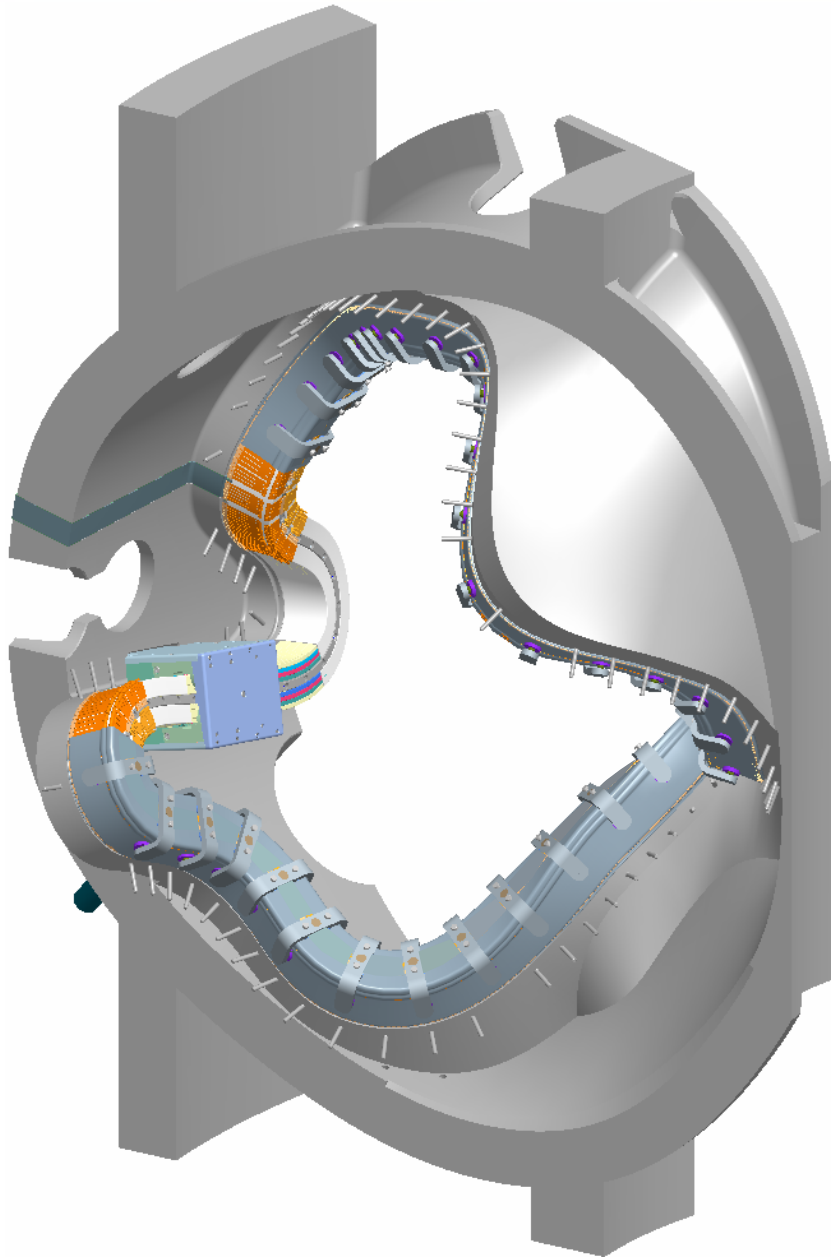
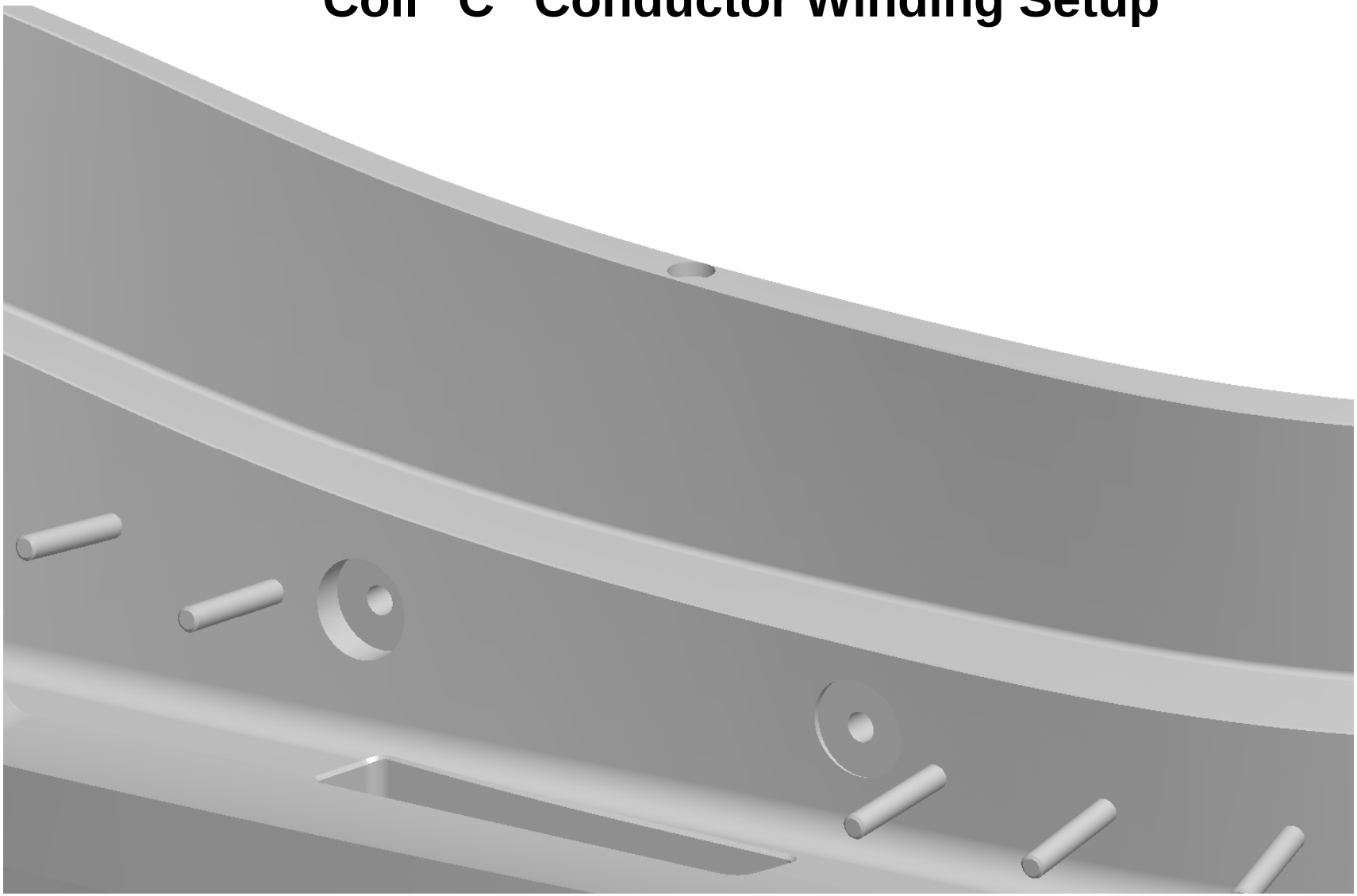
Modular Coil Type C Assembly

Winding Process

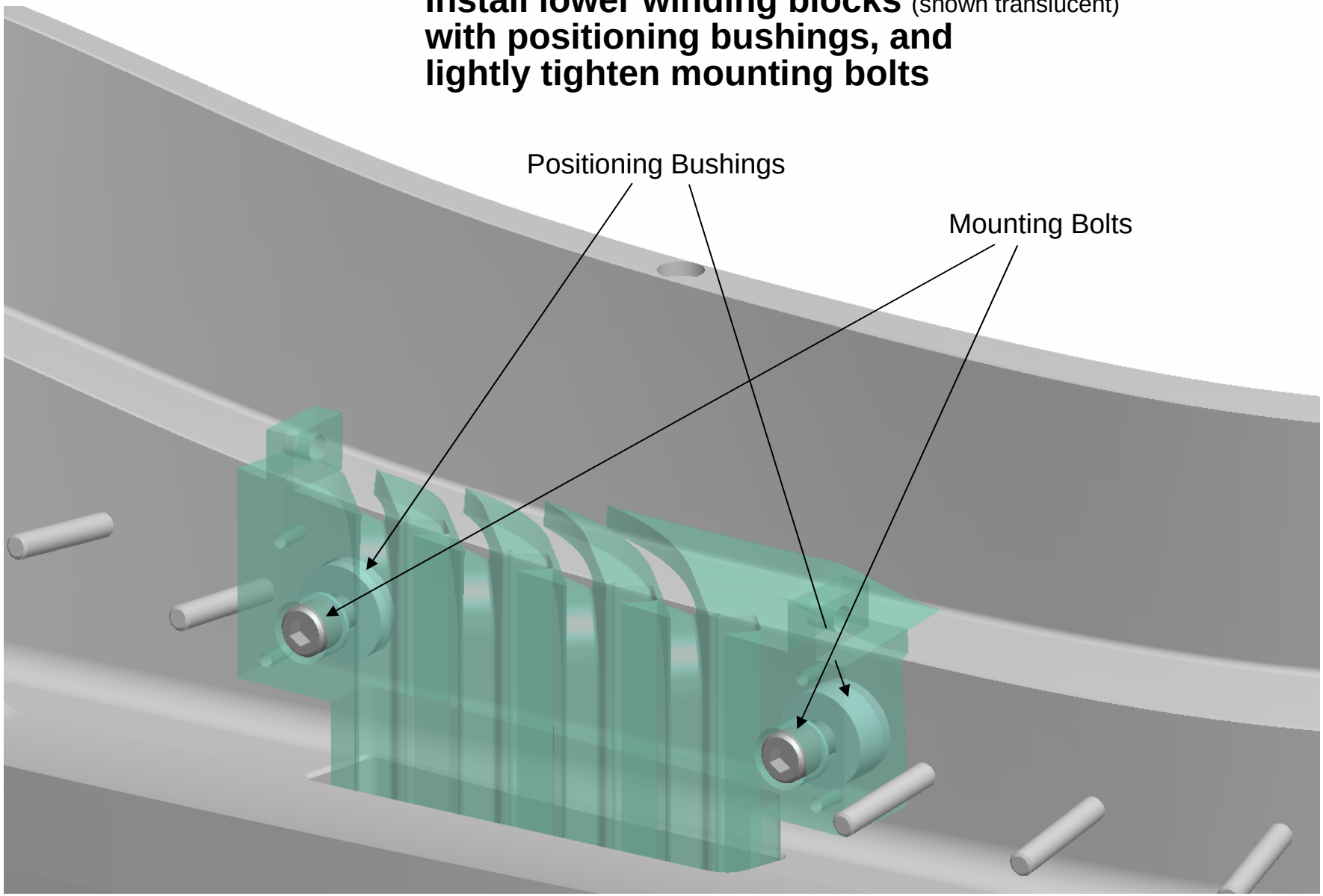


P. Fogarty, D. Williamson, B. Nelson
M. Cole, G. Lovett, T. Hargrove

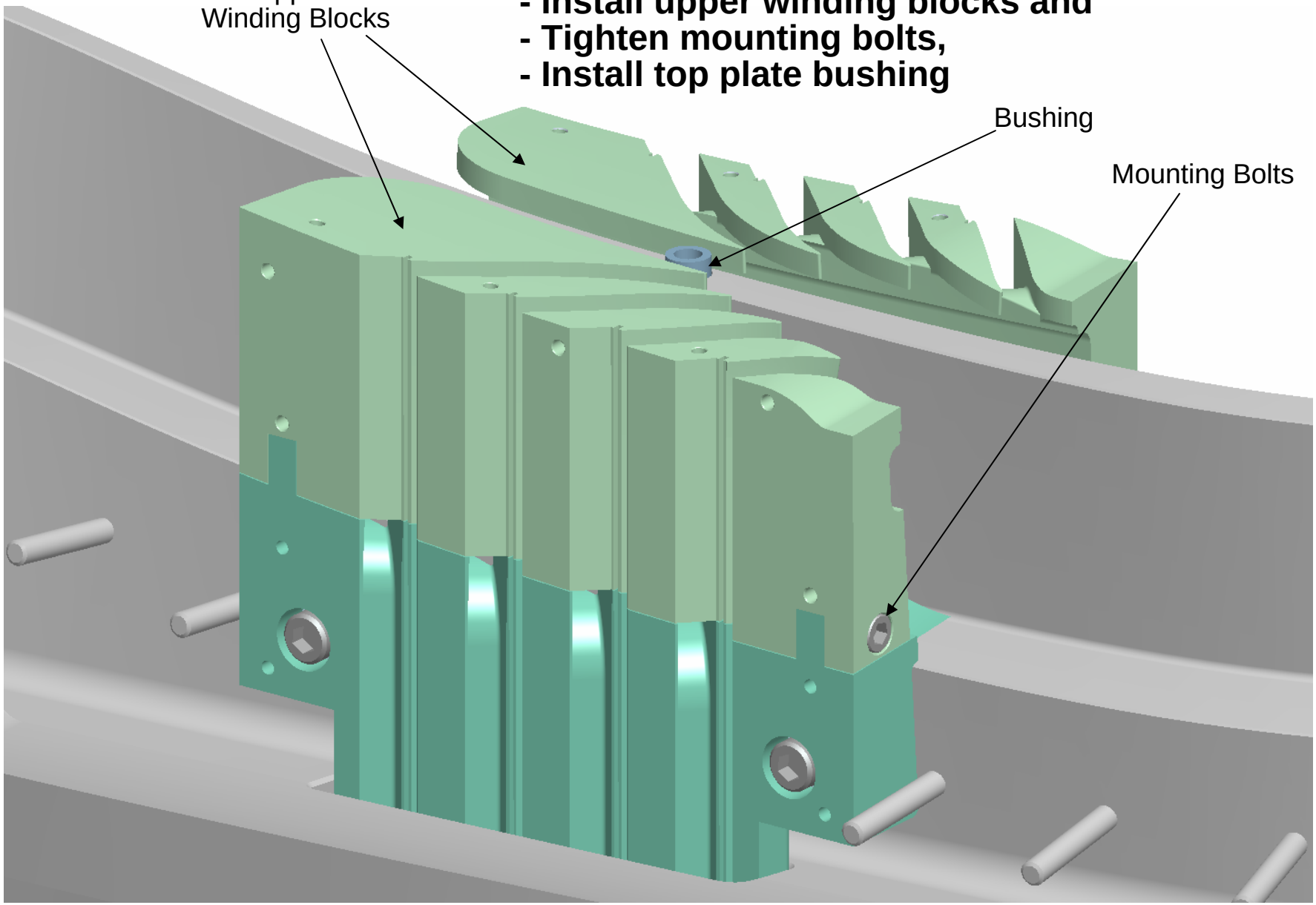
Coil “C” Conductor Winding Setup



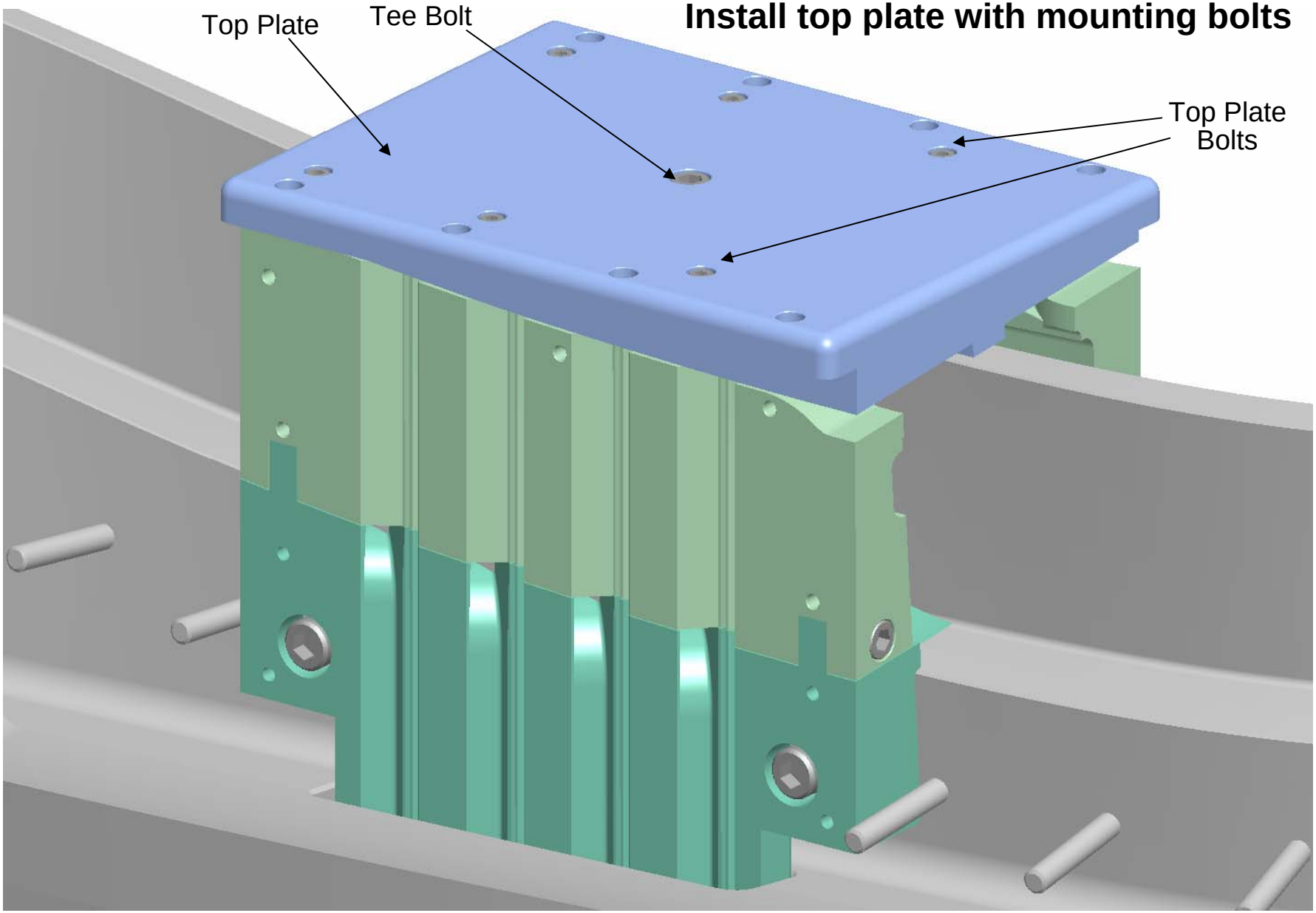
Install lower winding blocks (shown translucent) with positioning bushings, and lightly tighten mounting bolts



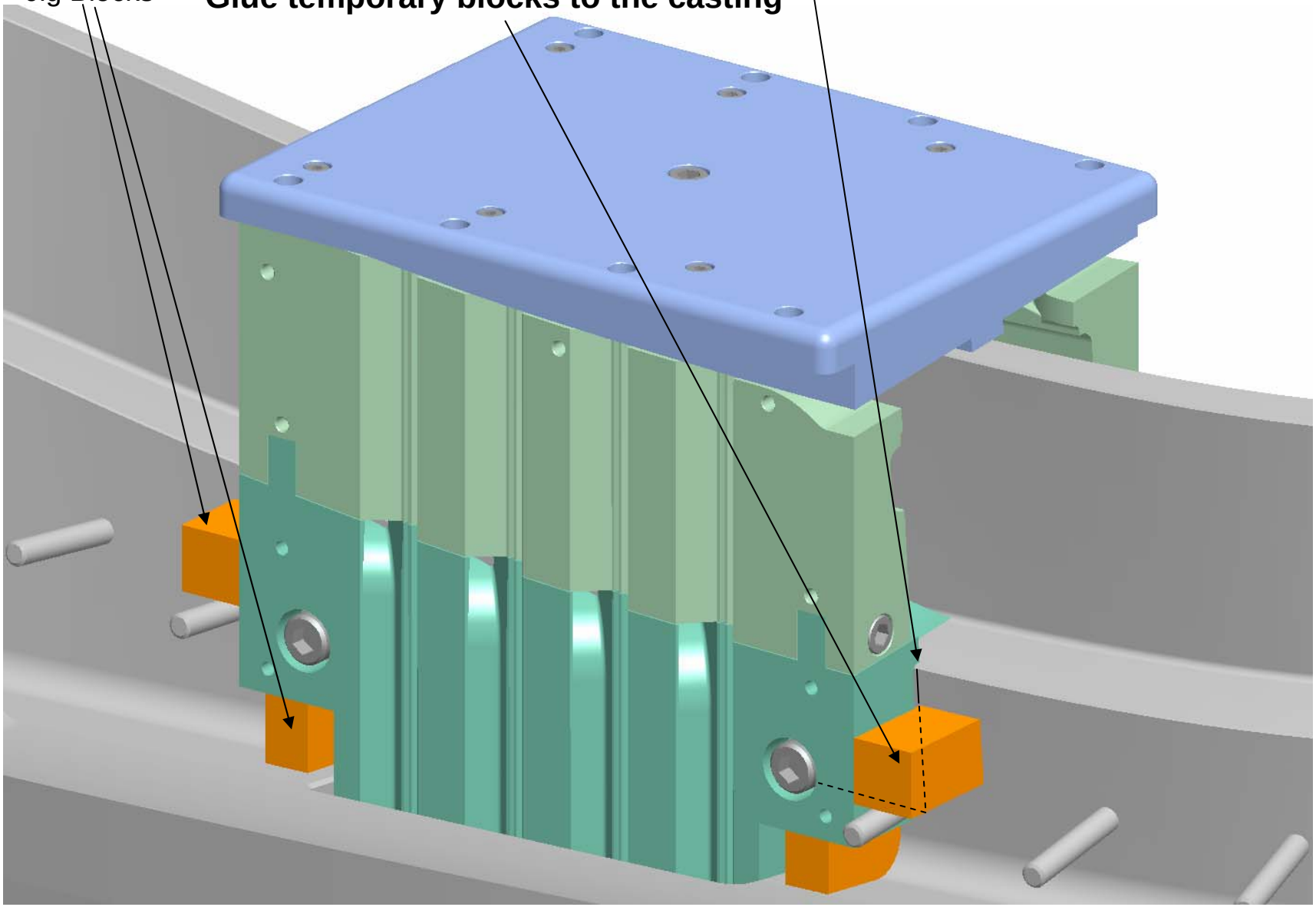
- Install upper winding blocks and
- Tighten mounting bolts,
- Install top plate bushing



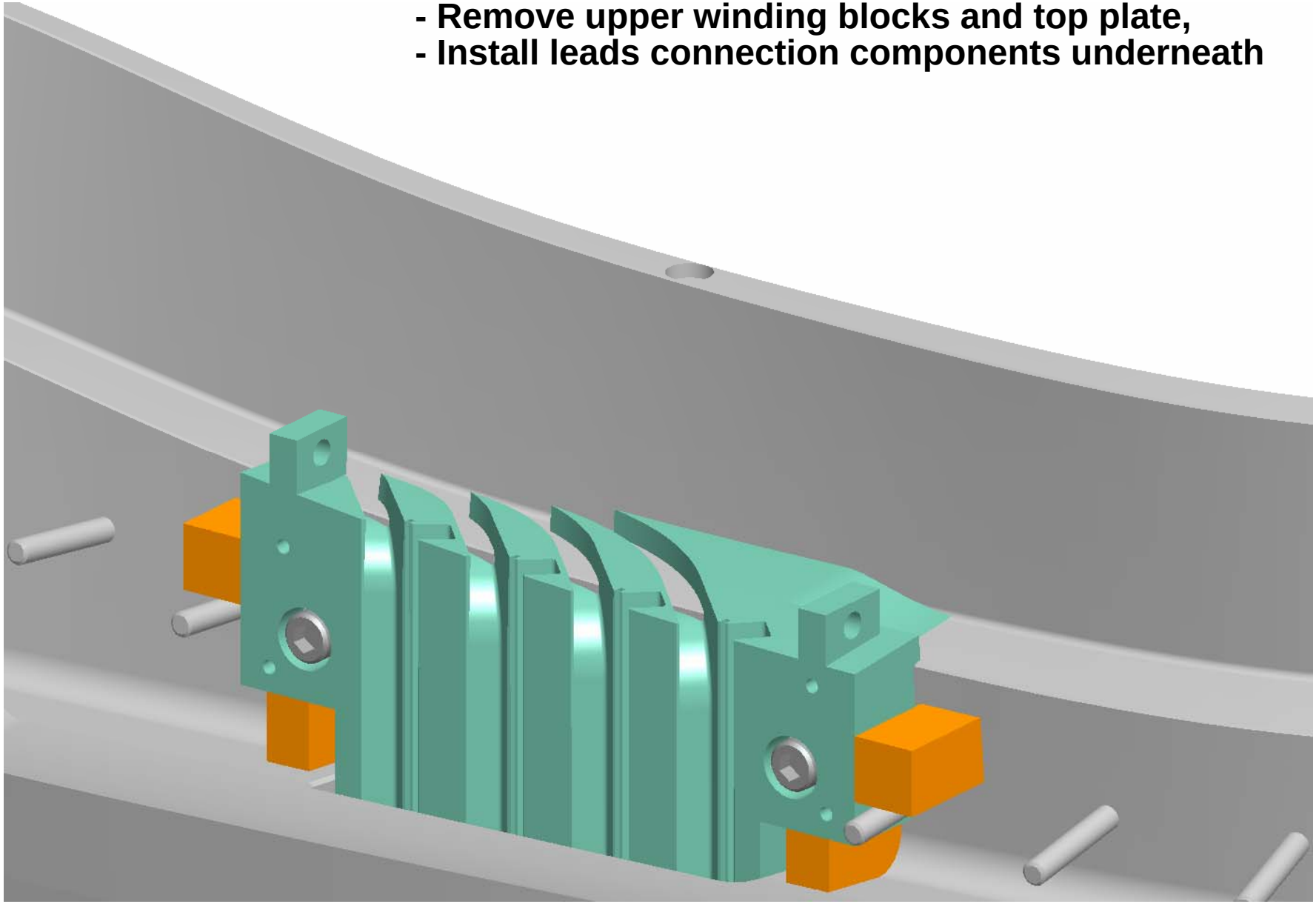
Install top plate with mounting bolts



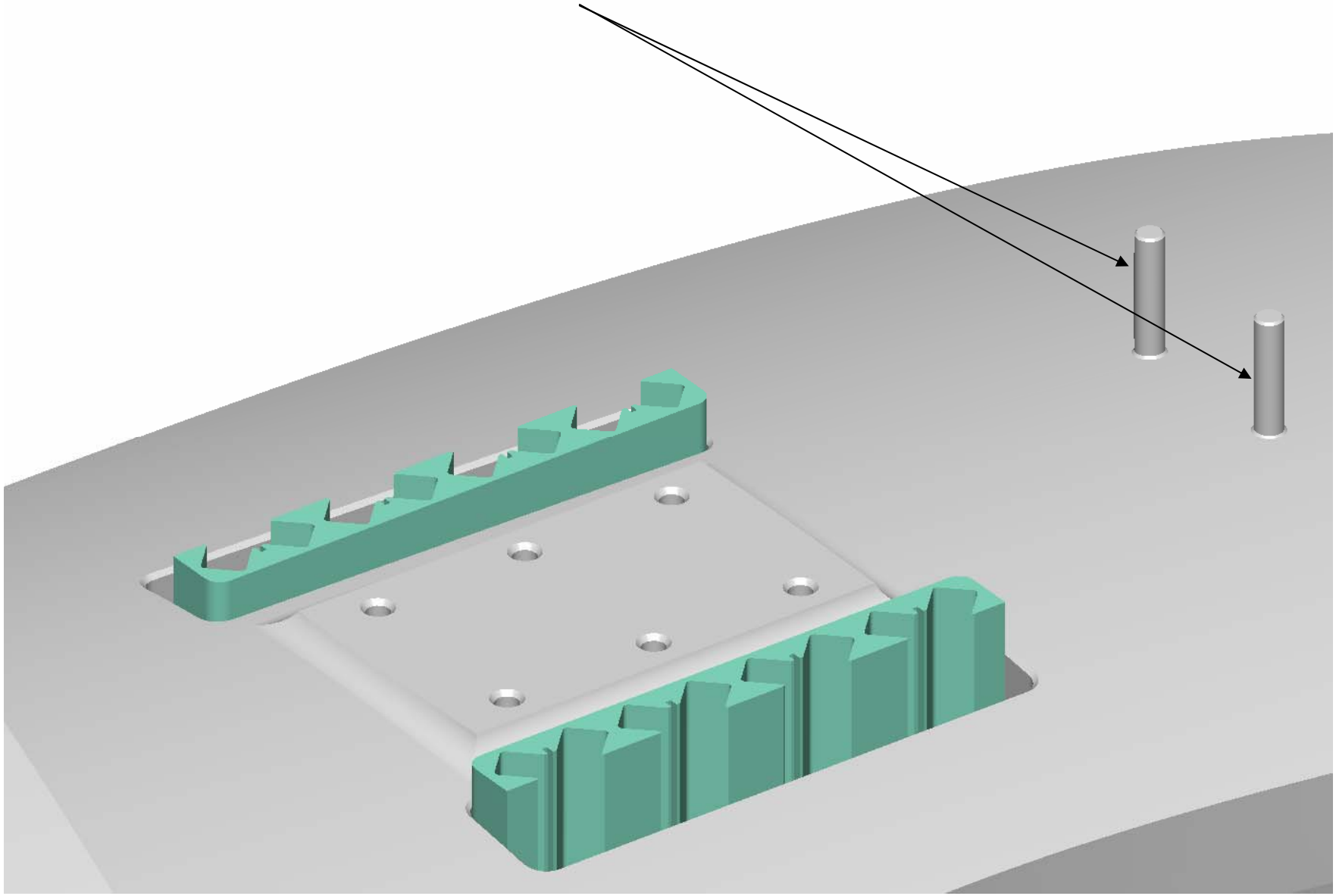
- **Accurately mark the sides & bottom edges of the lower winding blocks**
- **Glue temporary blocks to the casting**

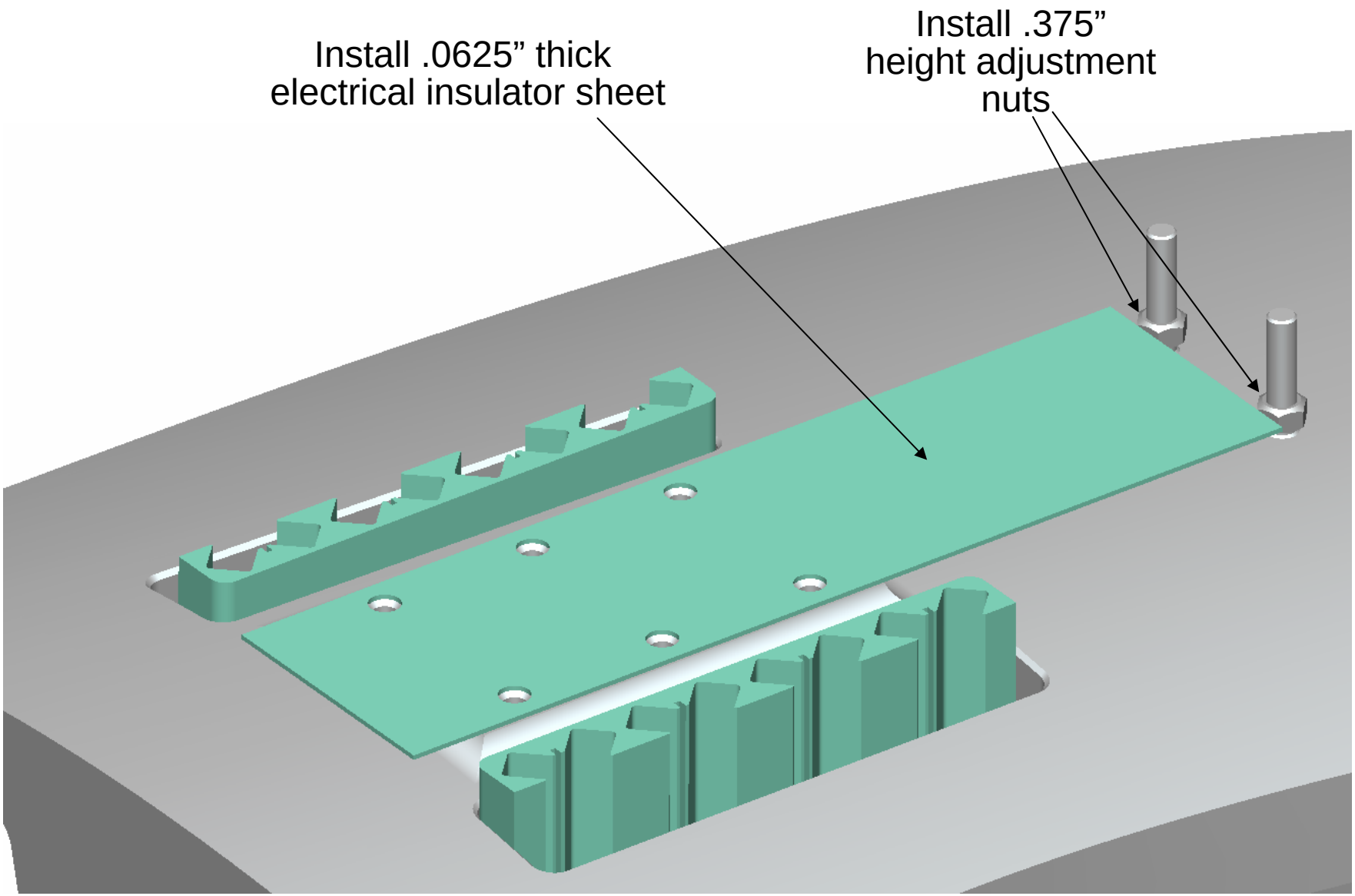


- Remove upper winding blocks and top plate,
- Install leads connection components underneath

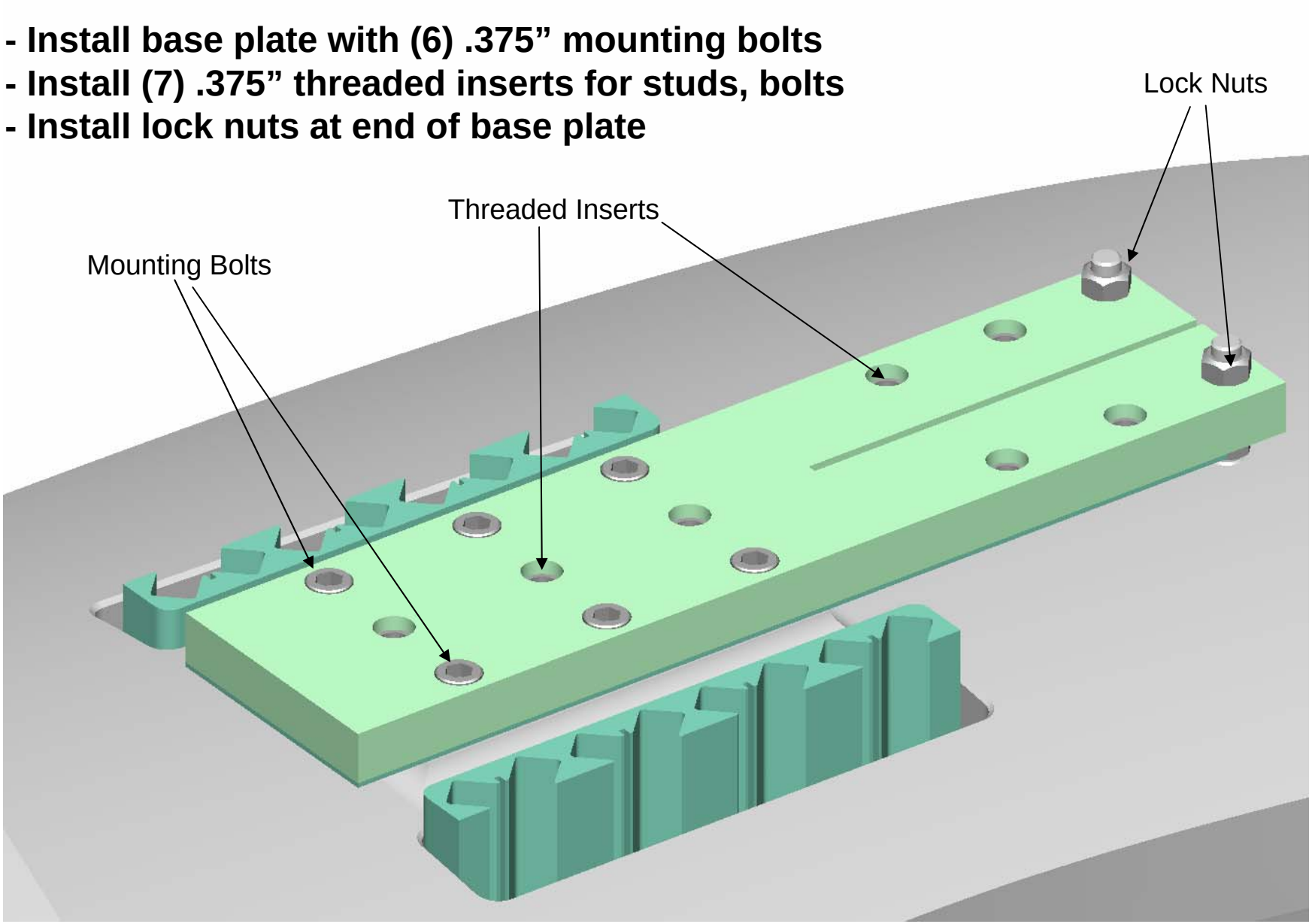


Shoot two studs into shell for base plate support

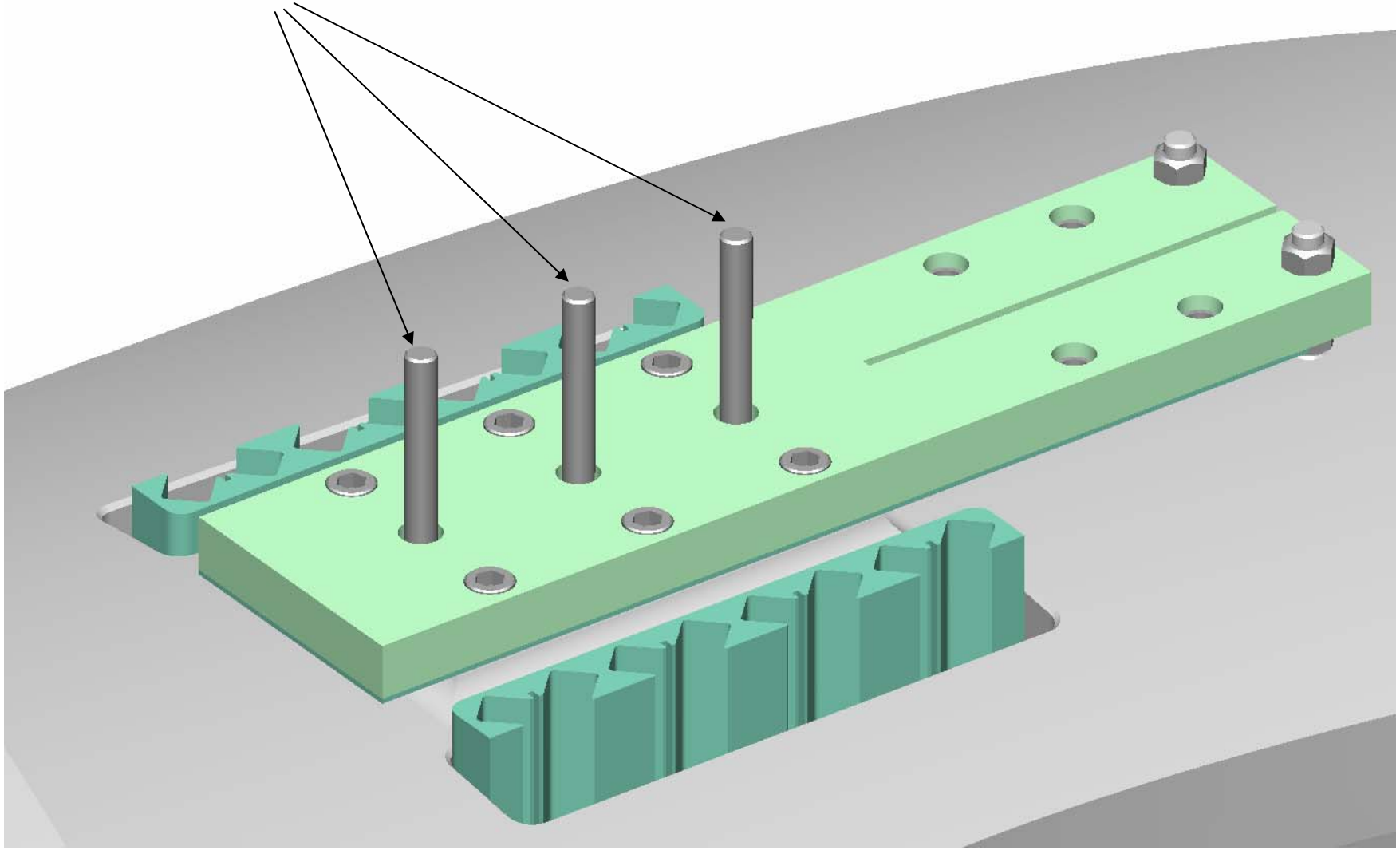



Install .0625” thick
electrical insulator sheet
Install .375”
height adjustment
nuts

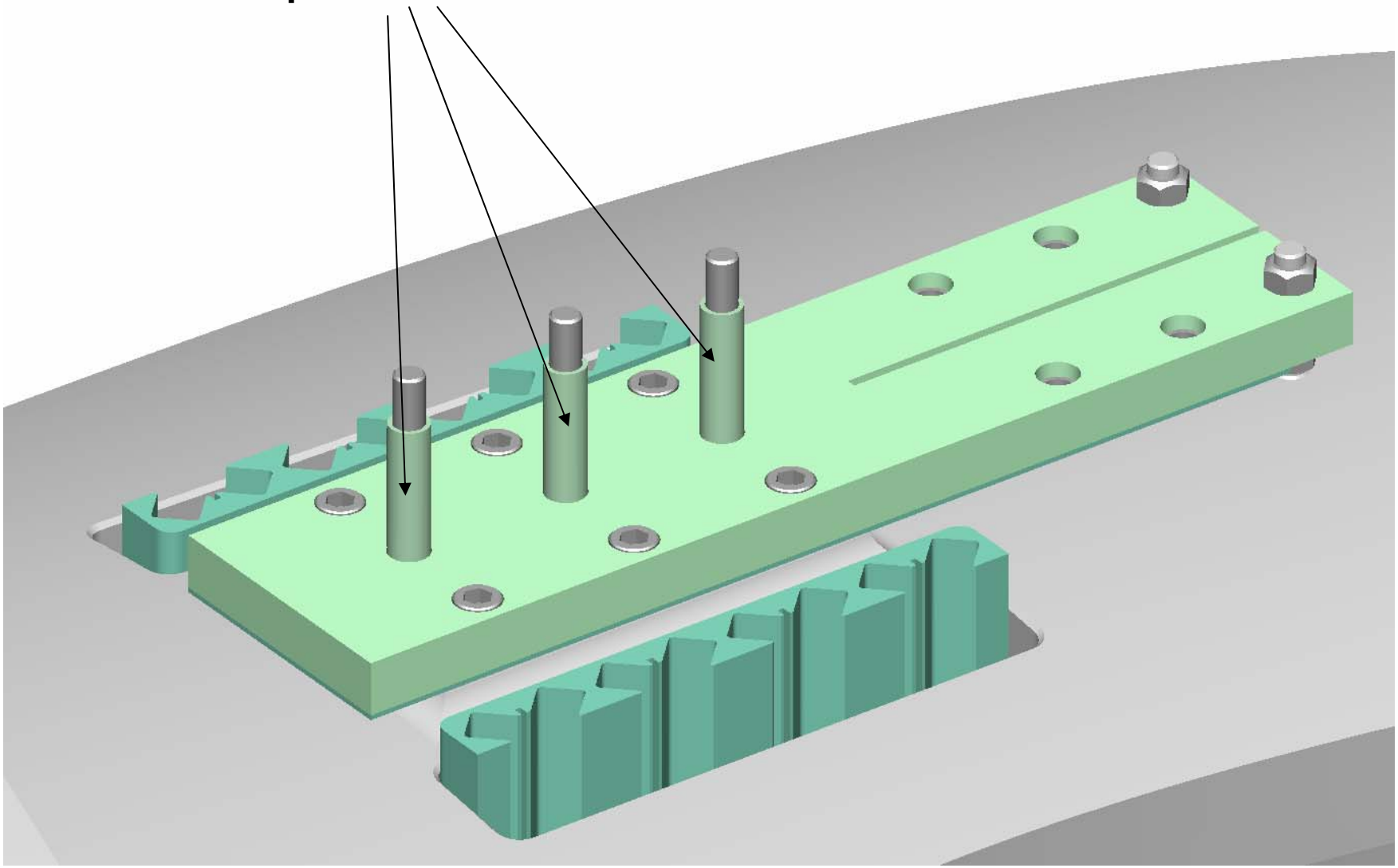
- **Install base plate with (6) .375” mounting bolts**
- **Install (7) .375” threaded inserts for studs, bolts**
- **Install lock nuts at end of base plate**

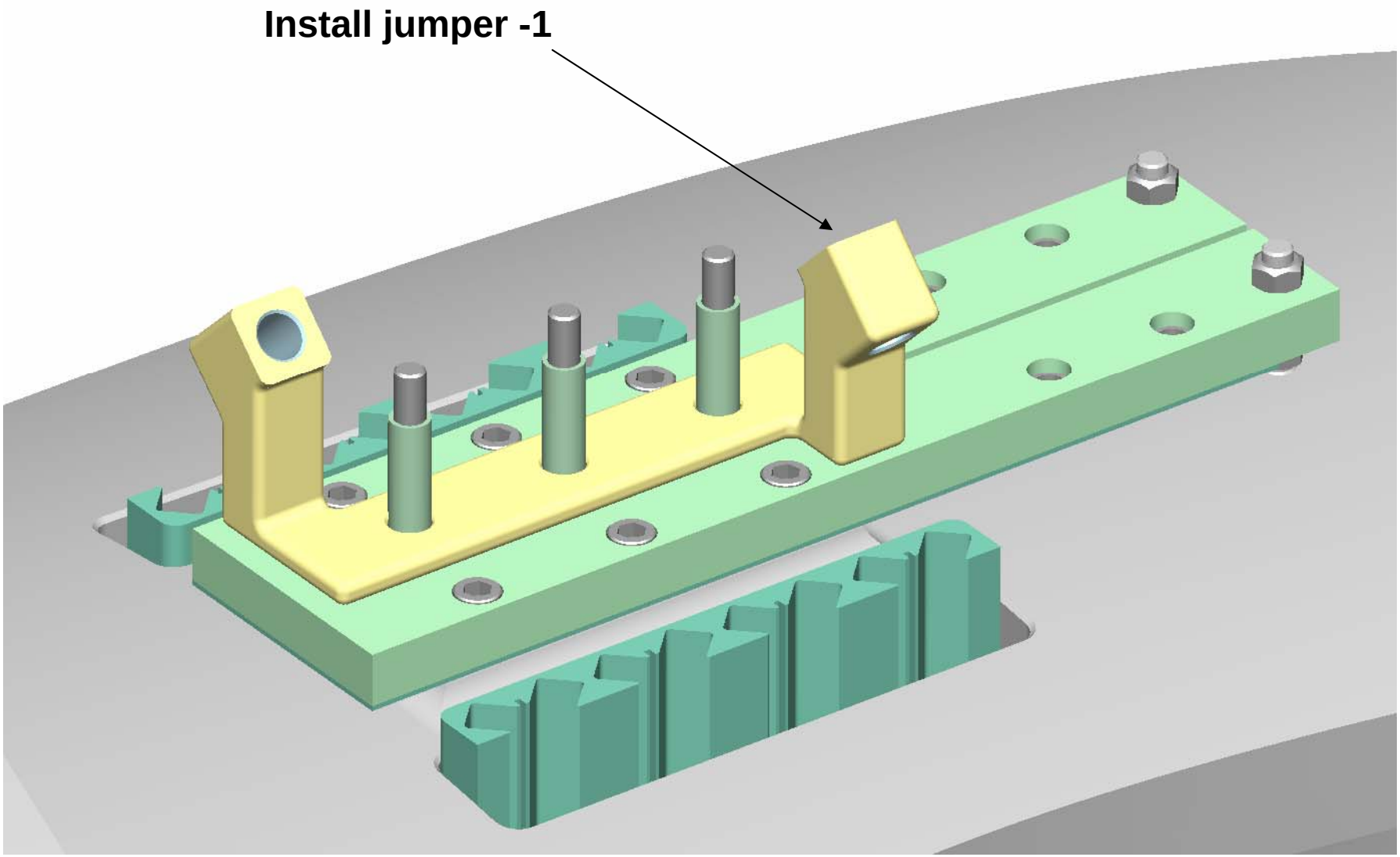


Install (3) .375” mounting studs

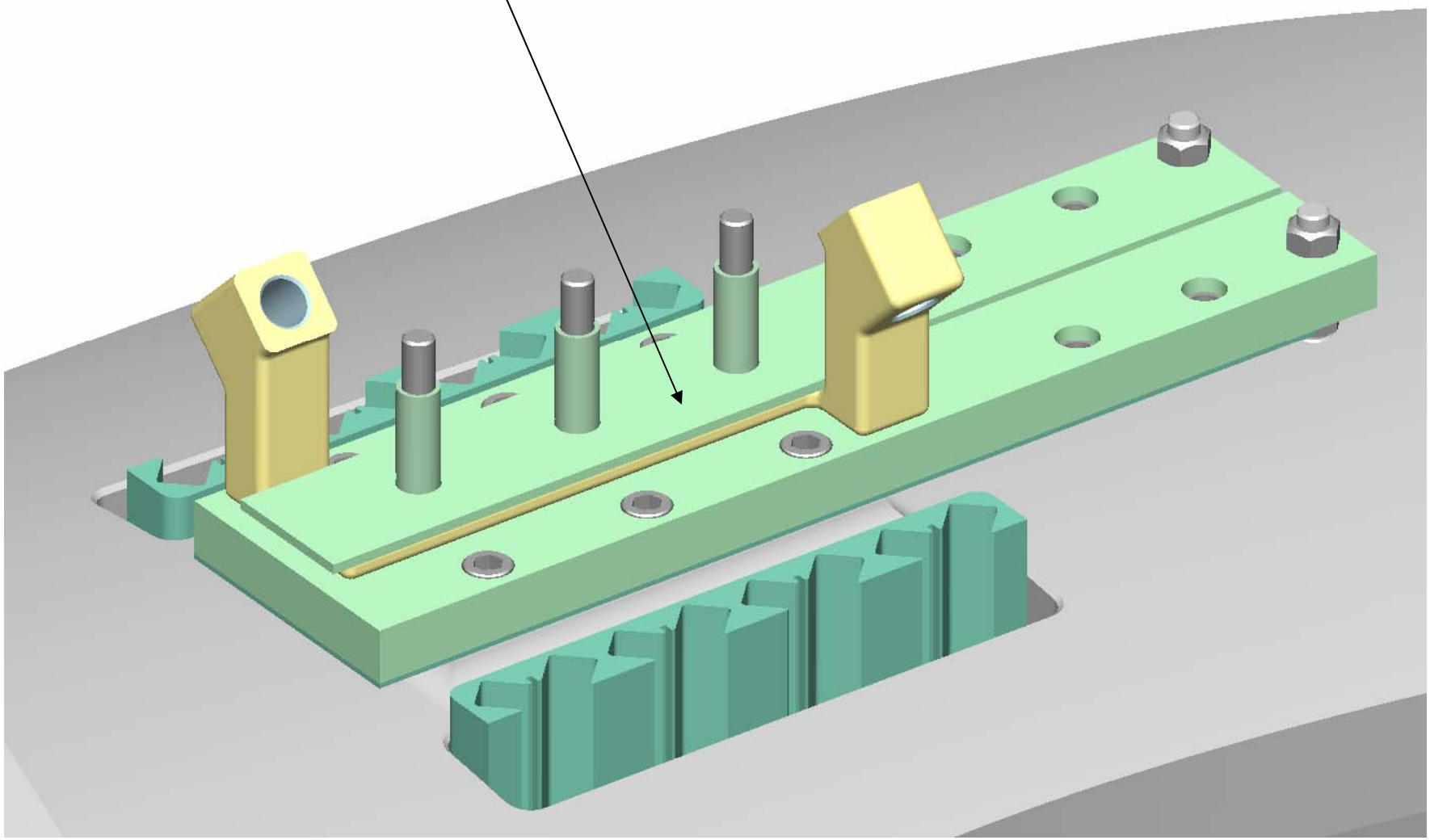


Install insulating sleeves over studs and push into recessed holes

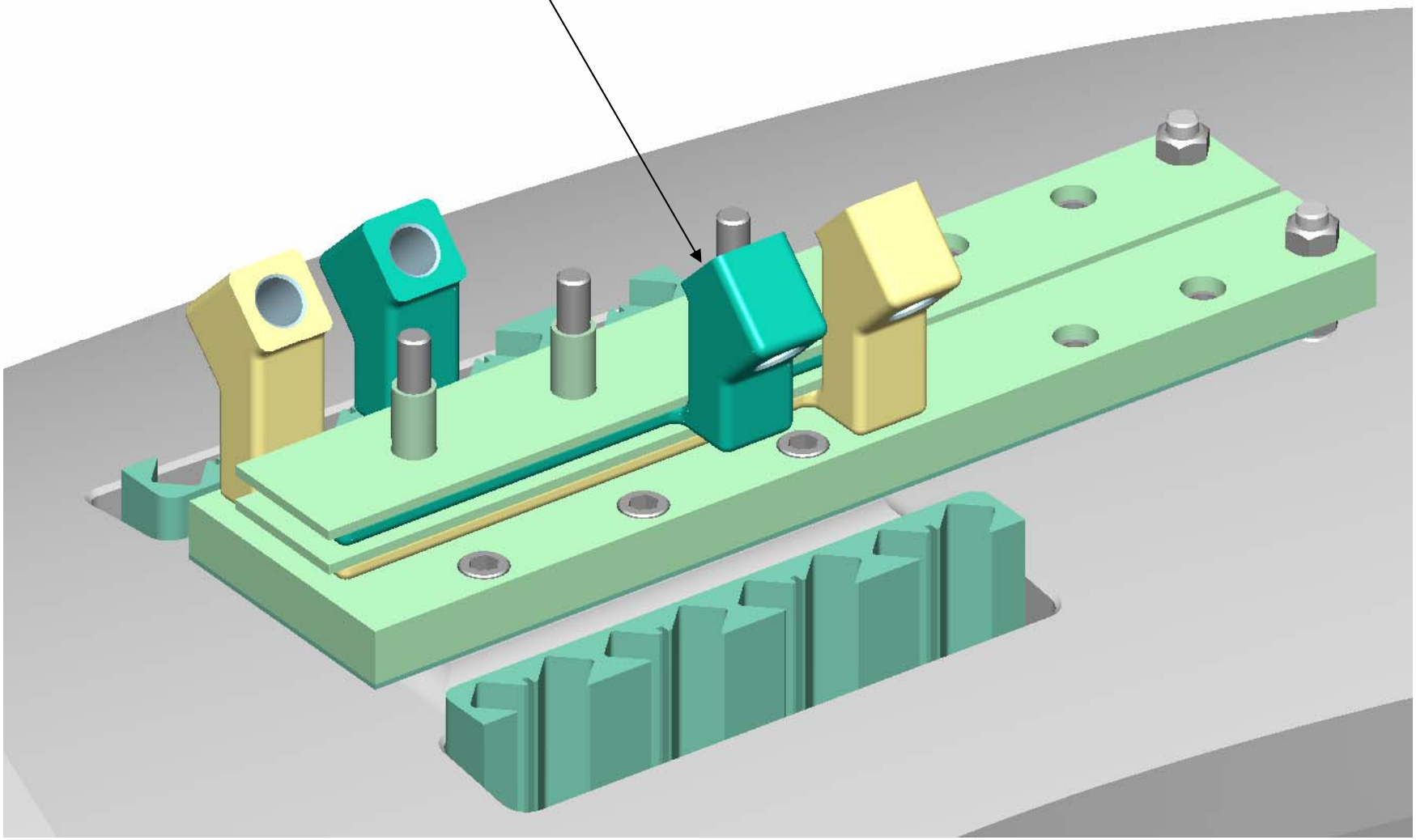



Install jumper -1

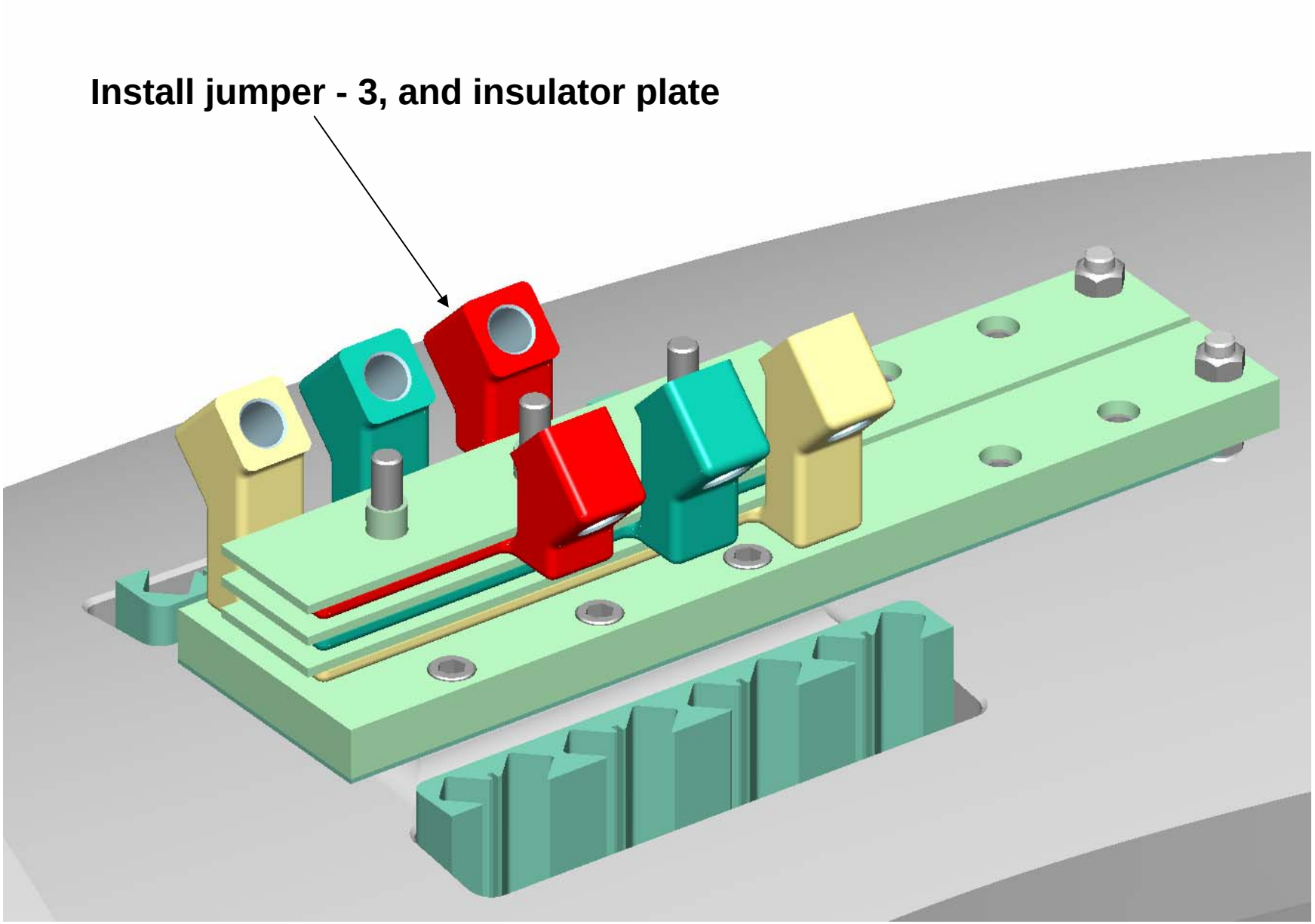
Install .125” thick insulator plate



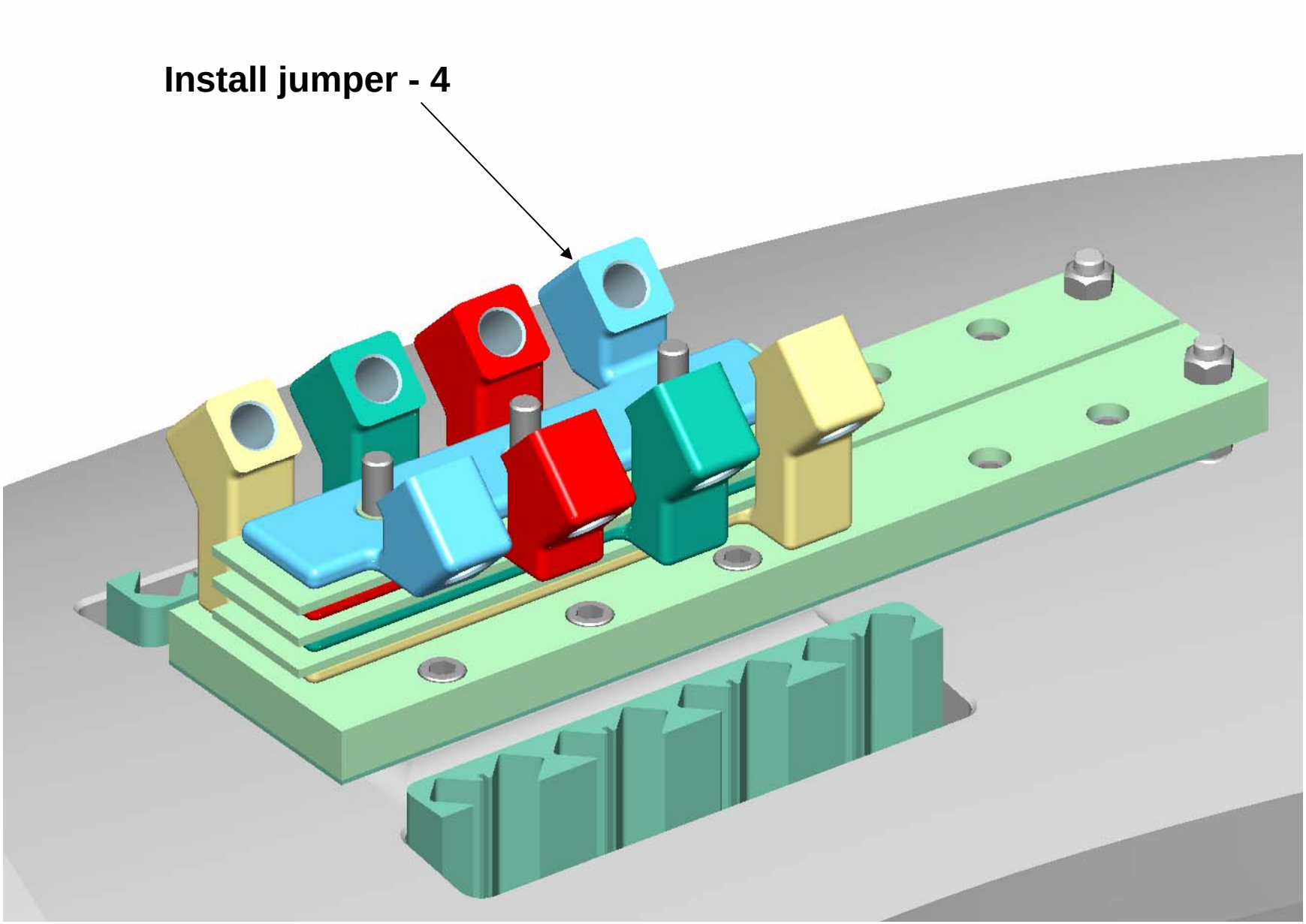
Install jumper - 2 and insulator plate



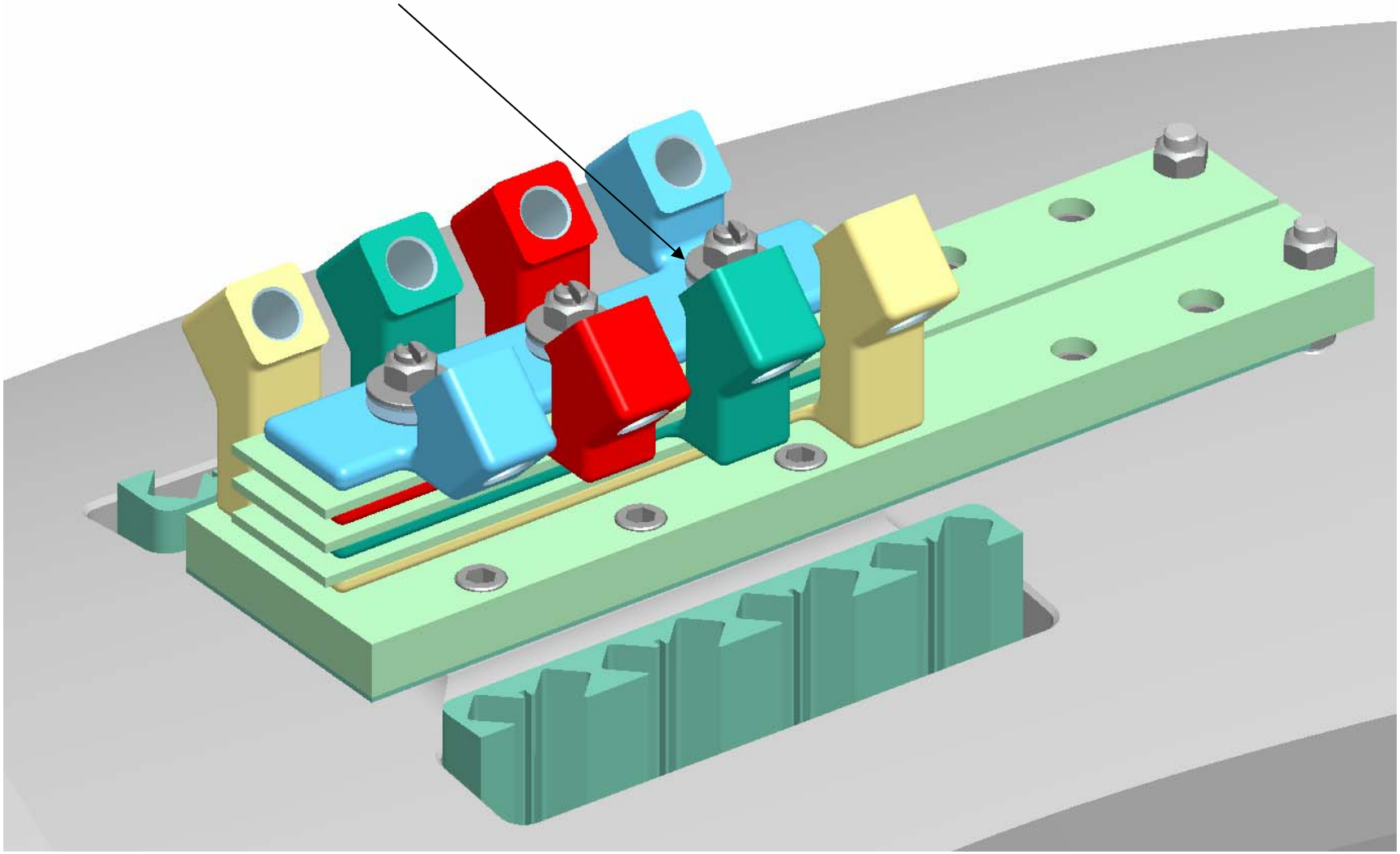
Install jumper - 3, and insulator plate



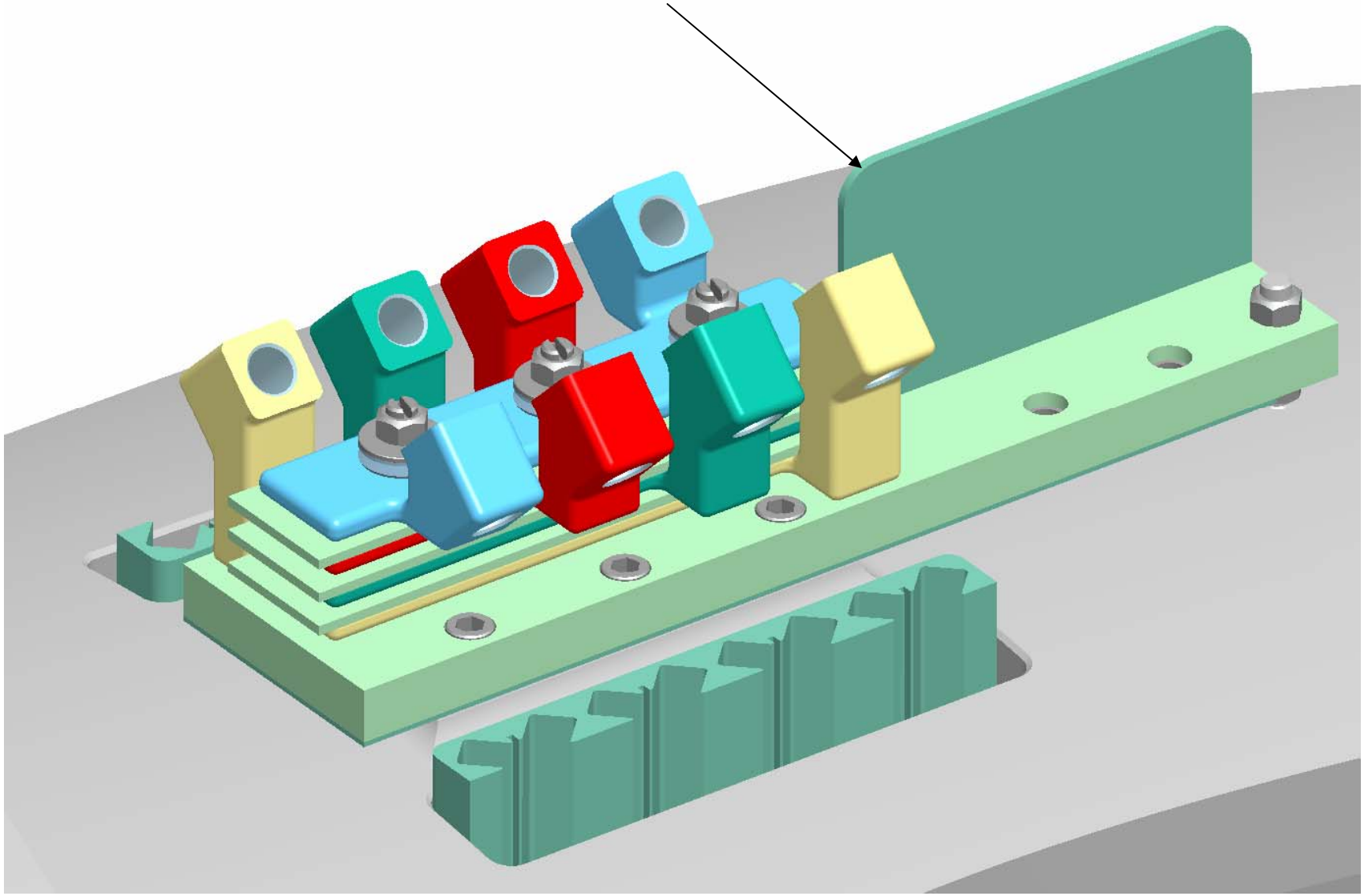
Install jumper - 4

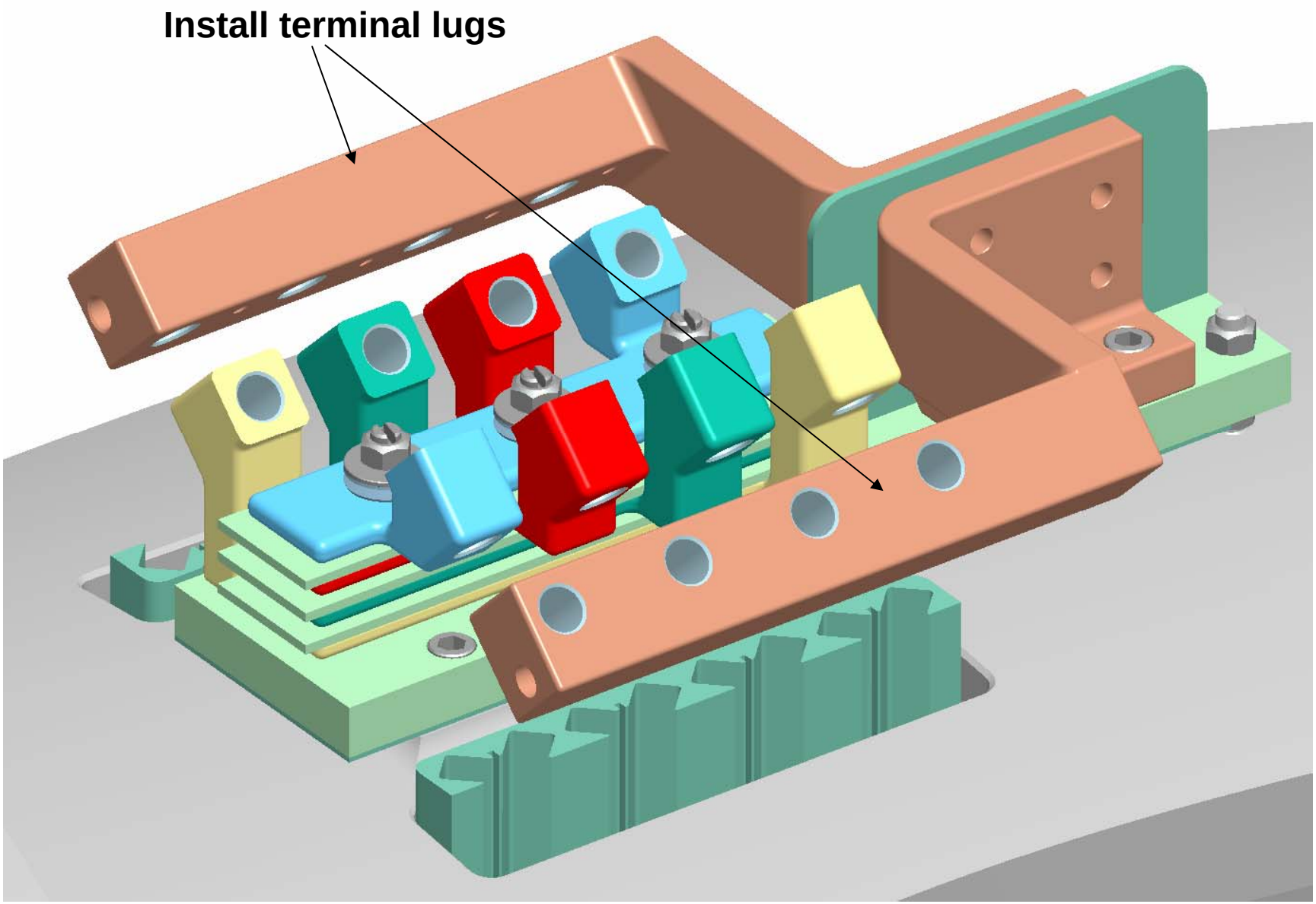


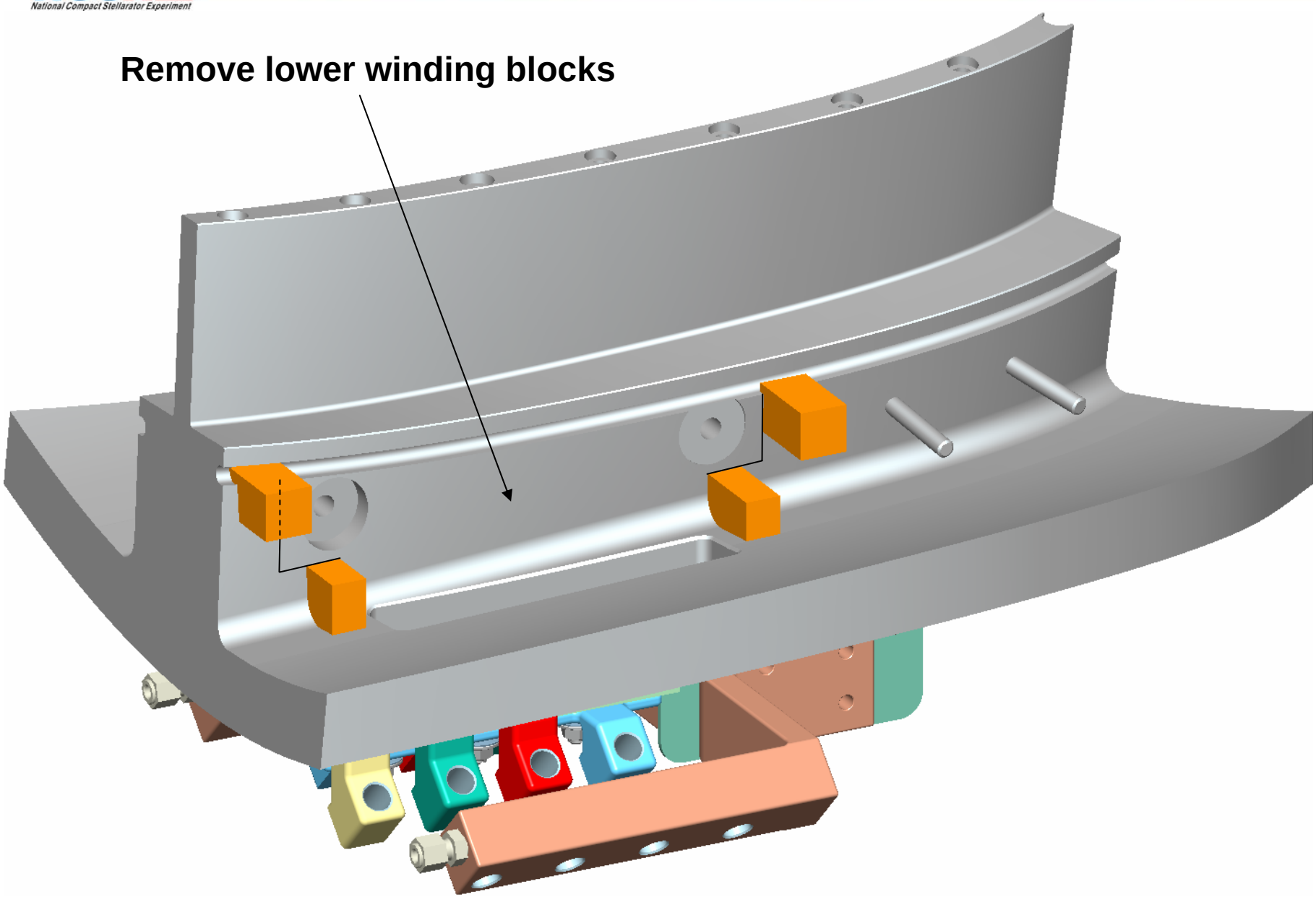
Install (2) bellville washers, (1) flat washer, and (1) nut (each stud)

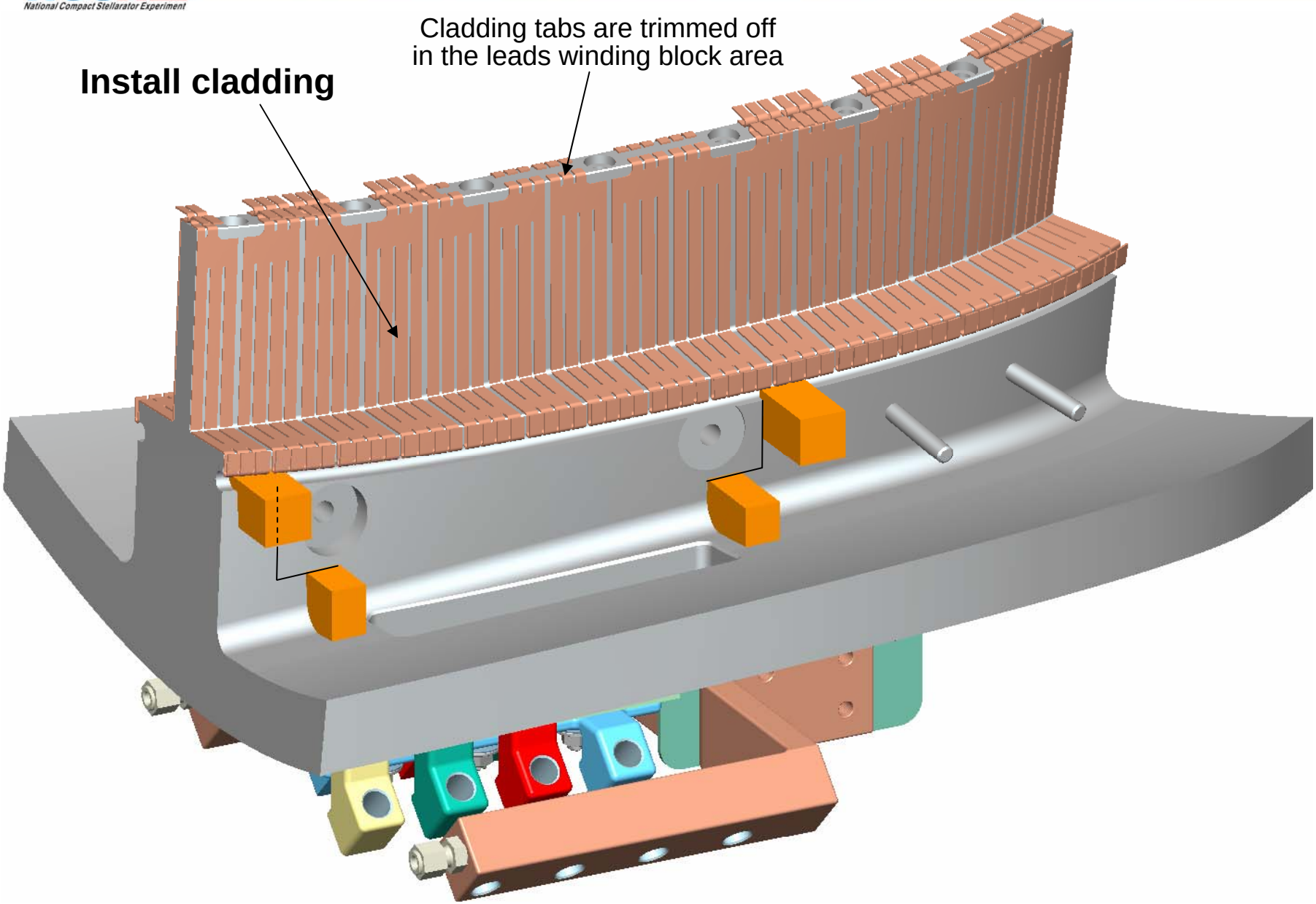


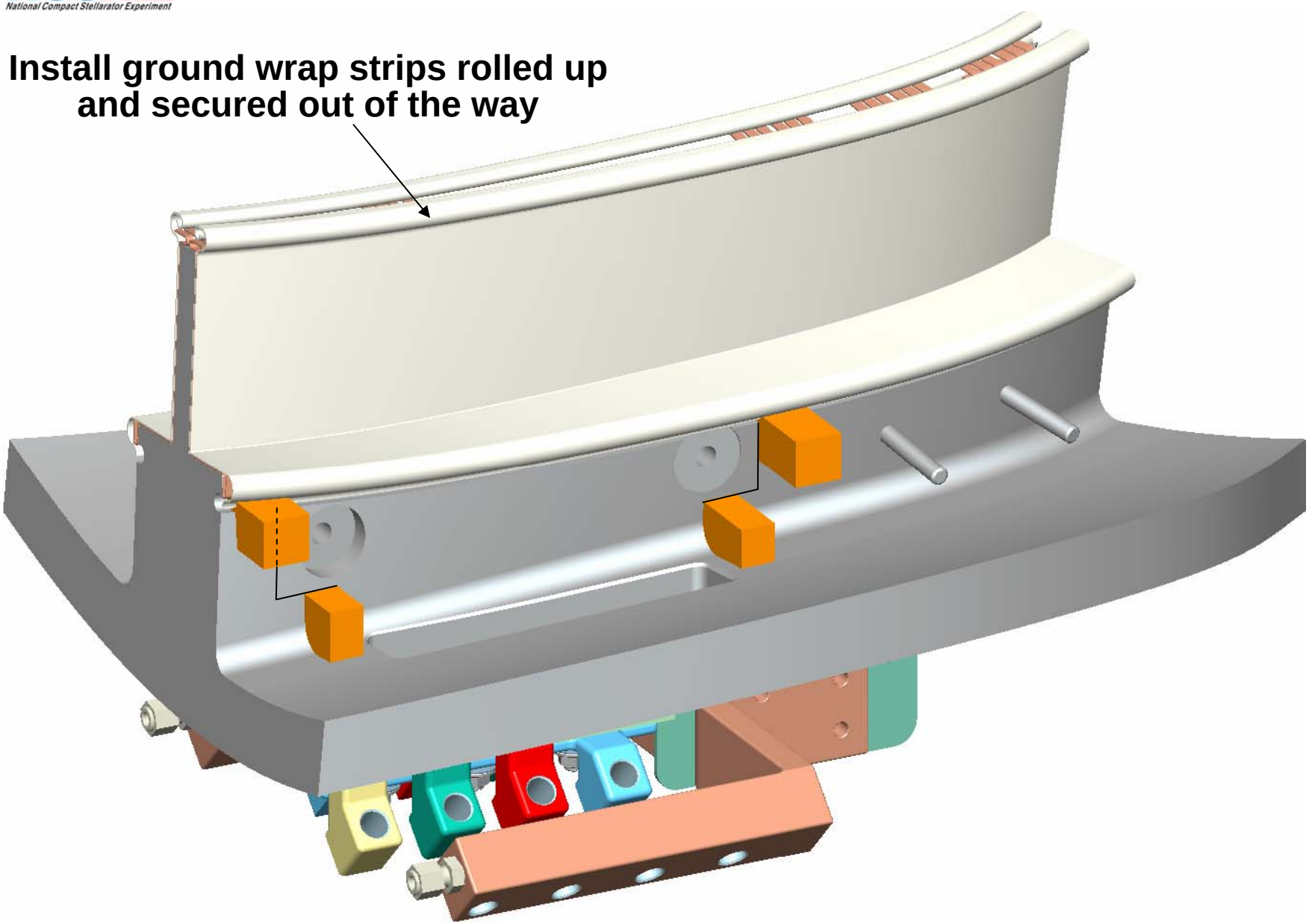
Install insulator divider plate for terminal lugs



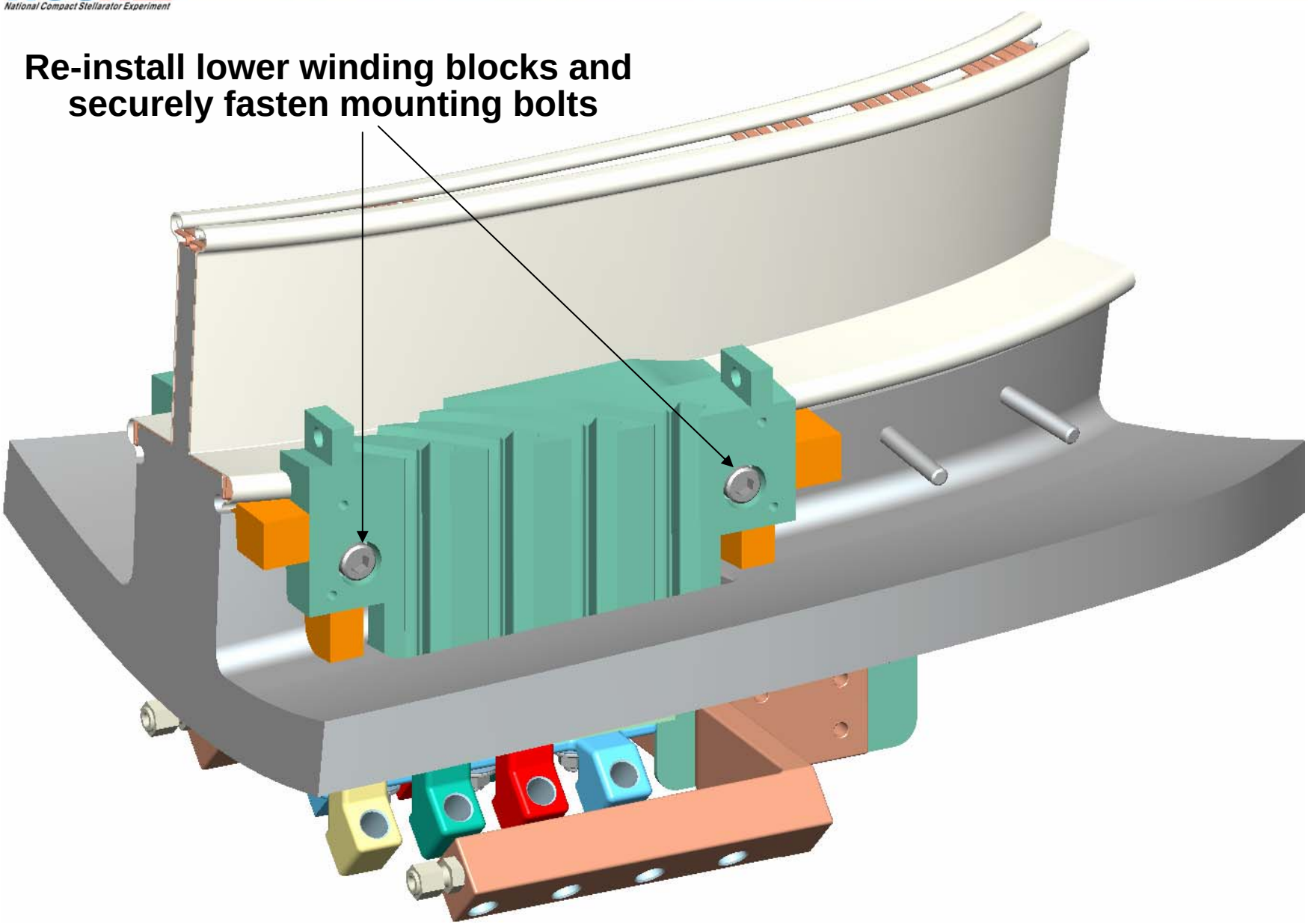

Install terminal lugs


Remove lower winding blocks

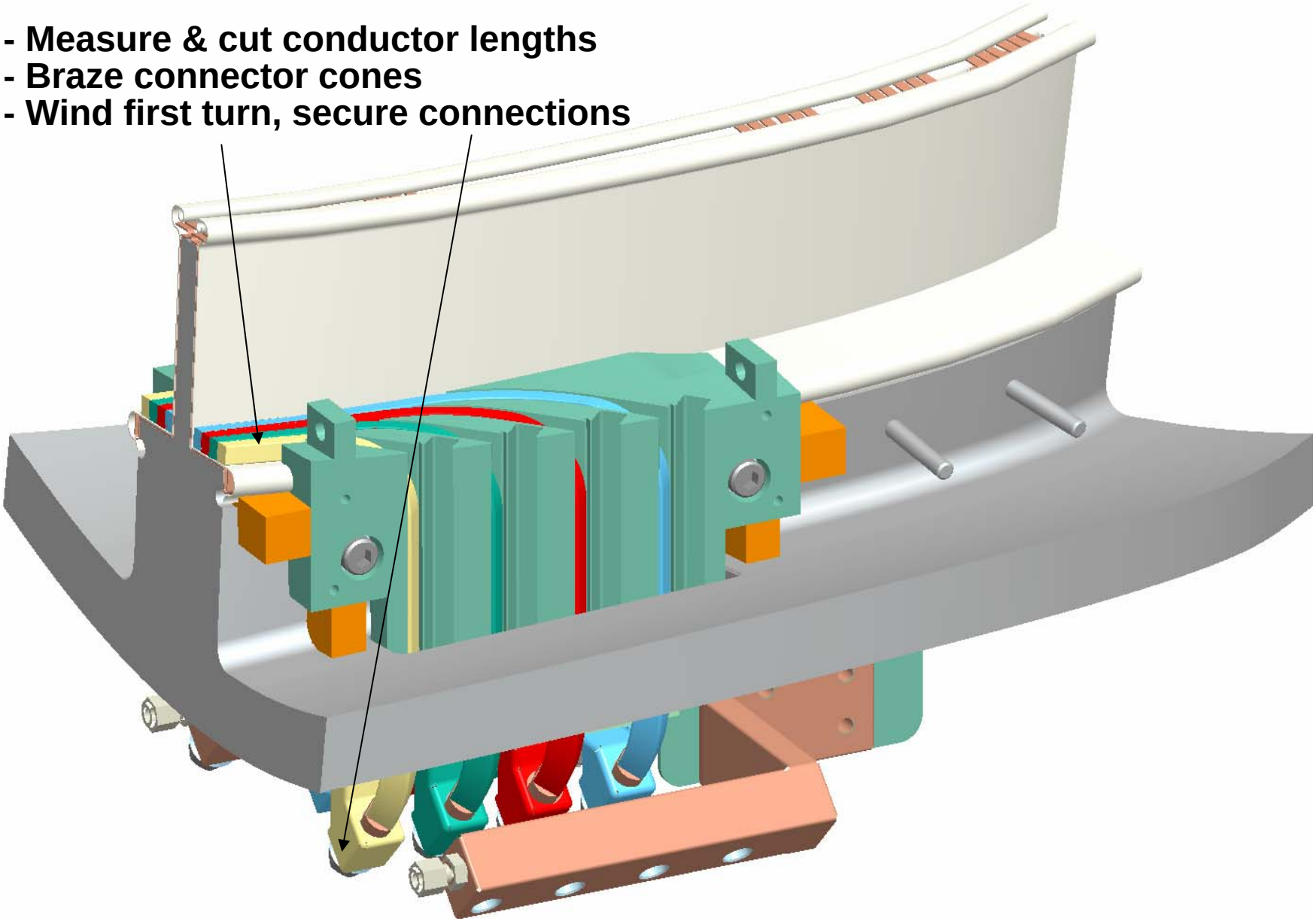

Install cladding
Cladding tabs are trimmed off
in the leads winding block area


Install ground wrap strips rolled up
and secured out of the way

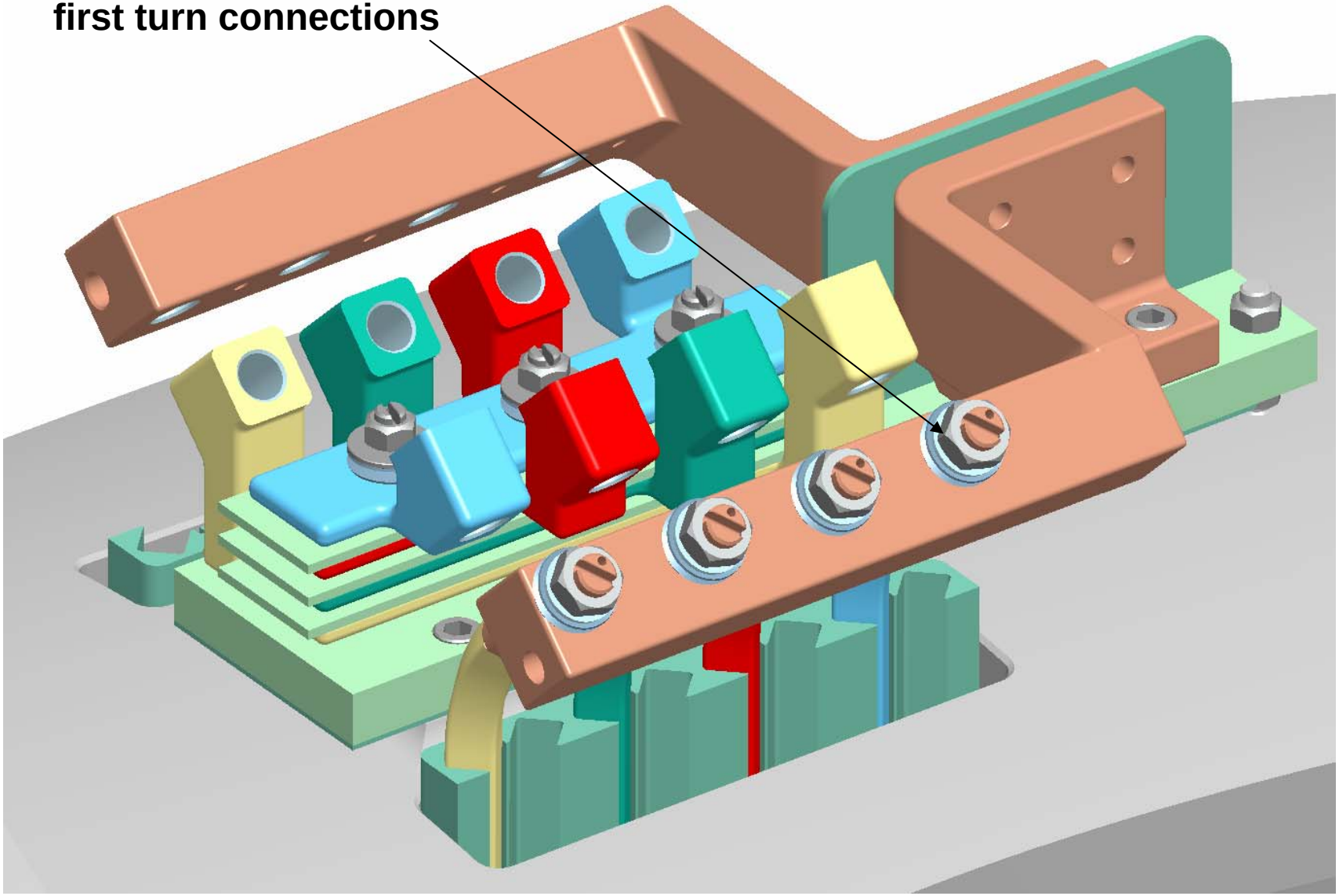
Re-install lower winding blocks and securely fasten mounting bolts



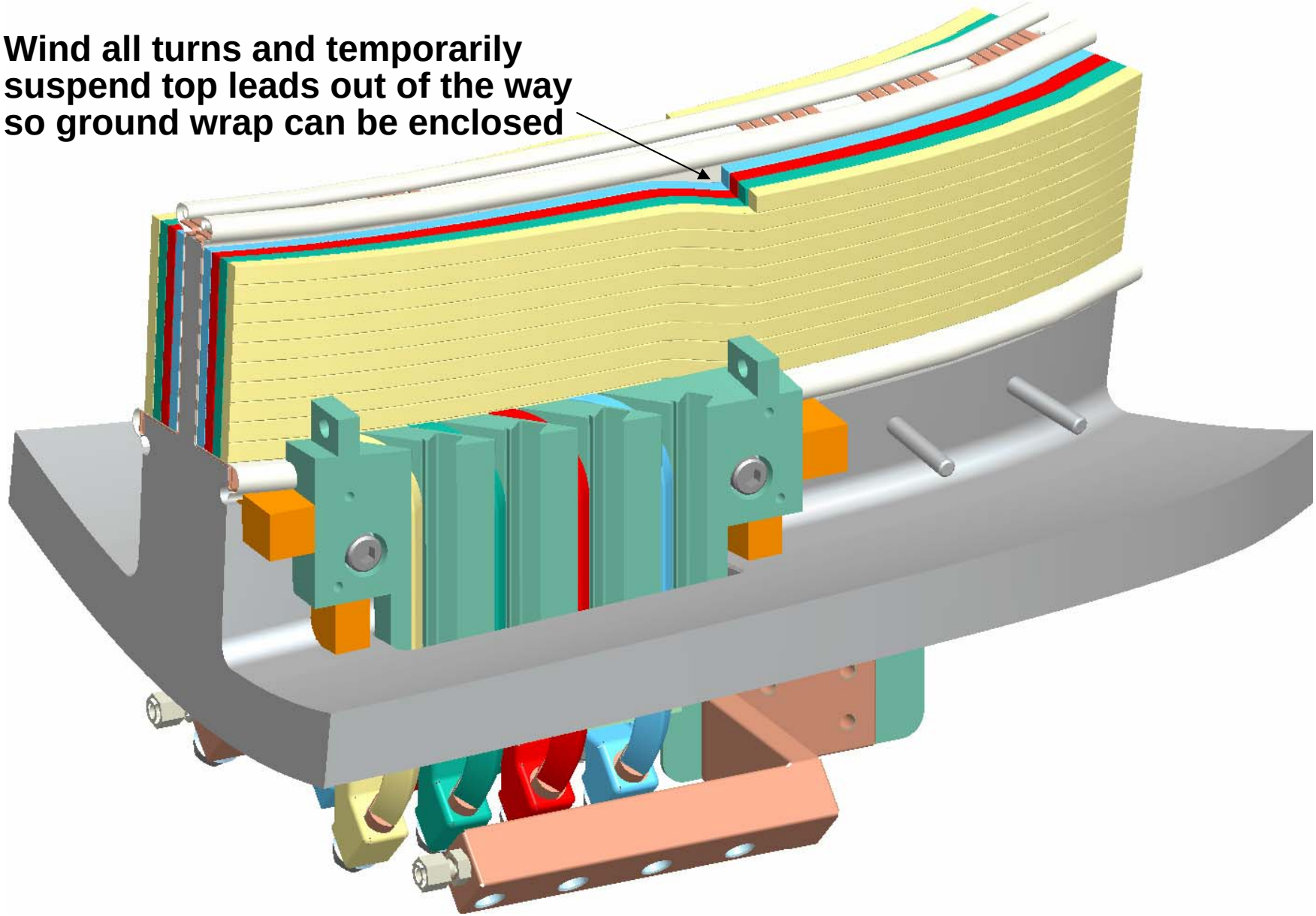
- Measure & cut conductor lengths
- Braze connector cones
- Wind first turn, secure connections

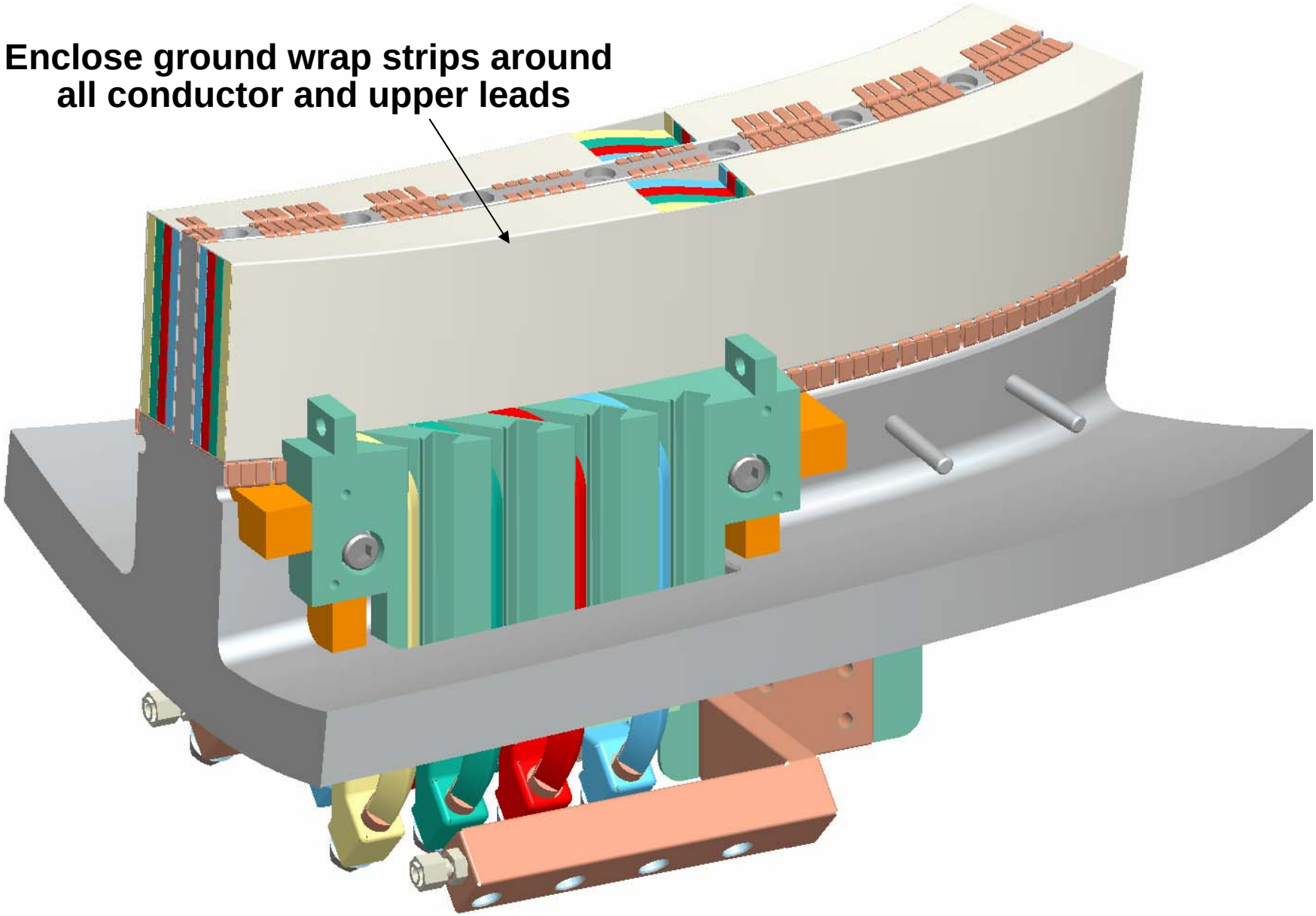


Underneath view showing first turn connections

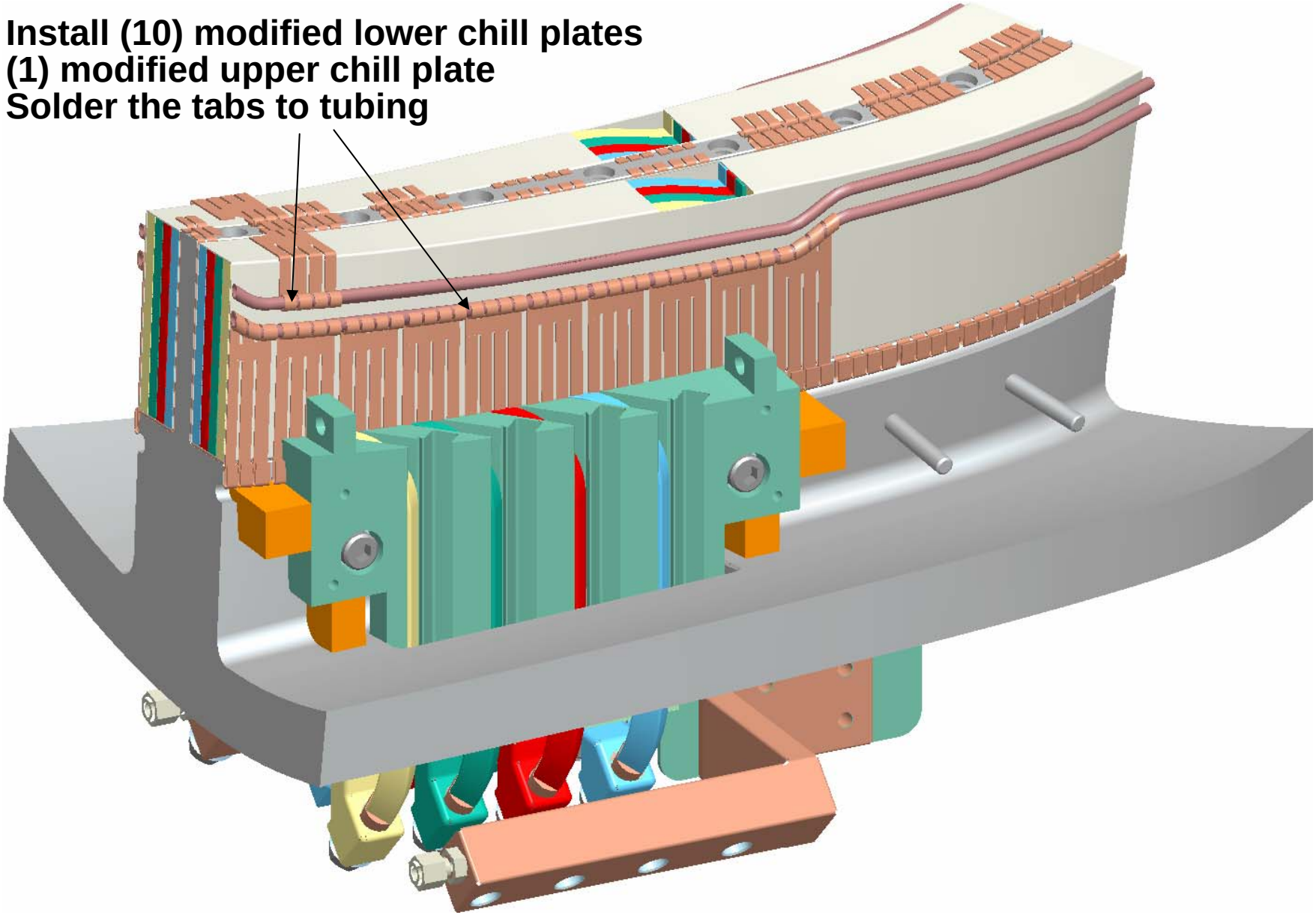


Wind all turns and temporarily suspend top leads out of the way so ground wrap can be enclosed

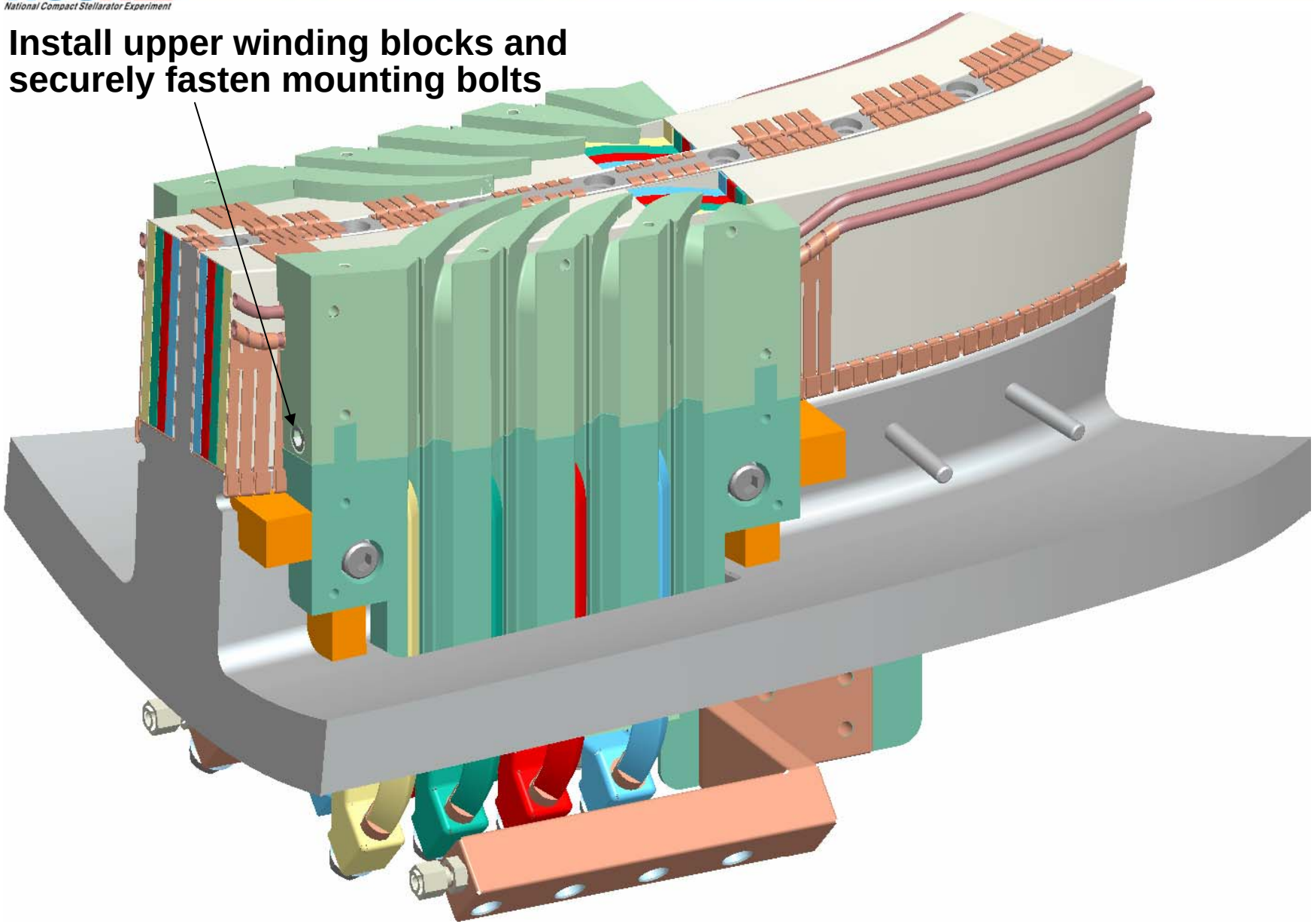



Enclose ground wrap strips around
all conductor and upper leads

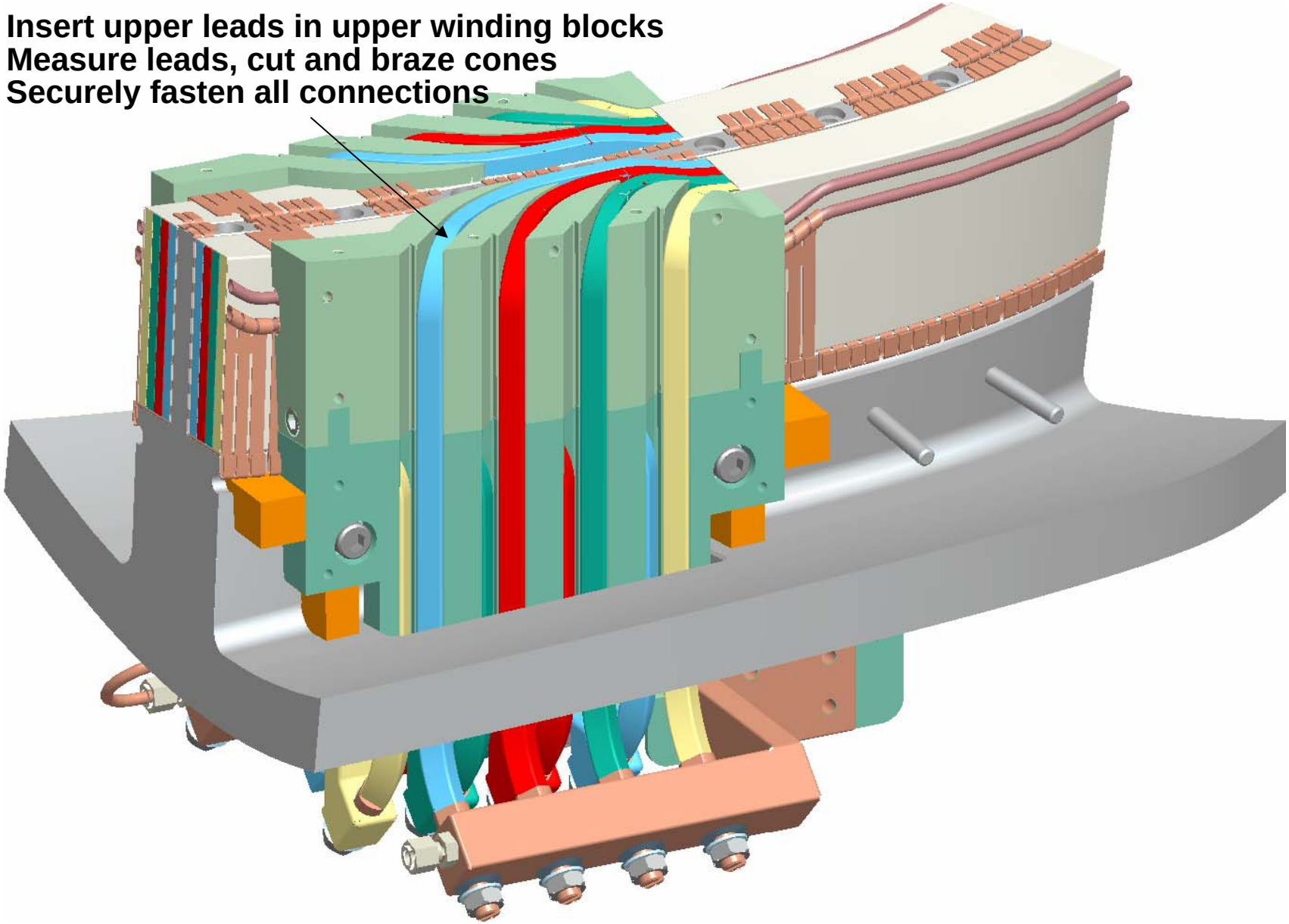
Install (10) modified lower chill plates
(1) modified upper chill plate
Solder the tabs to tubing



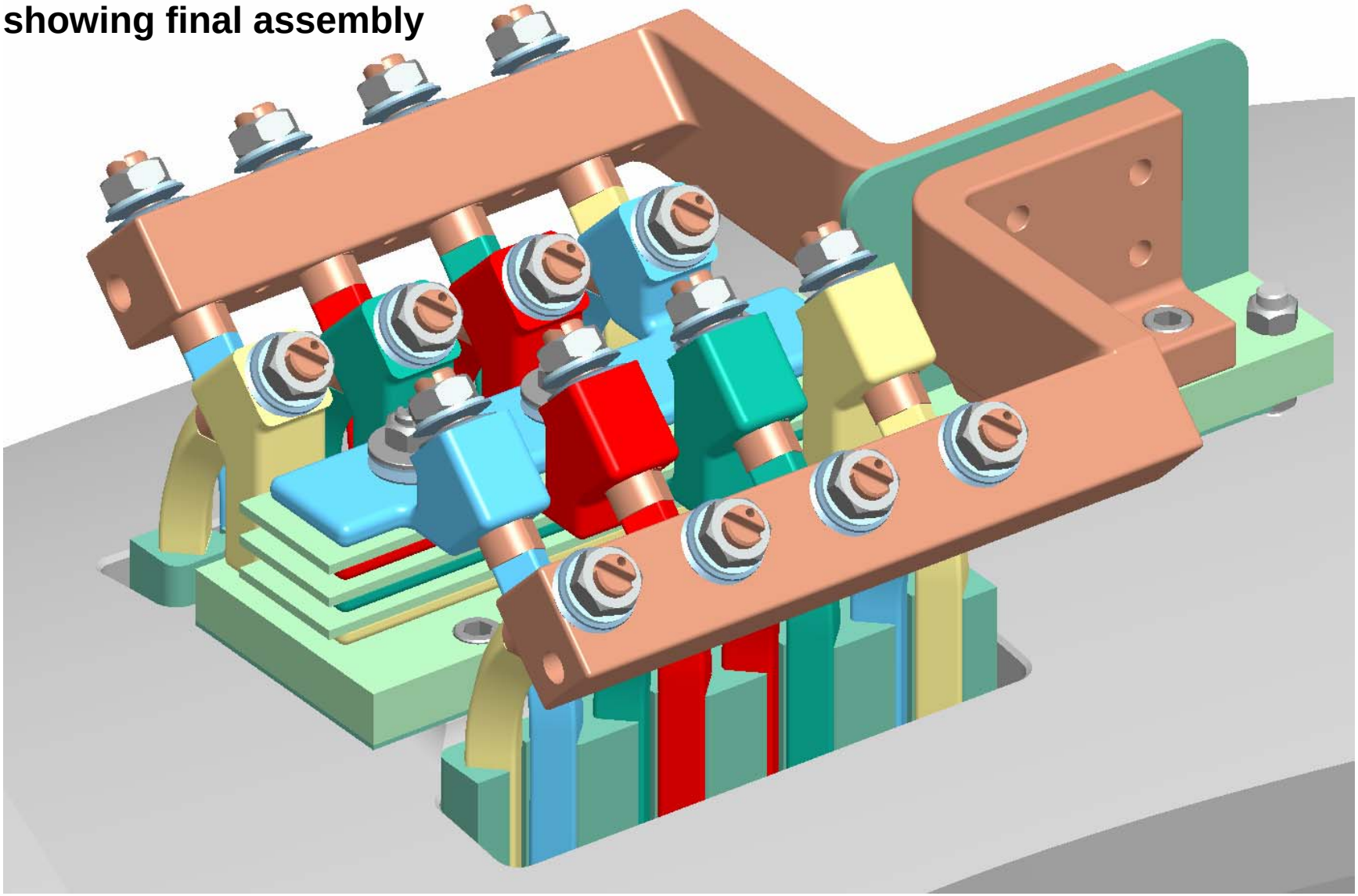
Install upper winding blocks and securely fasten mounting bolts



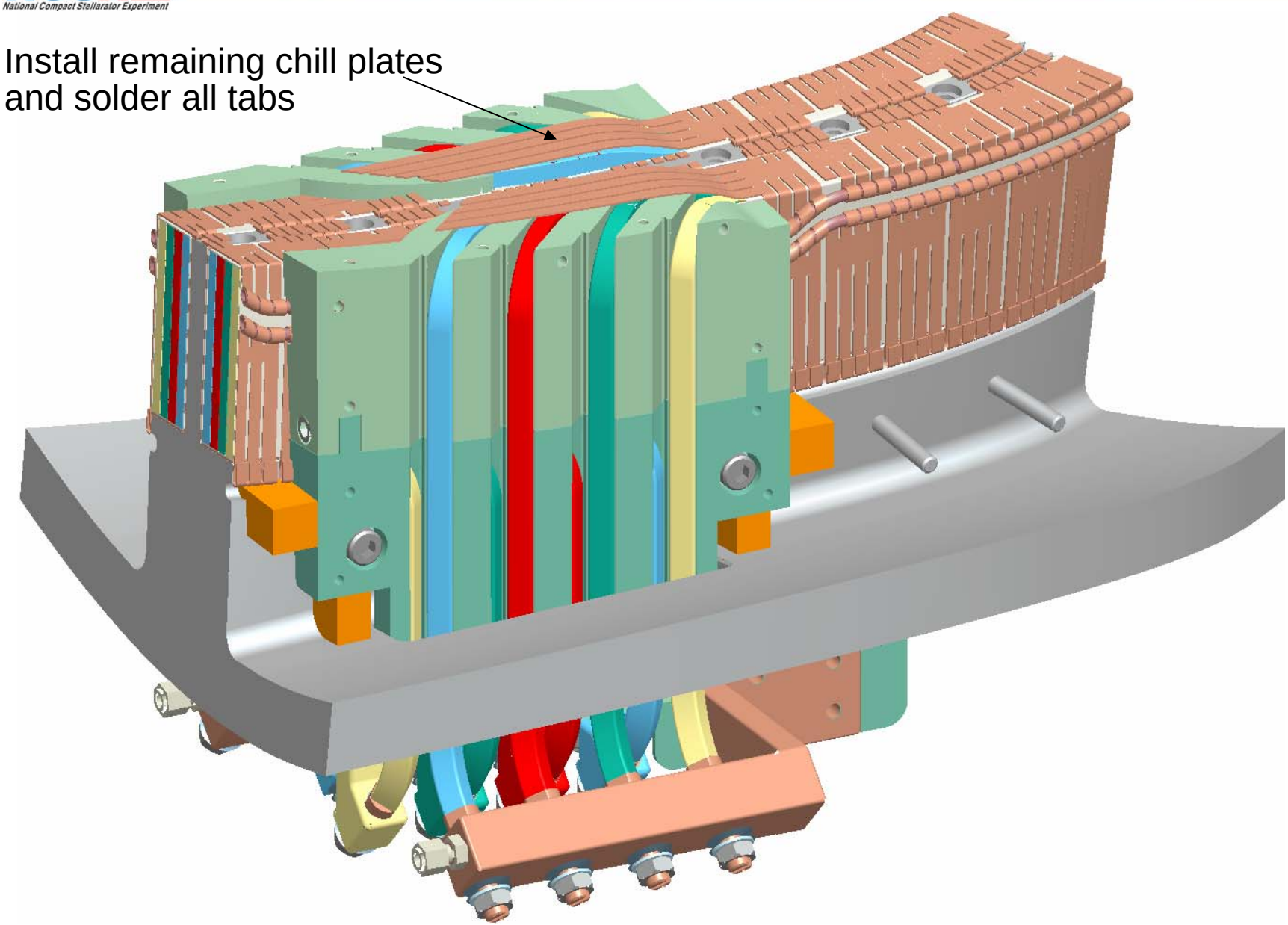
- Insert upper leads in upper winding blocks
- Measure leads, cut and braze cones
- Securely fasten all connections



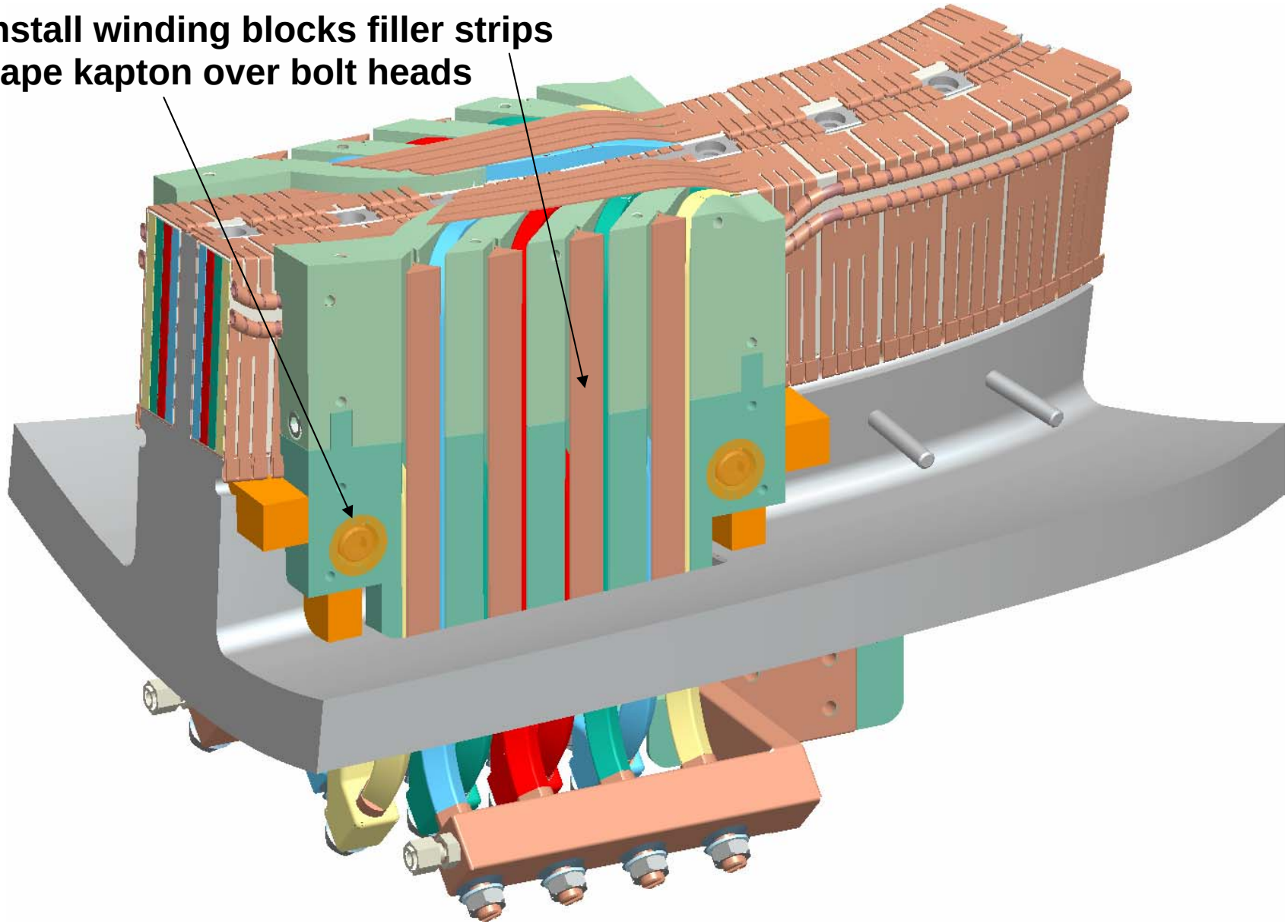
Underneath view showing final assembly

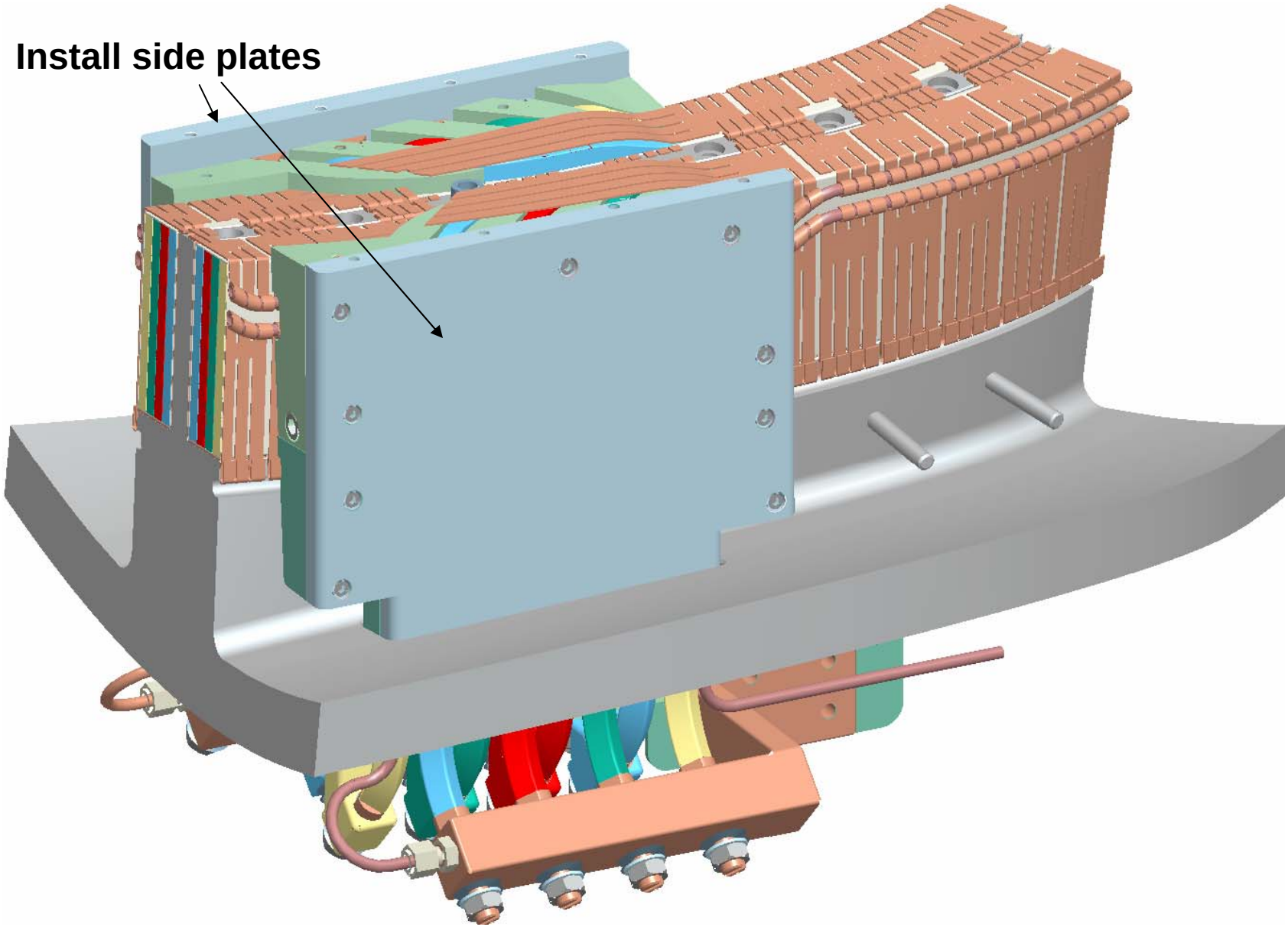


Install remaining chill plates and solder all tabs

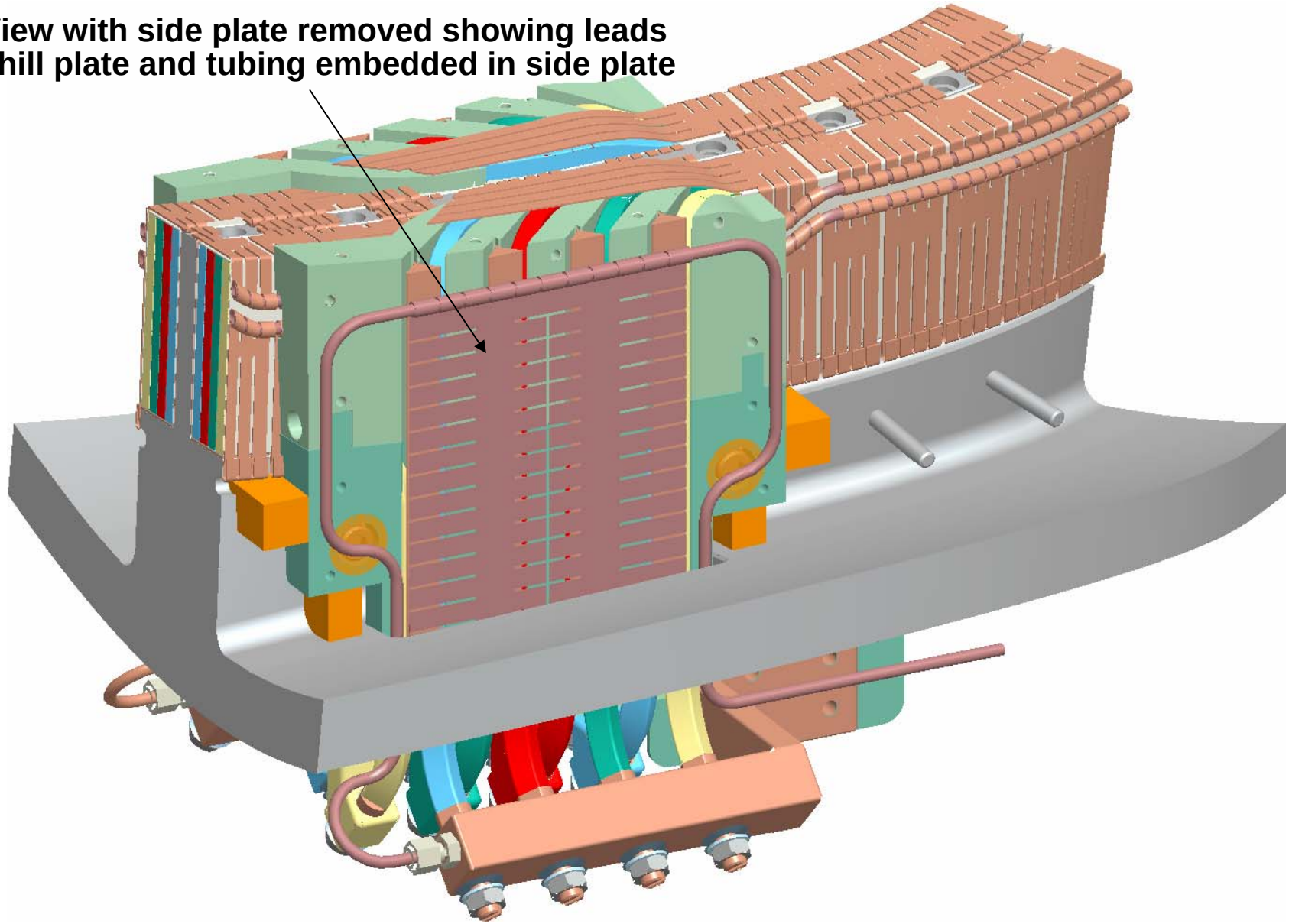


Install winding blocks filler strips
Tape kapton over bolt heads

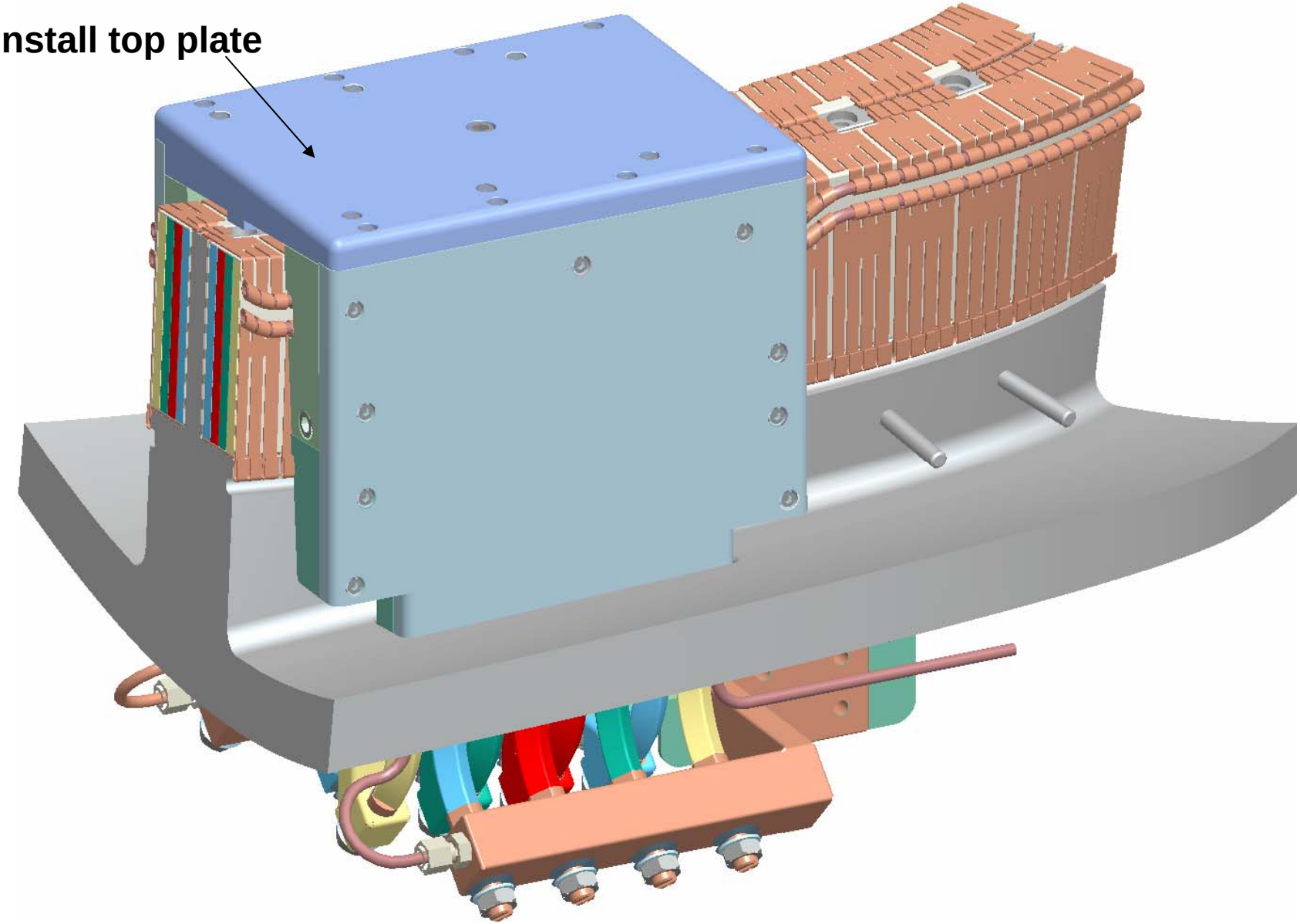


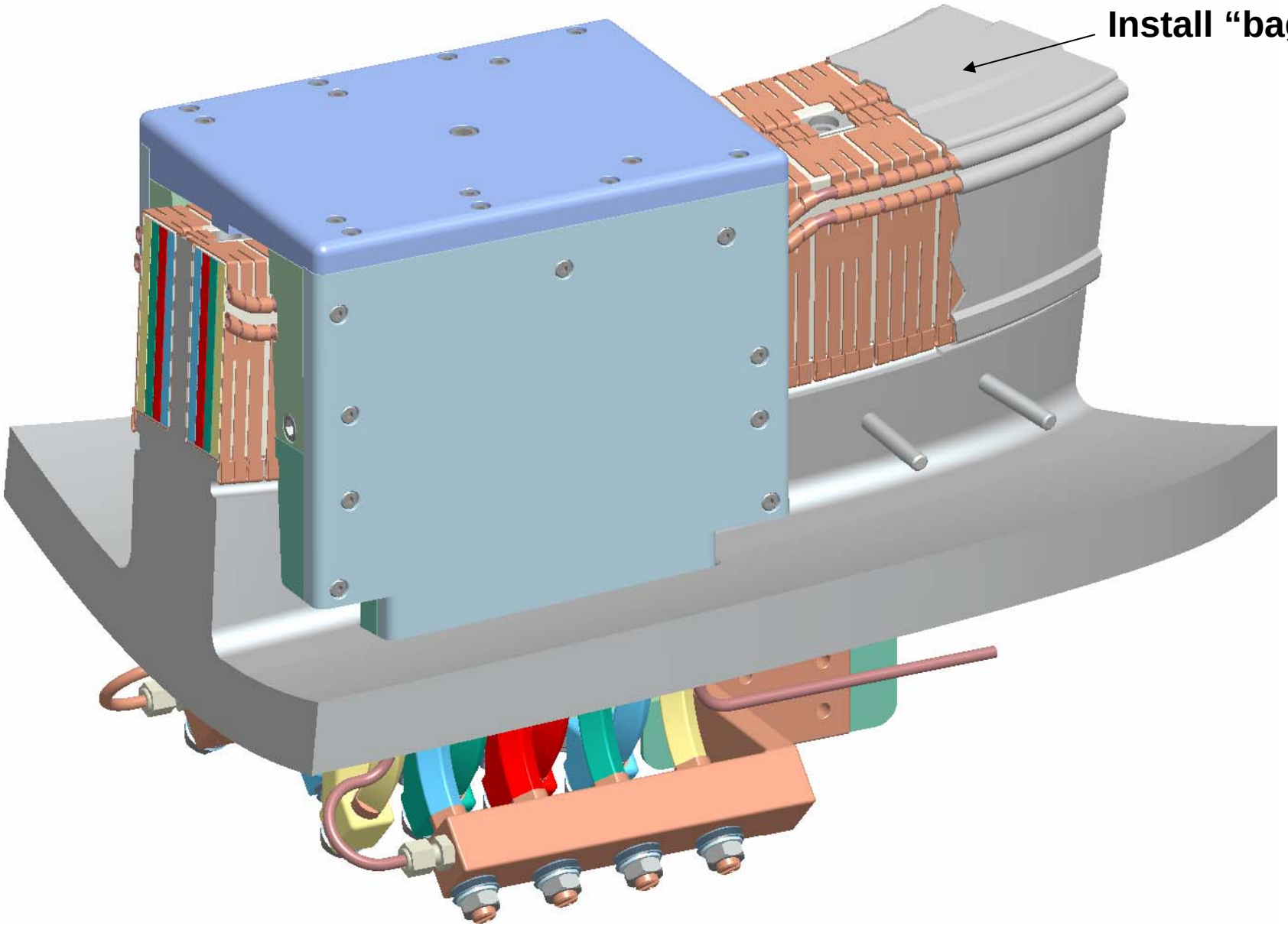

Install side plates

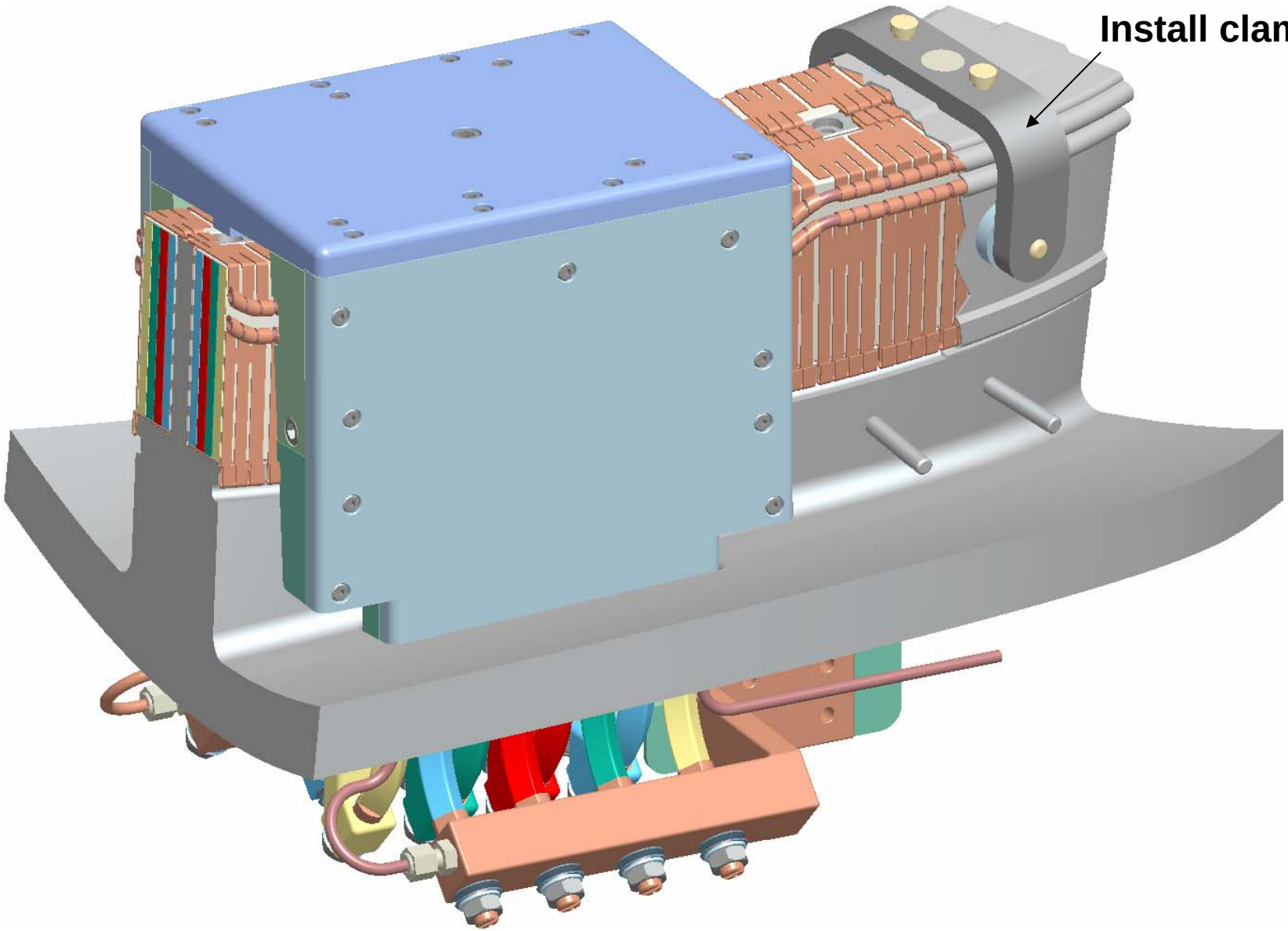
View with side plate removed showing leads chill plate and tubing embedded in side plate



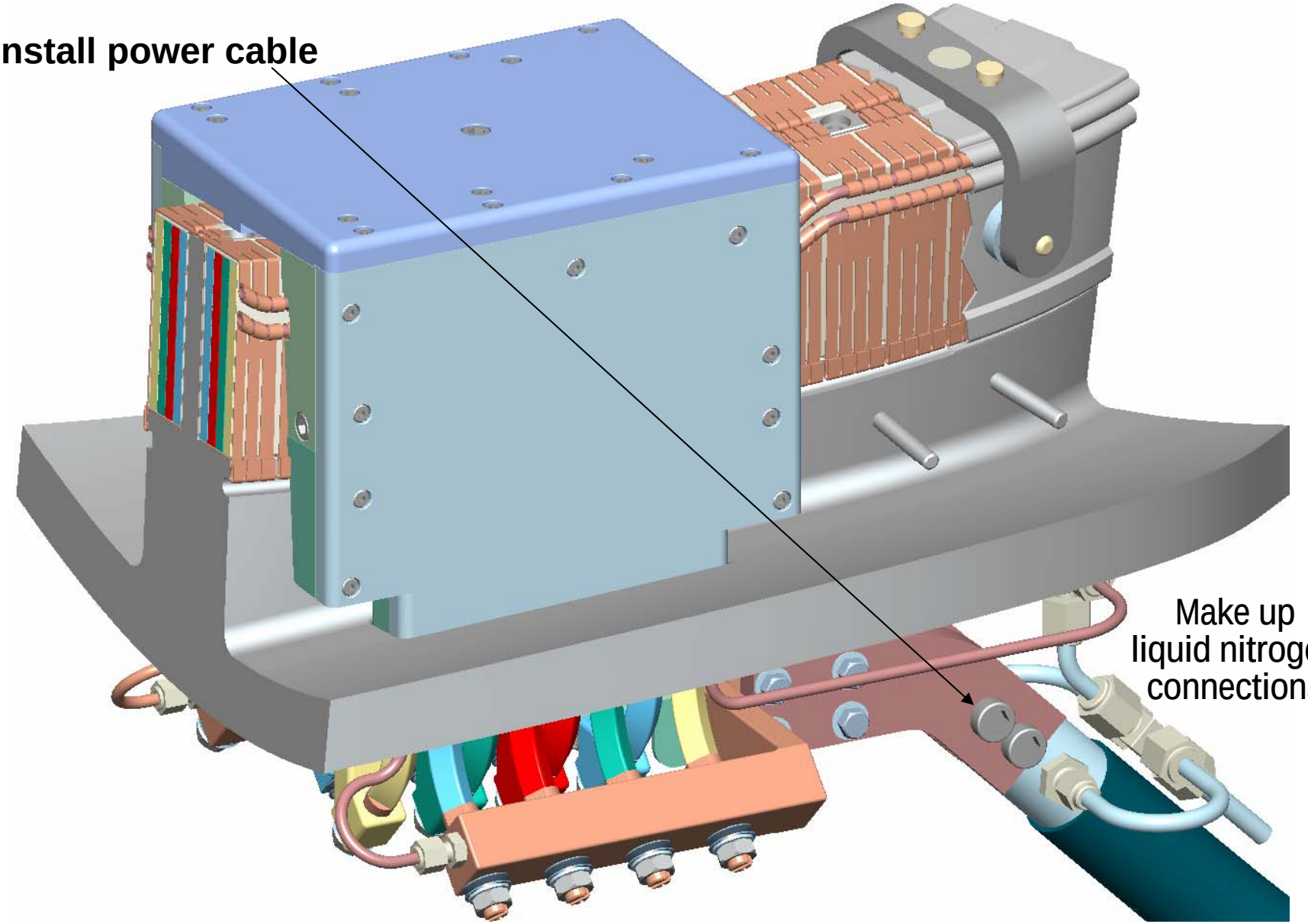
Install top plate



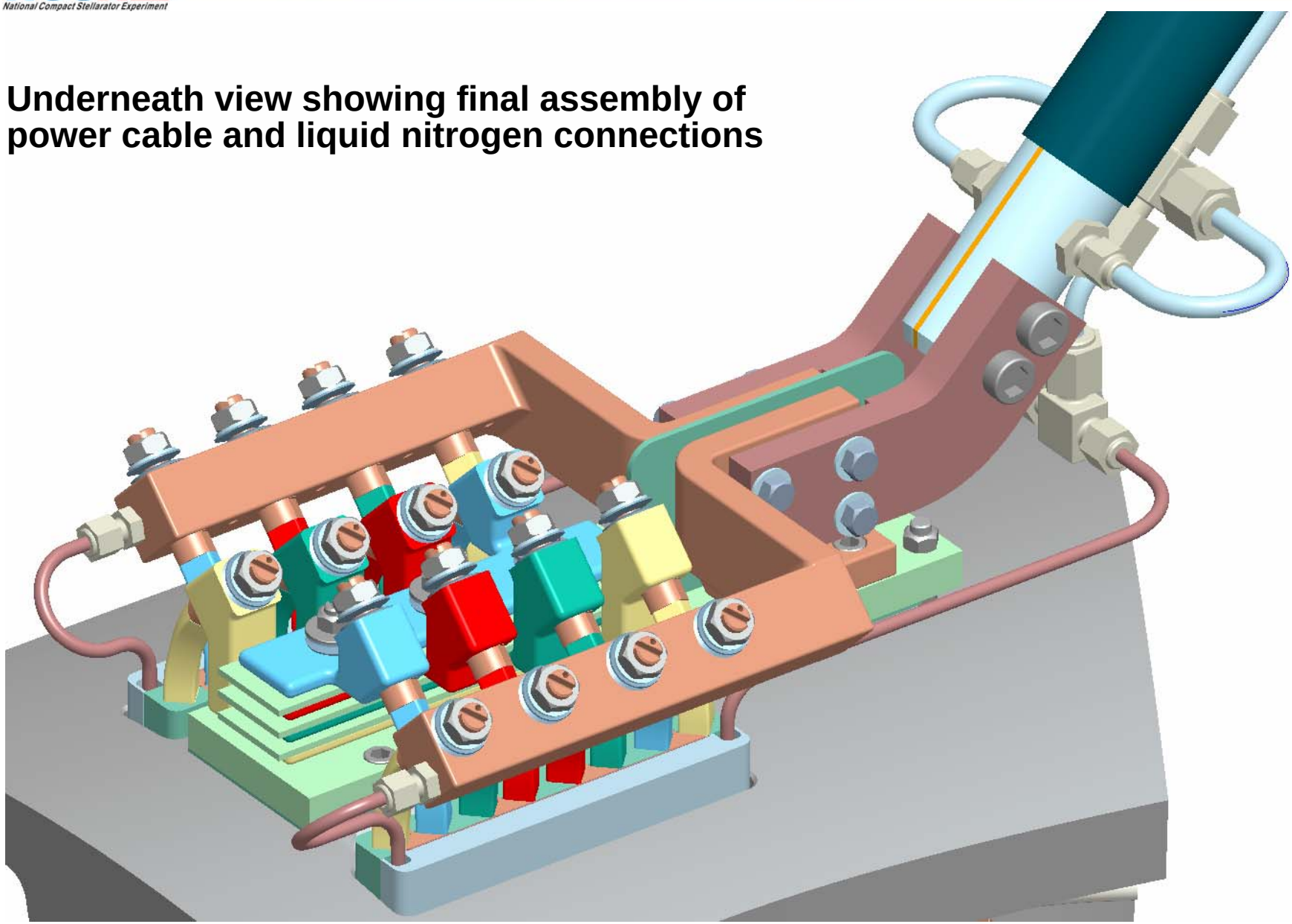

Install “bag”

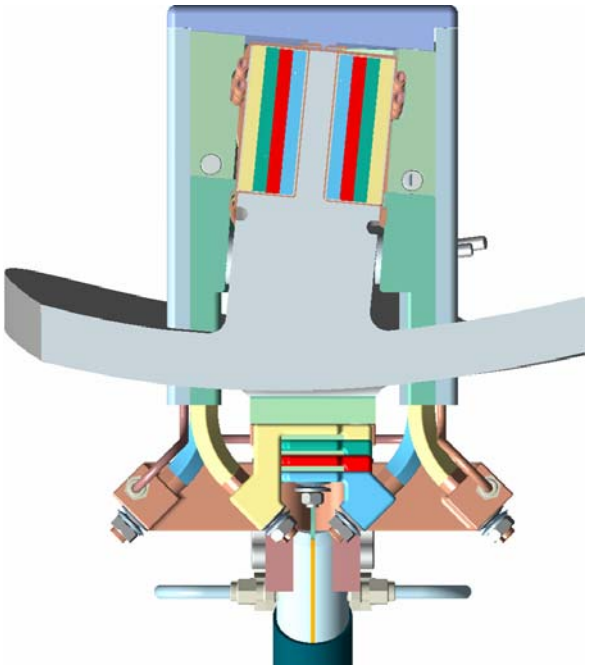

Install clamps

Install power cable

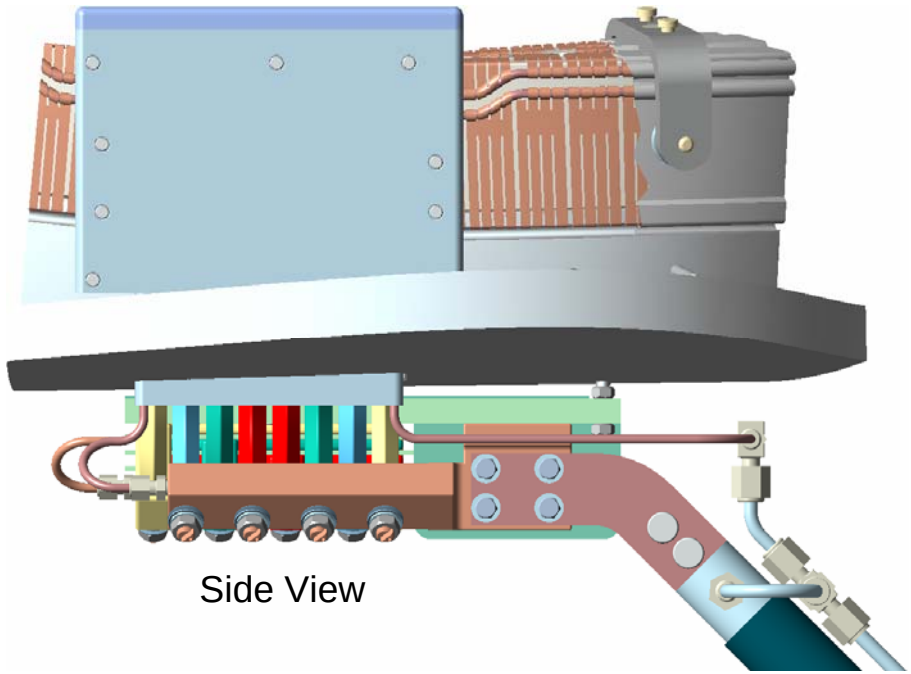


Underneath view showing final assembly of power cable and liquid nitrogen connections



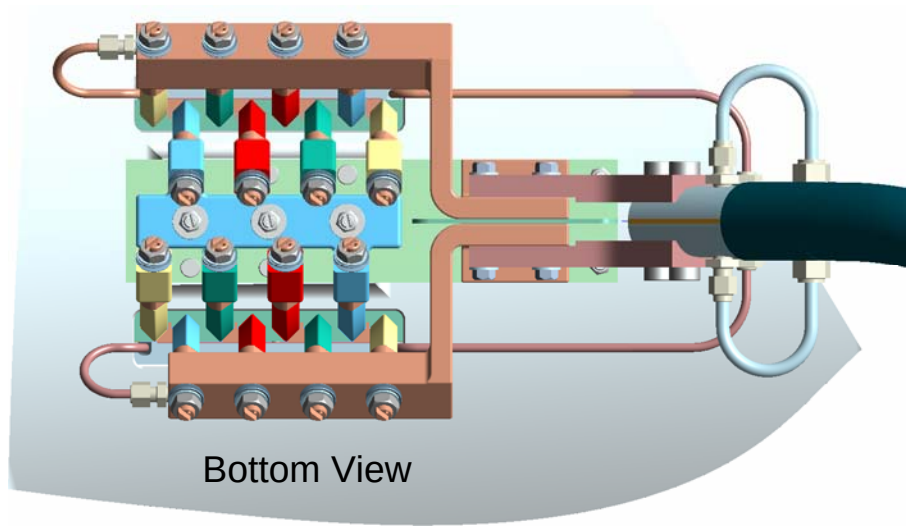


End View



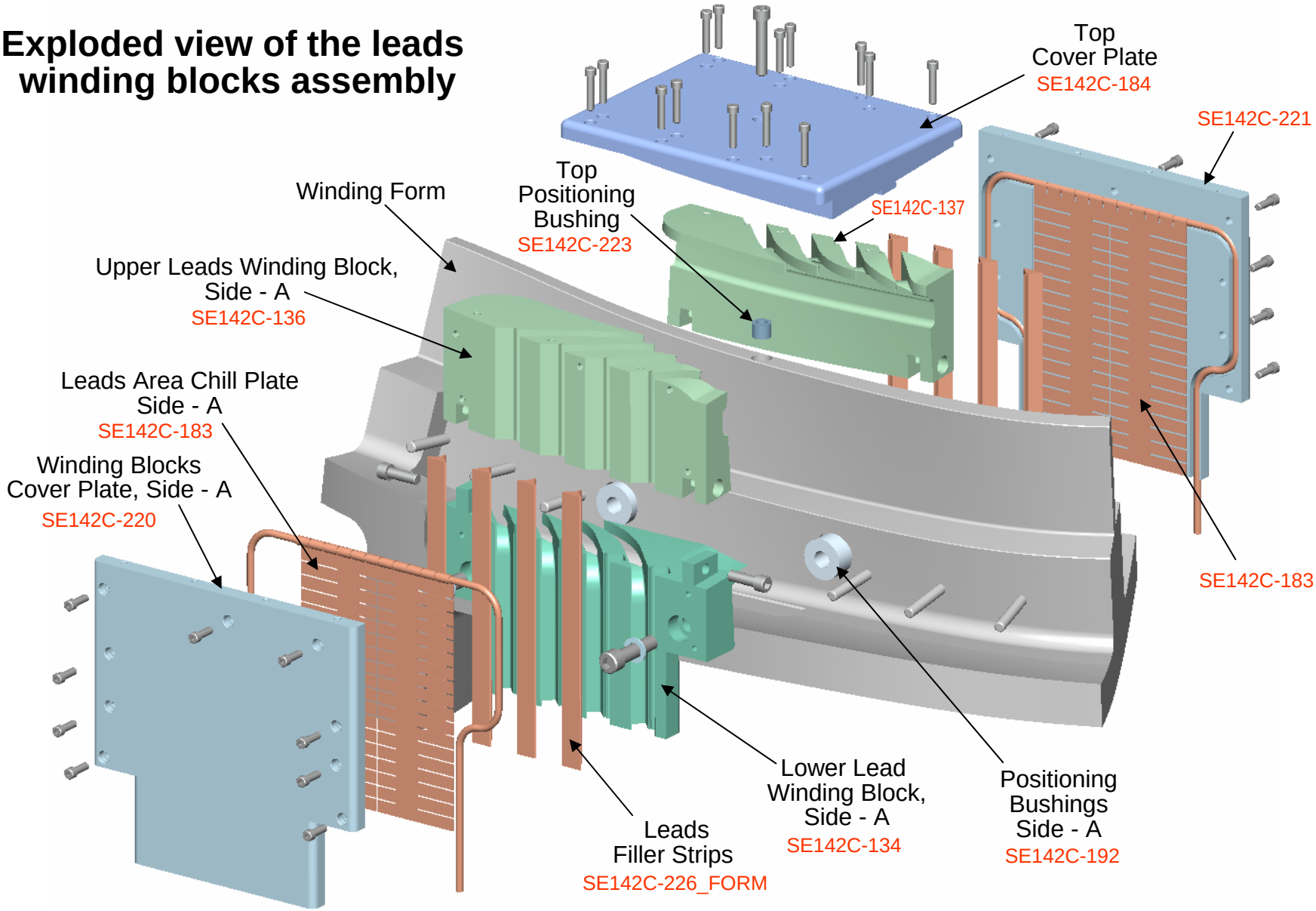
Side View

3 views of the leads winding blocks assembly

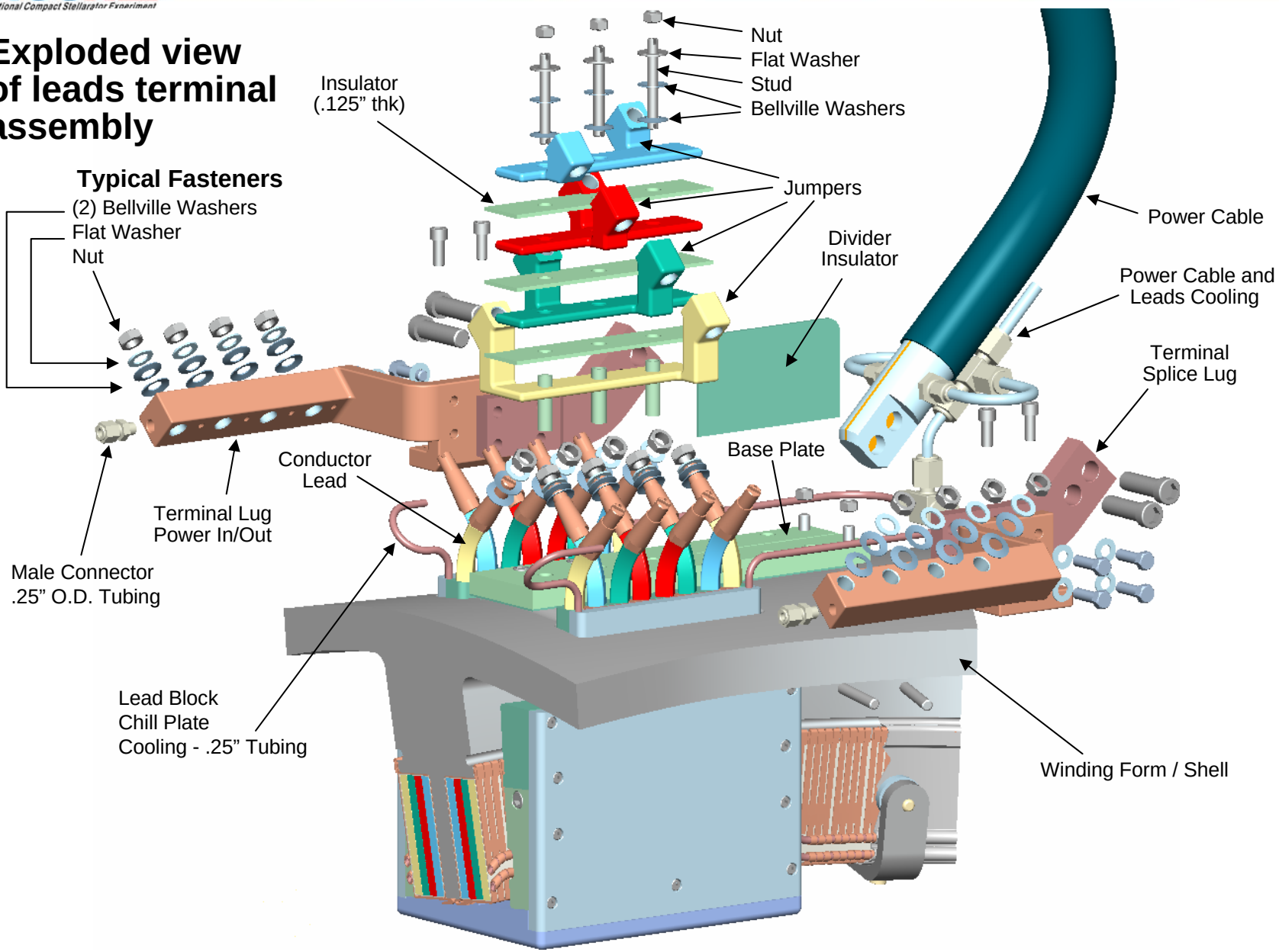


Bottom View

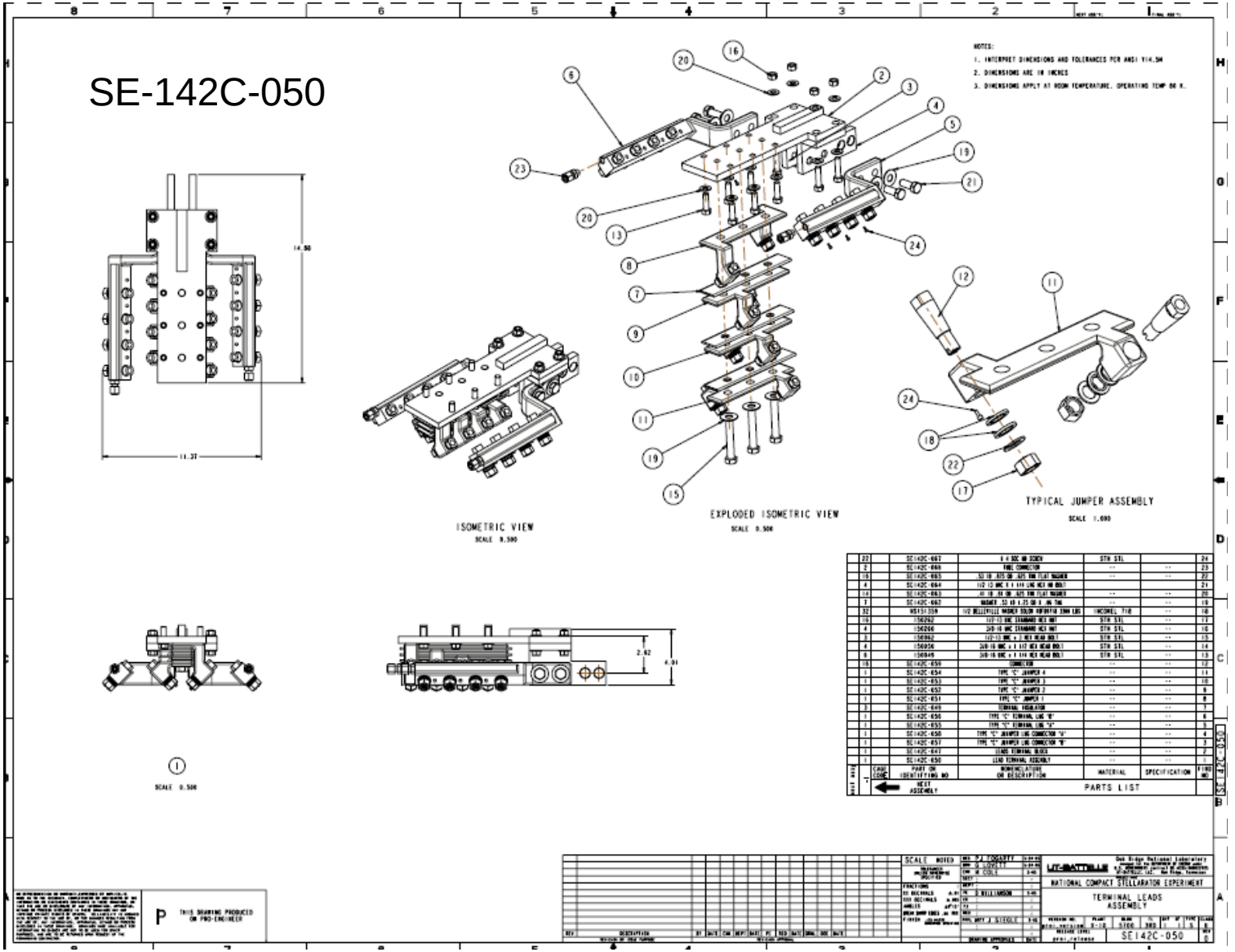
Exploded view of the leads winding blocks assembly



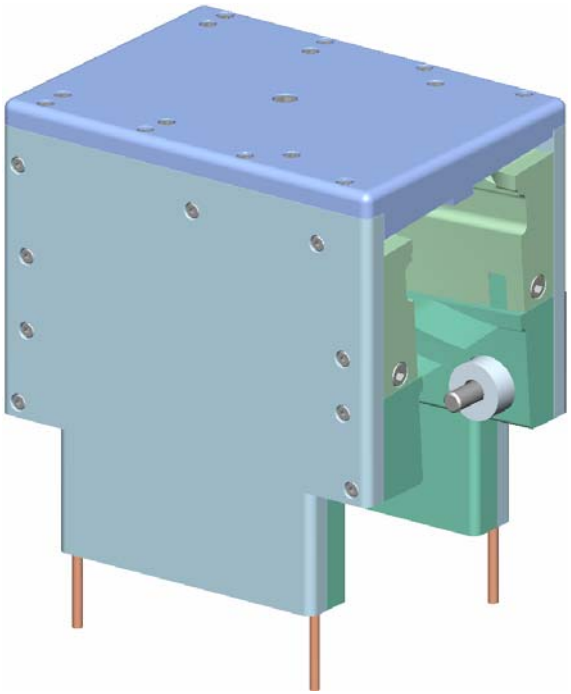
Exploded view of leads terminal assembly

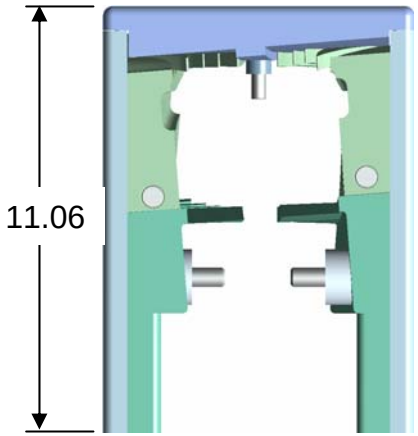


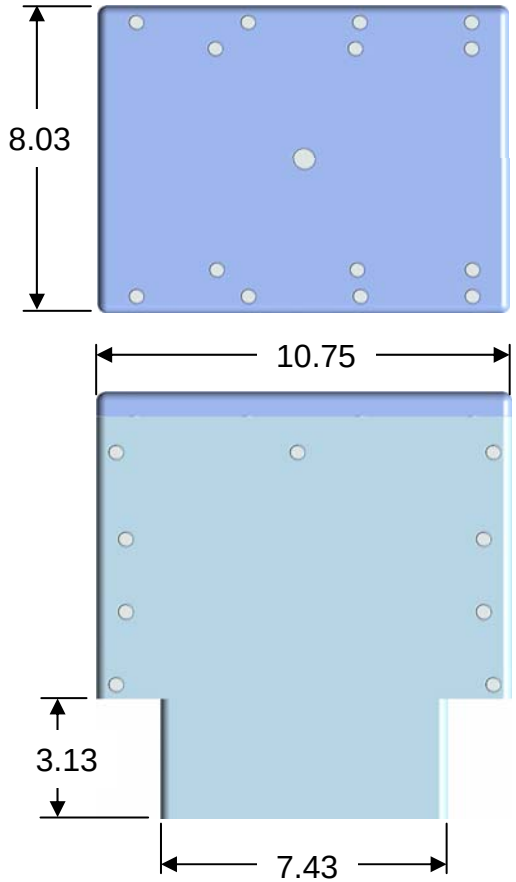
SE-142C-050


NOTES:
1. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M
2. DIMENSIONS ARE IN INCHES
3. DIMENSIONS APPLY AT ROOM TEMPERATURE. OPERATING TEMP 80 K.
ISOMETRIC VIEW
SCALE 0.500
EXPLODED ISOMETRIC VIEW
SCALE 0.500
TYPICAL JUMPER ASSEMBLY
SCALE 1.000
SCALE 0.500
PARTS LIST
NEXT ASSEMBLY
NATIONAL COMPACT STELLARATOR EXPERIMENT
TERMINAL LEADS ASSEMBLY
SE142C-050

Views of the leads winding blocks assembly



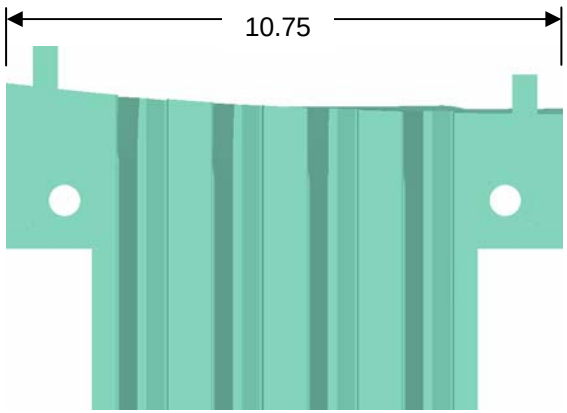




Side – A, Lower Winding Block

Side – A Dwg # SE142C-134
Side – B Dwg # SE142C-135

Top View

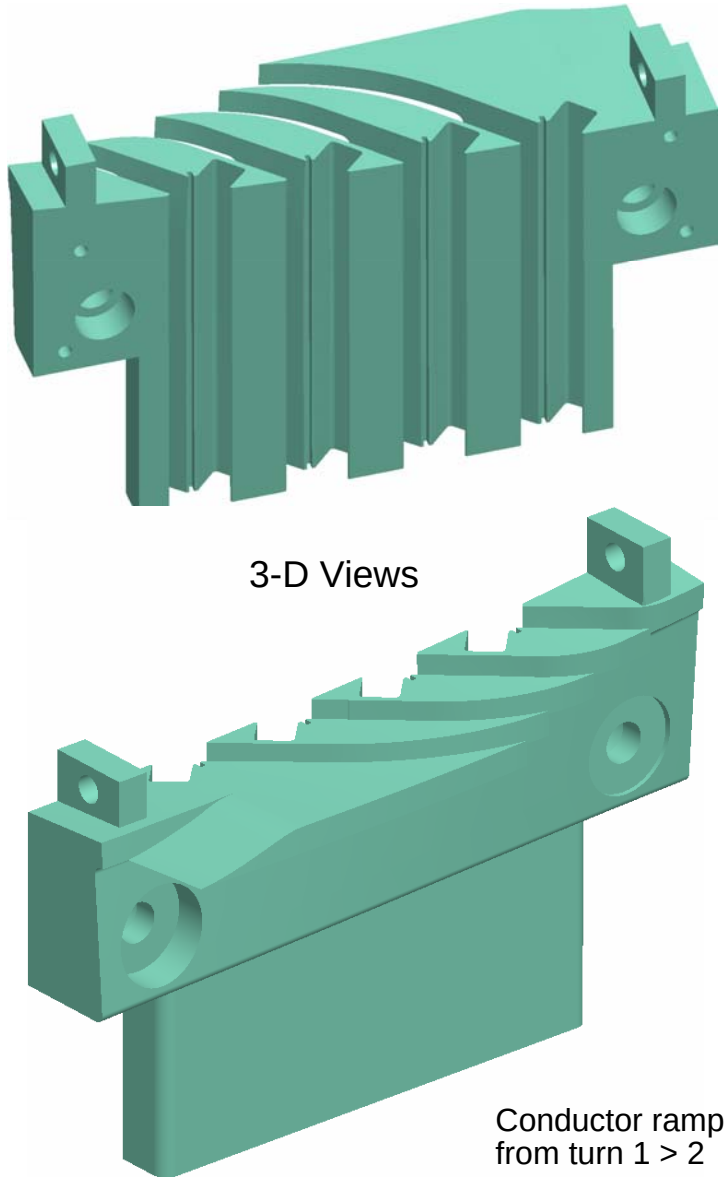


Left View

Side View

Right View

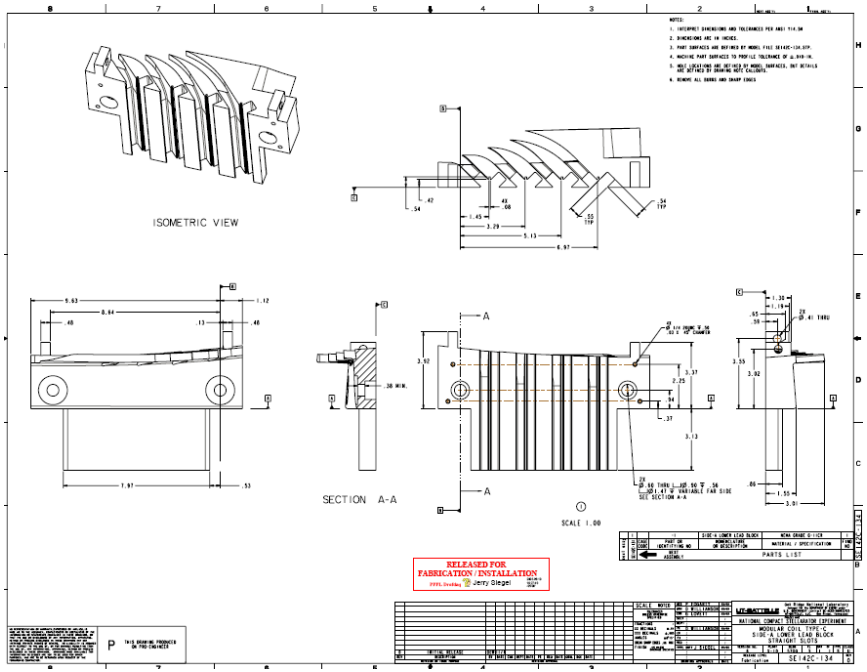
Bottom View



3-D Views

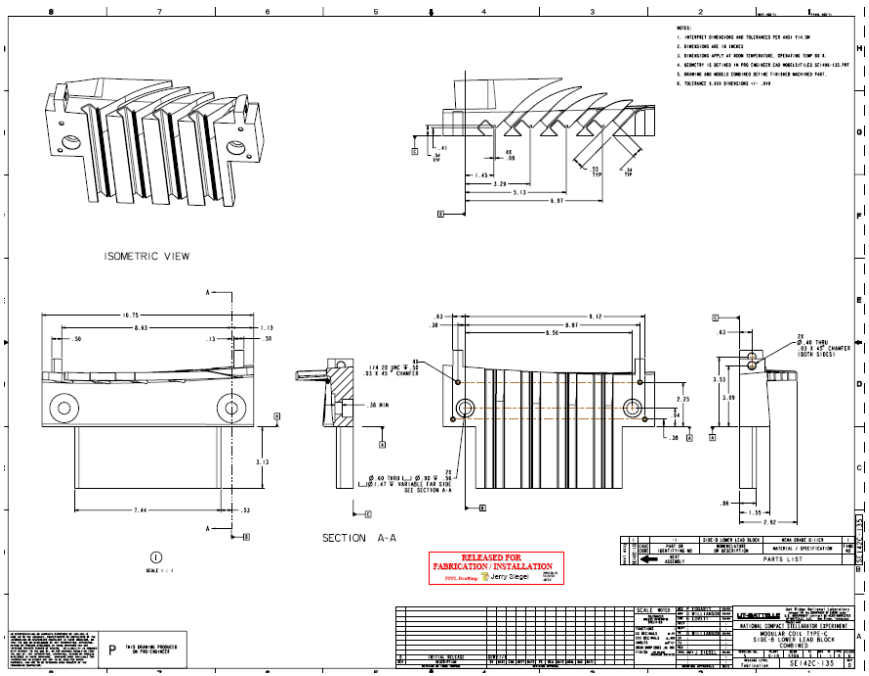
Conductor ramp
from turn 1 > 2

Lower Winding Blocks



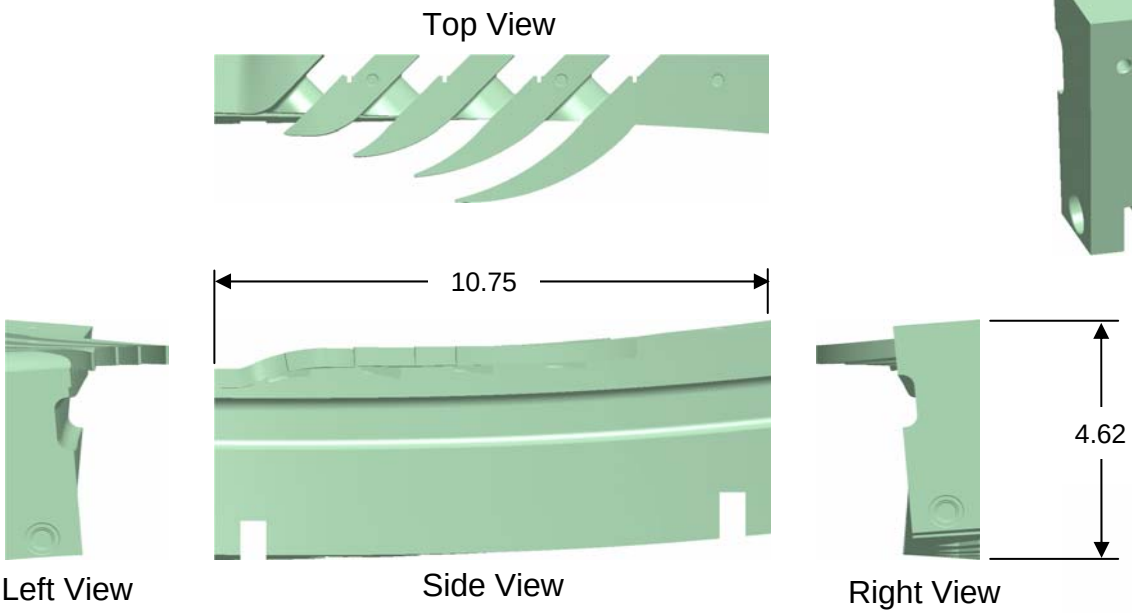
SE-142C-134

SE-142C-135

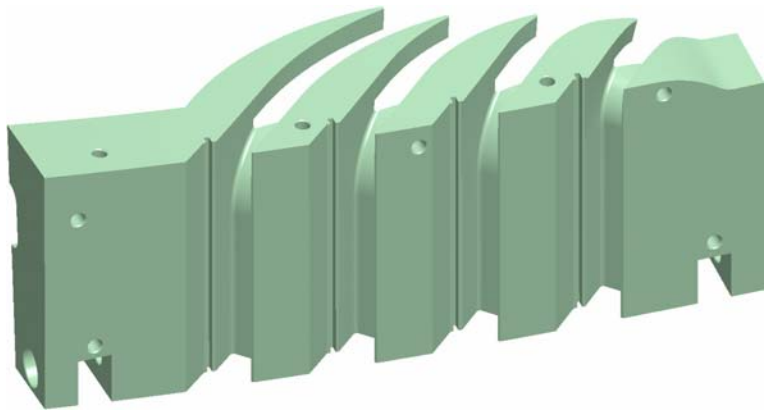


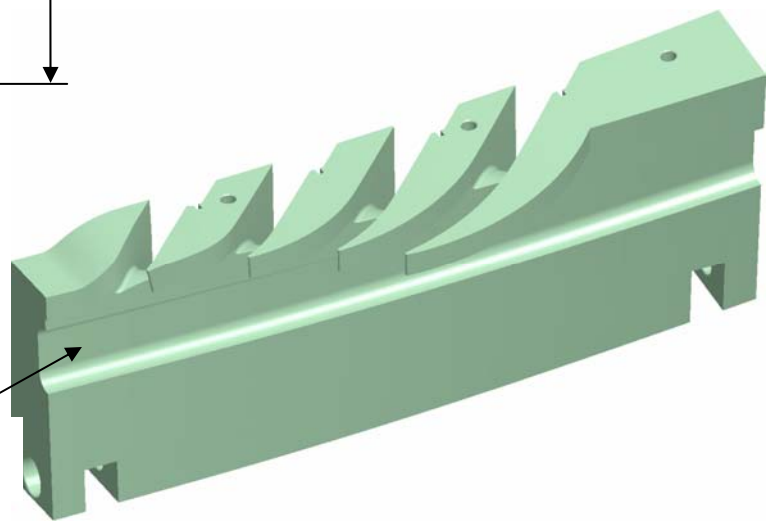
Side – A, Upper Winding Block

Side – A Dwg # SE142C-136
Side – B Dwg # SE142C-137

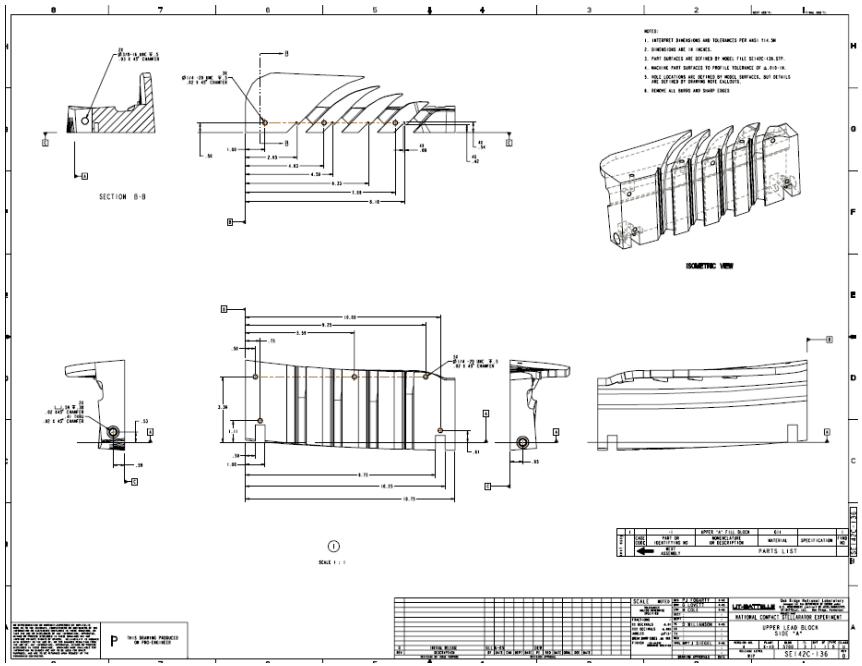


3-D Views



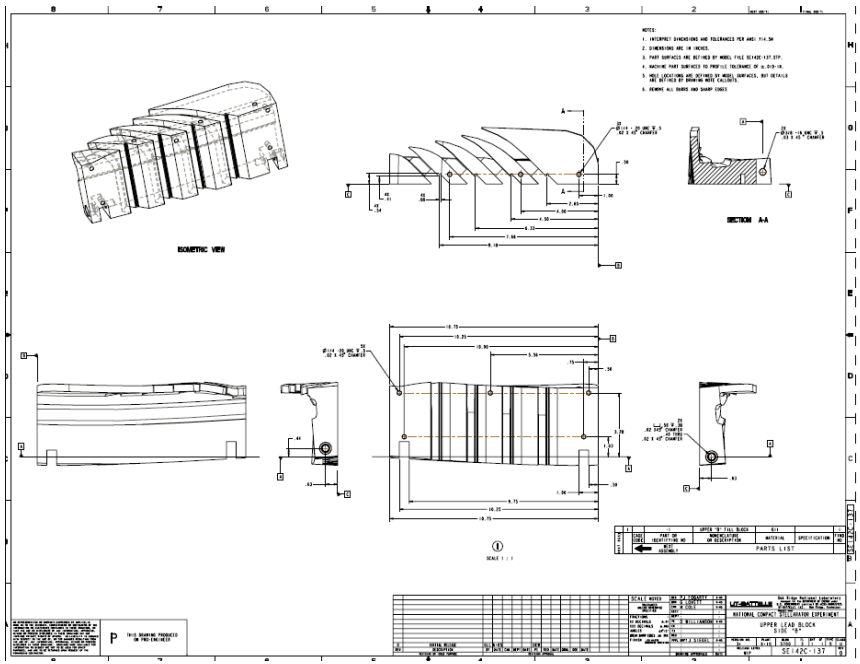


Upper Winding Blocks

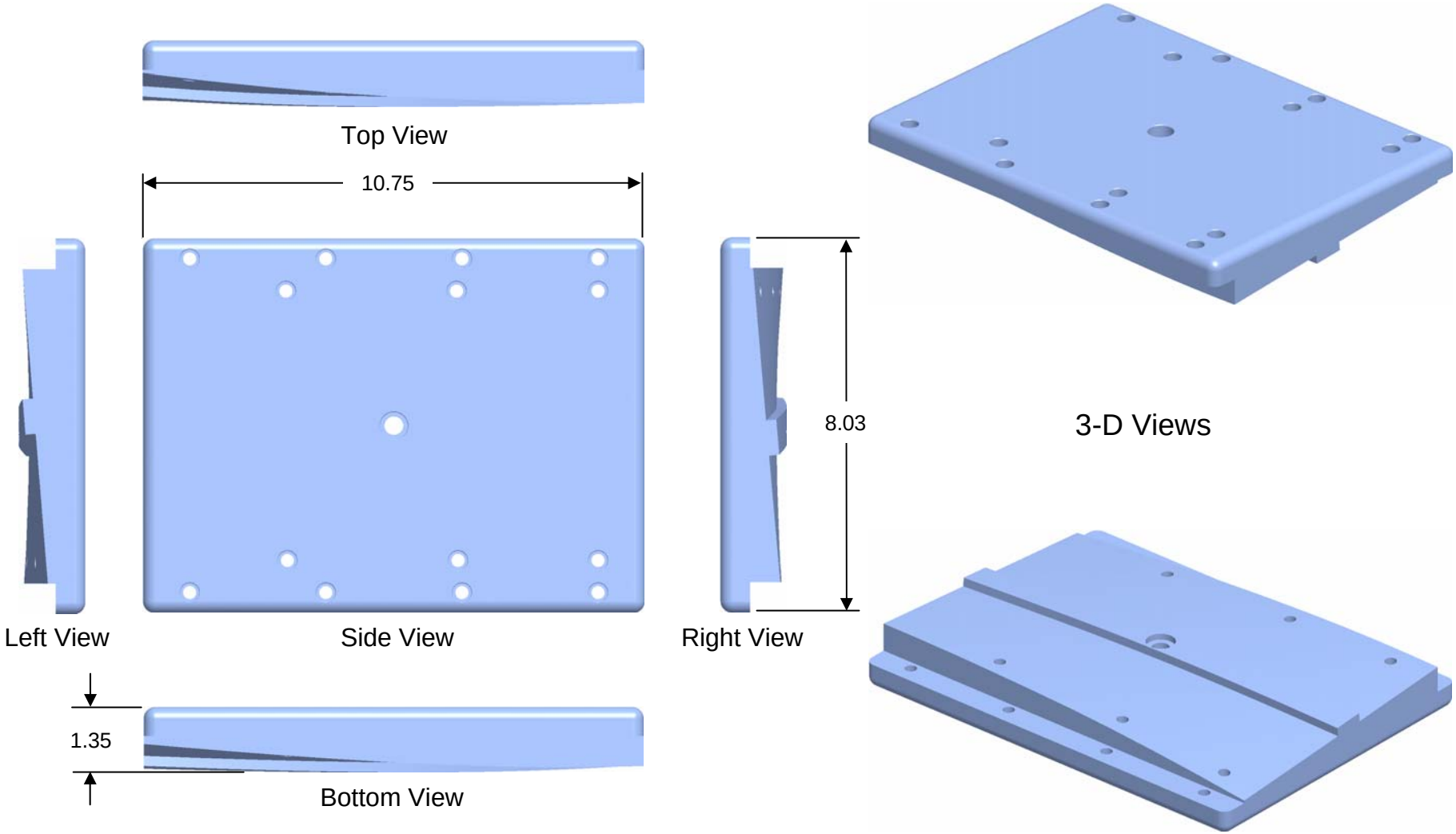


SE-142C-136

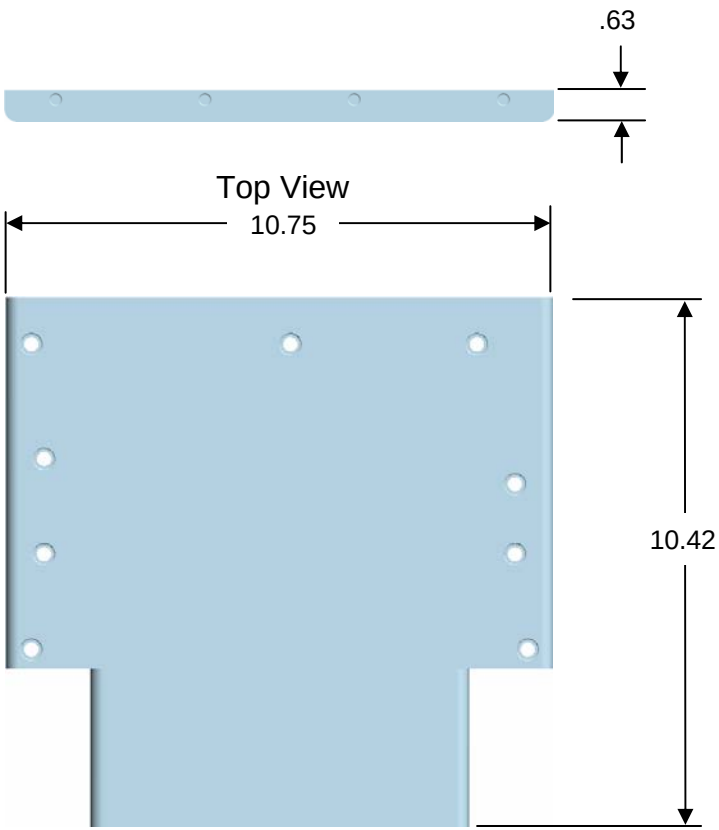
SE-142C-137

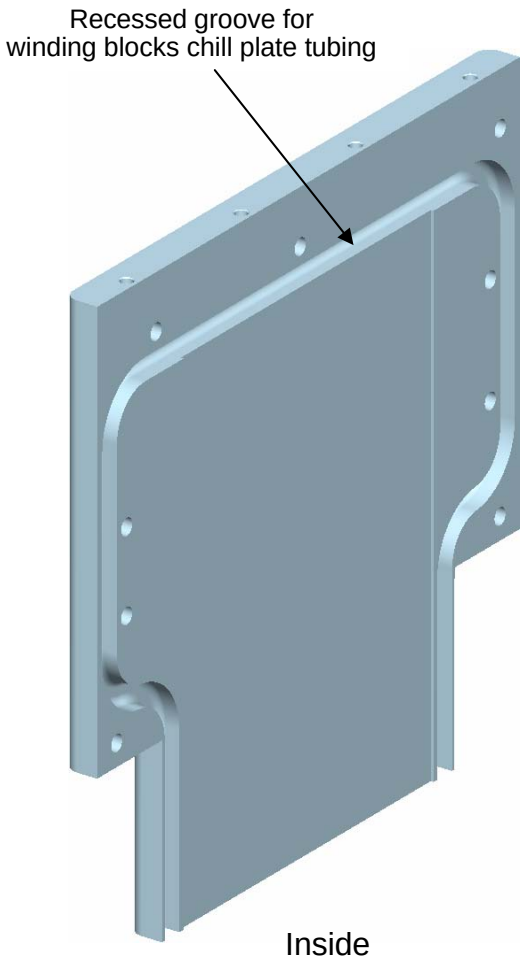


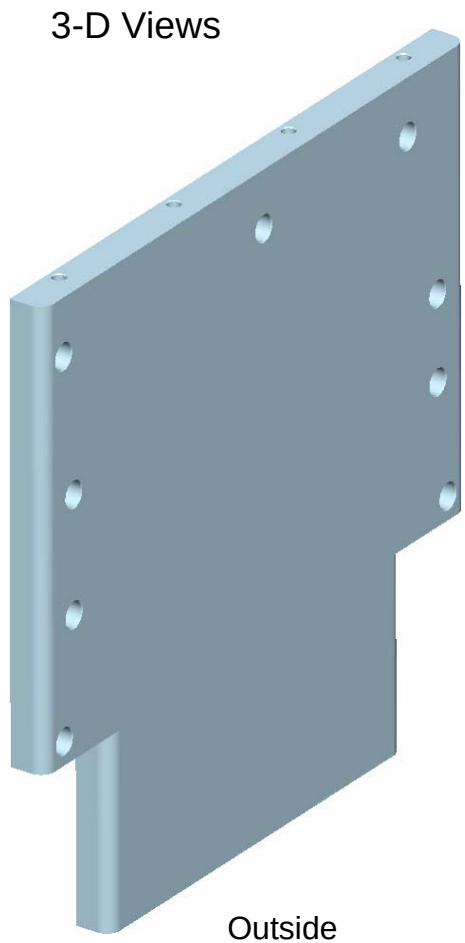
Top Plate


Top View
10.75
Left View
Side View
Right View
8.03
1.35
Bottom View
3-D Views

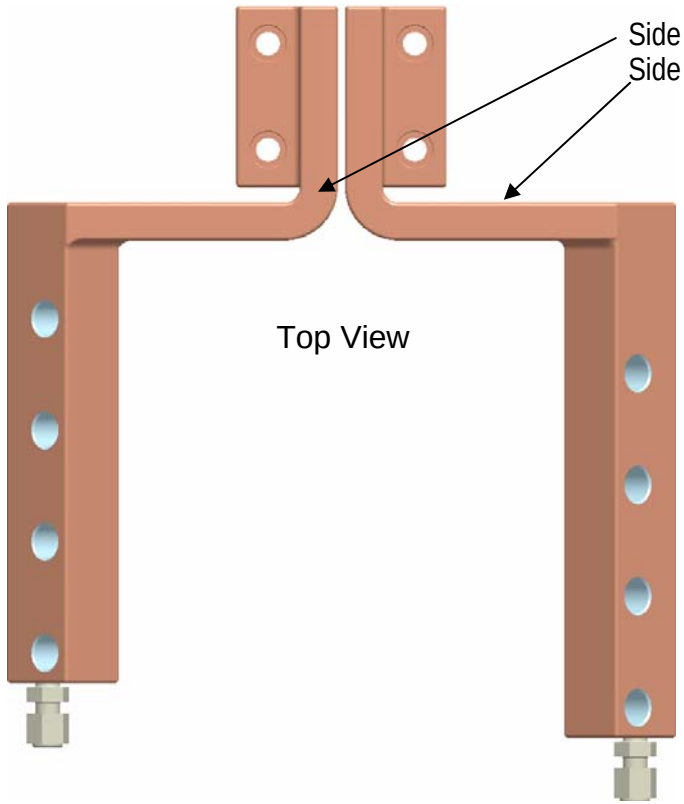
Side Plate

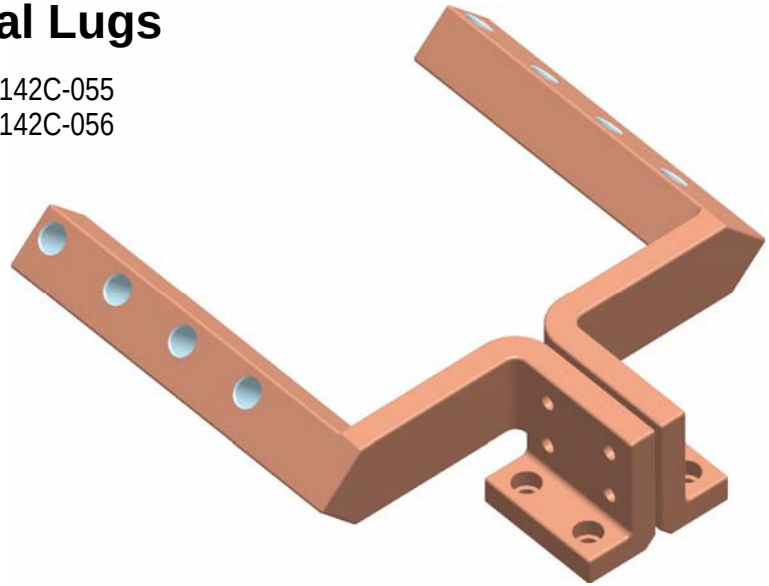

.63
Top View
10.75
10.42


Recessed groove for
winding blocks chill plate tubing
Inside

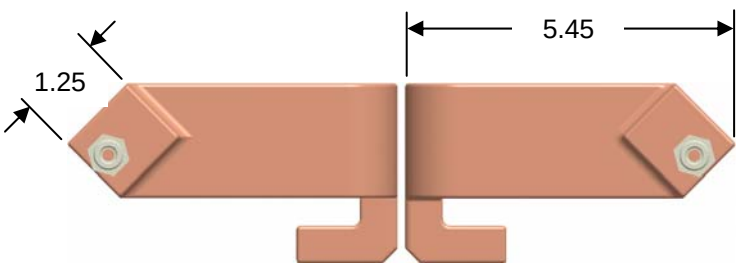

3-D Views
Outside

Terminal Lugs

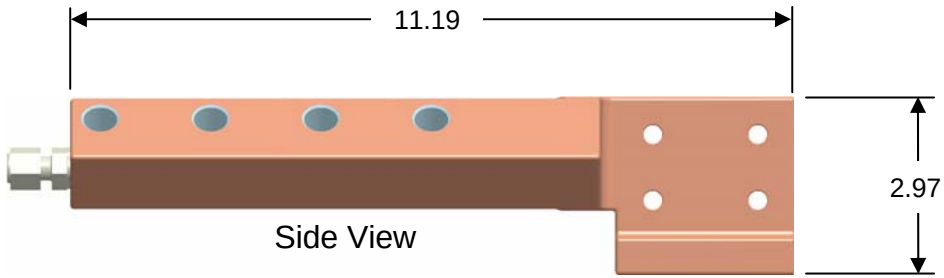




3-D View

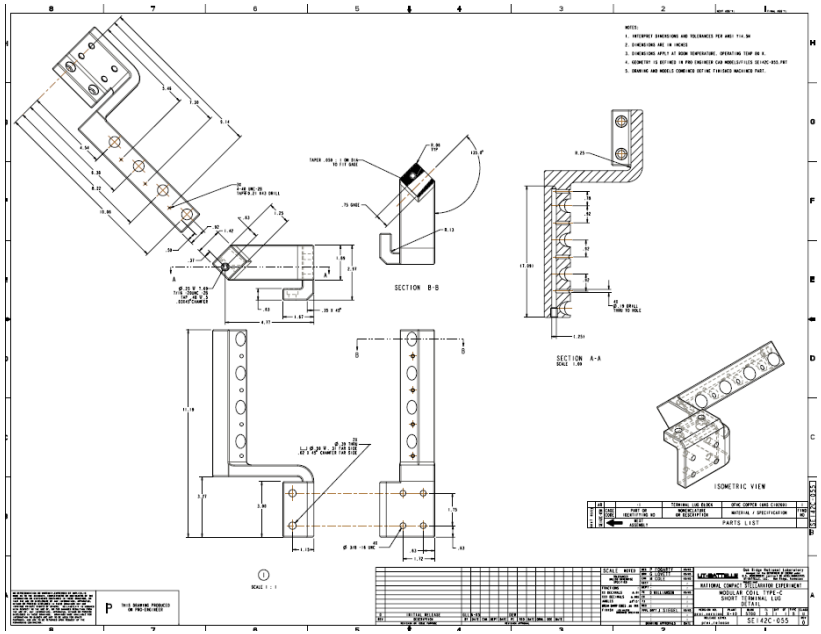


Front View



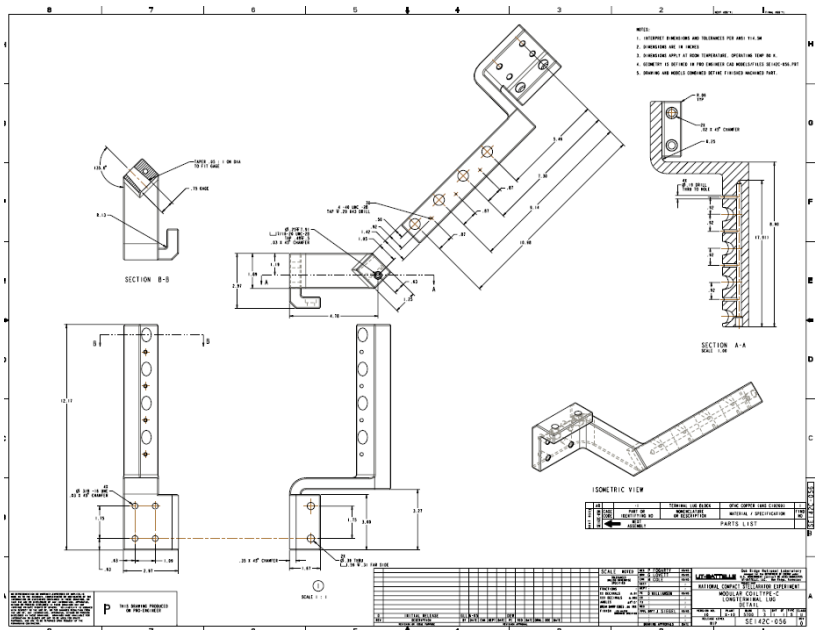
Side View

Terminal Lugs



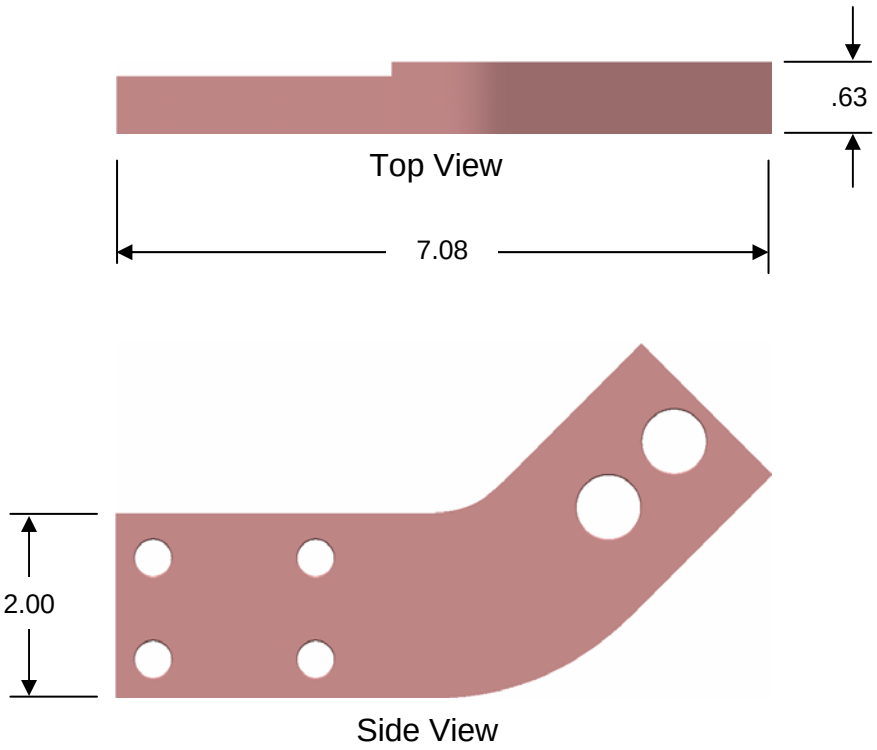
SE-142C-055

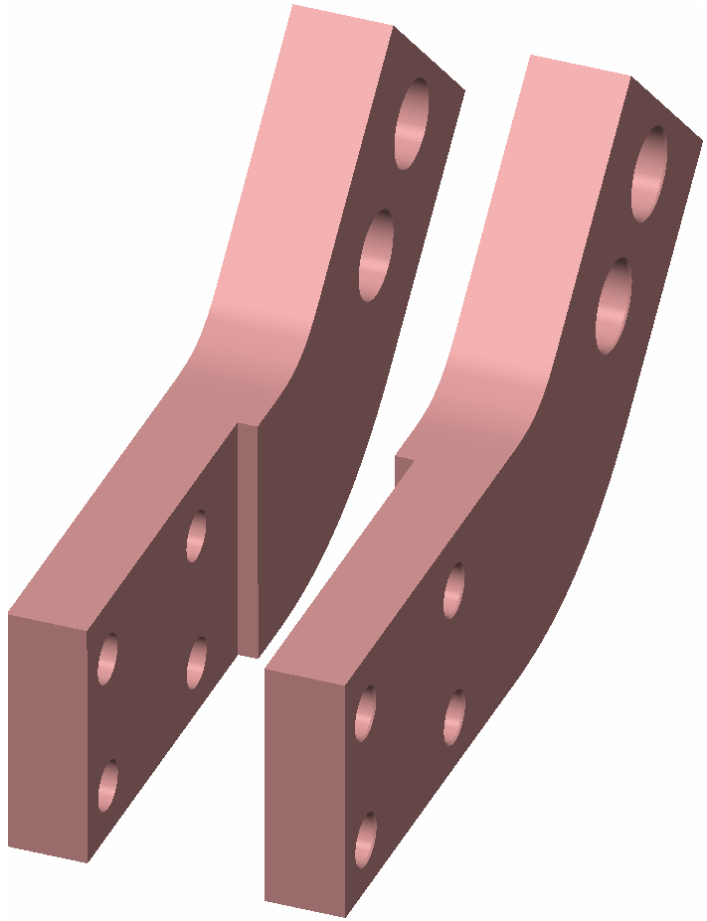
SE-142C-056



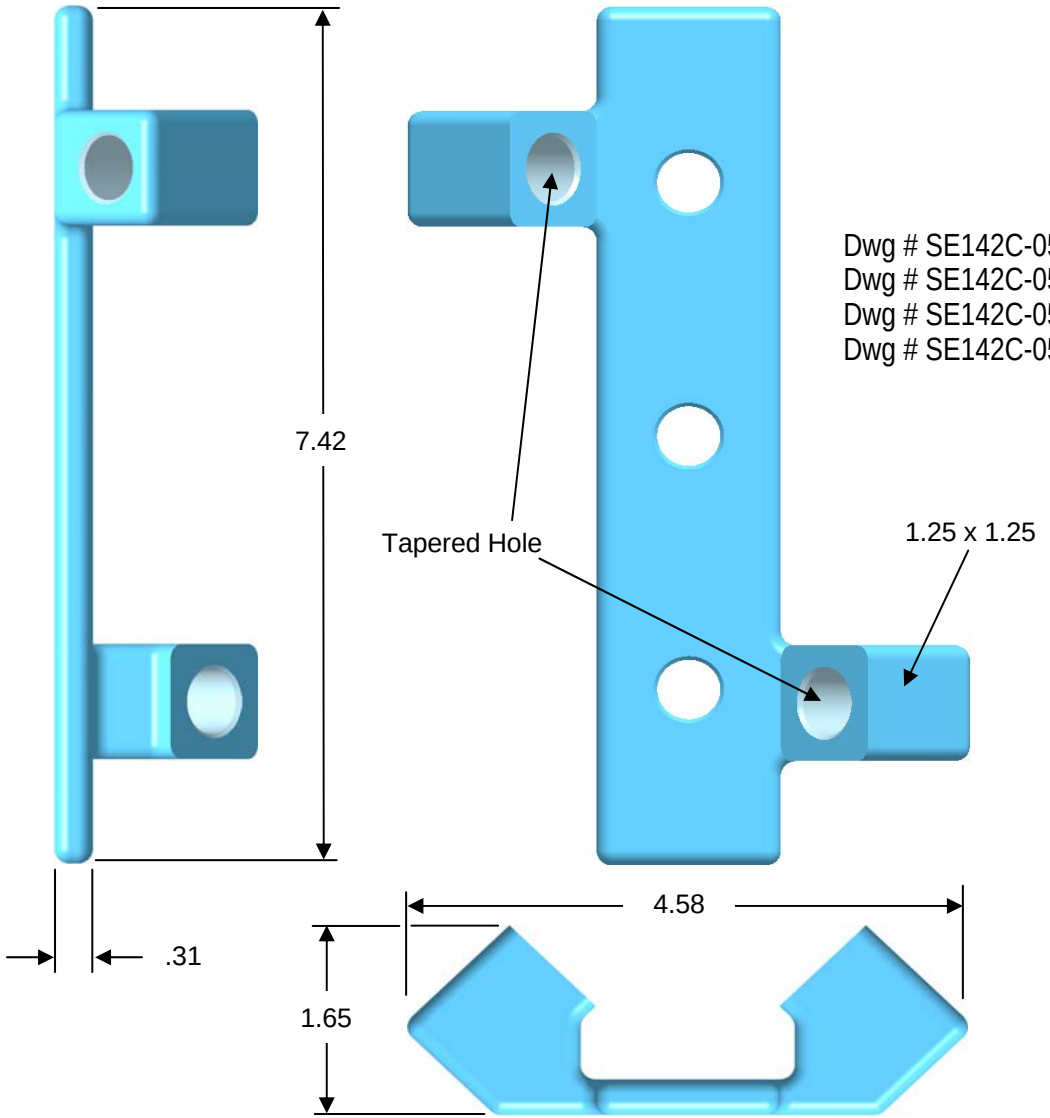
Terminal Splice Lugs

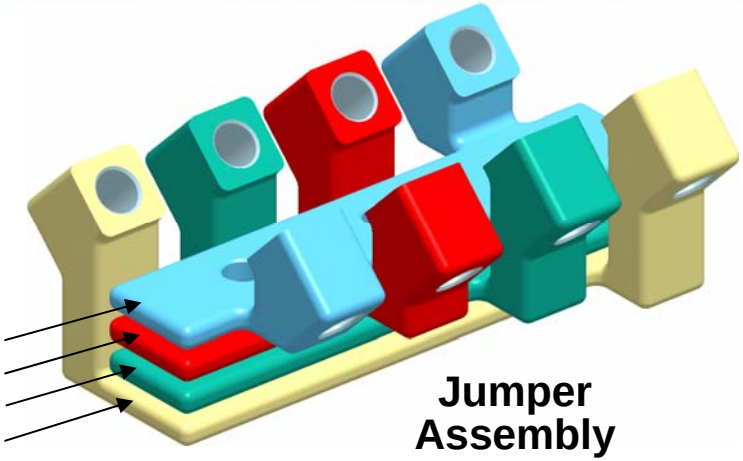
Side – A Dwg # SE142C-263
Side – B Dwg # SE142C-264





Jumper - 4

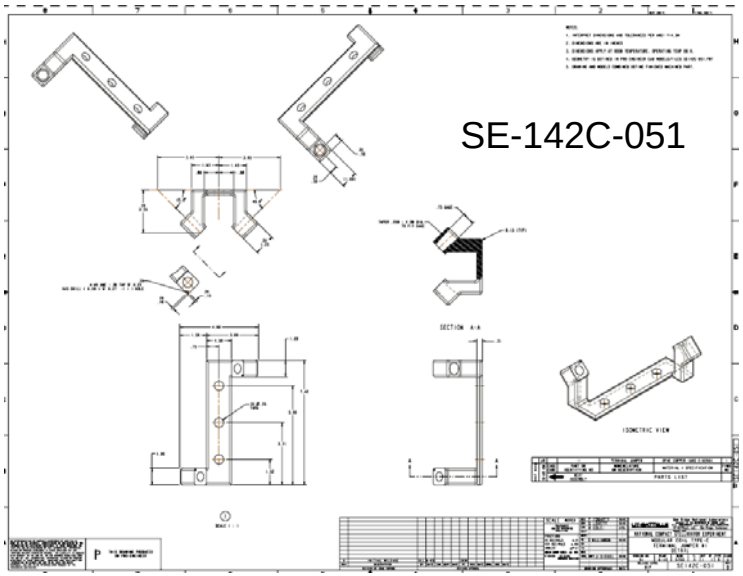


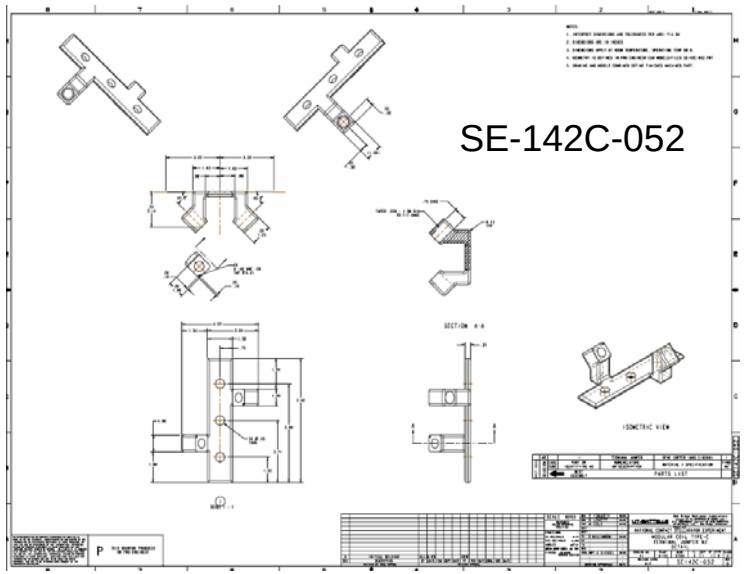


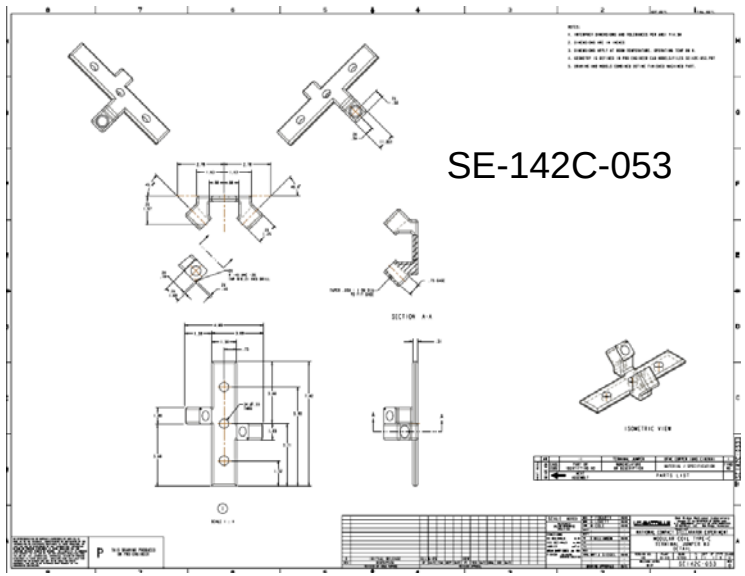
Jumper Assembly

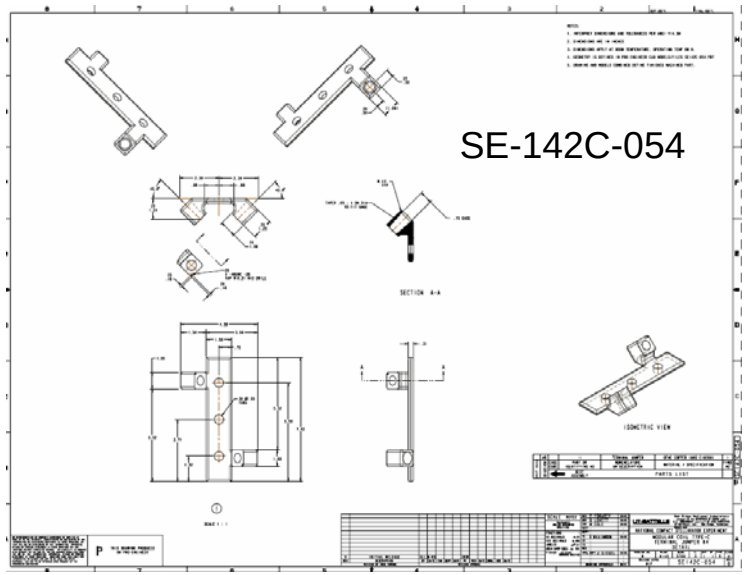
Make as a casting

Terminal Jumpers

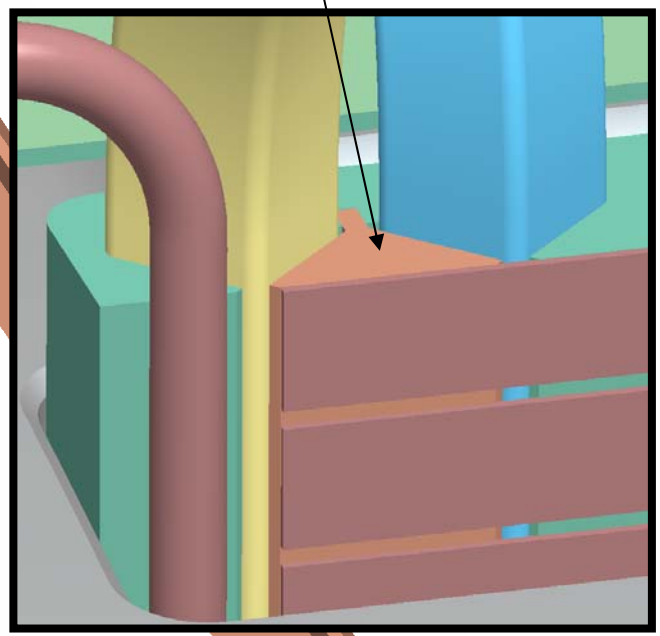


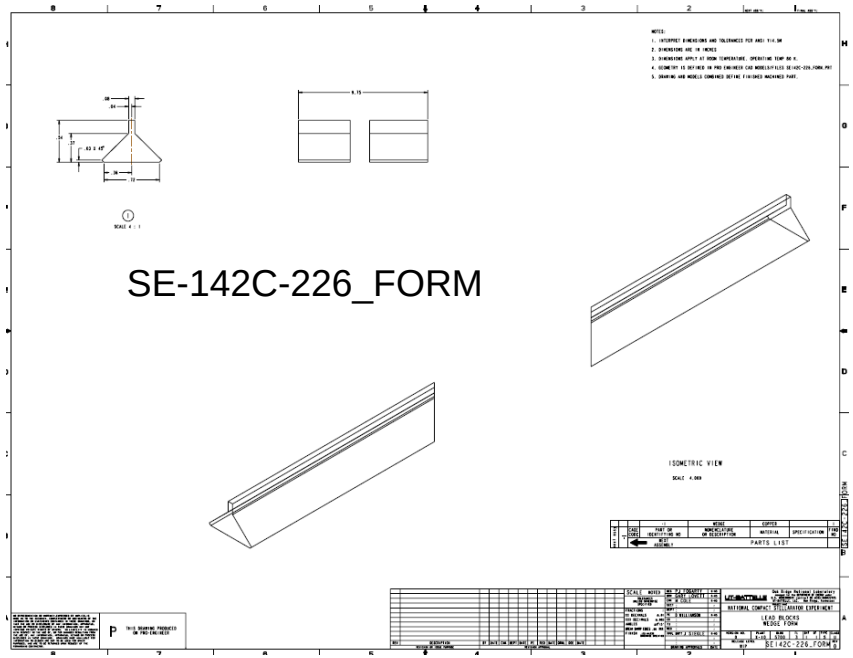




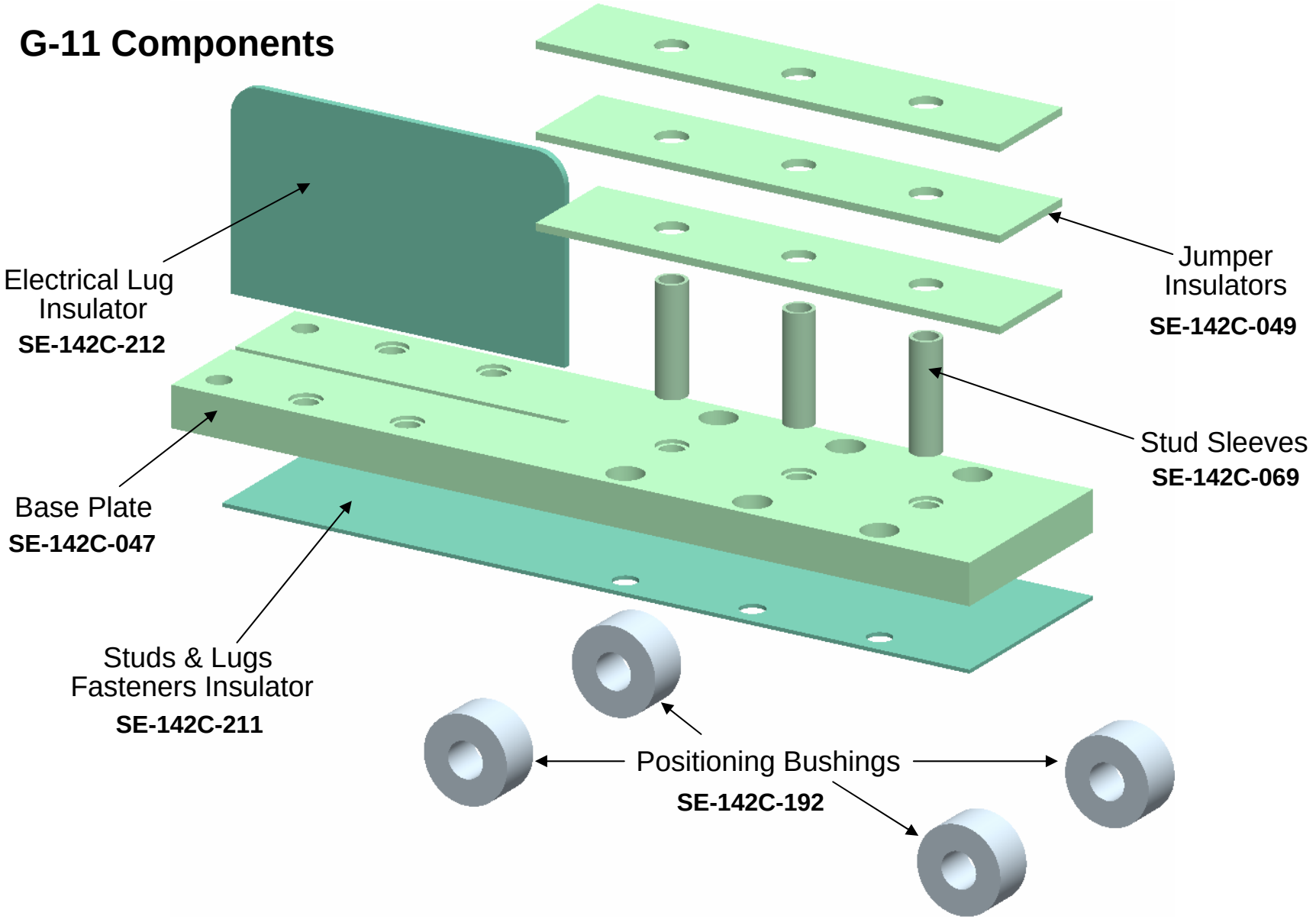


Leads Filler Strip

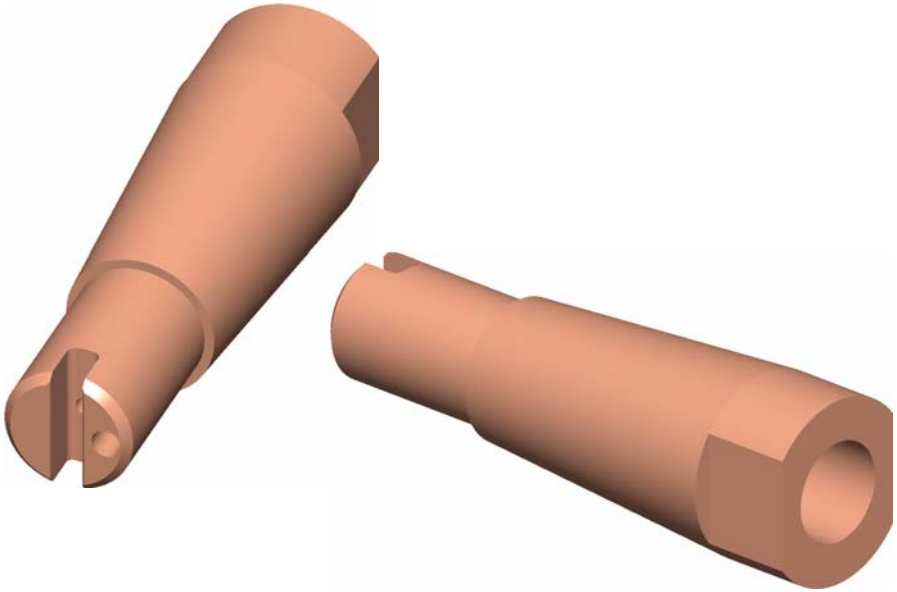


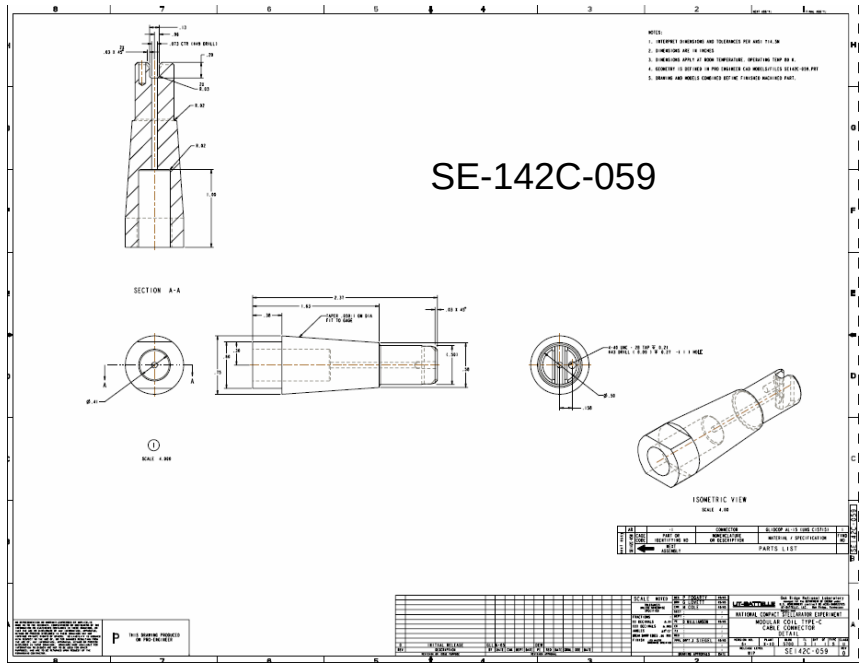


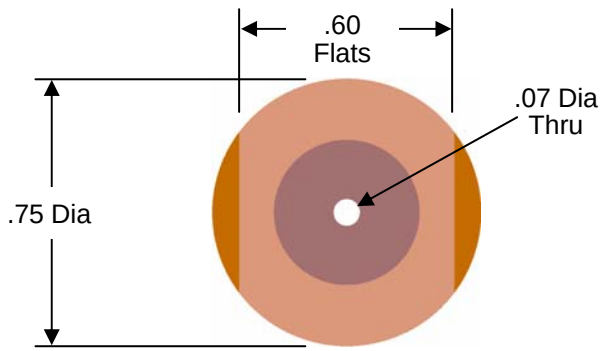
G-11 Components

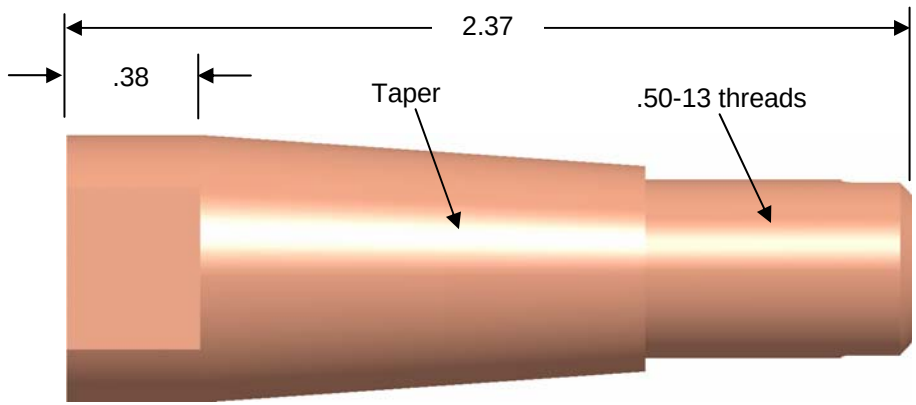


Conductor Lead Nosecone









Da END