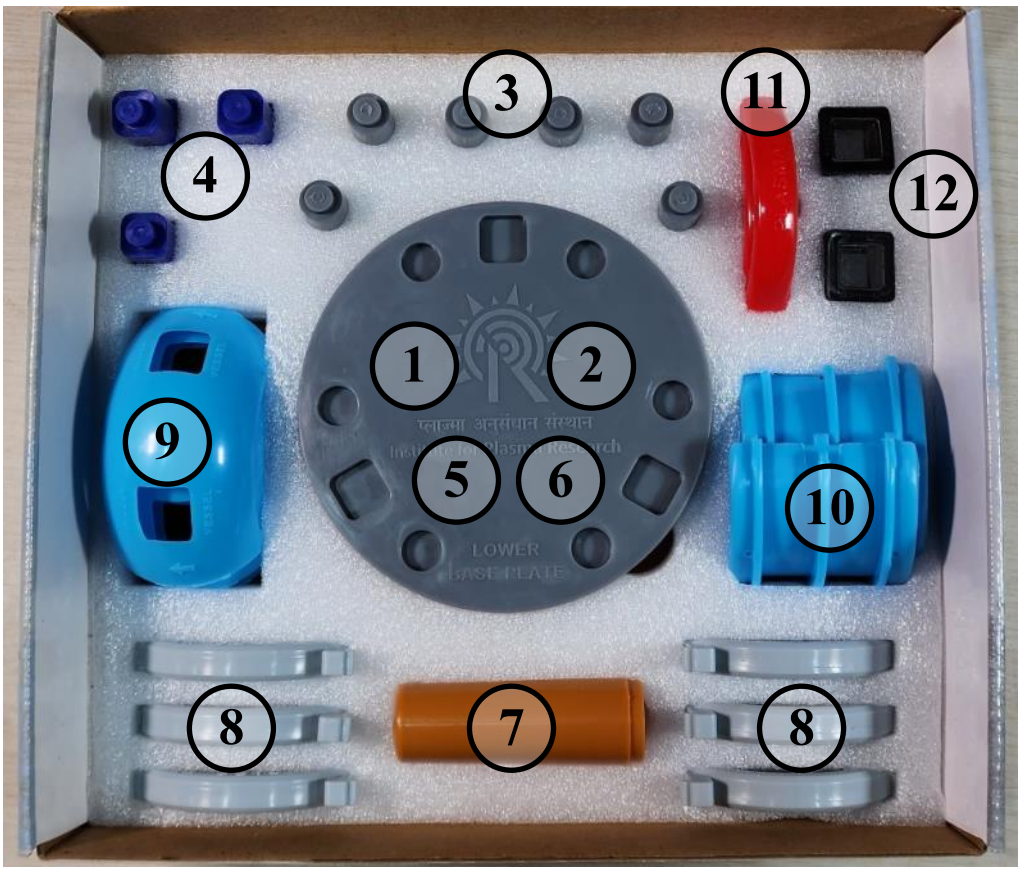
Assembly of the TOKOTOY

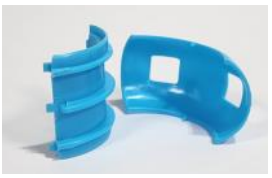
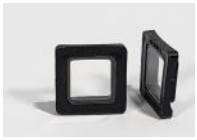
The TokoToy assembly can be completed in ~10 mins following the 14 steps detailed below. No tools are required for assembly.



Part No.	Name of the Part	Number of
01	Lower Base Plate	01
02	Upper Base Plate	01
03	Support Pillars	06
04	Vacuum Pump	03
05	PF coil (Upper)	01
06	PF coil (Lower)	01
07	Central Solenoid	01
08	Toroidal Field (TF) coil	06
09	Vacuum Vessel (Outer)	03
10	Vacuum Vessel (Inner)	03
11	Plasma	03
12	Vacuum vessel windows	06

Please check to see all the parts are there in the box. There should be a total of **35 parts**. Parts 1, 2, 5 and 6 and stacked one on top of the other. When the box is opened ONLY Part 1 will be visible.

Part No.	Name of the Part	Image
01	Lower Base Plate	
02	Upper Base Plate	
03	Support Pillars	
04	Vacuum Pump	
05, 06	PF coil (Upper & Lower)	

Part No.	Name of the Part	Image
07	Central Solenoid	
08	Toroidal Field (TF) coil	
09, 10	Vacuum Vessel (Inner & Outer)	
11	Plasma	
12	Vacuum vessel windows	

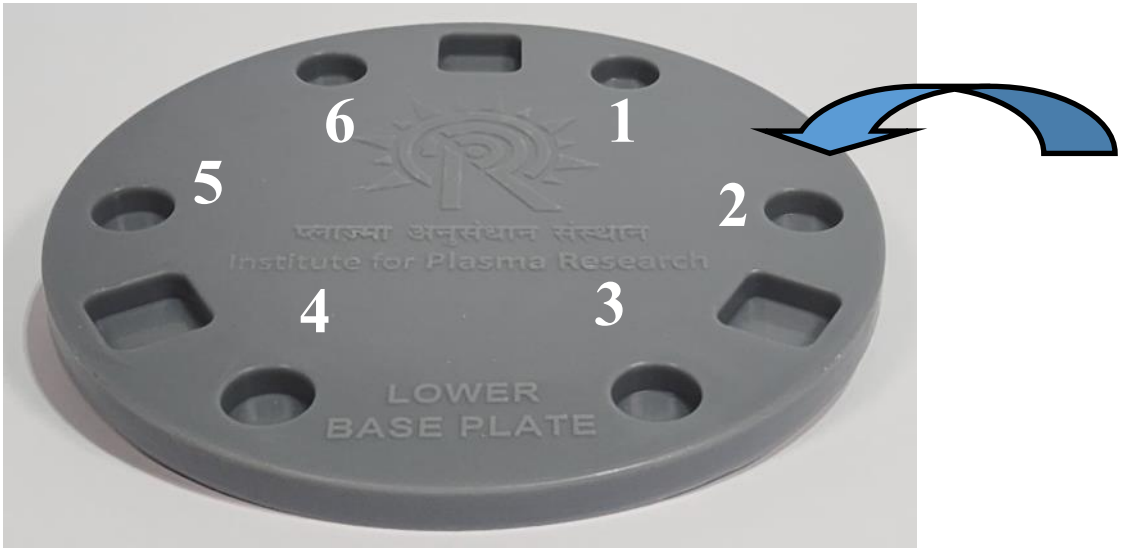
The **TokoToy** parts are made of injection molded polypropylene and certain parts could end up having a slightly incorrect fit due to temperature induced warping of the plastic material. Slight filing of the ill-fitting part with some sand paper or file can solve the problem.

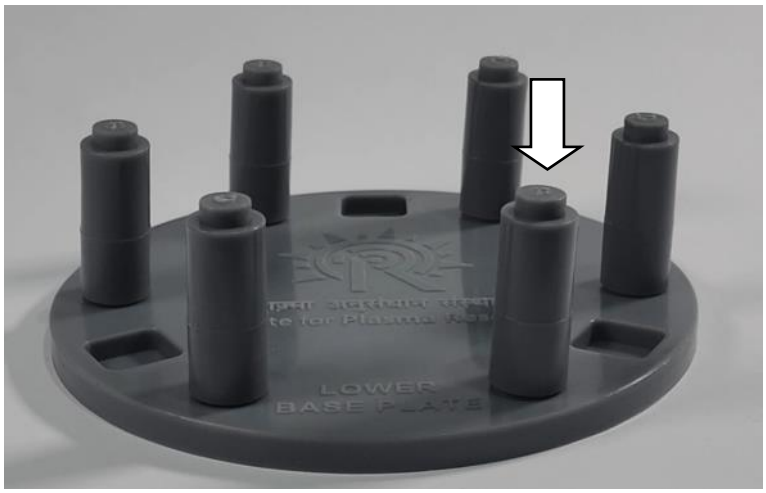
WARNING : This toy has parts that can choke. Do not chew or swallow!
Not suitable for children below 12 years.

For any queries regarding the TokoToy, please contact <outreach@ipr.res.in>
Website : **http://www.ipr.res.in/outreach/documents/tokotoy**

STEP - 1,2

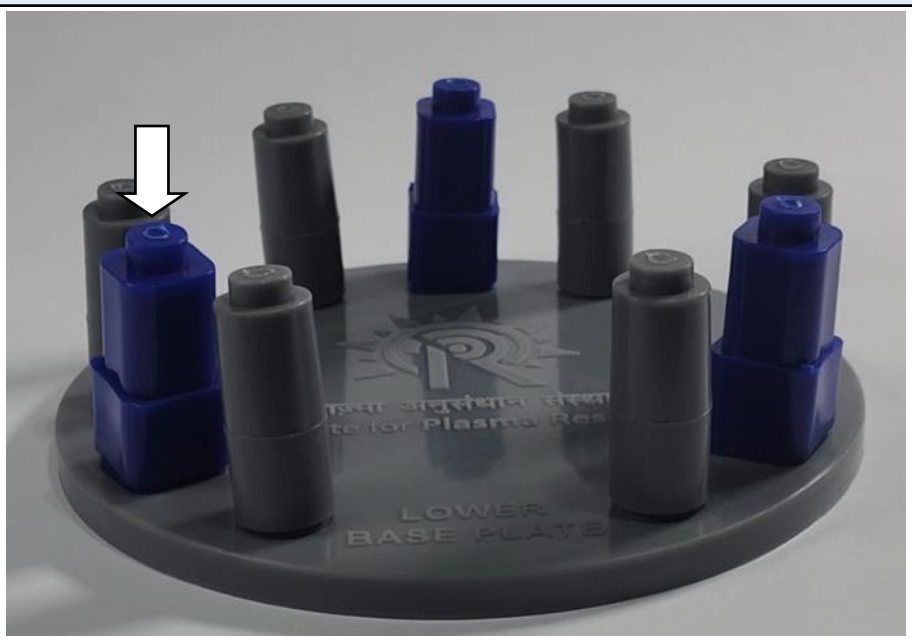
Take the SIX support structure stubs and place them on to the round receptacles on the Lower Base Plate. Push-fit then to ensure that they are tight and straight.





STEP - 3

Take the THREE vacuum pump blocks into the three square receptacles on the Lower Base Plate. Push-fit them to ensure that they are tight and straight.



STEP - 4

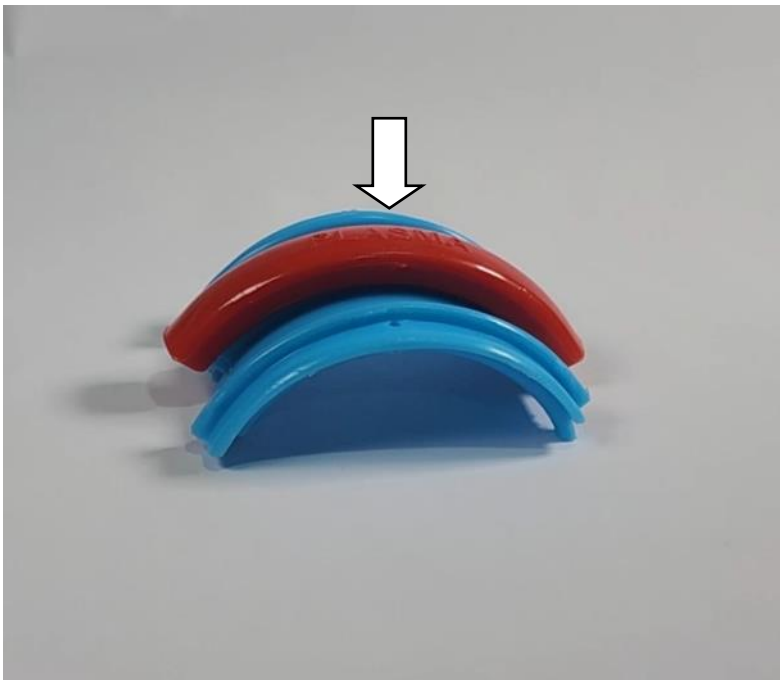
Take the upper base plate and push fit it on to the support system and vacuum pump blocks mounted on the lower base plate. Some amount of adjustment will be needed to align all the stubs. Once aligned, push fit all the parts into position.

STEP - 5

Take the Poloidal Field (PF) coil and attach it to the upper base plate. This will snap fit into the grooves on the upper base plate. Since both these PF coils are identical, you can use any one of the two.

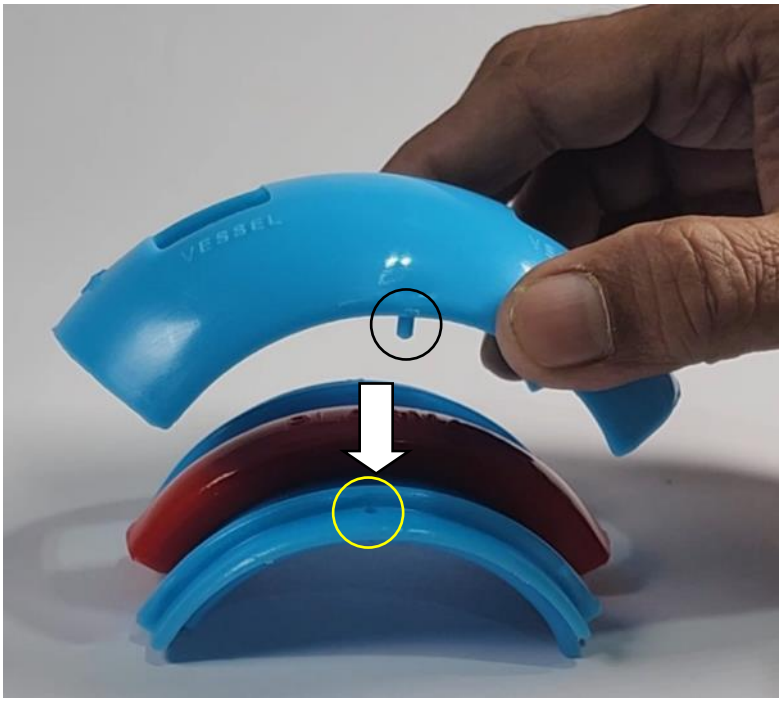
STEP - 6

Take the plasma block and attach it to the back plate of the vacuum vessel. The plasma block will snap on to the groove on the back plate.



STEP - 7

Take the outer vacuum vessel piece and snap-fit it to the inner vacuum vessel piece aligning the pins on the outer piece with the holes on the inner vacuum vessel piece. Push fit it to snap in place.

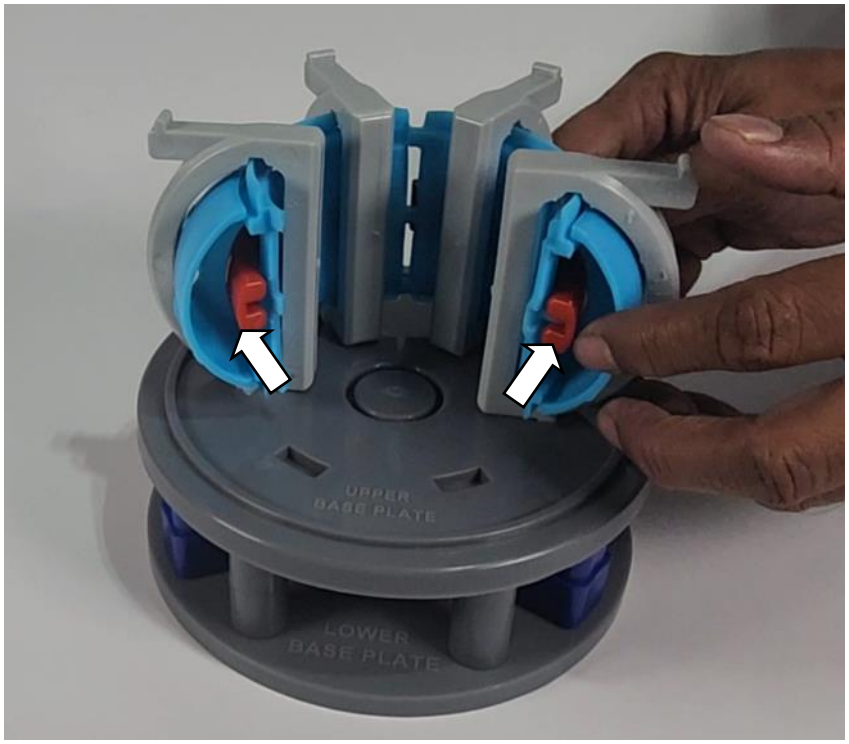


STEP - 8

Take FOUR of the Toroidal Field (TF) coil blocks and snap-fit them into the slots on the upper base plate. Push the blocks down and ensure that they stay tight and vertical.

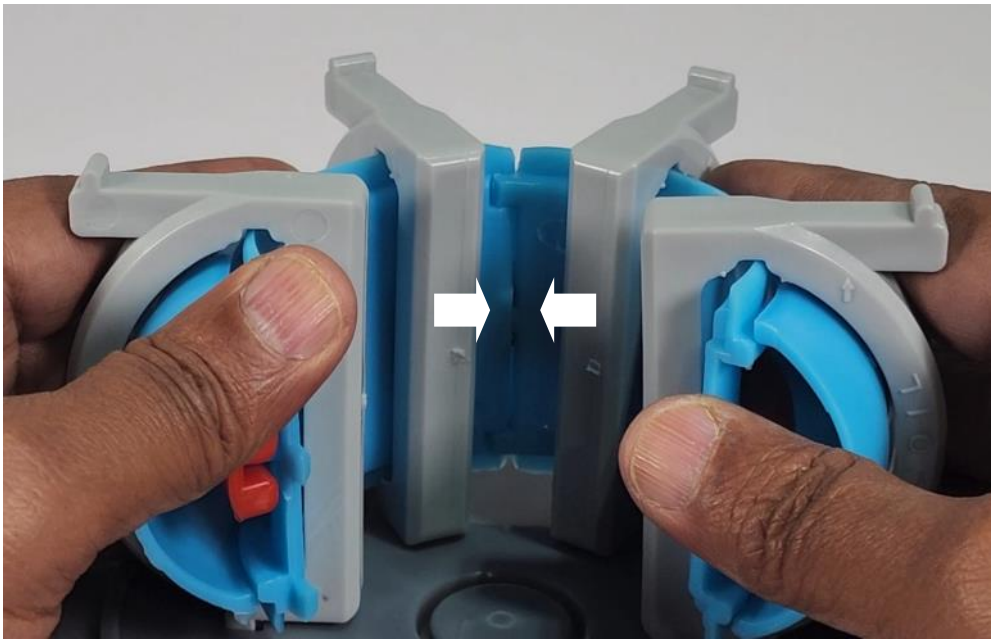
STEP - 9

One by one, slide two of the three vacuum vessel assemblies (from Step 7) through the TF coils. Please make sure that the snapping pins at the ends of the vacuum vessel assembly are correctly aligned.



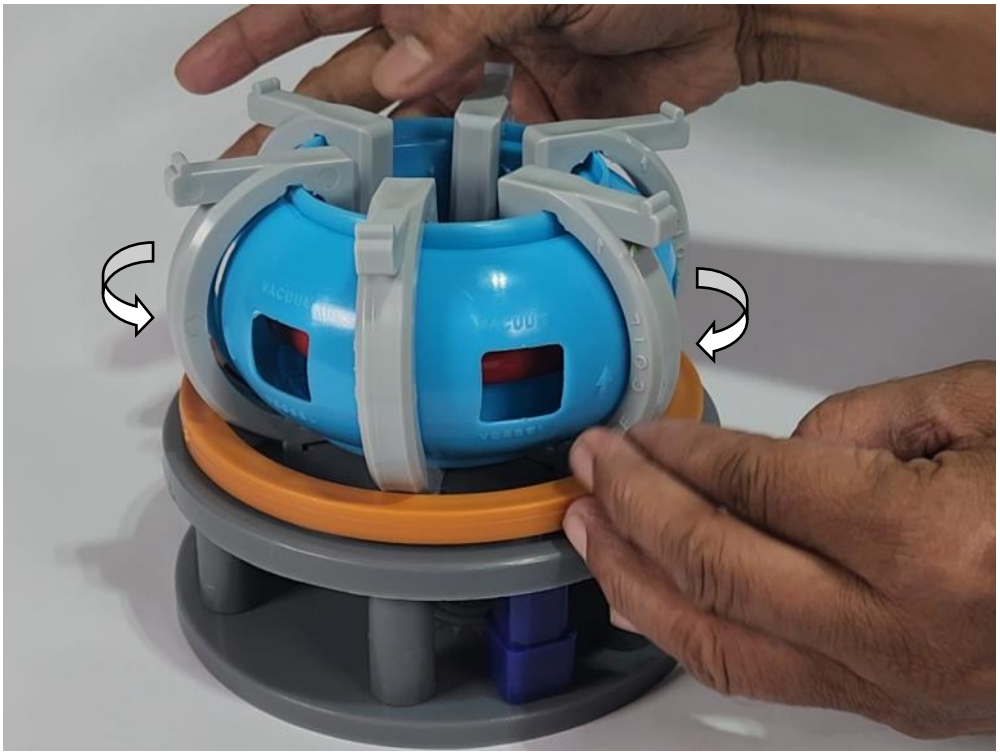
STEP - 10

Snap-fit the two vacuum vessel blocks to assemble the TF and vacuum vessel. Slide the remaining two TF coils on to the third vacuum vessel assembly and snap-fit the TF coils to the base. Then proceed to snap-fit the third vacuum vessel to the remaining two previously assembled vacuum vessels.



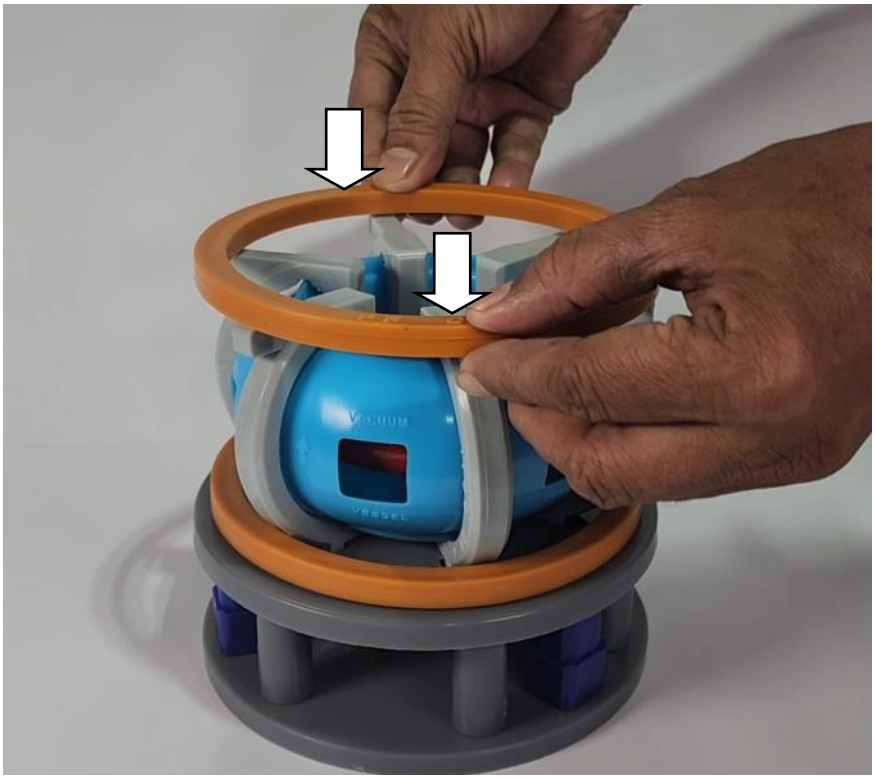
STEP - 11

After joining all the three vacuum vessel components, gaps at the joints between them would be visible. Now, slide the vacuum vessel components inside the TF coils to ensure that they are positioned in such a way that the gaps between the vessel sections are not visible anymore.



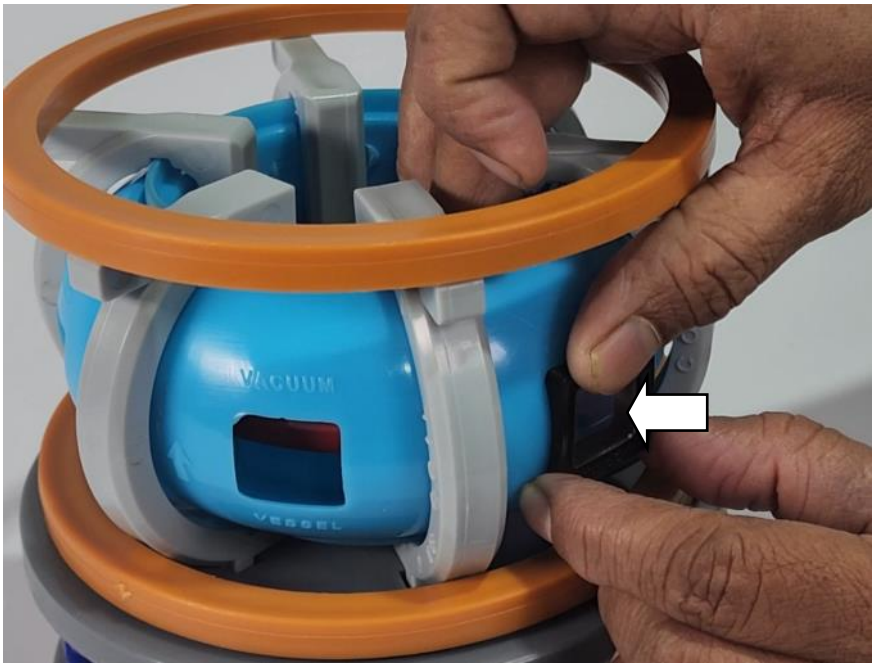
STEP - 12

Take the other Poloidal Field (PF) Coil and snap-fit it on to the stubs provided on the top of the six TF coils. Press down to push fit and fix.



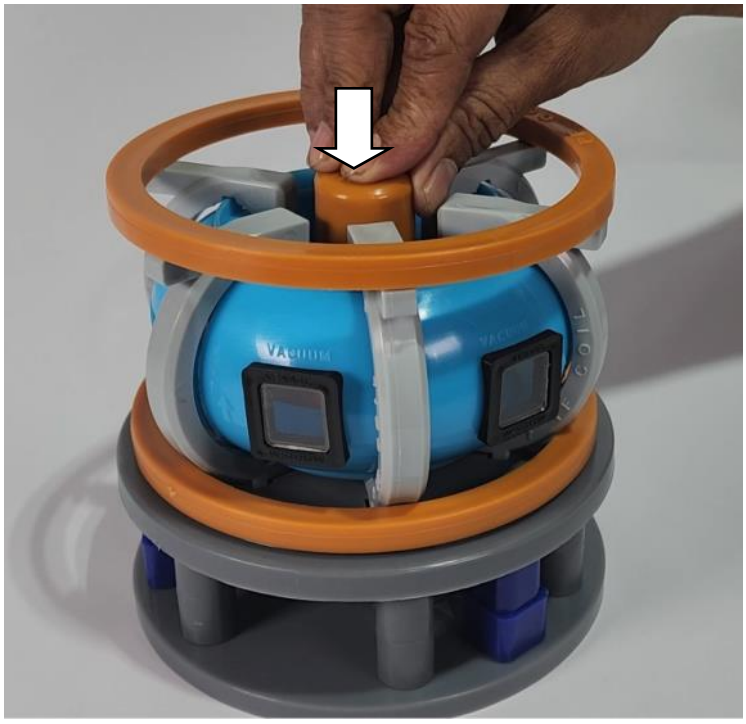
STEP - 13

Take the SIX vacuum vessel windows and snap-fix them on to the square holes provided on the outer vacuum vessel. The curvature of the windows must be matched with the curvature of the vacuum vessel while snap-fitting the windows.



STEP - 14

Take the Central Solenoid block and push-fit it on to the groove provided on upper base plate, in the vertical centre of the device.



CONGRATULATIONS !

If you have reached this far, you have now completed the build of the TokoToy ! Before finishing, please check if all the parts are fitting well. If assembled correctly, one can actually lift the tokamak by simply holding the central solenoid block!