

May 29, 2018

Version 1

ARMS_partB_Assembly V.1



Forked from [ARMS_partB_Assembly](#)

DOI

dx.doi.org/10.17504/protocols.io.qisduue

Laetitia Plaisance¹

¹National Museum of Natural History, Smithsonian Institution

Global ARMS Program



Laetitia Plaisance

National Museum of Natural History, Smithsonian Institution



Create & collaborate more with a free account

Edit and publish protocols, collaborate in communities, share insights through comments, and track progress with run records.

Create free account

OPEN  ACCESS



DOI: <https://dx.doi.org/10.17504/protocols.io.qisduue>

External link: <http://www.oceanarms.org/protocols/arms-assembly>

Protocol Citation: Laetitia Plaisance 2018. ARMS_partB_Assembly. **protocols.io**

<https://dx.doi.org/10.17504/protocols.io.qisduue>

License: This is an open access protocol distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Working

This protocol describes how to assemble an ARMS unit. It includes a parts and material list, a tutorial video link and step by step instructions with photo of an assembled ARMS.

Created: May 29, 2018

Last Modified: May 29, 2018

Protocol Integer ID: 12594

Keywords: arms units from the individual part, base plate in order, individual part, bottom of the arm, arms unit, base plate, arm, first plate, spaces for organism, compartment, first space, flat on the base plate

Abstract

During this step, you will be assembling the ARMS units from the individual parts. The unit is a stack of alternating open layers and closed layers. The closed layers contain a cross-shaped structure dividing the ARMS in four compartments, providing 'cave-like' spaces for organisms. The very first space, at the bottom of the ARMS **should always be a closed layer** and the top layer will be open.

Another important feature is that the first plate should lay flat on the base plate. No space should be created between the first plate and the base plate in order to avoid creating an extra space for colonization.

Attachments



[Assembly Protocol.pdf](#)



[ARMS schematic.pdf](#)

445KB

Guidelines

The numbering of the ARMS plates starts with the bottom plate, directly in contact with the base plate. This bottom plate is plate #1. The upper plate is plate #9.

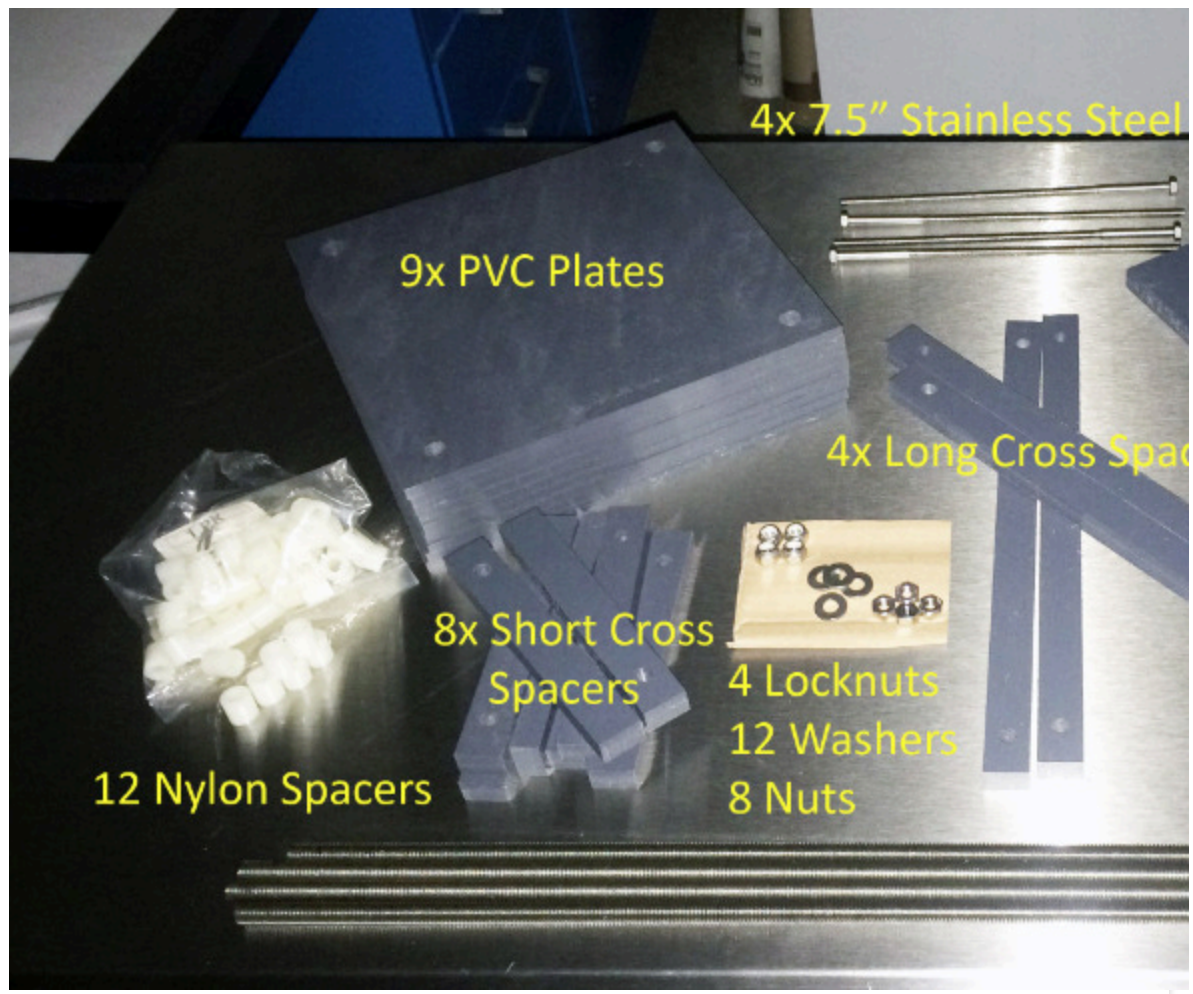
The very first space, at the bottom of the ARMS **should always be a closed layer** and the top layer will always be open.

The first plate should lay flat on the base plate. No space should be created between the first plate and the base plate in order to avoid creating an extra space for colonization.

Troubleshooting

Assemble all the necessary material

- 1
 - 1 x PVC base plate (45cm x 35cm x 1.27cm)
 - 9 x PVC layer plates (22.5cm x 22.5cm x 0.63cm)
 - 4 x PVC long cross spacers (30cm x 2cm x 1.27cm)
 - 8 x PVC short cross spacers (14cm x 2cm x 1.27cm)
 - 4 x 7½ or 8-inch stainless steel bolts – minimum 2" thread length
 - 16 x ½-inch long Nylon spacers
 - 12 x ¼-inch stainless steel washers
 - 4 x ¼-inch stainless steel nuts
 - 4 x ¼-inch stainless steel nylon insert locknuts
 - 2 x 7/16-inch wrenches (11mm)
 - Silicon grease (we use Aqualube/Aquashield™)




Link to assembly video and file with exploded view

- 2 A four minute video of the full ARMS assembly is available here:

https://www.youtube.com/watch?v=_L_FuKQVXnY&t=141s

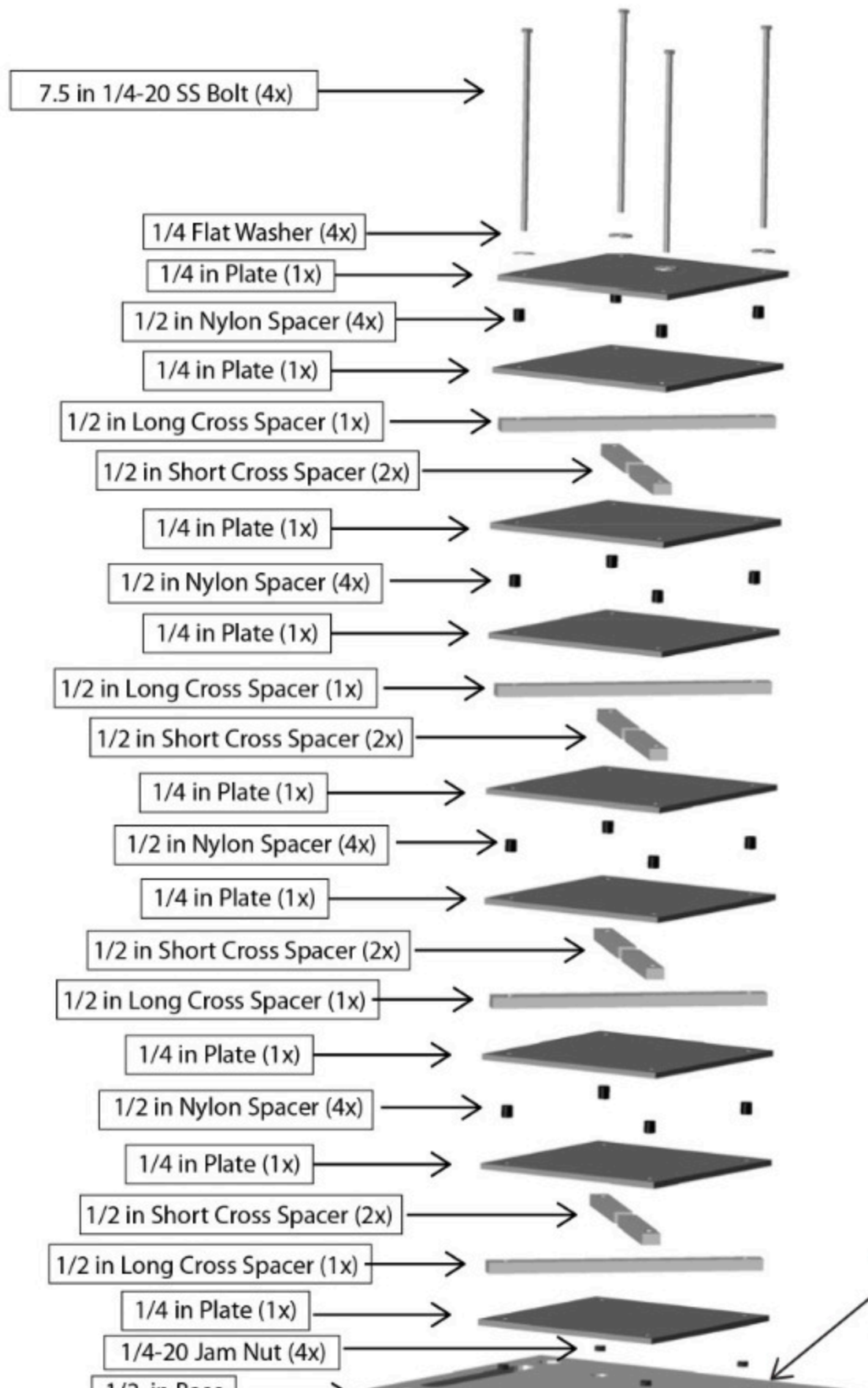
Files below include a two page **Assembly Protocol** with exploded view, **ARMS schematic** which includes the blueprints of the PVC parts.

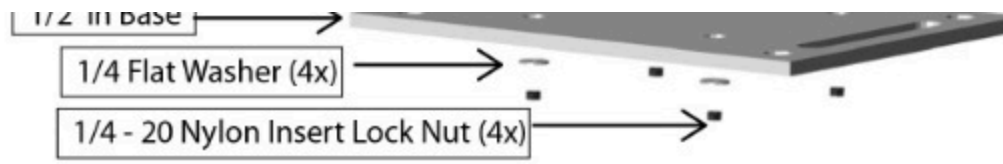
 assembly protocol.pdf

 arms schematic.pdf

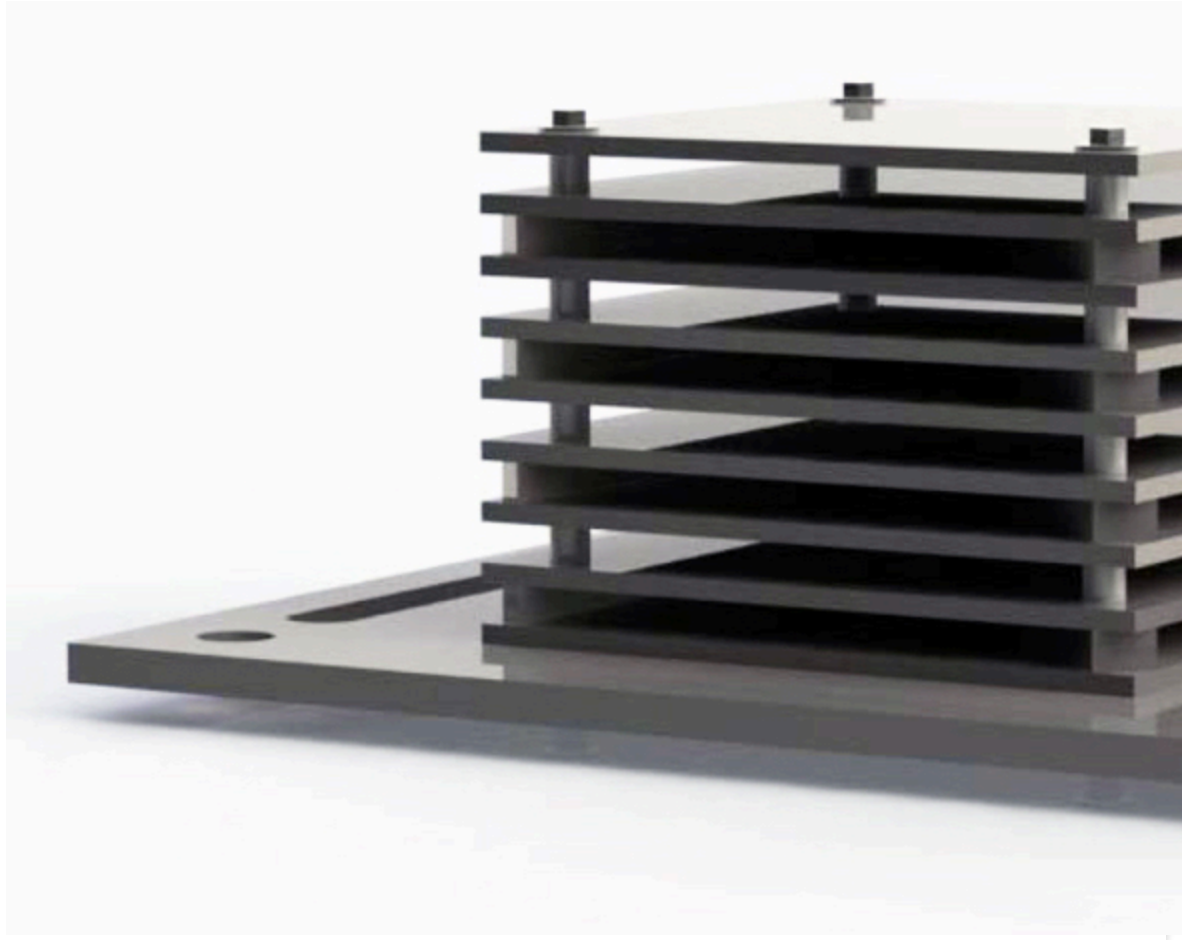
Assembly Procedure

- 3 Place a washer on each of the stainless steel bolts and run the four bolts with washers through the four corners of a singlelayer plate. Invert the plate so the bolt heads and washers are underneath and the bolts are sticking up through.
- 4 Slide a nylon spacer onto each bolt and add a second layer plate. This creates an open layer (this will become the top layer when you invert the entire stack onto the base plate later)*.
- 5 Slide a long cross spacer onto two bolts in opposite corners. Place two short cross spacers on each of the two remaining bolts (one each) in a way that they make contact with the long spacer at right angles. Add a third layer plate to create a closed layer.
- 6 Repeat steps 2 and 3 to alternate between open and closed layers until there are four of each.
- 7 Once the fourth closed layer is complete, put silicon grease to the threads of the bolts and add a washer and a nut to each bolt; tighten securely.
- 8 Place the base plate on the bolts with the counter-sunk side down. Coat the tips of the bolts in silicon grease again if needed. Add a washer and the locknut and tighten securely using the two wrenches - one to hold the bolt and the other to tighten the nut.






- 9 Invert the ARMS structure so the base plate is on the bottom. It is now fully assembled.



Note

The layer directly above the base plate should always be a closed layer. Make sure there is no space between the base plate and the first ARMS plate. The plate directly in contact with the base plate is the plate #1.

 00:15:00 ARMS Assembly