

WALT DISNEY WORLD®

PROJECT RED

STURGEON

OPERATIONS AND REPAIR MANUAL



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Revision History

Date	Version	Description	Author
04/19/24	1.0	First iteration	Bridget Reilly Beauchamp, Brieaunna Avery
06/01/2024	1.1	Addition of Comprehensive Materials	Bridget Reilly Beauchamp, Brieaunna Avery
06/12/2024	2.2	Final Iteration before installation	Bridget Reilly Beauchamp, Betsy Falk

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1 Introduction and Preface

1.1 General Project Information

1.1.1 Notes from Monkey Boys Productions

This character is designed for use in collaboration with Walt Disney World/Disney's Hollywood Studios for use in the Voyage of the Little Mermaid Theater. All information contained herein was prepared for Monkey Boys Productions, LLC and is property of the Disney Corporation and not to be used in any way without their consent.

1.1.2 From the Disney Scope of Work, section 1.2-1.4:

General Resort Overview

Movie magic comes to life at Disney's Hollywood Studios. This park features 8 sections: Hollywood Boulevard, Echo Lake, Grand Avenue, Sunset Boulevard, Commissary Lane, Star Wars: Galaxy's edge, Toy Story Land and Animation Courtyard.

General Venue Overview

Project Red will take place in the Voyage of the Little Mermaid (VOLM) Theater located within the One Man's Dream building next to Animation Courtyard in Disney's Hollywood Studios. The VOLM Theatre is a 400-seat theatre with a small, elevated stage with access between the house and backstage on Stage Left. All elements must fit through a double door at most due to limited load in infrastructure.

General Show Overview

A reimagined retelling of the classic film seen through the unique perspective of Ariel, a 16-year-old girl. Through cutting edge technology, mixed media, puppetry, and live actors, we follow Ariel's journey as she boldly pursues her dream to be part of the human world above, even if it means leaving her under the sea home.

1.2 Item Description

1.2.1 Summarized from the Disney Scope of Work, Section 4.9.1:

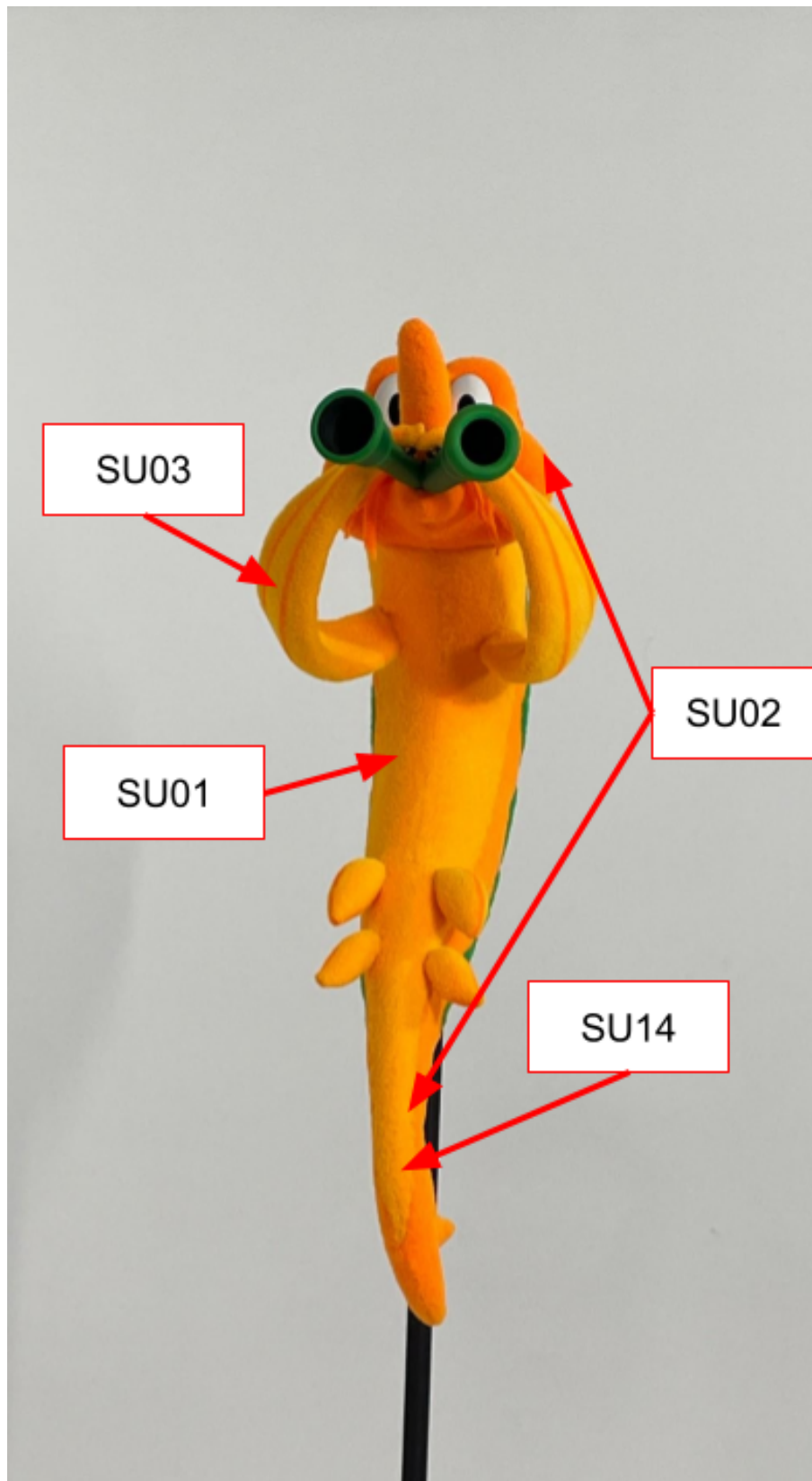
The Sturgeon is a rod puppet performed by a single puppeteer. The tail should be loose to allow for wiggles as the puppet is moved back and forth.

1.2.2 Basis of Engineering

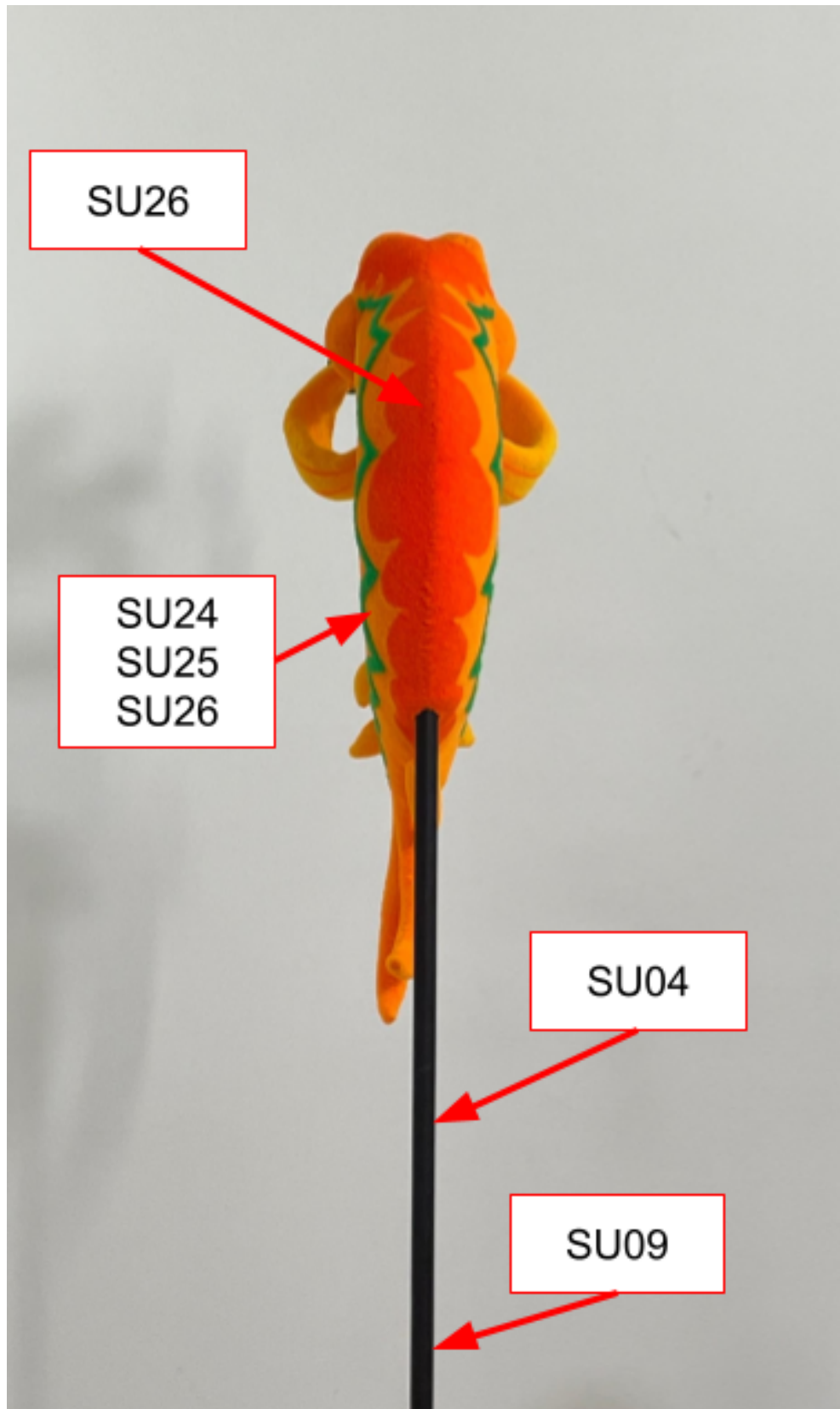
The Sturgeon is constructed primarily of L200 Foam, with some soft foam in the head and appendages, around an armature wire skeleton. The skin is UV-reactive, custom-dyed fleece, embellished with paint. The flutes are 3D-printed, and painted with UV-reactive paint. There are no mechanisms in this puppet.

2 Construction and Assembly

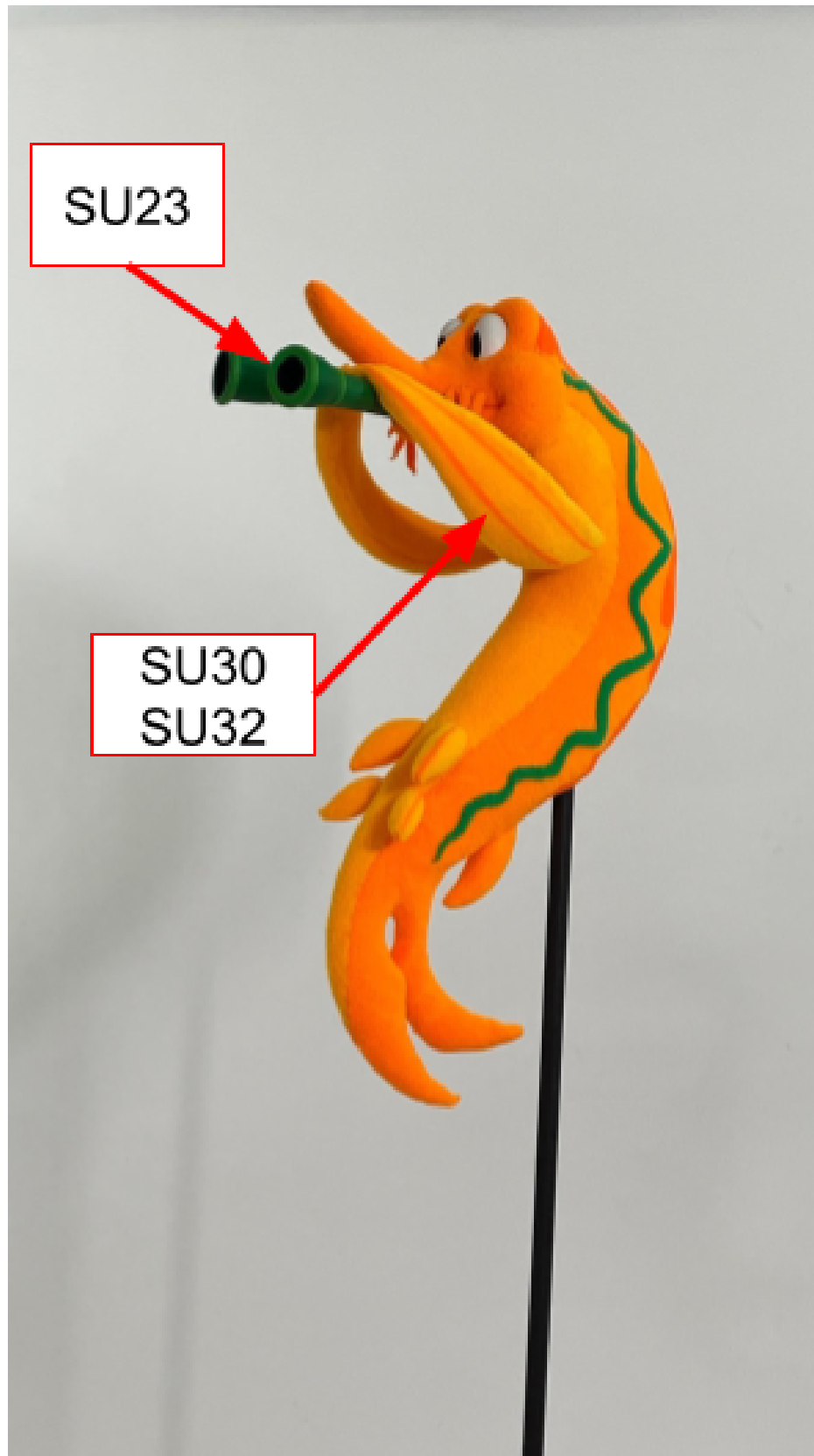
2.1 Front View



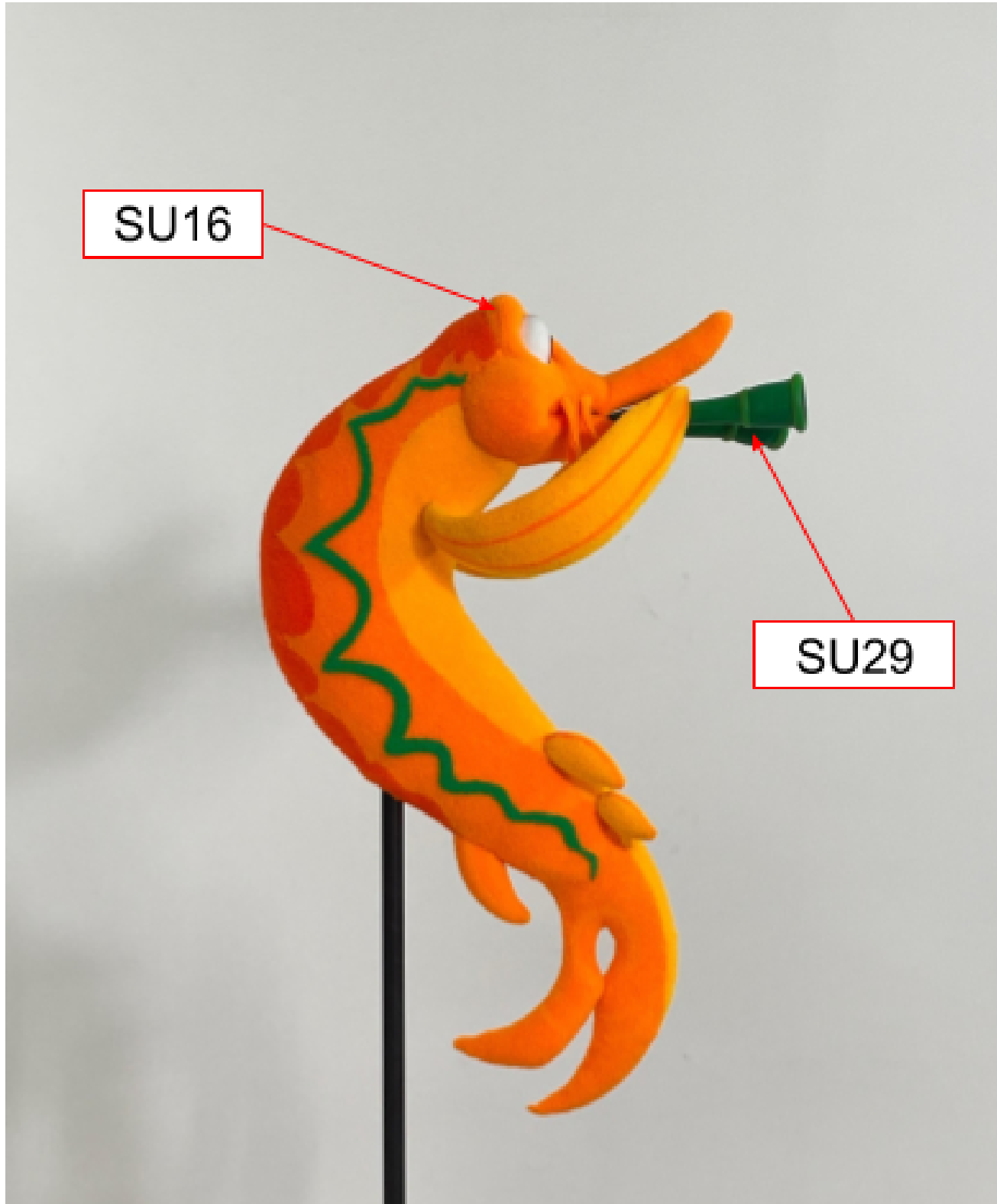
2.2 Rear View



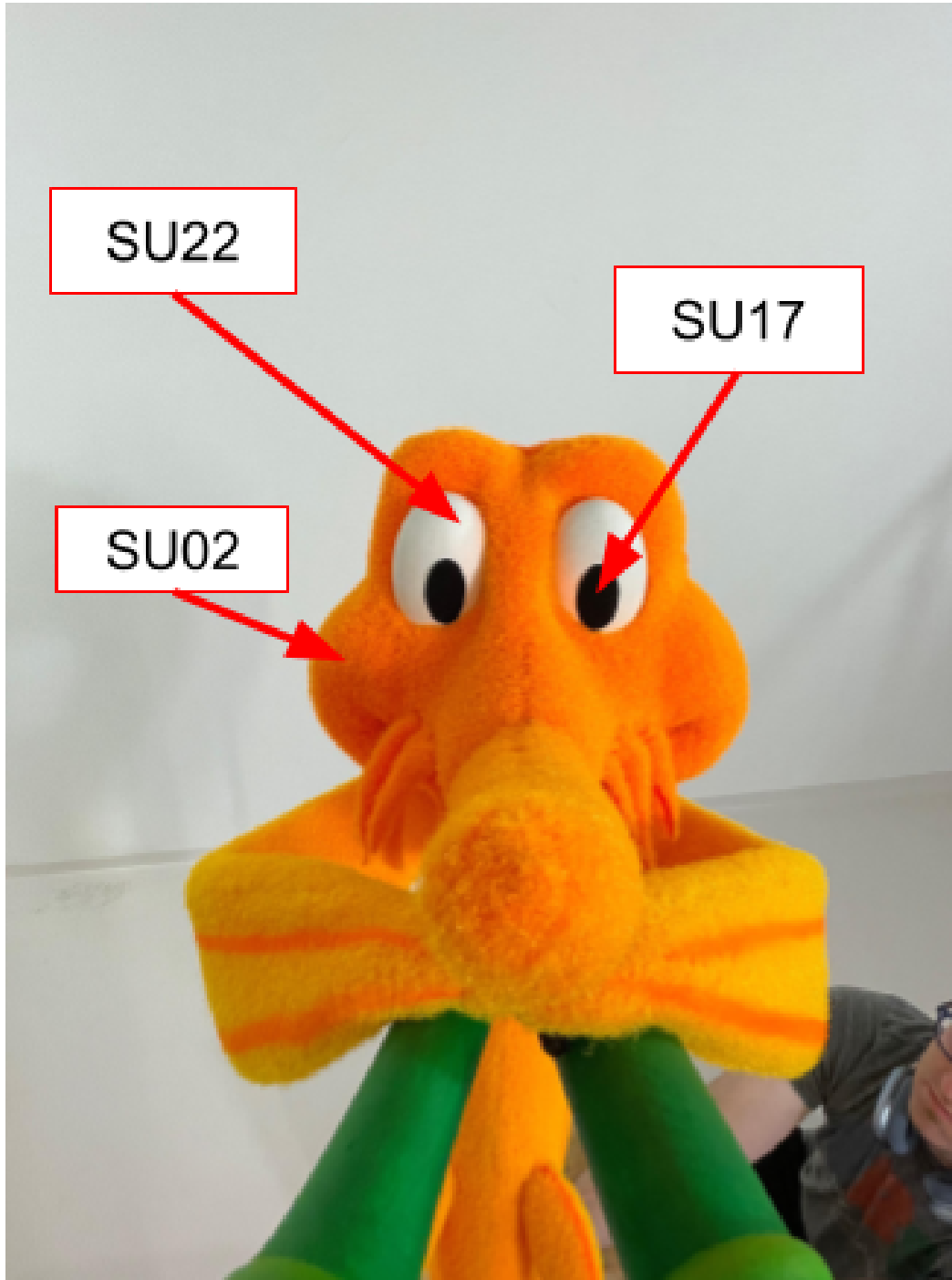
2.3 Left view



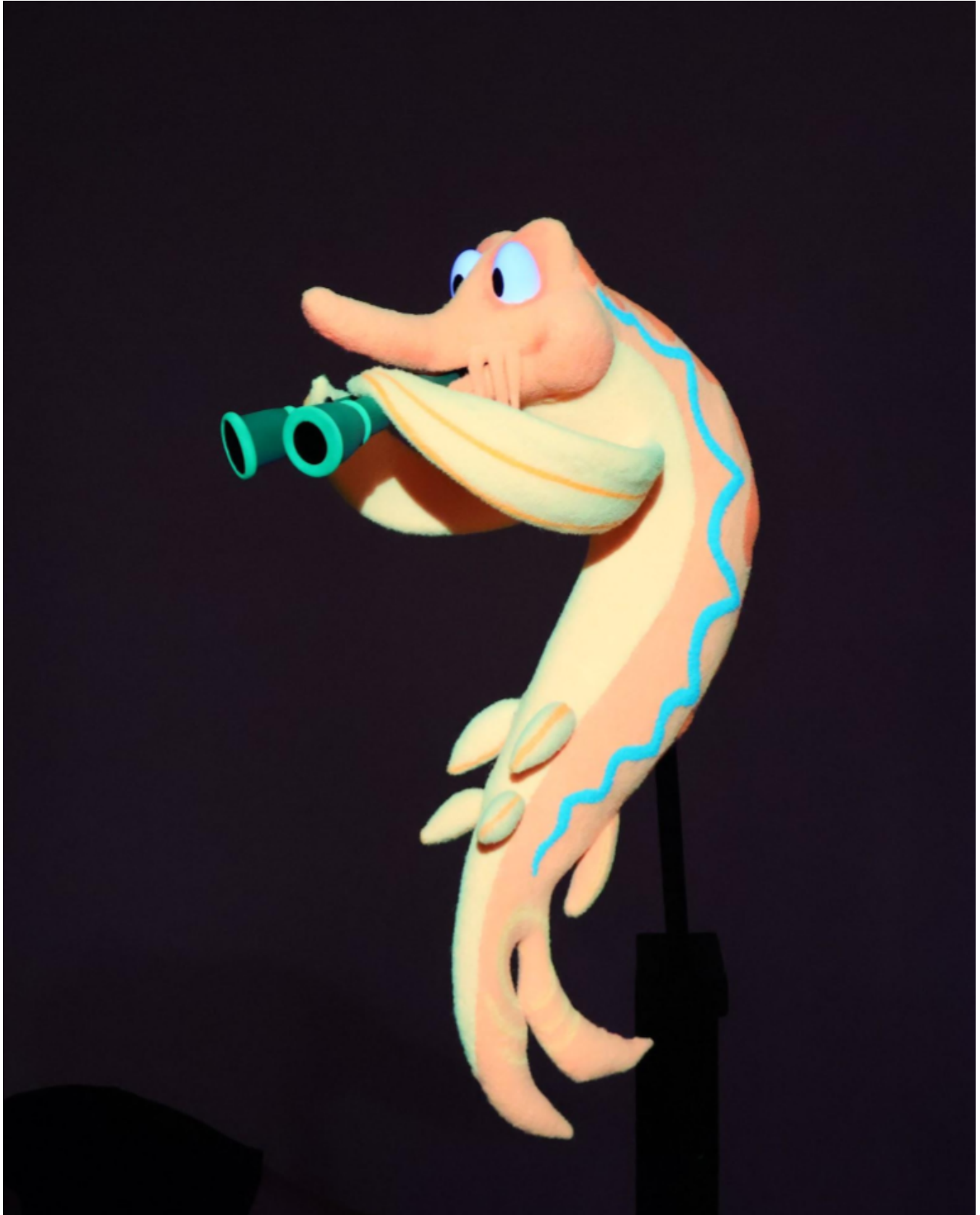
2.4 Right View



2.5 Closeup of Face



2.6 UV View



3 Description of Operating Modes

3.1 Operating Modes

3.1.1 Storage

The puppet will be stored on a stand during the show.

Between performances, the puppet should be covered with its custom cover in order to protect it from the elements.

At no point should a puppet be stacked on top of or underneath another puppet or prop.

3.1.2 Performance

The puppet is operated by a single performer. They should be able to do all performing actions without assistance.

3.2 Operating Procedures

3.2.1 Removing the puppet from the stand

Please ensure that you have clean hands before handling this puppet.

To remove the Sturgeon from the stand, grasp pole with 2 hands below the body of the puppet and lift.

3.2.2 Action: Moving the puppet

To move the Sturgeon, wiggle the pole back and forth. That's it!

3.2.3 Placing puppet on stand

To place the puppet on its stand, reverse the actions described in section 3.2.1

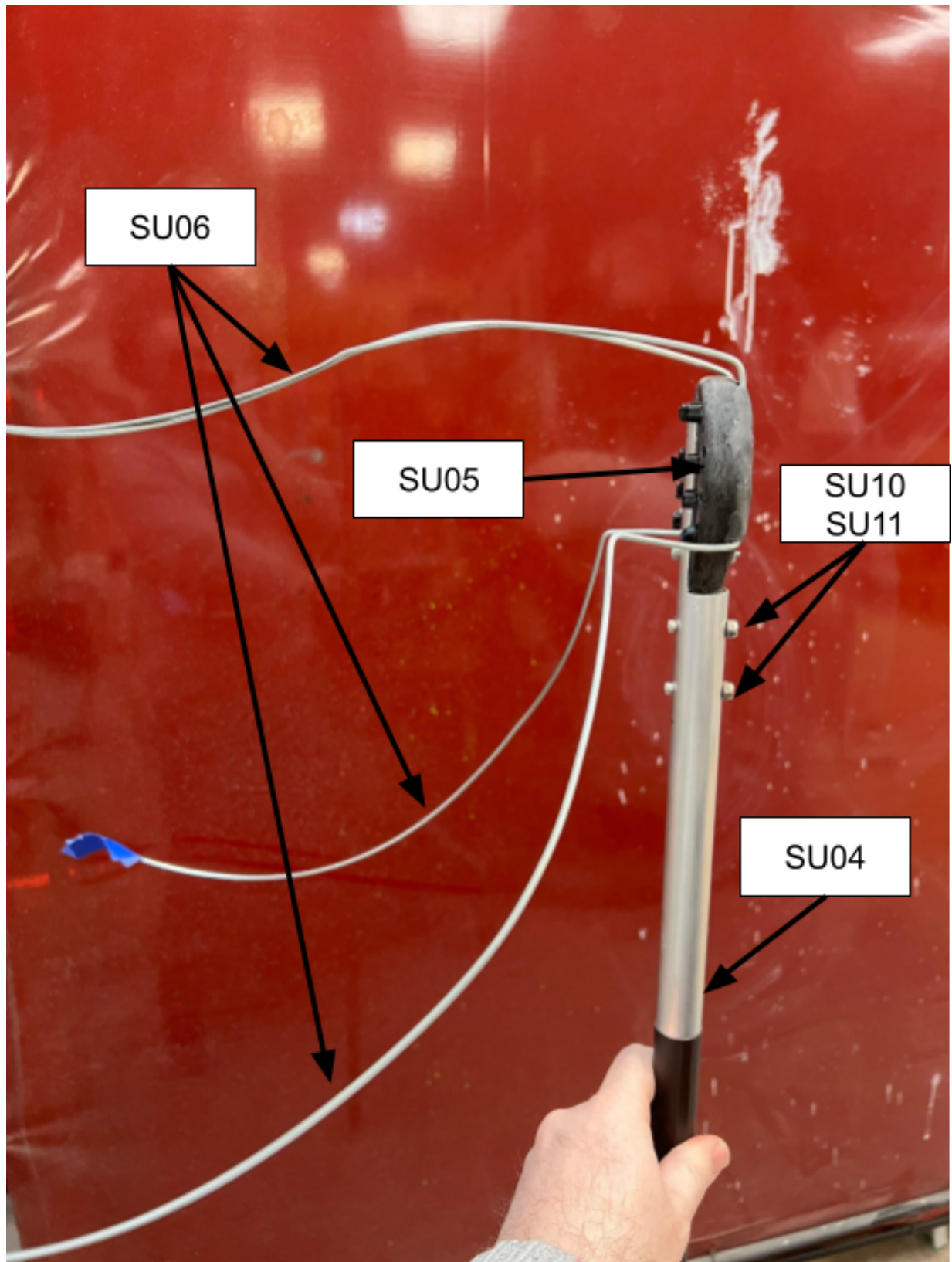
3.2.4 Storage

To store the puppet ensure that the puppet is stable on the stand and lower the cover over the top. Draw the string around the bottom of the puppet and pull the cord lock to secure it in place. The cover does not need to be cinched completely closed around the stand.



4 Detailed Diagrams of Mechanisms and Hardware

4.1 Internal structure of the puppet



5 Safety and Hazards

5.1 Safety Precautions and Hazard Identification

As is the case with any puppet, care must be taken when handling this item to make sure that the item does not become damaged beyond normal expectations.

- Care should be taken that the puppet and its accessories do not crash against walls, doorframes, other props, or other items. This could cause the puppet to become damaged or soiled.
- If the hardware on the puppet becomes loosened, pieces of the puppet will be likely to behave erratically. Care should be taken to ensure that all hardware is present and properly tightened at all times.
- All electrical systems should be regularly checked and maintained to the utmost safety standards.

5.2 Hazard Mitigation Strategy

There is always a chance of breakage and small injury when handling puppets and props, but Monkey Boys Productions has done their best to keep these chances low and keep both performers and technicians safe. All items have been built to be safe to handle with little chance of injury when handled correctly.

- All carbon fiber parts have been sanded to a smooth surface and sealed or covered.
- All wires and other such electrical parts have been assembled in the most safe and logical way to avoid injury and avoid becoming a hazard to performers or technicians.
- Weights and distribution of weight have been thought through to make the carrying and handling of the props easier on the performers to avoid muscular injury or strain.

These puppets are not a hazard to the environment or the performance location.

6 Repair & Service

6.1 Daily Checks and Inspections

The following list is provided as a basis for daily inspection of the puppet. Items may be added to or removed from this list as the on-site technical director sees fit.

Check Point	How to Inspect
eyeball paint	visually
flute paint	visually

6.2 Periodic Testing

The following list is provided as a basis for periodic testing of the puppet. Items may be added to or removed from this list as the on-site technical director sees fit.

Check Point	How to Inspect	When to Inspect
fin attachments	visually & manually	weekly
pupils	visually & manually	weekly

6.3 Routine Corrective Maintenance

The following list is provided as a basis for routine maintenance of items that will commonly need replacement or adjustment. Items may be added to or removed from this list as the on-site technical director sees fit.

Check Point	Corrective Action	When to Address
replace zip ties	remove & replace	as needed
replace pupils	replace topstick	as needed

6.4 Puppet-specific Service Items

A basic service kit has been supplied for use with this specific prop. Refills of the items in this kit can be handled by direct purchase from the source or by emailing contact@monkeyboysproductions.com. A full manifest of these items is supplied inside the kit and is included on the final page of this manual.

6.5 Cleaning Fabrics

*****Please note that using liquids or detergents on UV treated fabrics may cause the UV reactivity to fade*****

6.5.1 Spot Cleaning

- Spot clean as soon as dirt and grime are noticed.
- Gently wipe with Shout or Tide wipe.
- Dab product into deeper stains.
- Blot and gently wipe with a clean, white towel.
- Make sure that the area dries well.

6.5.2 Deep Cleaning Option 1 for widespread stains

- Dilute a drop of Woolite detergent in room temperature water.
- Dab on with a white cloth.

- Gently wipe & dab with clean white towel.

6.5.3 Deep Cleaning Option 2 for deep stains

- Spray Bissell Pro Carpet Cleaner on worst of spot.
- Allow it to rest for 1 minute.
- Carefully dab and wipe with a clean towel, being mindful that fabric doesn't pull away from the material beneath.

6.5.4 In all cases

- DO NOT rub, twist, or pull when cleaning
- DO NOT use heat, steam, or pressure
- DO NOT use bleach or other harsh chemicals
- DO NOT immerse in or saturate with water

6.6 Cleaning Hard Surfaces

******Please note that using liquids or detergents on UV treated surfaces may cause the UV reactivity to fade******

- Hard surfaces (Carbon fiber, plastic, aluminum, grip tapes, etc.) can be wiped clean with water or a mild cleanser such as Dawn dish detergent diluted in water.
- Always use a soft cloth and work carefully to avoid scratching or damaging any coatings or paints.
- Always wipe all surfaces dry immediately after cleaning to avoid leaving water spots or otherwise damaging finishes.

7 Detailed Maintenance Procedures

7.1 Specialty information about replacing the zip ties on the flutes

The sturgeon has a 3-D printed sculpt of two green flutes attached to its mouth via a 3/16" diameter zip tie that is tied through two holes drilled in the wooden mouth plate. The larger hole where the flutes meet lines up with the holes in the mouth plate.

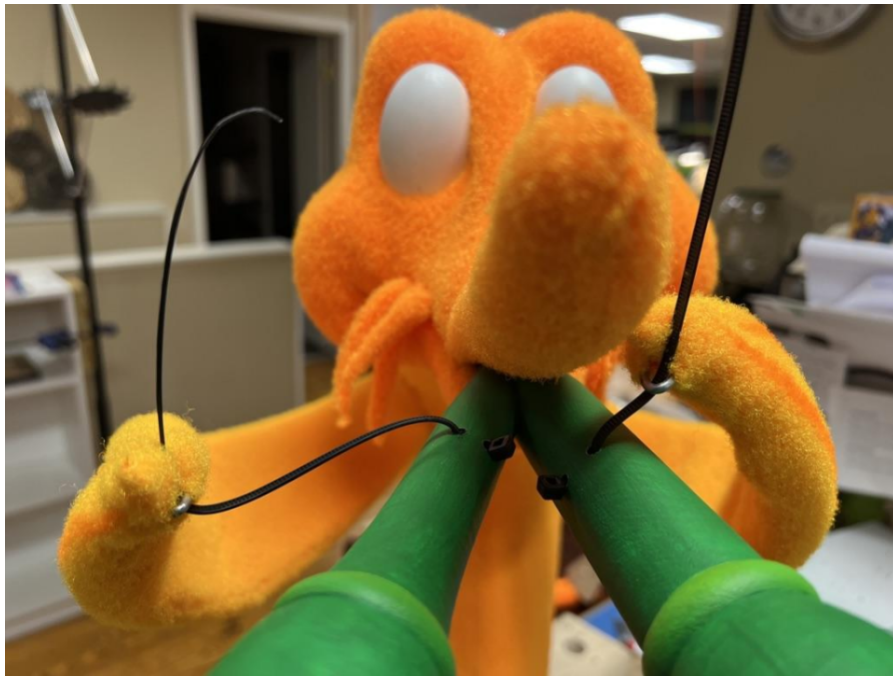


The smaller holes mid-way on the flutes line up with tips of the arm fins. The arm fins 'holding' the flutes are also held on with 1/8" zip ties running through a steel loop on the tips of the fins and through holes in the flutes.

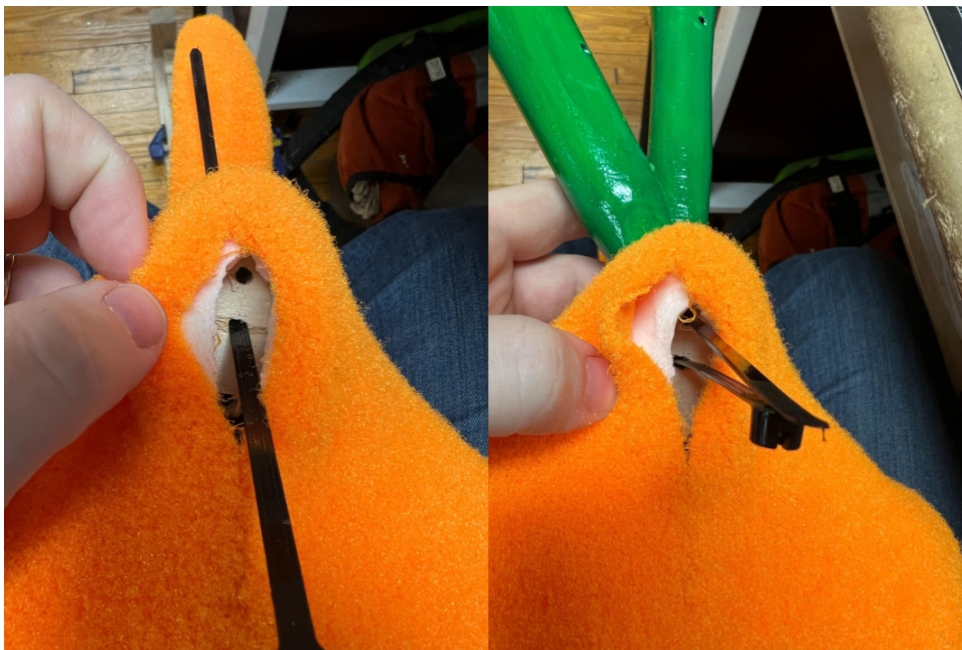
If these zip ties need to be replaced:

Fins to Flutes -

- The thinner of the flutes gets attached to the right fin.
- Pre-curl the ends of the replacement zip ties to help fish them through the two holes in the flute and then lace them through the silver steel loop that is poking out of the end of each fin.

**Mouth plate to Flutes -**

- The mouth is stitched closed on either side. Cut the stitches to access the front of the mouth.
- Cut the stitches under the chin to access the hole cut in the foam. From there you can remove and replace the 3/16 zip tie.
- Push the tail end of the zip tie through the bottom of the chin so it pokes up through the mouth, slide the flutes on, bend the zip tie so the tail pushes through the second hole in the mouthplate. Under the chin, connect the tie and zip it tight. Cut off the tail and restitch the chin fleece.



8 Comprehensive Parts List

8.1 Understructure and Base

Part #	Part	Usage	Vendor	Vendor Part ID
SU01	1/2" L200	body/face	Foam Factory	
SU02	1/2" Polyfoam (upholstery foam)	Face, tail, body fins, cheeks,	Foam Factory	
SU03	1/2" bra foam (laminated foam)	arm fins	coastpad.com	
SU04	5 foot long, 7/8" diameter aluminum pole	hand rod - performance enhancer	McMaster-Carr	89965K661
SU05	1/2" abs plastic	internal armature core	McMaster-Carr	8586K391
SU06	Spring-Back Multipurpose 304 Stainless Steel Wire, Matte, 0.102" Diameter, 1/4 lb. Coil	internal armature for arms and snout	McMaster-Carr	9495K215
SU07	1/8" birch plywood	mouth plates	amazon.com	
SU08	1" L200	Stop blocks in head	Foam Factory	

8.2 Hardware

Part #	Part	Quantity	Usage	Vendor	Vendor Part ID
SU09	1" heat shrink tubing	4 feet	wrapping aluminum rod	amazon	
SU10	1" 6-32 button screws	4	attaching armature paddle to aluminum rod	McMaster-Carr	92196A165
SU11	6-32 lock nuts	4	attaching armature paddle to aluminum rod	McMaster-Carr	90631A007
SU12	3/16" zip ties	10	attaching spring steel to plastic paddle, securing flutes to mouth plate, keeping mouth closed	amazon	
SU13	1/8" zip ties	2	securing arm fins to flutes	amazon	

8.3 Fabric and Fibers

Part #	Part	Usage	Vendor	Vendor Part ID
SU14	F3 Fleece	face and body coverage	Dharma Trading	
SU15	Black Craft Velour	mouth plate cover	CRs Crafts	
SU16	Poly Fill	stuffing brow	JoAnn Fabrics	
SU17	Black Velour contact paper	pupil paper - eye pupils	Astek Home	
SU18	2" white elastic	access hatch hinge	JoAnn Fabrics	
SU19	1" white sewable velcro	access hatch latch	amazon	
SU20	Yellow Nylon thread	stitching arms to wire	Wawak	
SU21	Cotton thread - green, yellow, orange, yellow-orange	stitching all the pieces	JoAnn Fabrics	

8.4 Custom Made Parts

Part #	Part	Quantity	Usage	Vendor	Filename
SU22	3D printed Nylon	1 print per puppet	Eyeballs - both eyeballs are part of a single printed piece	David Valentine	**All Sturgeon 3D Files in Box Drive: https://disney.box.com/s/gd0mmzmi2ovxpk0u2sw8pnby3k4x0rfl
SU23	3D printed Nylon	1 print per puppet	flutes - both flutes are on a single printed piece	David Valentine	

8.5 Paints and Dyes

SDS sheets are available in the separate SDS Project Packet.

Part #	Part	Usage	Vendor	Vendor Part ID
SU24	Fluorescent Safety Orange Dharma Acid Dye	Custom Dyed F3 fleece, yellow and light orange	Dharma Trading	456
SU25	Fluorescent Yellow Jacquard Acid Dye	Custom Dyed F3 fleece,	Dharma Trading	640

		yellow and light orange		
SU26	Fluorescent Red Jacquard Acid Dye	Custom Dyed F3 fleece, light orange and dark orange	Dharma Trading	642
SU27	Rustoleum White Universal Bonding Primer	Prepping 3d printed pieces - eyes and flutes	Home Depot	
SU28	Wildfire Optical White UV paint	Eyeballs	World Paint Supply	
SU29	Wildfire Bright Green UV Paint	Flutes main color	World Paint Supply	
SU30	Createx Airbrush paint - Fluorescent yellow	body stripes, flute highlights and rings	amazon	
SU31	Createx Airbrush paint - Fluorescent blue	flute shadows	amazon	
SU32	Createx Airbrush paint - Fluorescent Sunburst	body stripes	amazon	
SU33	Black acrylic paint	inside of flutes	amazon	

8.6 Glues, Treatments, Coatings, and Chemicals

SDS sheets are available in the separate SDS Project Packet.

Part #	Part	Usage	Vendor	Vendor Part ID
SU34	Barge contact adhesive	gluing all foam together	Frankford Leather	
SU35	Steel Stik	adhering zip ties and spring steel to ABS paddle for internal armature	Home Depot	
SU36	Gaff Tape	connecting the top and bottom mouth plates	amazon	
SU37	Top Stick	securing pupil paper to eyeball	amazon	
SU38	Insta-Shield Flame Retardant	Fire treatment	Northeast FireShield	N/A