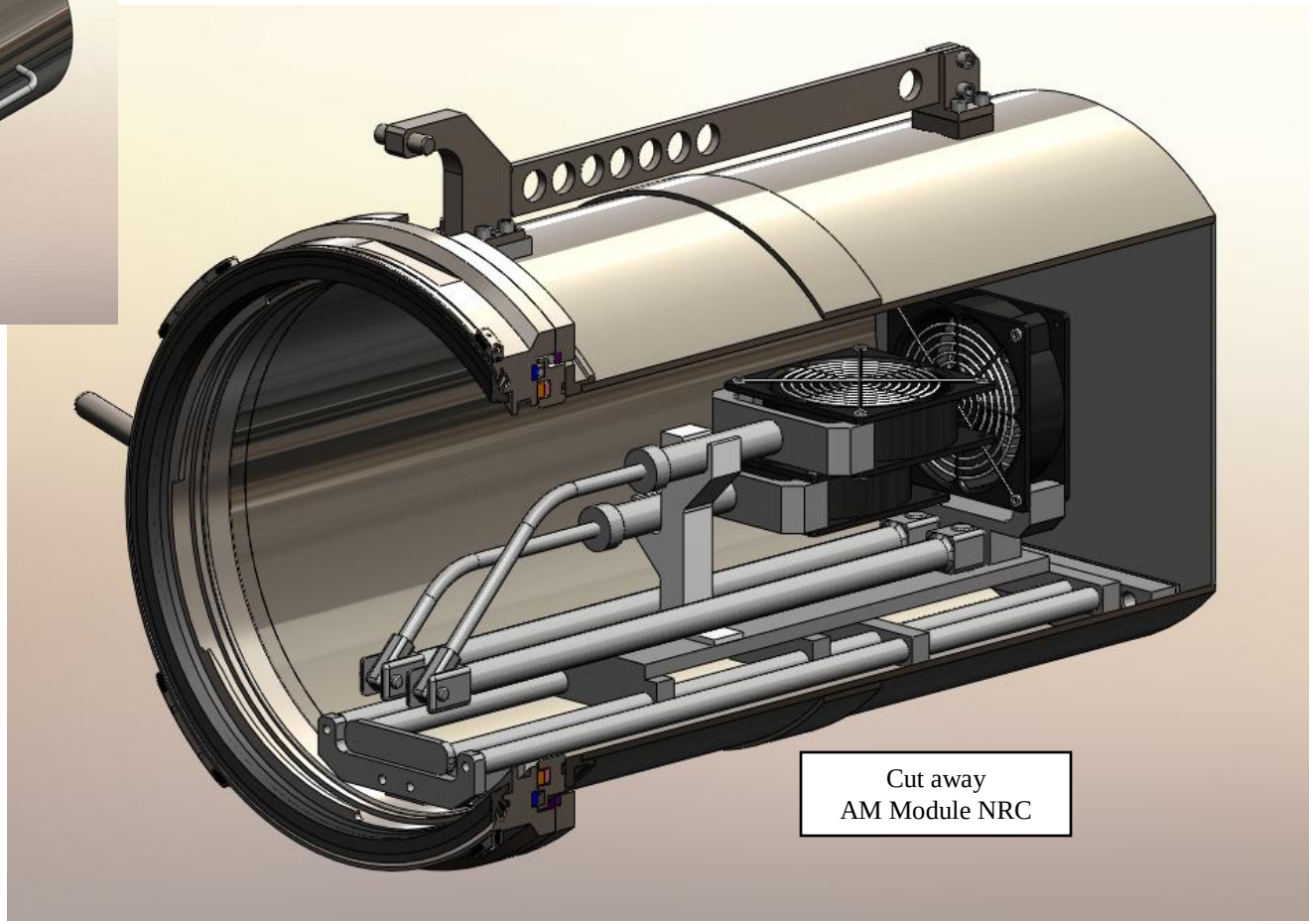
Dynamic Design Pharma, Inc.

Mission Viejo, California

www.dynamicdesignpharma.com

# 350mm Air Mixing Module

AM Module NRC



Cut away
AM Module NRC

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# System Description

A system that docks onto a standard RTP port of the barrier isolator for the purpose of creating air turbulence within the isolator chamber during Vapor Hydrogen Peroxide (VHP) decontamination.

The system consists of a Non-Rotating Canister (NRC) containing three fans that are extended out of the canister body and into the isolator chamber before starting the VHP cycle. The three fans are attached to a manually actuated shuttle that is housed inside the NRC. This method of attachment results in repeatable positioning and orientation between VHP cycles.

Two fans are mounted on individual swing arms that reach well into the isolator system. A third fan, hard mounted to the shuttle mechanism, creates air turbulence in front of and within the NRC thus assuring good VHP coverage of internal surfaces.

At the end of the VHP cycle, the fans are stowed back into the NRC by the operator through the isolator gloves. The design of the system is such that the stowing operation can be accomplished by touching surfaces that have been decontaminated by the VHP cycle.

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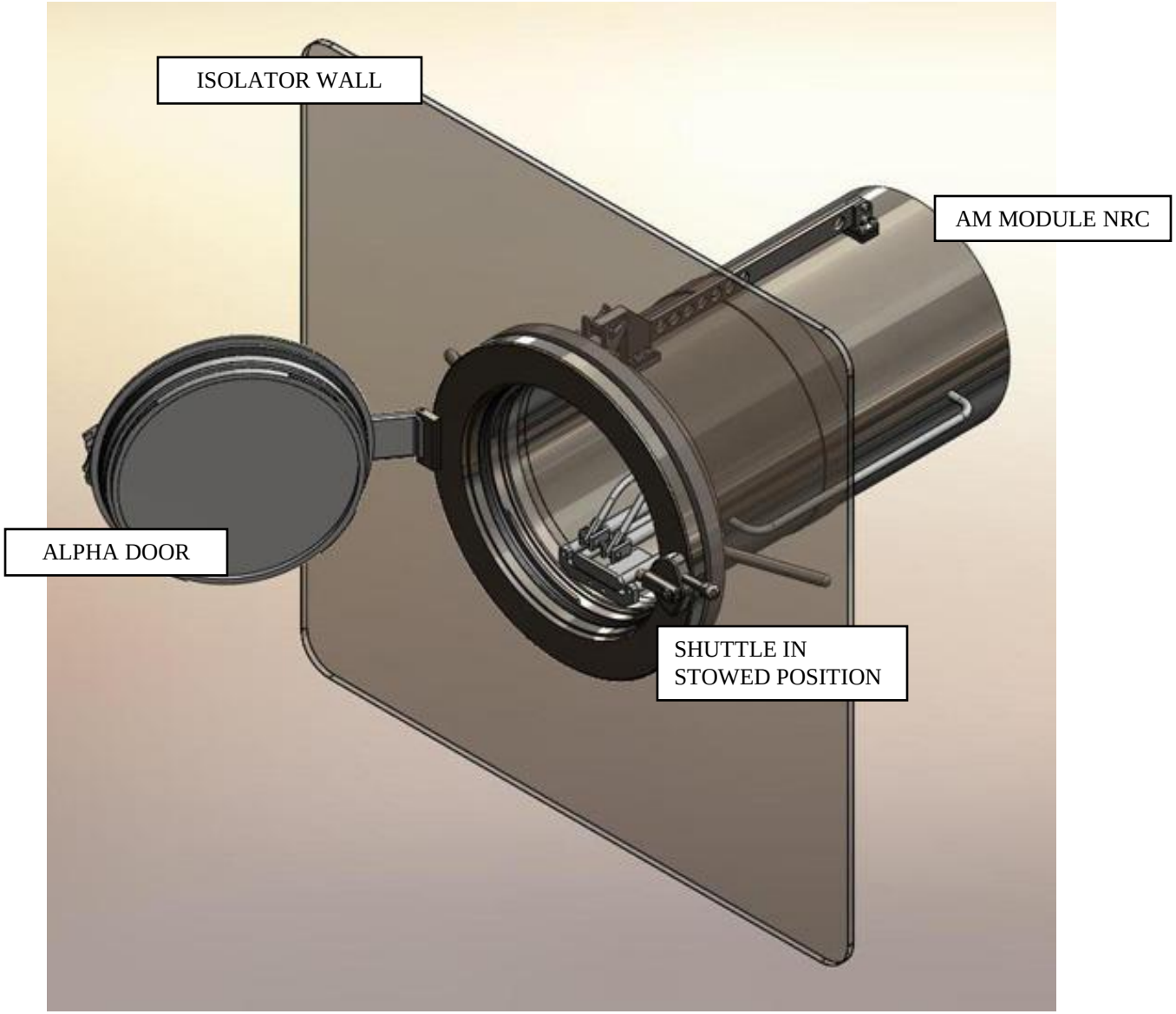
## Advantages

- Eliminates the need of permanently mounted “dirty” air mixing fans inside the isolator system.
- Uses Non-Rotating Canister technology: hands free handling of heavy components to be transferred into and out of isolators.
- Precise directional control of airflow during VHP decontamination cycles as determined during smoke studies and VHP cycle development.

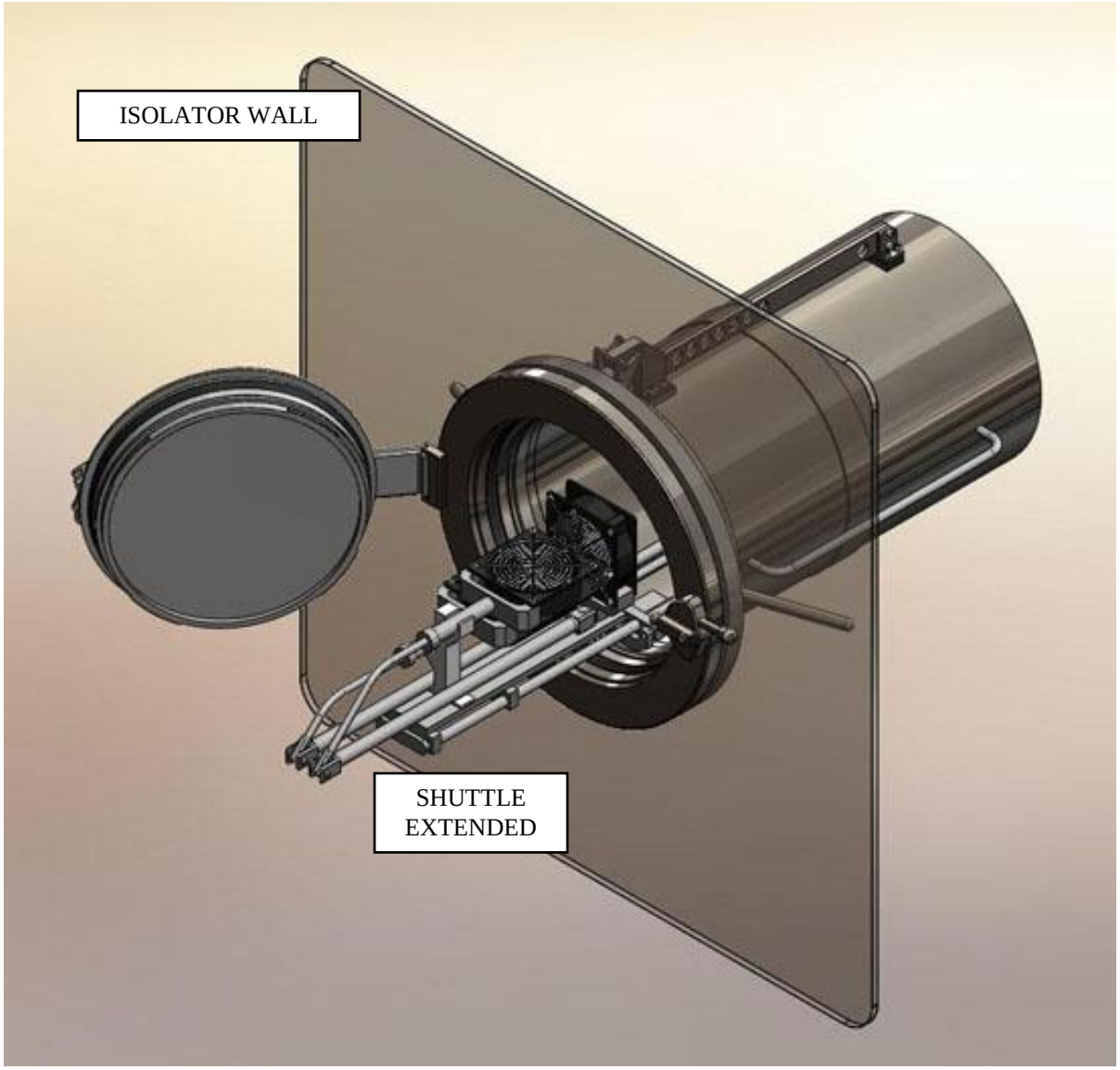
## Specification

- Nominal RTP port size: 270mm and 350mm
- Total number of fans: 3 (2 adjustable, 1 fixed)
- Electrical requirements: 115Vac 60hz or 220Vac 50Hz
- Stowing of the fans after use: contact only surfaces that have been VHP decontaminated.
- Stowing using glove manipulations only.

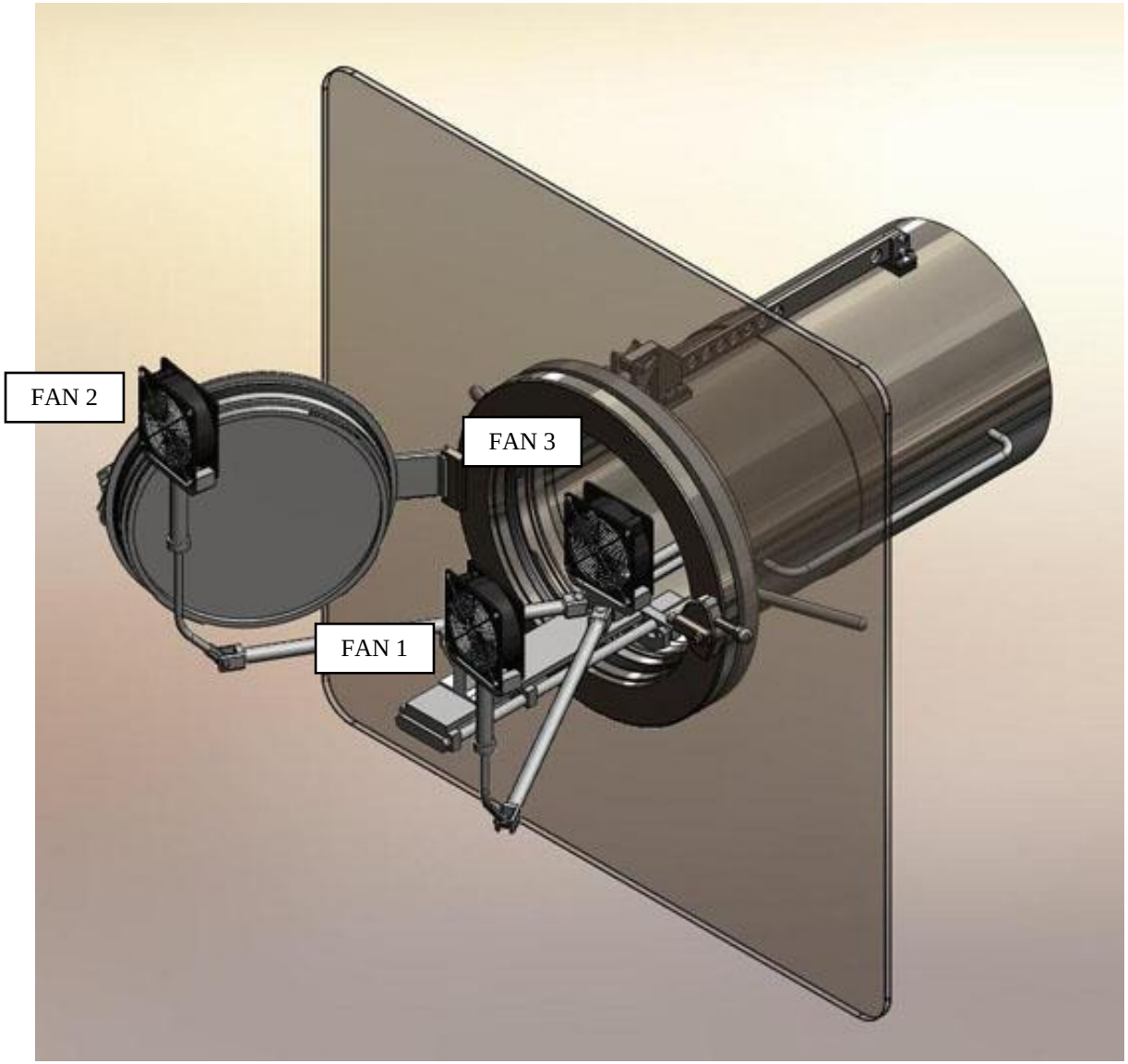
# System as seen upon opening of RTP door



# System with shuttle extended and fans stowed



# System with fans in position - ready for VHP



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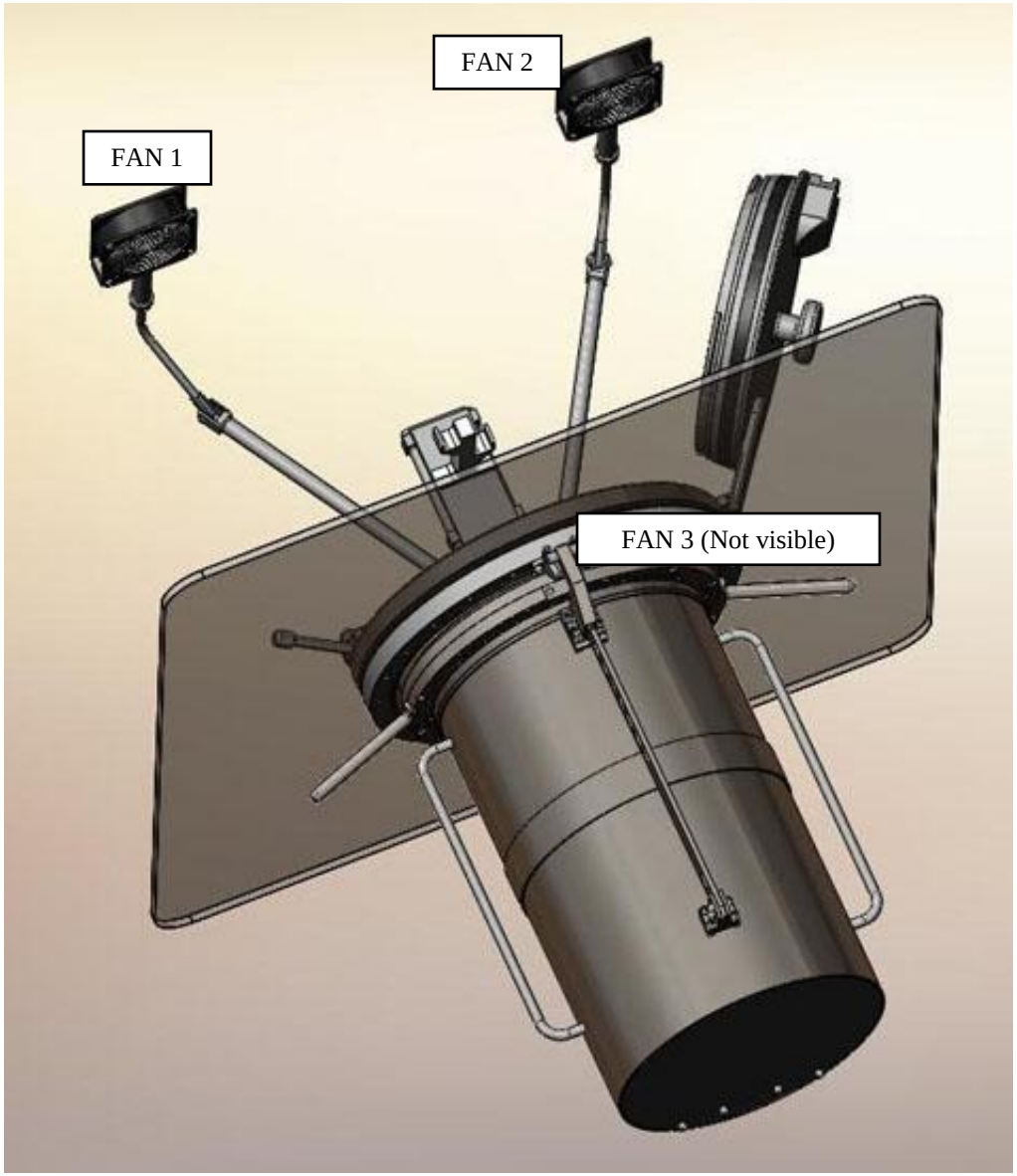

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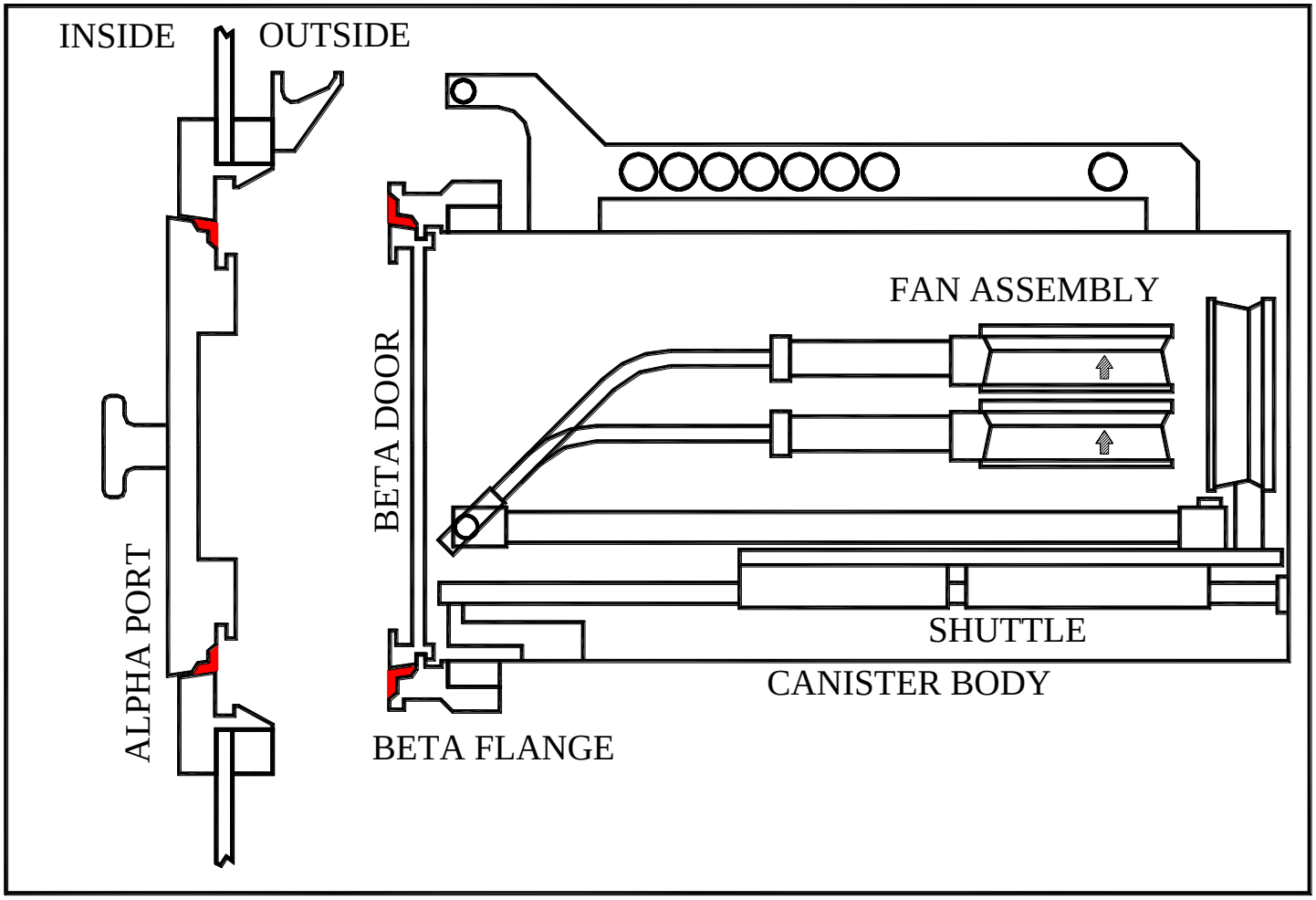
## System Operation

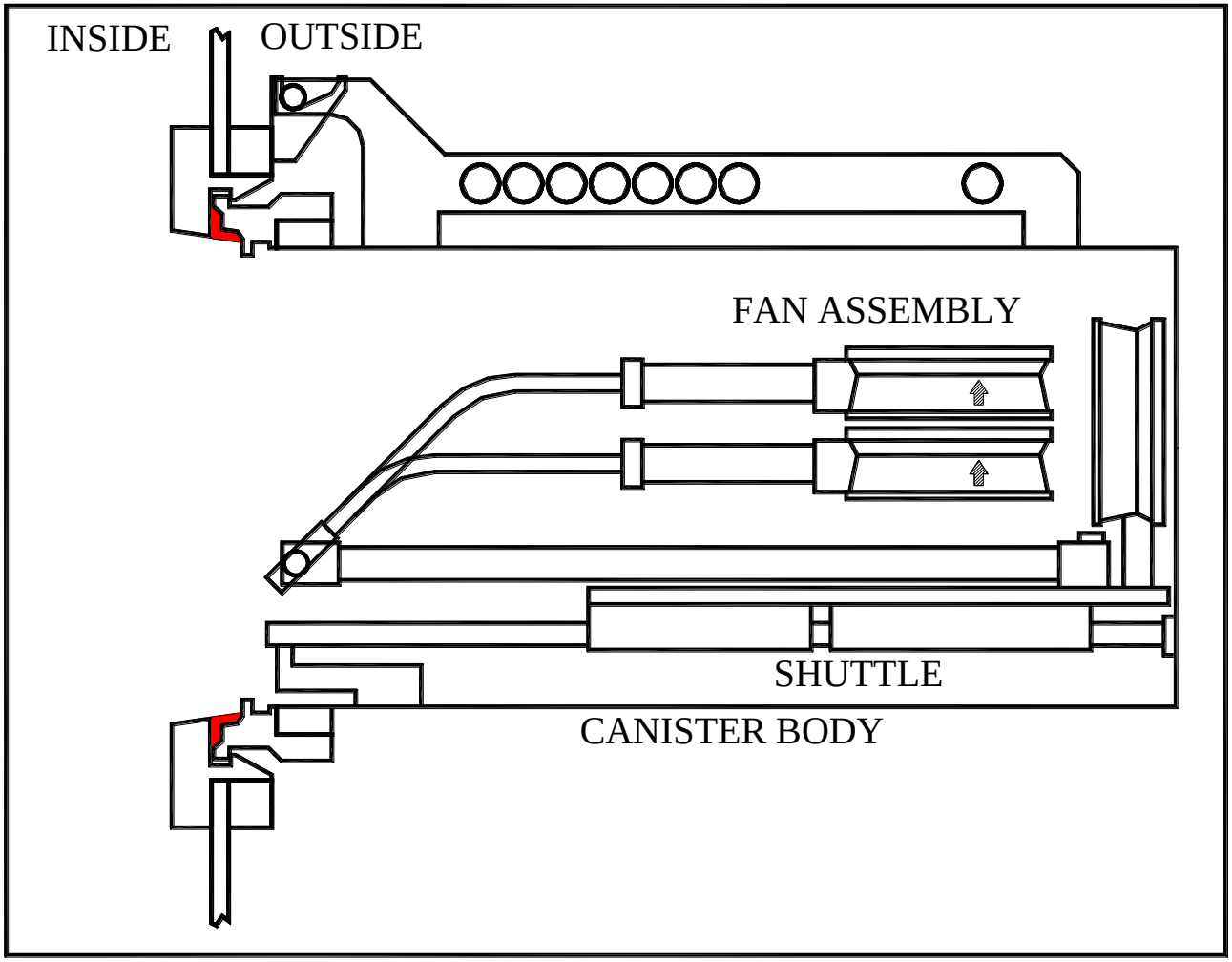
- The Air Mixing Module is docked to the RTP port prior to the start of the VHP cycle.
- The RTP door is opened to access the internal components of the NRC.
- The shuttle mechanism, with the fans attached, is pulled out of the NRC to the extended position.
- Both adjustable fans are raised to the upright position and moved over to the validated position. They are locked in position
- Both adjustable fans are rotated on their mounting axis and locked into position.
- Fan #3 is fixed in position and therefore requires no operation.
- The power cord external to the NRC canister is connected to a standard electrical outlet.
- The VHP cycle is performed.
- At the end of the cycle, the operator, via the isolator gloves, stows away the fans back inside the NRC and closes the RTP door.
- The NRC is undocked from the RTP port and taken away.

# Set up sequence - Step 1



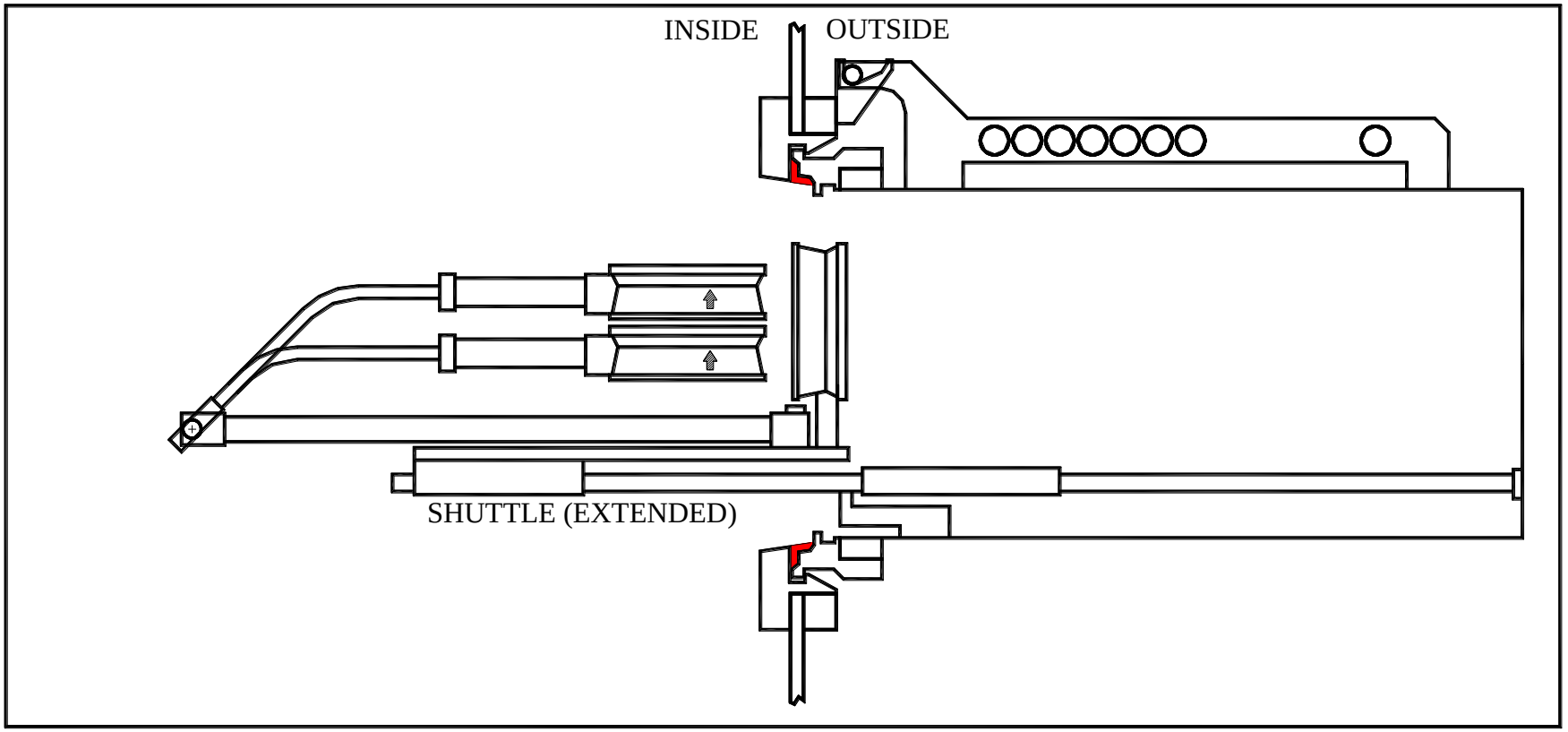

**Step 1**: The Air Mixing Module NRC is docked to the Alpha port of the barrier isolator

# Set up Sequence - Step 2



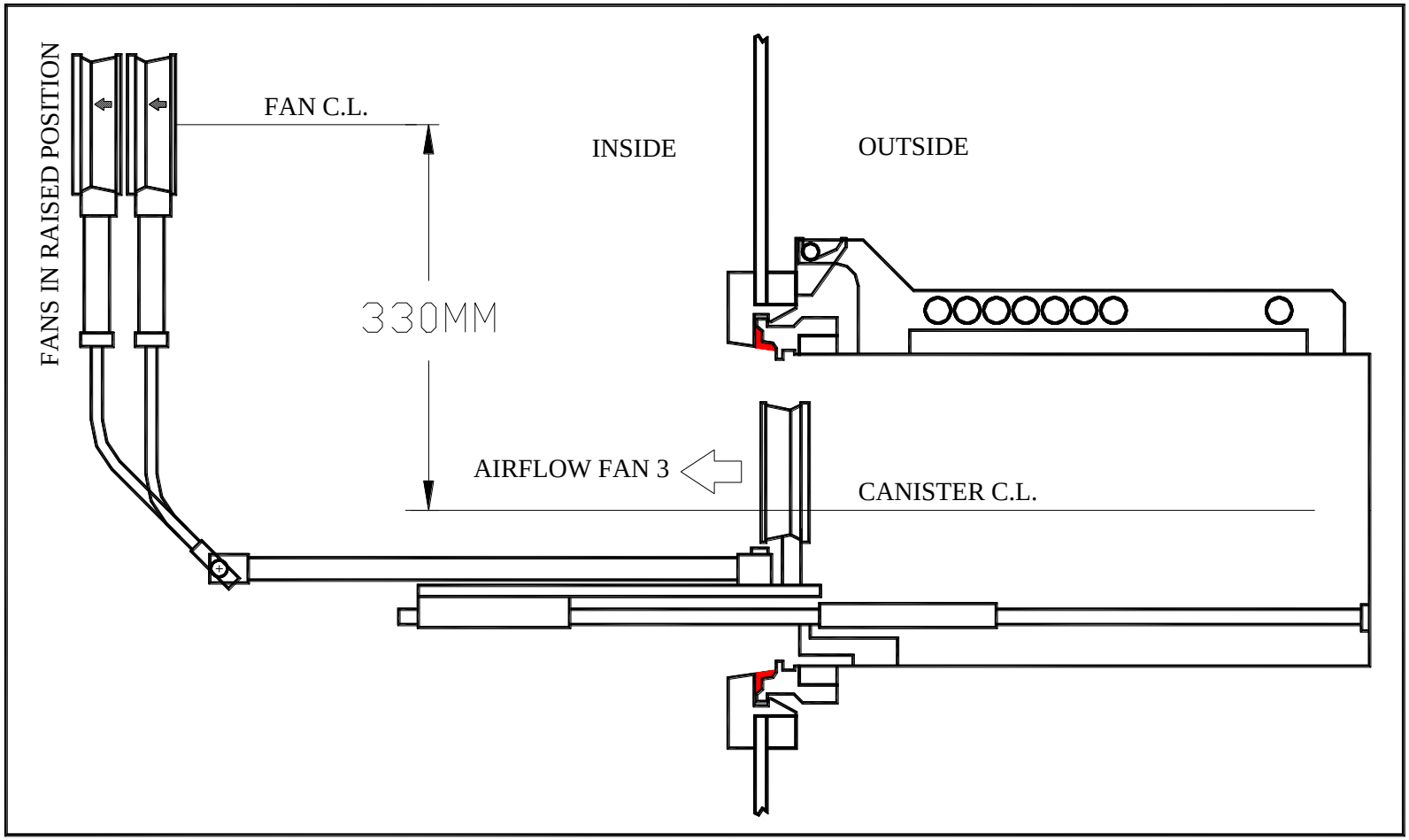

**Step 2**: The Alpha/Beta door is opened to gain access to the fan skid inside the NRC

# Set up sequence - Step 3



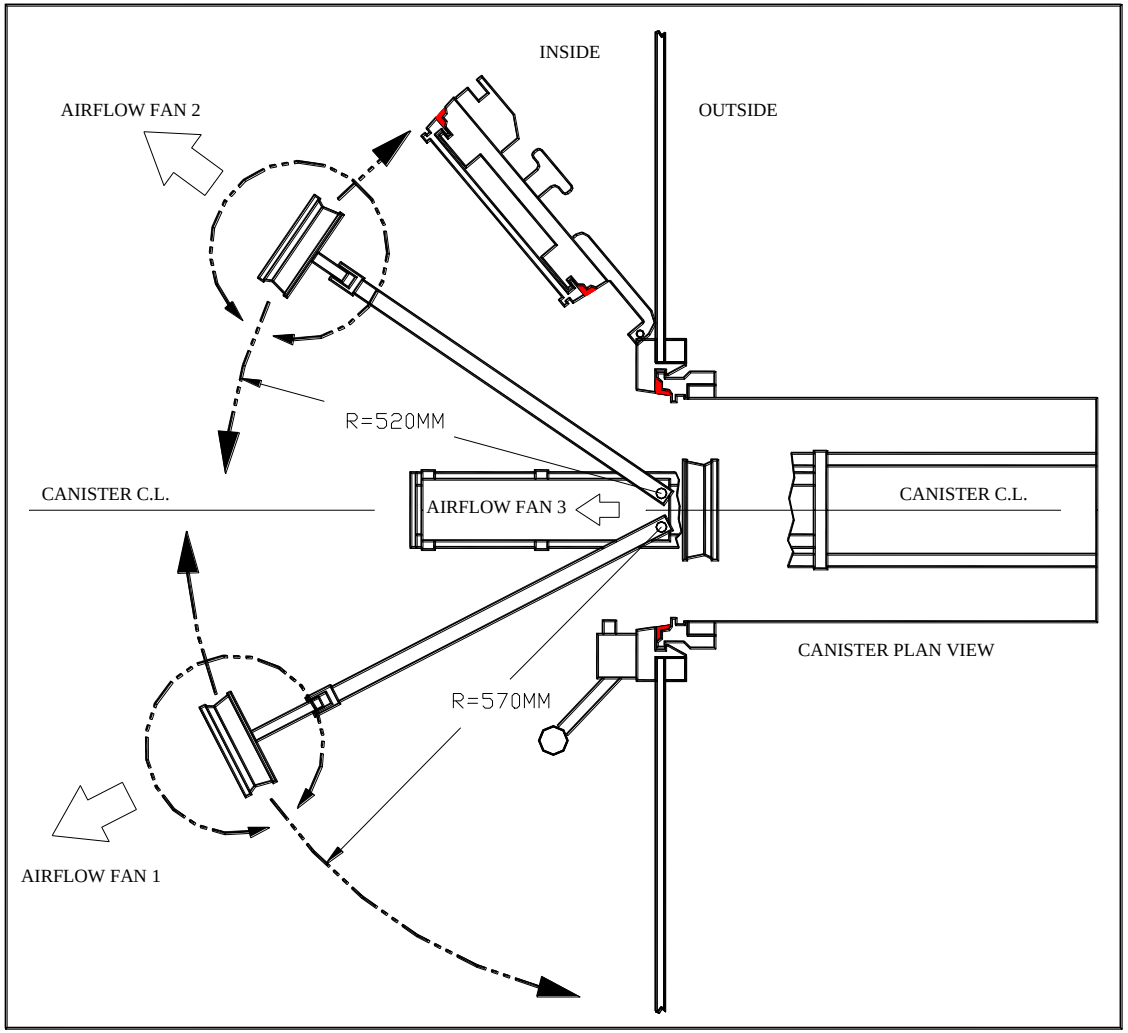

**Step 3**: The fan skid is pulled out of the NRC. The stroke is fixed and controlled by a hard stop.

# Set up sequence - step 4



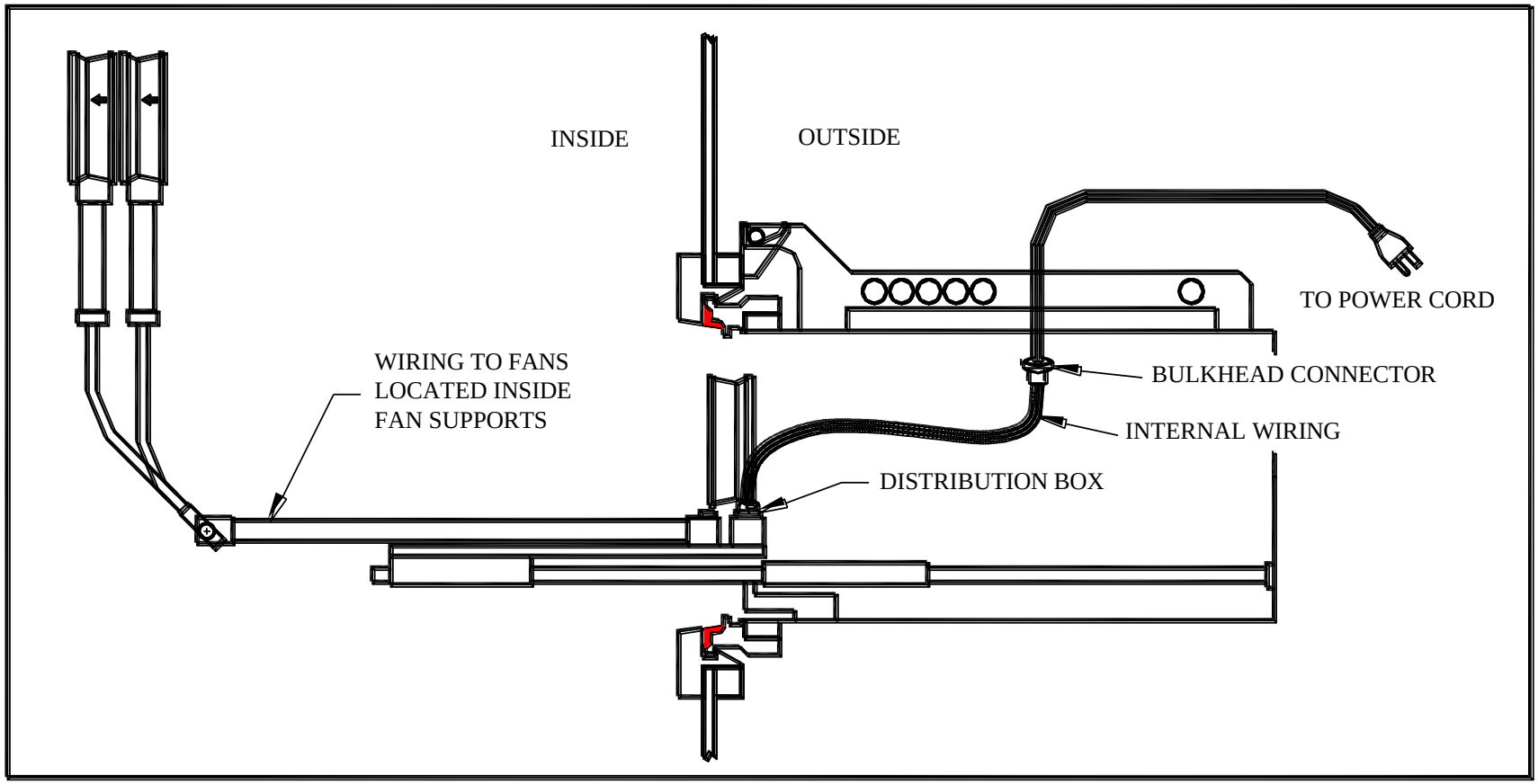

**Step 4**: Fans 1 and 2 are raised to the upright position. The extent of swing is controlled by hard stops to assure of positioning repeatability

# Set up sequence - step 5




**Step 5**: Fan #1 and 2 are moved to the validated angular position and orientation. They are locked in position to assure of repeatability. Fan 3 is not adjustable.

# Electrical details




**Description:** The power cord penetrates the canister body via a leak tight bulkhead connector. The wires are routed to a distribution box where wiring to the individual fans is started. Wires to the movable fans is routed within the mounting arms.

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# Non-Rotating Canister Technology

The NRC Canister (NRC) is a RTP canister system that features Dynamic Design Pharma's proprietary NR Technology that permits the beta flange to rotate in relation to the canister.

The NRC beta flange is a standard beta flange manufactured by companies such as Getinge-La Calhene or CRL. It attaches to the canister by means of a circular static seal and locking hardware.

The NRC canister, in its standard form, is a spun aluminum canister with an internal shuttle mechanism designed to hold a parts tray. It also features lifting handles and self supporting devices to facilitate the docking process of the NRC onto the RTP port.

The non-rotating feature of the beta flange yields the benefit of total versatility in the design of the NRC canister body. It can be manufactured in many different shapes, sizes and materials as required by the application at hand.

US Patent 6,655,759