

# Mice Tracker Mechanical Status

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## Contents:-

 Tracker 1 Status

 Tracker 2 Status

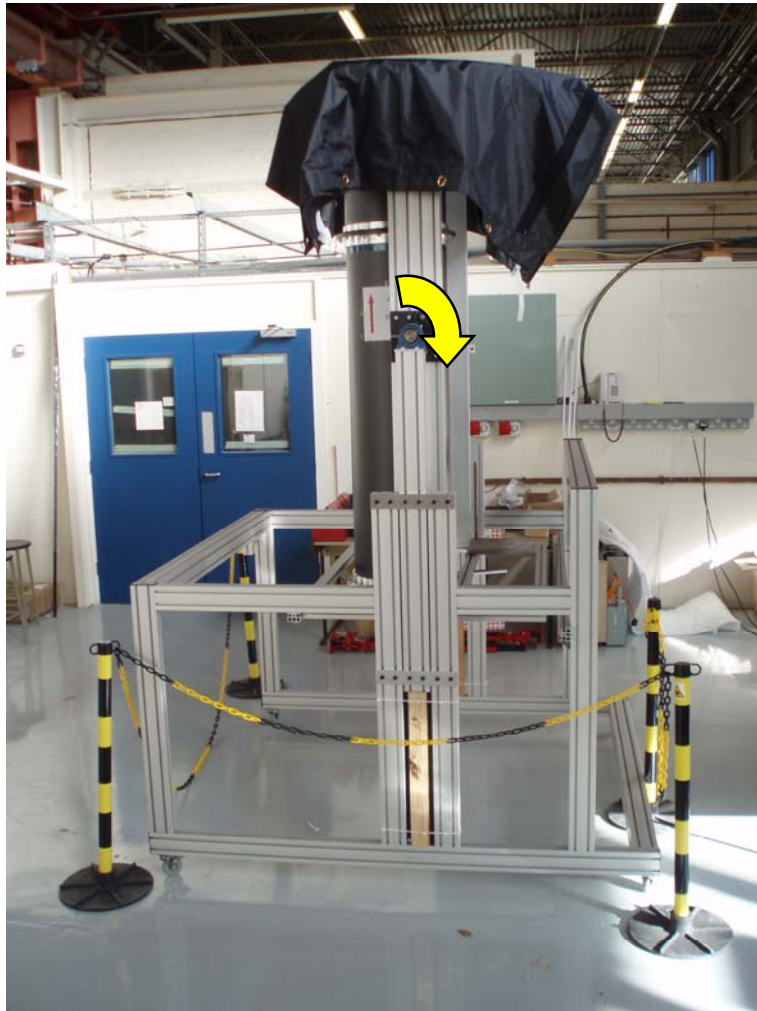
 Further Hardware

## Requirements

 Alignment of Tracker

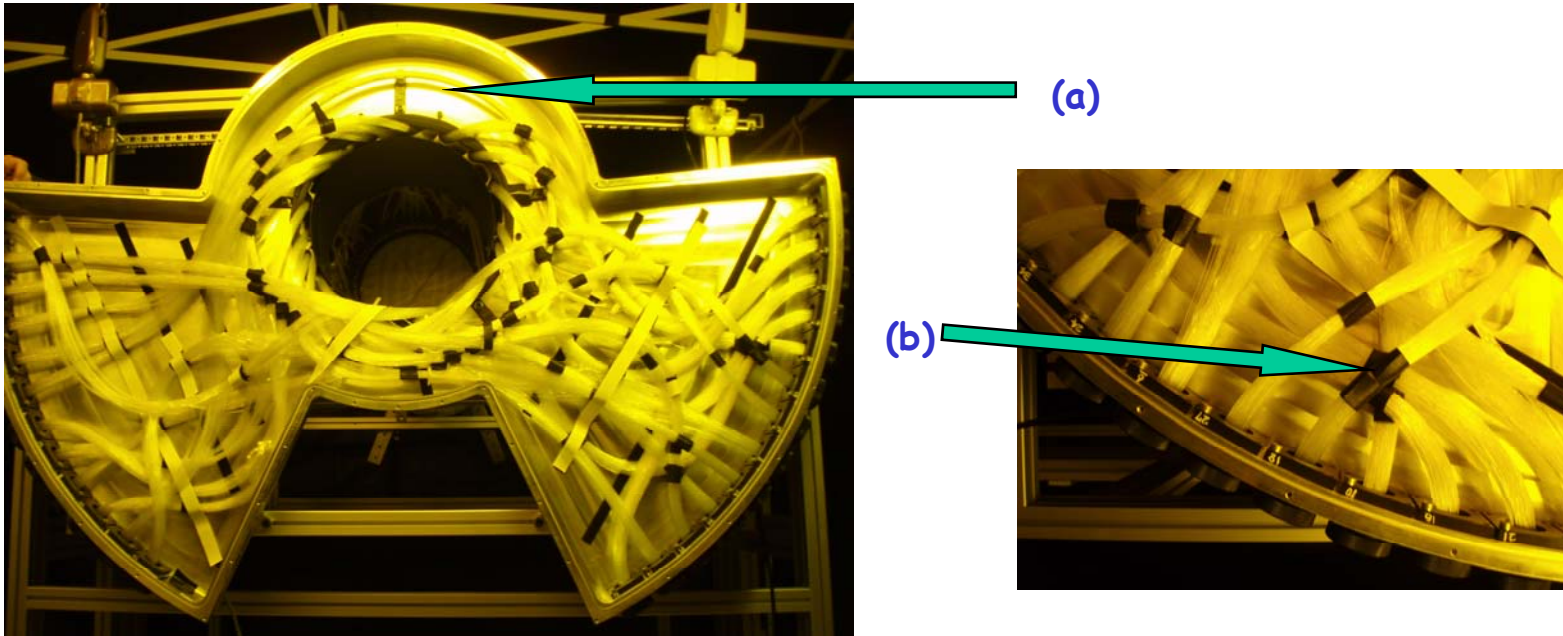
 Installation Procedure

# Tracker 1 Status



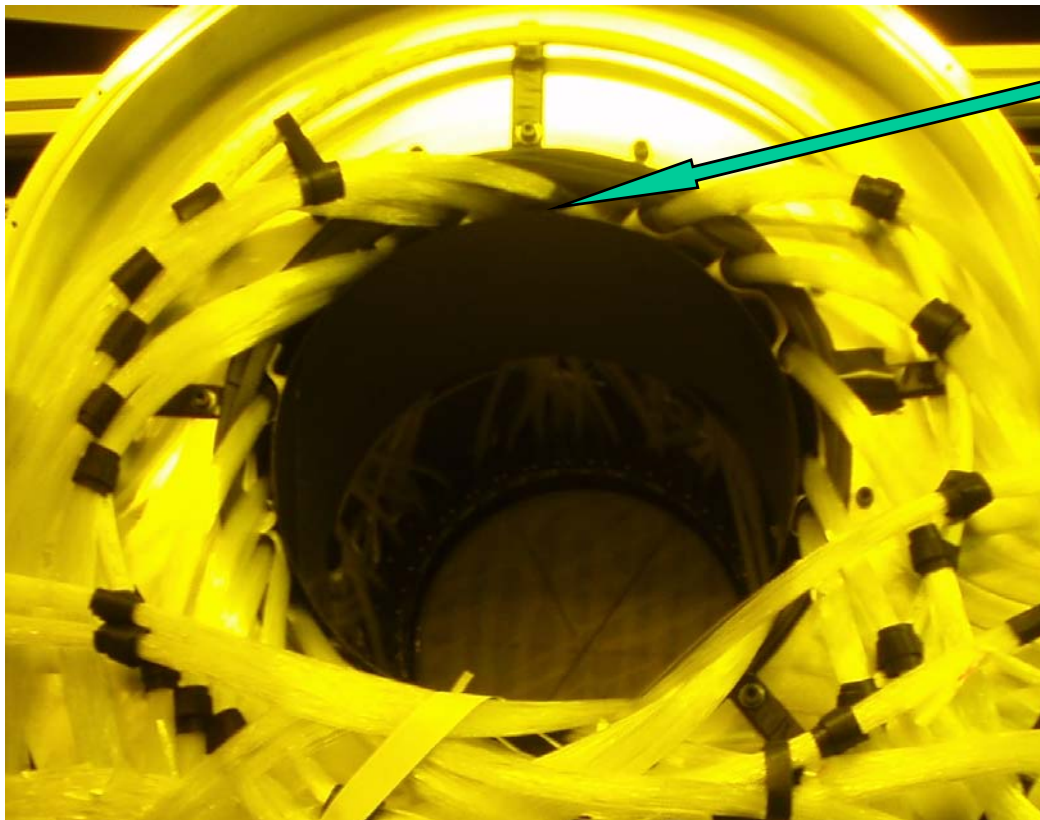
Tracker 1 is at present sitting in R8 at the Rutherford Lab. It is in the cosmic ray support frame in the vertical position. The frame was designed to allow the tracker to be installed in the horizontal position and then to be rotated to the position shown to optimise cosmic ray numbers. A value added to this is that we can use the same frame rotated to the horizontal to install the tracker into the beam line prior to the solenoids arriving should this be needed.

## Tracker 1 Status (cont)



Tracker 1 is fully 'fibred up'. This proved a bit of a challenge as the fibres did not attach to the station at consecutive connectors. As with all similar tasks the first 20 bundles were easy the last 5 were not. They are held in place using a ring of plastic pipe on brackets (a) and attached using double sided velcro ribbon (b). The velcro is wrapped around the bundles soft side in to protect the fibres and is also used where fibre bundles cross each other.

## Tracker 1 Status (cont)



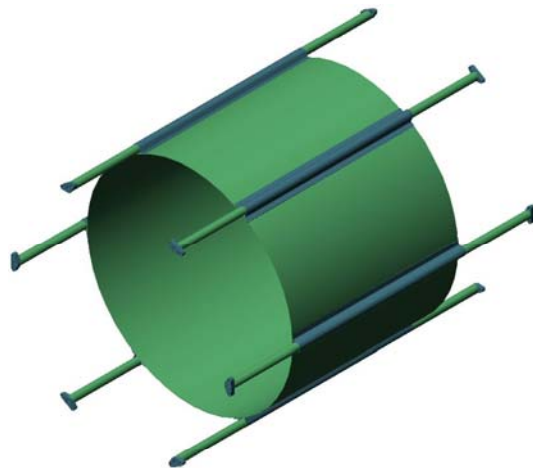
(c)

To protect the fibres from damage during the installation of the lead absorber equipment tracker 1 is fitted with a carbon fibre tube internally. This tube (c) is just discernable in the photograph.

The alignment feet are not yet fitted but are now ready when the tracker comes out of the tube. The mast extension brackets are also ready to be fitted.

# Tracker 2 Status

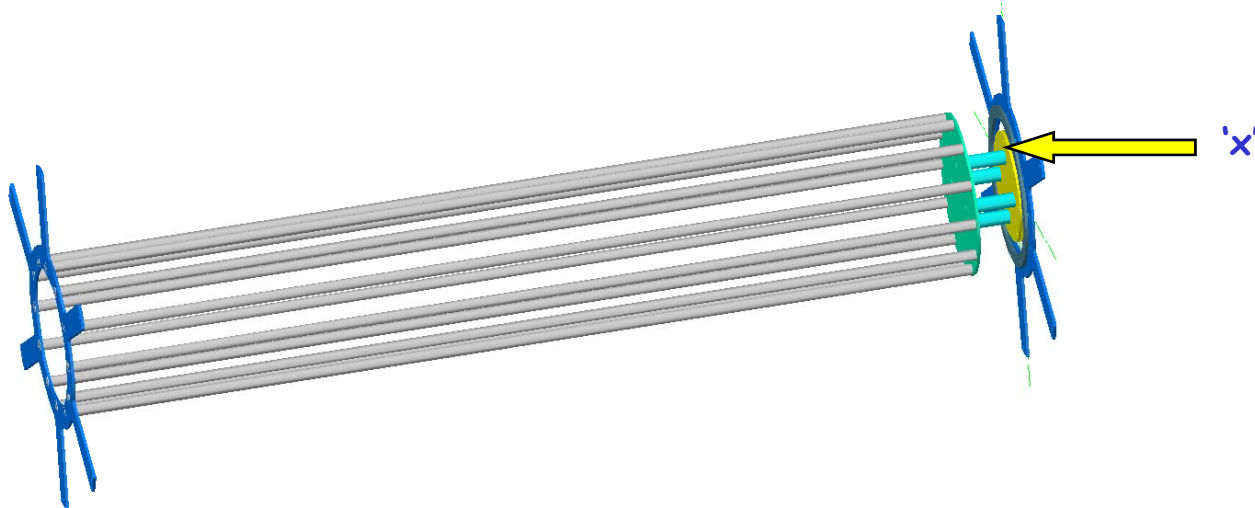
All the stations for tracker 2 are ready to be assembled. We still require the space frames to be fabricated and this takes approximately 1 day per frame (4 frames). All the component parts for the frames are ready. We are not pressing to hard at this time because the tracker is not yet required and there are other urgent calls on the workshop time.



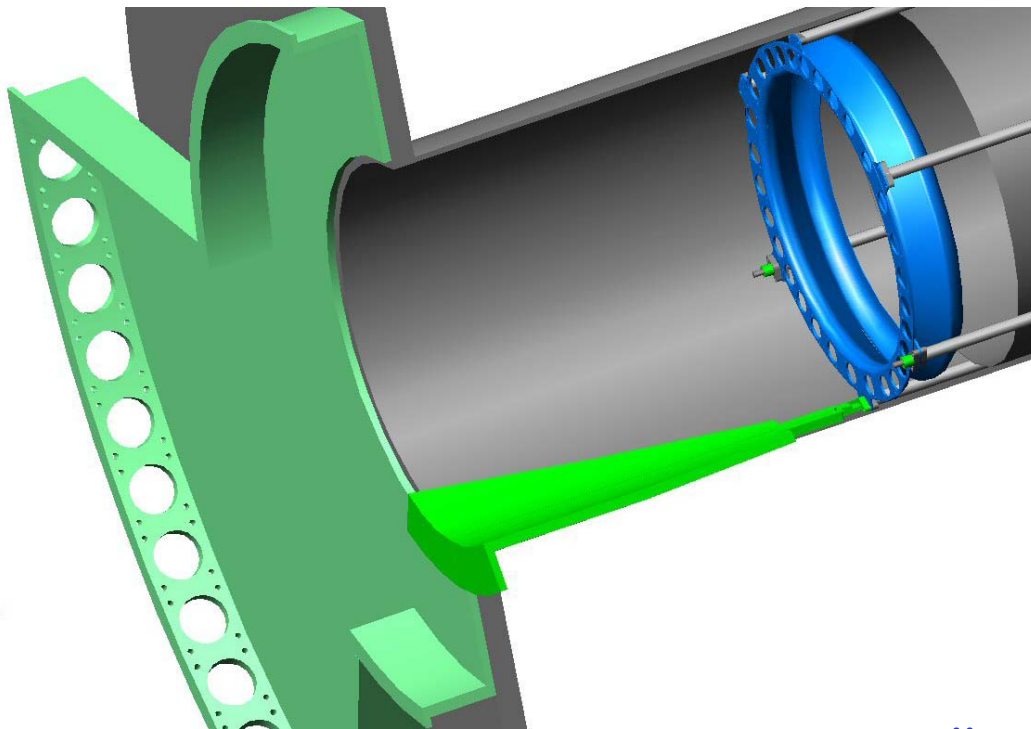
# Fibre Support Masts



The fibre support masts are ready to be assembled. They consist of the aluminium components on the left. They are fitted with lengths of carbon fibre tubes. There is a rubber membrane at position 'x' to stop any off axis movement of the mast during installation being transferred as stress into the tracker.



# Alignment of Tracker



The tracker sits on 4 adjustable feet two at the front two at the rear and is held down by a spring loaded foot at the 12 o'clock position. This aligns the axis of both tracker and solenoid

The tracker is aligned in Z and Phi by pulling a locating block into a Vee which is located using dowels to the patch panel.

All components are manufactured

# Further Hardware Requirements

- The patch panel needs to have 'o'rings to seal the patch panel to the solenoid and to seal the patch panel cover also the bulkhead connectors.
- The fibre support masts need to be assembled (all components available).
- Space frames for tracker 2 need bonding.
- Magnetic field sensors, we have plates and brackets but not the sensors or the power/signal feed throughs.
- Trellis \* to support the external fibre bundles between the patch panel and the cryo's.
- Manufacture of the installation channel. \*

\* These to be produced from extruded section which will allow for 'insitu' modifications



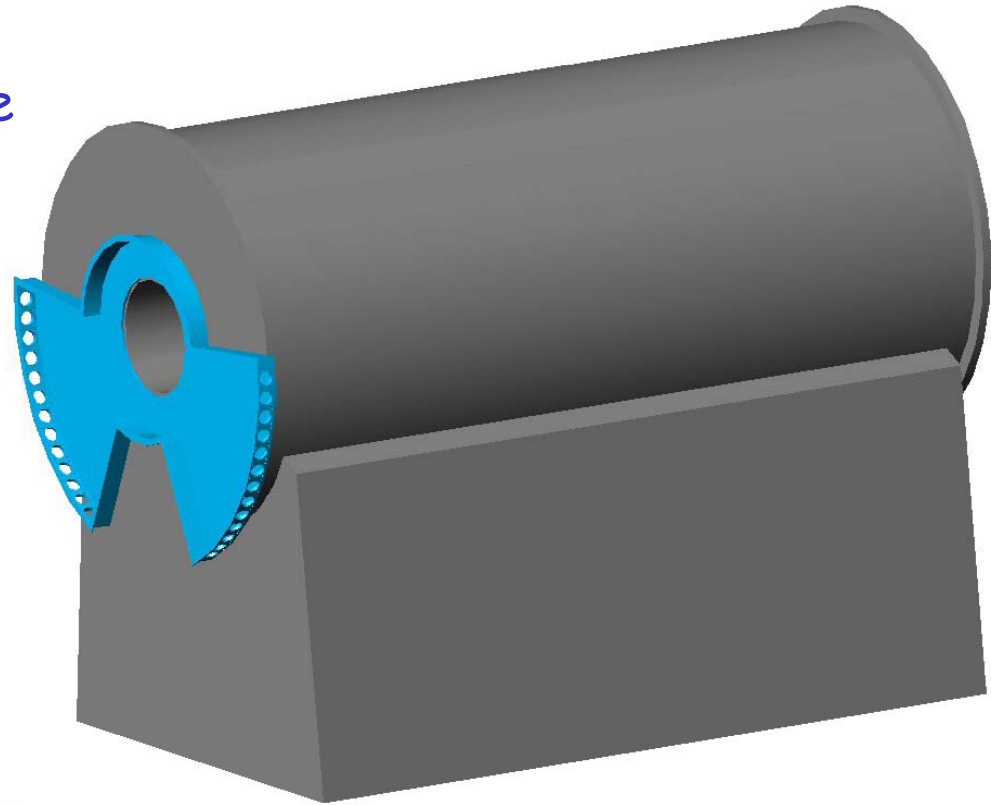
# Installation 'Cartoon'

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The following sequence shows the stages of installation for the tracker into the solenoid. This makes use of the installation mast All of this work will take place in a large black tent specially acquired for Mice.

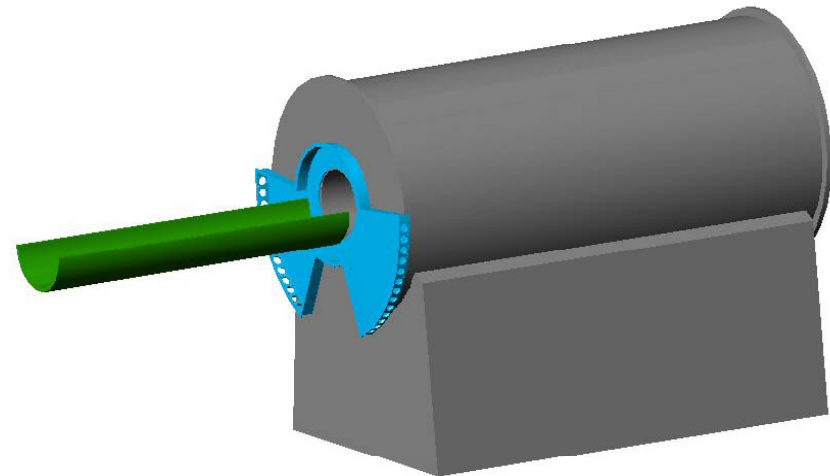
## Stage 1 of Installation

The patch panel is fitted and sealed to the solenoid. Hopefully at this stage we can test the seals using cover plates.

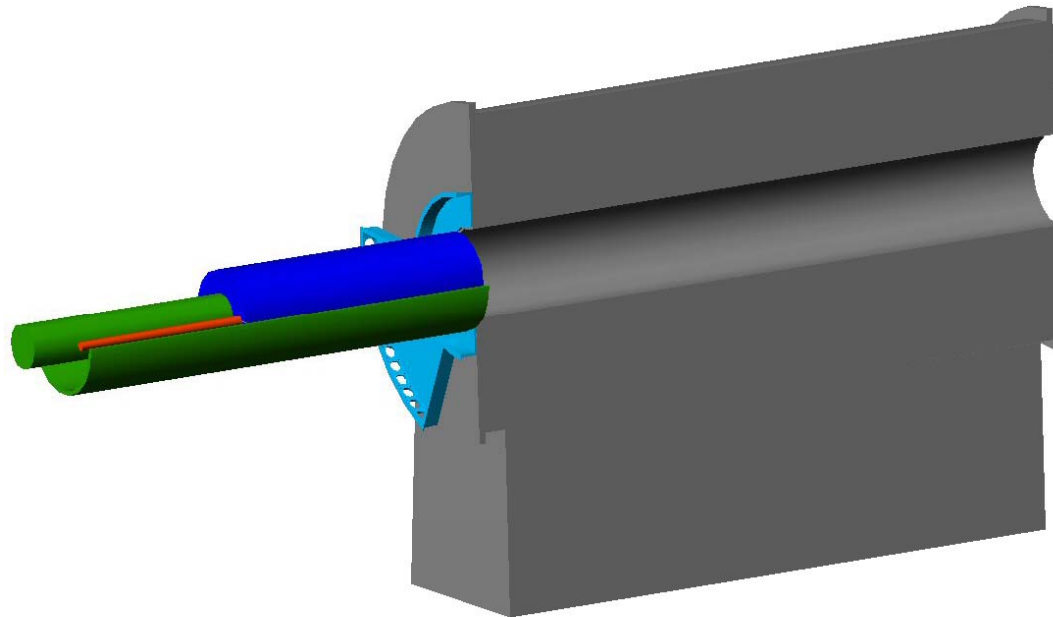


## Stage 2 of Installation

An installation channel is fitted in front of the solenoid and aligned. This will allow us to safely insert the tracker, supporting it all of the way to its final position



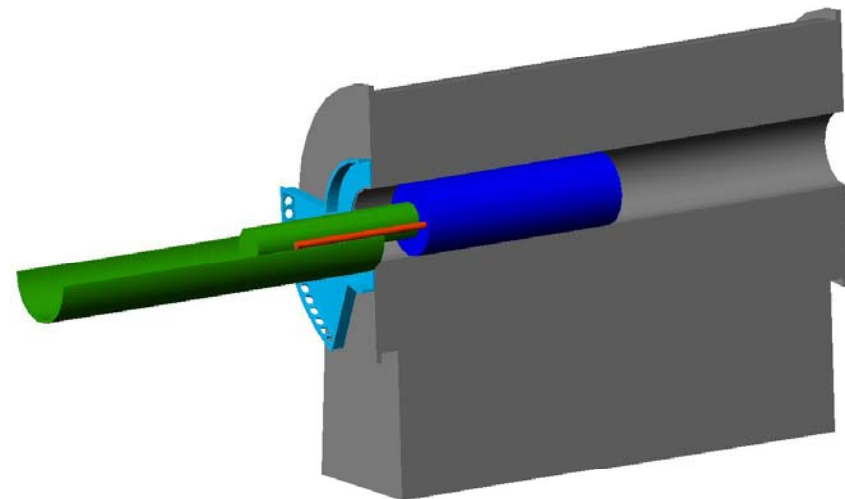
## Stage 3 of Installation



The tracker, complete with the light guide support structure is lifted onto the installation cradle. The light guide support structure is to ensure that no damaging forces are exerted on the fibres. Covers will be fitted during transit.

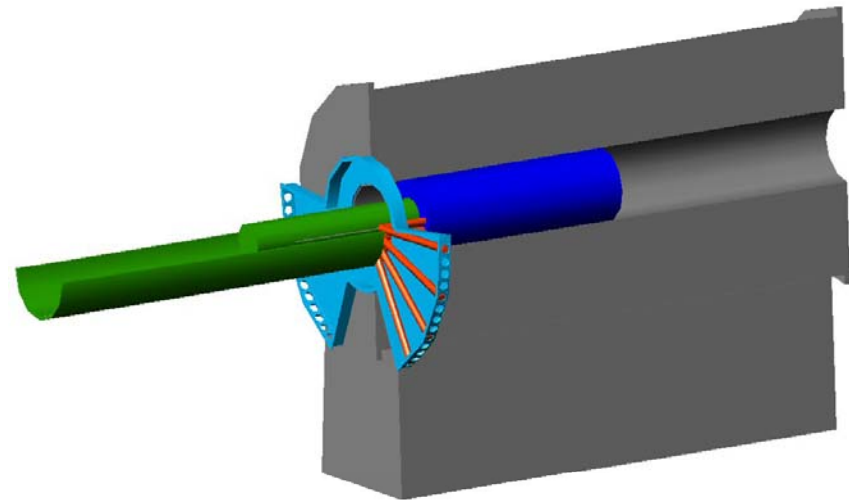
## Stage 4 of Installation

The tracker is then slide into its pre-determined position inside the bore of the solenoid. This position will already have had the 'tracker target' fitted, surveyed and removed. This will allow us to position the tracker, which will also have been surveyed, to the correct alignment.



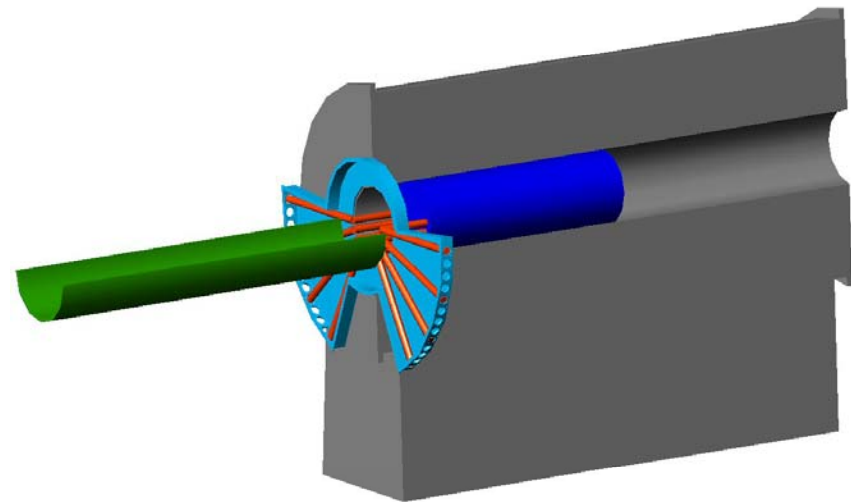
## Stage 5 of Installation

With the tracker in position and secure the light guides can now be carefully re-routed to their final position in the patch panel and the seals fitted. If the external light guides are not to be attached immediately then light tight/protection covers will remain fitted.



## Stage 6 of Installation

The light guides can then be secured to stop any damage and a shield (not shown) fitted to stop any damage occurring when the diffuser is installed. The Light guide support structure is now removed.



## Stage 7 of Installation

The patch panel cover is fitted and sealed to the patch panel. If we are not ready to fit the diffuser mechanism then a cover plate will be attached.

