

WALT DISNEY WORLD®

PROJECT RED

STING RAY

OPERATIONS AND REPAIR MANUAL



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Revision History

Date	Version	Description	Author
02/14/2024	1.0	First iteration	Bridget Reilly Beauchamp, Brieaunna Avery
05/15/2024	1.1	Addition of Comprehensive Materials	Bridget Reilly Beauchamp, Brieaunna Avery
06/11/2024	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 4.10.1:

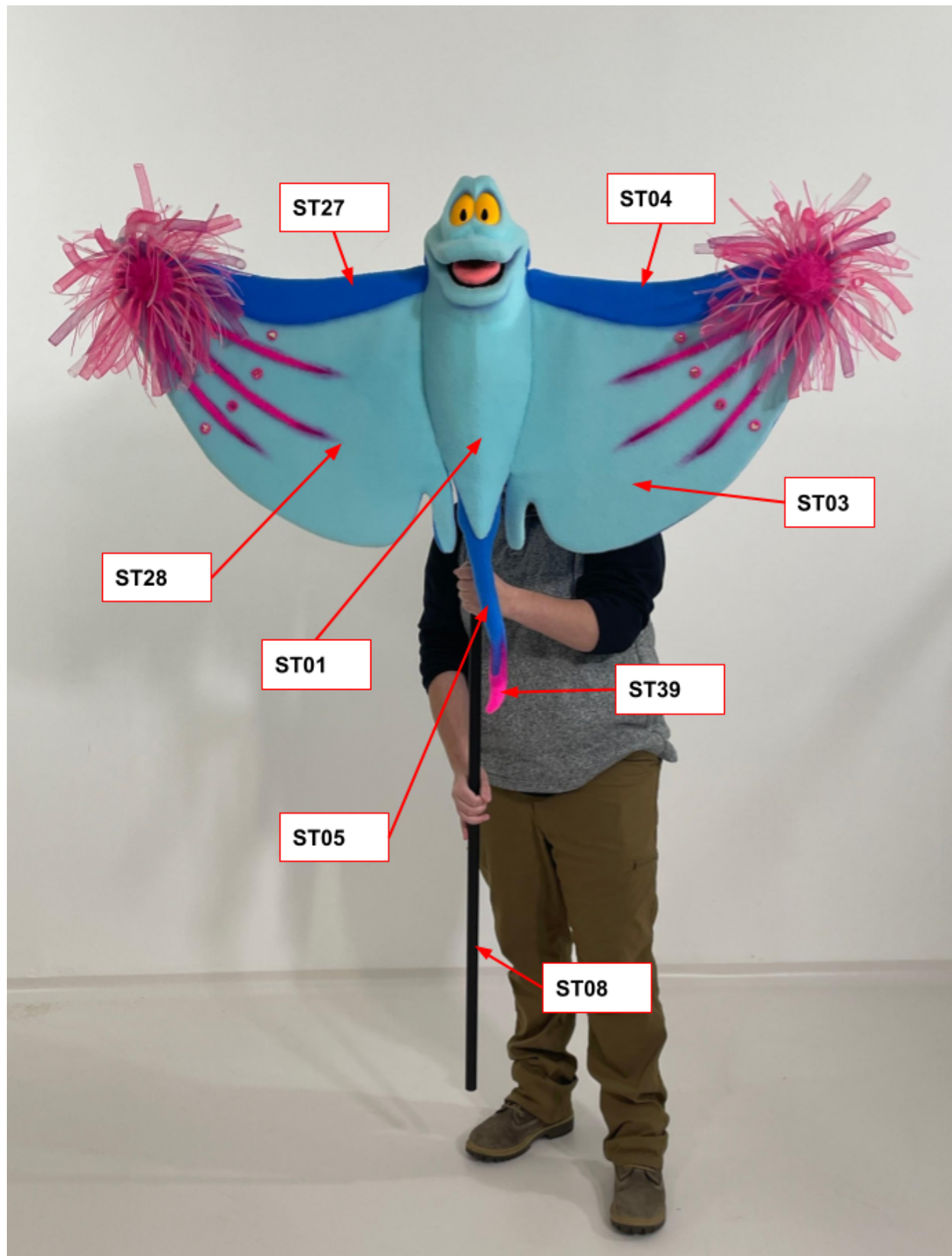
The Manta Ray fish is performed by a single puppeteer and is essentially a "fish on a stick" rod puppet. All animations are sympathetic to the puppeteer's movement.

1.2.2 Basis of Engineering

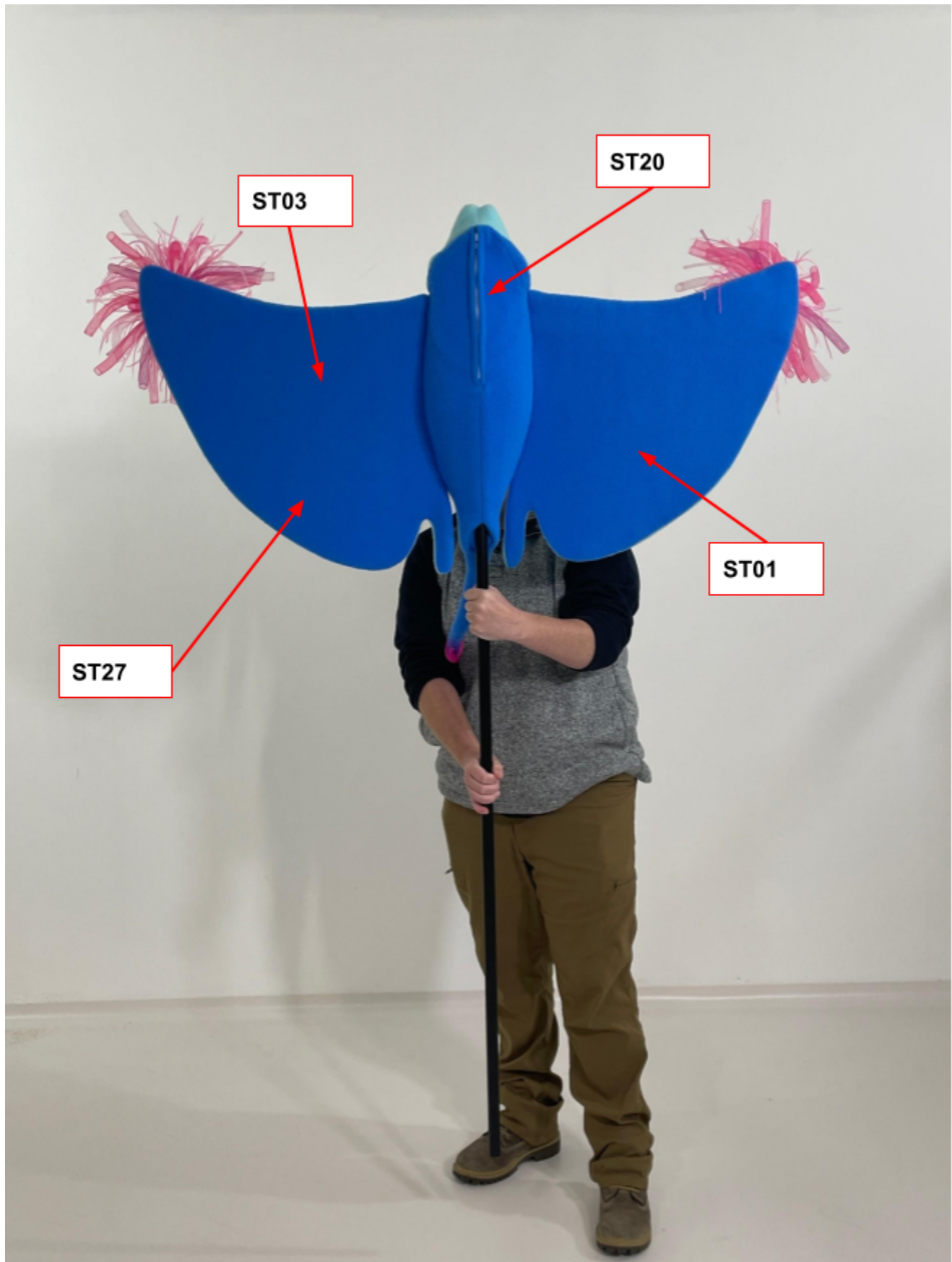
The Sting Ray is built with a closed cell foam body on a carbon fiber rod. The wings are built from laminated foam and fabric with a spine of spring steel and foam. The castanets are built from a combination of crinoline tubes and ostrich feathers. All of the fabrics and treatments are UV-reactive.

2 Construction and Assembly

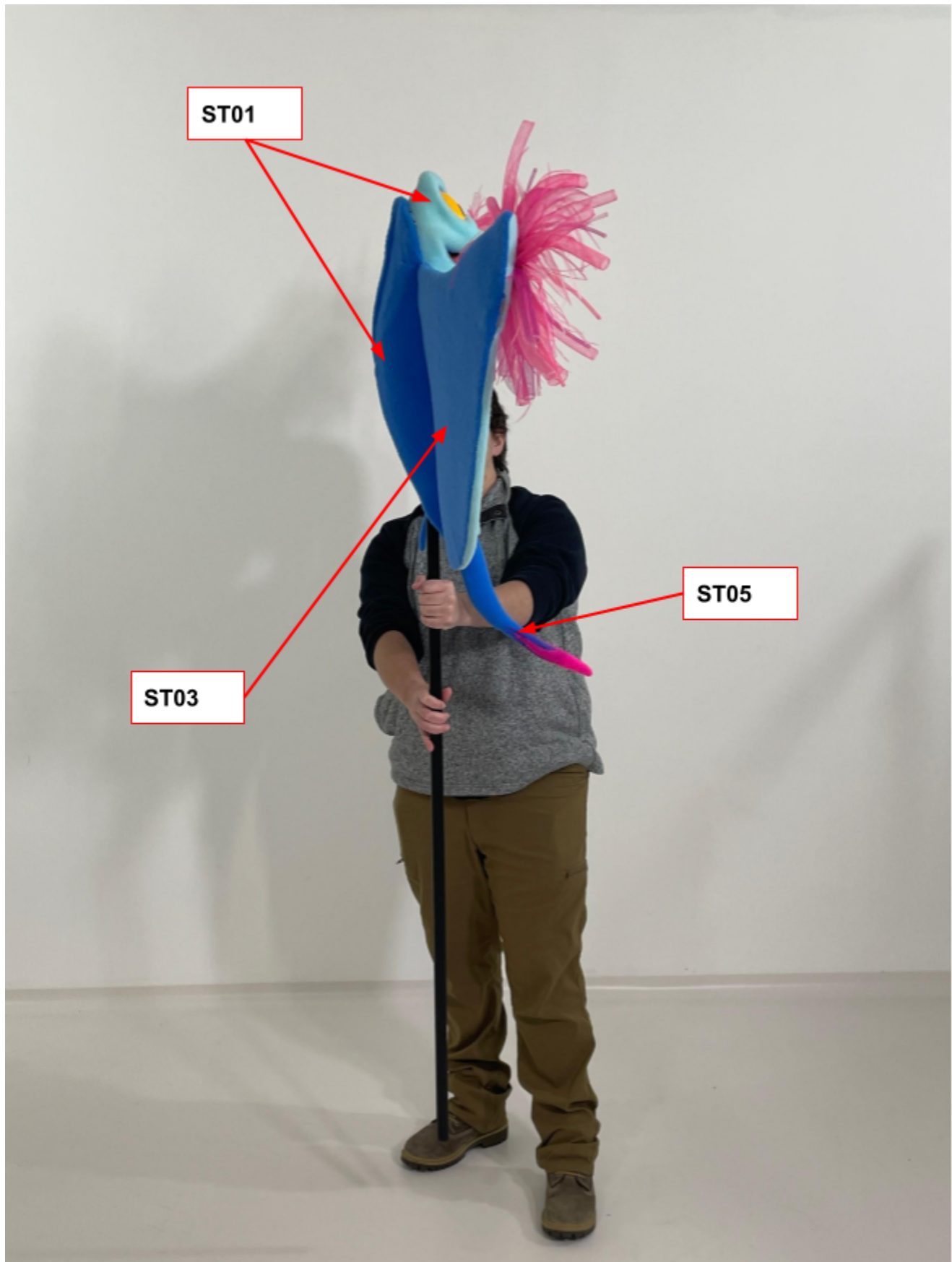
2.1 Front View



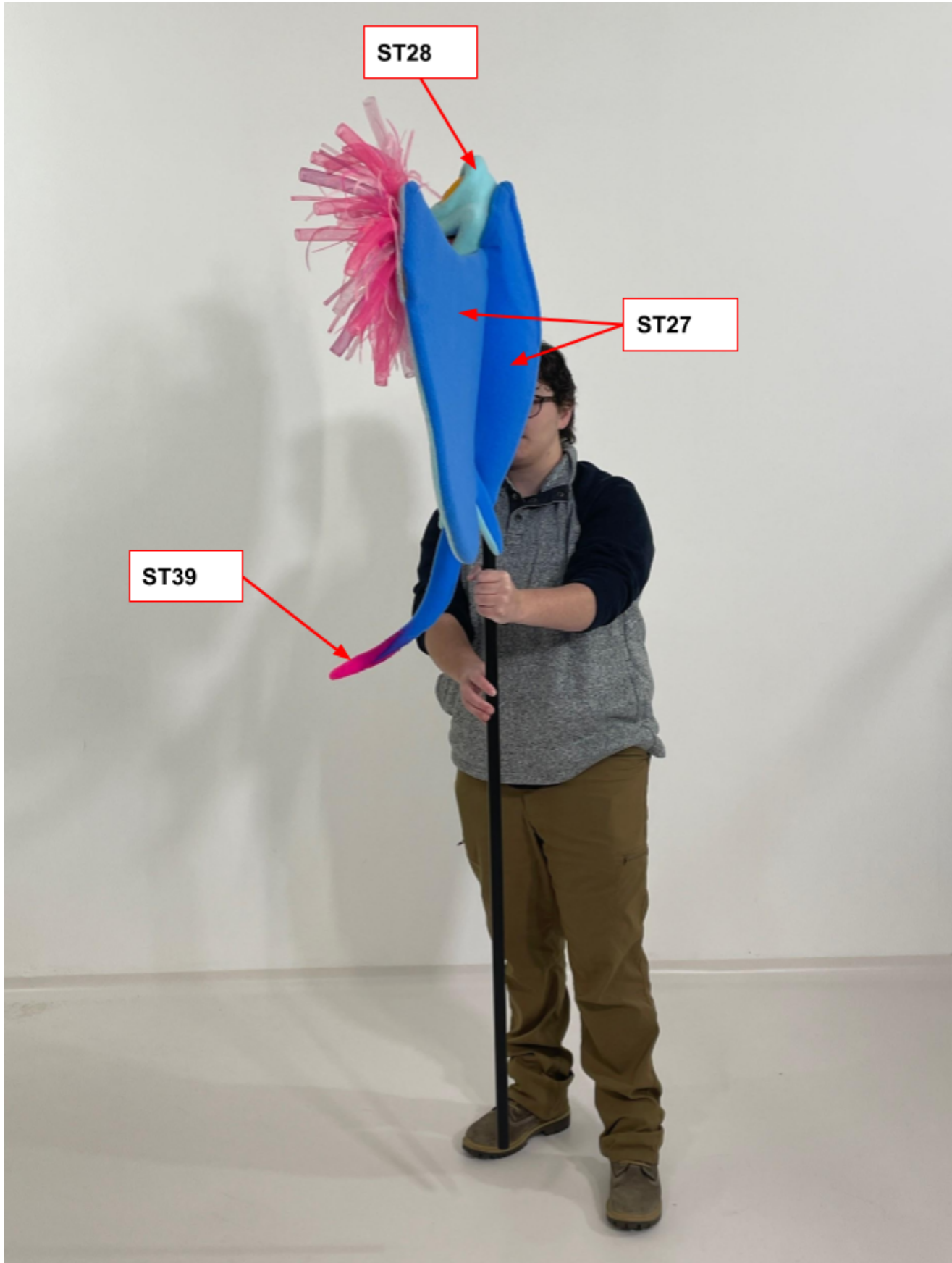
2.2 Rear View



2.3 Left view



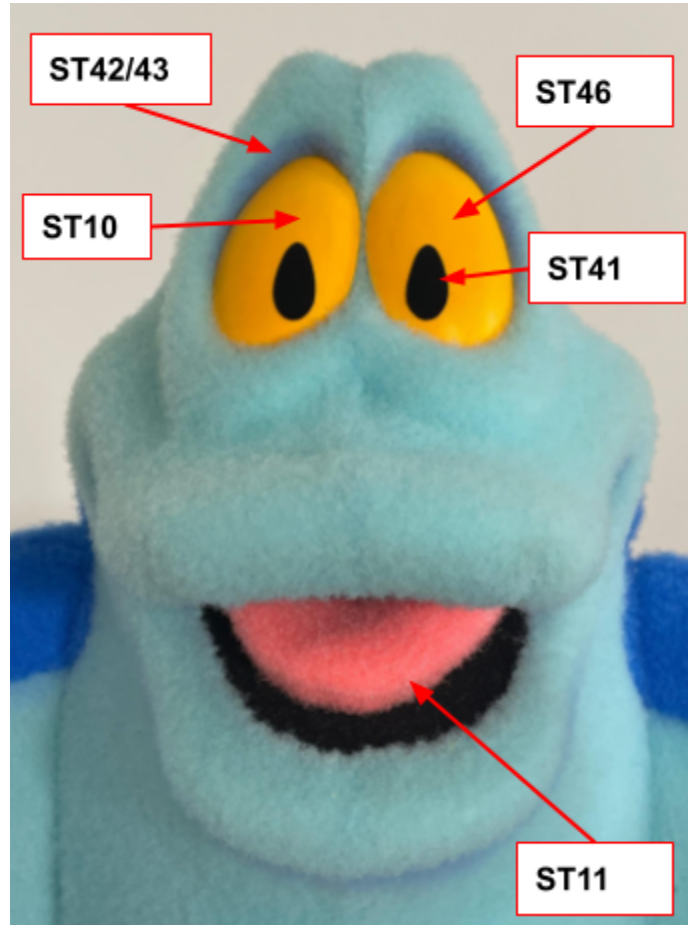
2.4 Right View



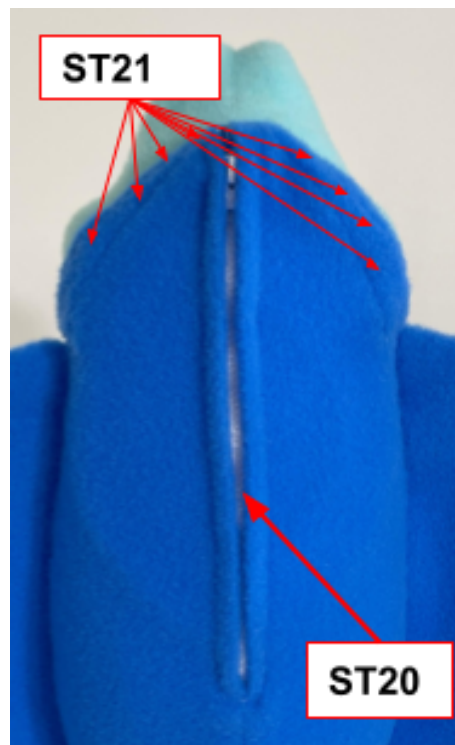
2.5 Closeup of Castanet & Embellishment



2.6 Closeup of Face



2.7 Closeup of the Rear Access Zipper



2.8 UV Views



3 Description of Operating Modes

3.1 Operating Modes

3.1.1 Storage

The Sting Ray will be stored on a single stand during the show.

Between performances, the Sting Ray should be covered with its own dust cover in order to protect them 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.

1. Using 2 hands on the rod, the first puppeteer should lift straight up until the rod clears the stand. Second puppeteer should then repeat the motion.
2. Once the puppet is off the stand, hold it upright in front of you, with both hands on the pole at all times.

3.2.2 Action: Shimmy

To make the Sting Ray appear to “shimmy,” the puppeteer should twist their hands right and left quickly.

3.2.3 Placing puppet on stand

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

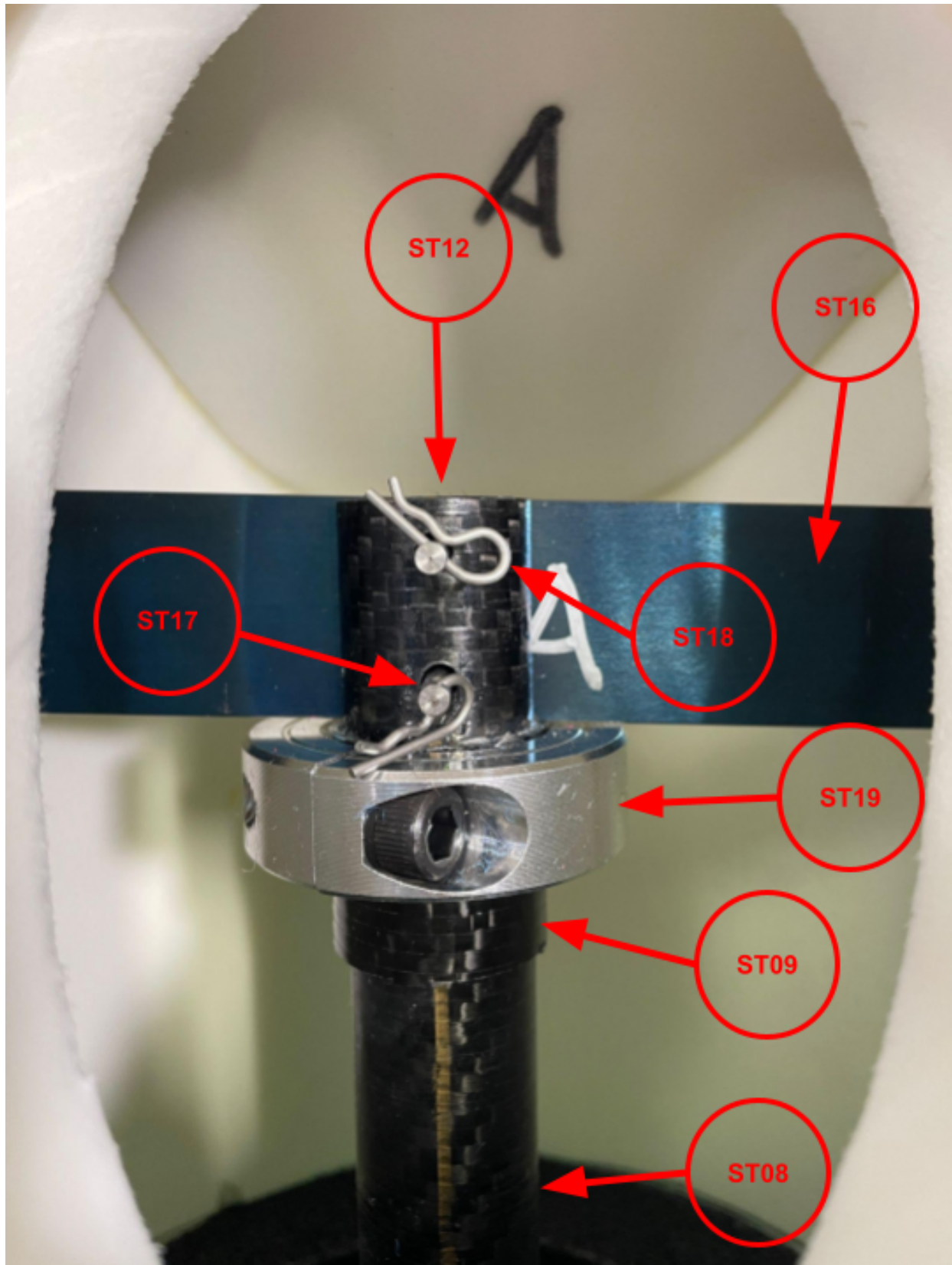
3.2.4 Storage

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 Spring Steel attachment point



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
Castanets	Physically check snaps
Zipper	Ensure it's closed

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
Internal cotter pins	Open up back, inspect visually & physically	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
Snaps	restitch/replace	as needed
castanets	replace	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

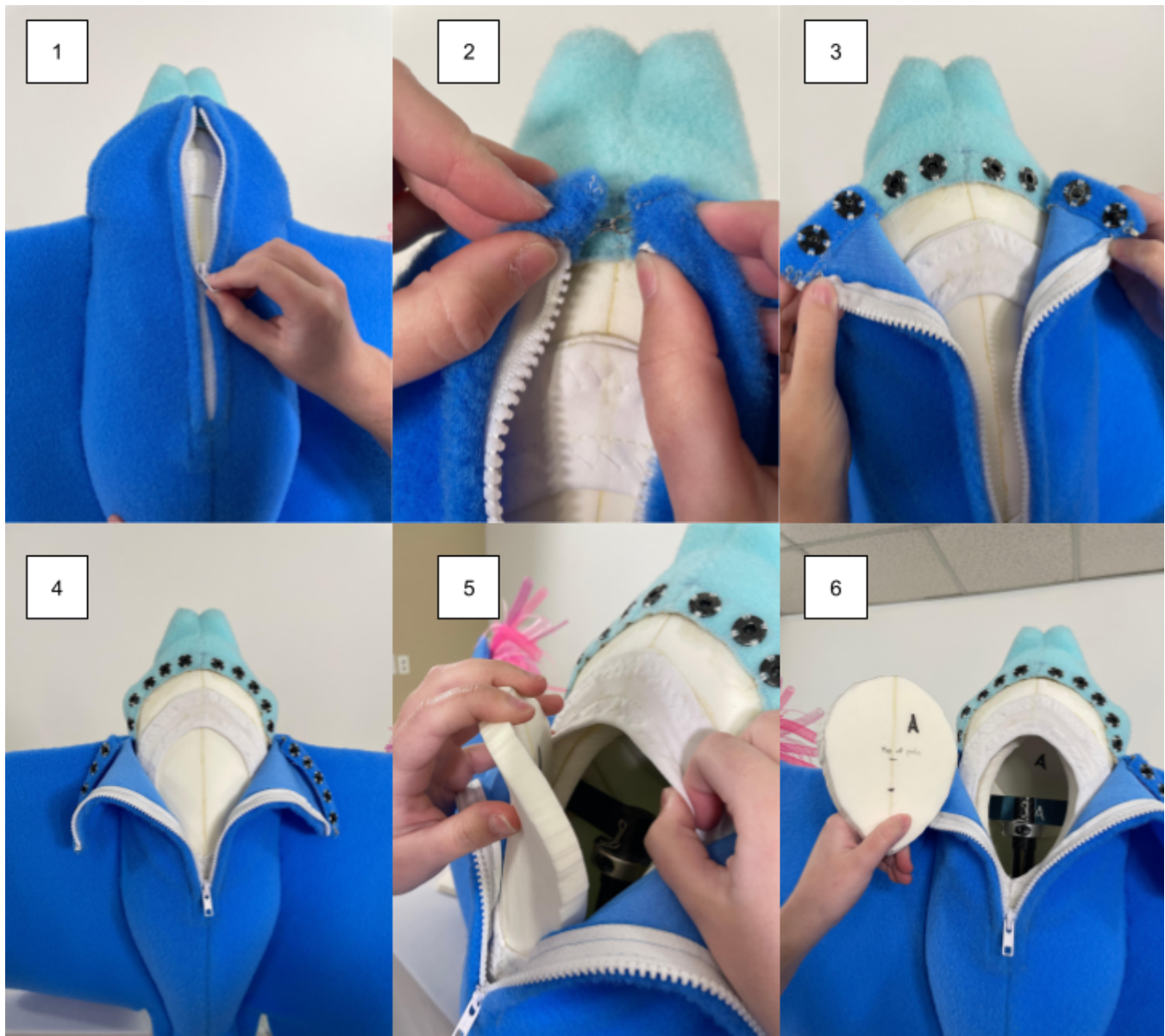
******Please note that using liquids or detergents on UV treated surfaces may cause the UV reactivity to fade******

- 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

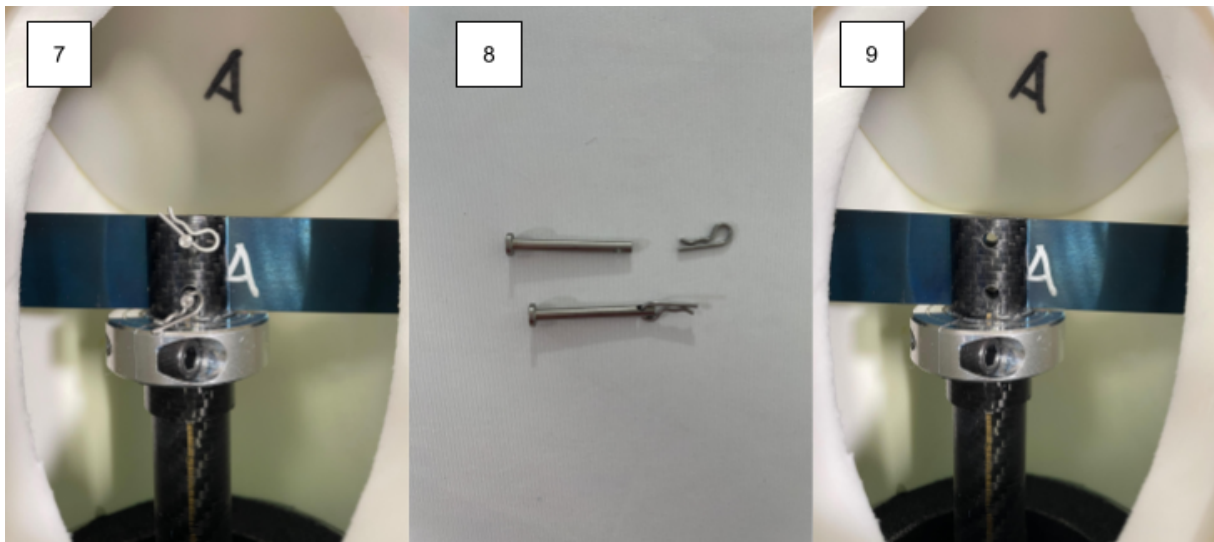
7.1 Specialty information about accessing the interior

1. Undo the Zipper located on the back of the Stingray puppet. **Fig 1**
2. Undo the Hook & Eye located at the top of the zipper. **Fig 2**
3. Ten Snaps help to keep the opening secured, undo these snaps. **Fig 3 - Fig 4**
4. You must pull out the foam piece that gives shape to the back of the puppet.
 - a. Lift the spandex gasket up and pull the foam piece out; make sure to remove it gently to prevent fingernail marks or fingerprints. **Fig 5**
 - b. The foam piece is labeled according to which Stingray it belongs to (i.e: A to A, B to B) **Fig 6**
5. You should now be able to perform maintenance.

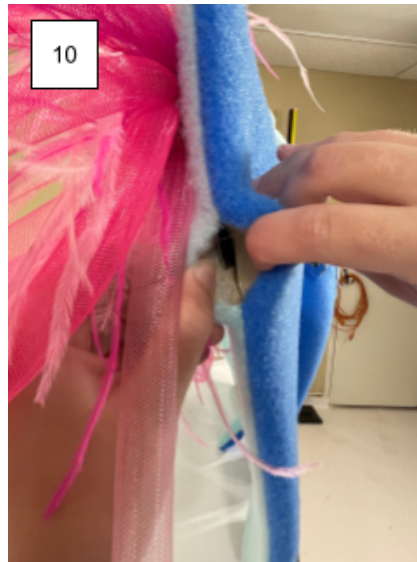


7.2 Specialty information about how to replace the spring steel

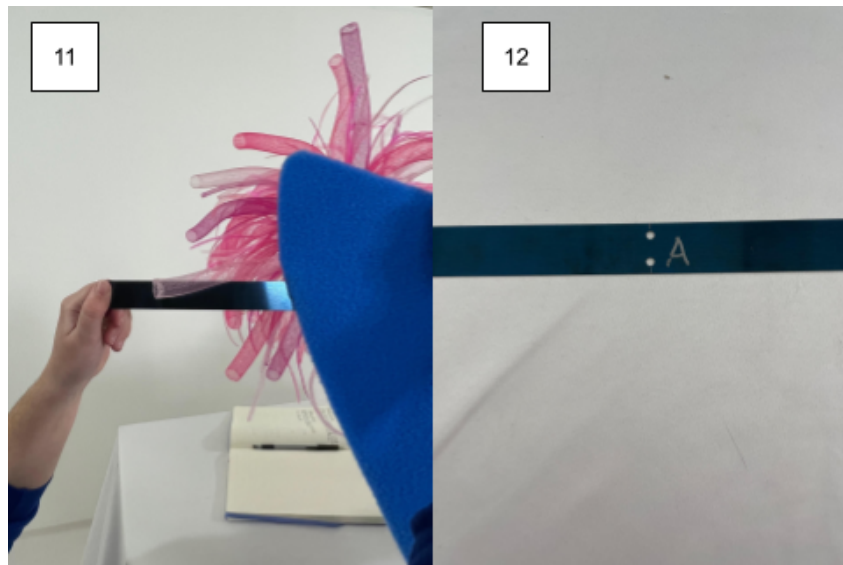
1. To start, remove Hairpin & Cotter pins and set them aside. **Fig 7- Fig 9**



2. Pick your favorite wing and open the velcro closure on that wing. **Fig 10**



3. Grab Steel Spring and pull out. **Fig 11 - Fig 12**



4. Putting the Steel Spring back in

- a. When putting the old Steel Spring back in, make sure to have the “A” facing right upside and out back of puppet.
- b. Make sure wings are held out straight for ease.
- c. Pause when you reach the center and make sure it is carefully getting through the L200 of the body and properly aligned with the center.
- d. Make sure the Steel slides through the slit in the rod and guide into the other wing slowly. You can open the other wing’s velcro to help guide it in. **Fig 13**



- e. Replace the Hairpin & Cotter pins.

7.3 Specialty information about how to remove and repair the castanets

1. Each Castanet is attached to the wings of the Stingray via Three snaps. Unsnap and you are ready to perform any maintenance you need! **Fig 14**



7.4 Specialty information about making the castanets



Each feather clump has:

ST26

2

ST24

3

ST23

3

ST25

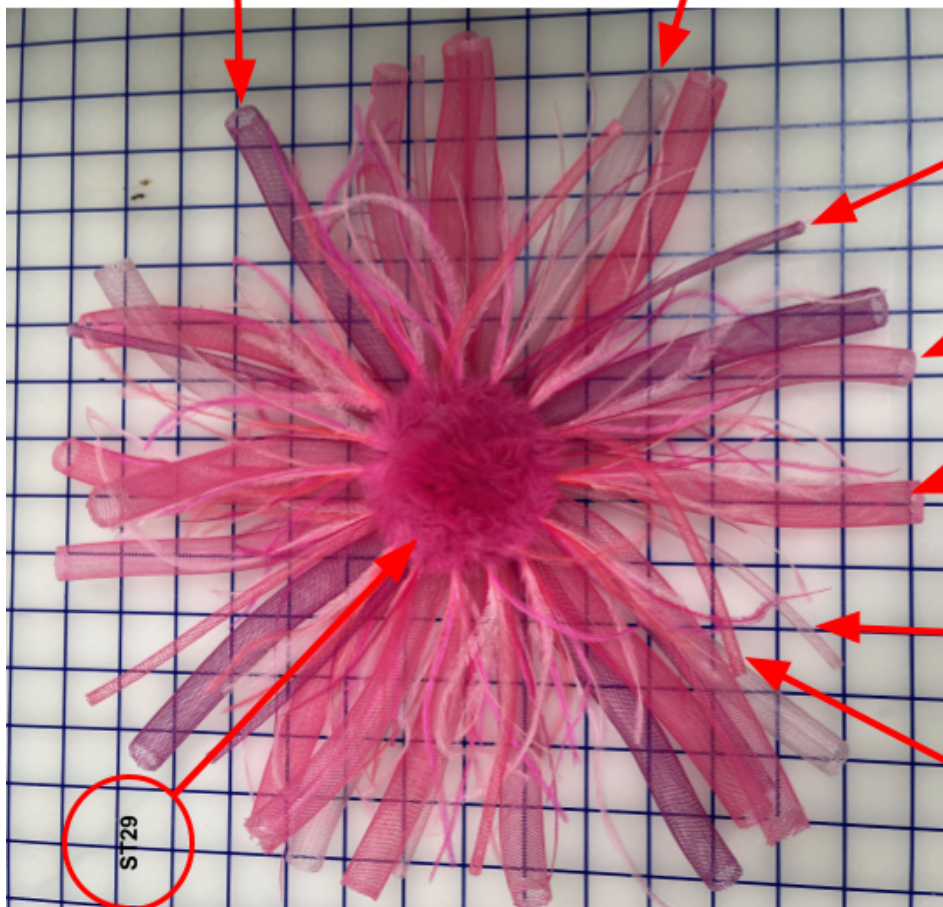
2

16 clumps per castanet



ST37

ST21



ST31

ST32

ST34

ST36

ST30

ST35

ST33

ST29

8 Comprehensive Parts List

8.1 Understructure and Base

Part #	Part	Usage	Vendor	Vendor Part ID
ST01	1/2" L200	Head, body	FoamFactory	XPE2
ST02	1' polyfoam	Cheeks	FoamFactory	PE2-_1
ST03	3/8" bra foam	Wings	Coastpad	CPIT100032
ST04	1/8" bra foam	wings	Coastpad	CPIT100023
ST05	1/2" bra foam	tail	FineBrand	CPIT100010
ST06	1/2" Plastizote	Mech Center	JMS Plastic Supply	705111-6
ST07	1/4" Carbon Fiber Rod	Mech Center	Rock West Composites	P/N 47317-L48
ST08	#4 Carbon Fiber Tube	Handle	Rock West Composites	P/N 46404
ST09	#5 Carbon Fiber Tube	Wing stabilizer	Rock West Composites	P/N 46405
ST10	1/16" HIPS	Eyes	Curbell	# W11-00103
ST12	Black ABS Rod	Stabilizes carbon fiber tube at slot for spring steel	McMaster Carr	#8587K5

8.2 Hardware

Part #	Part	Quantity	Usage	Vendor	Vendor Part ID
ST13	Nylon Hex Head Screws	2 per	Eyes	McMaster Carr	#94613A546
ST14	Nylon Hex Nut	2	Eyes	McMaster Carr	#94812A700
ST15	Nylon Plastic Washer	2	Eyes	McMaster Carr	#95606A430
ST16	1075 Spring Steel Strip	1	Spring Steel Wings	McMaster Carr	#9074K34
ST17	18-8 Stainless Steel Precision Clevis Pin	2	Spring Steel Connection	McMaster Carr	#90378A117
ST18	18-8 Stainless Steel Hairpin Cotter	2	Spring Steel Connection	McMaster Carr	#92391A019

	Pin				
ST19	1" Aluminum Clamping Shaft Collar	1	Spring Steel Stabilizer	McMaster Carr	#6157K18
ST20	Coats & Clark White Sport Separating Zipper 14"	1	Back Access	Coats & Clark	# 1049139
ST21	Size 4 Sew-On Snaps/ Black	16	Back Access, castanet snaps	Wawak	# SOS4BK
ST22	Handmade Rubber Washer	2	Eyes	McMaster Carr	#1370N15

8.3 Fabric and Fibers

Part #	Part	Usage	Vendor	Vendor Part ID
ST23	A Plume of Ostrich Feather - Coral	Castanets	Feather Place	B825--CO
ST24	A Plume of Ostrich Feather - Candy Pink	Castanets	Feather Place	B825--CP
ST25	A Plume of Ostrich Feather - Pink Orient	Castanets	Feather Place	B825--PO
ST26	A Plume of Ostrich Feather - Shocking Pink	Castanets	Feather Place	B825--SP
ST27	White fuzzelle dyed medium blue	Back of body		N/A
ST28	White fuzzelle dyed light blue	Front of body		N/A
ST29	Neon Pink UV Reactive Solid Shaggy Fabric	Castanet Center	Big Z Fabric	SKU: NWUV03
ST30	C009 Rose Red 16mm Tubular Crinoline	Castanets	Ali Express	n/a
ST31	C014 Rose Red 16mm Tubular Crinoline	Castanets	Ali Express	n/a
ST32	C004 Pink 16mm Tubular Crinoline	Castanets	Ali Express	n/a
ST33	C009 Rose Red 4mm Tubular Crinoline	Castanets	Ali Express	n/a
ST34	C014 Rose Red 4mm Tubular Crinoline	Castanets	Ali Express	n/a
ST35	C004 Pink 4mm Tubular Crinoline	Castanets	Ali Express	n/a
ST36	Hot Pink Nylon Mesh Tubing	Castanets	Cosplay Supplies	n/a
ST37	Canvas	Wings, body reinforcement, castanet backing		B09MCHDSPR
ST38	White Spandex	Body access panel	Spandex House	795

ST39	White fuzzelle dyed pink	Embellishments		n/a
ST11	White F3 dyed light pink	Tongue		n/a
ST60	1" velcro	wings	Wawak	# VO50WH

8.4 Custom Made Parts

Part #	Part	Quantity	Usage	Vendor	Filename
ST40	Cricut Holographic Iron on Vinyl - Translucent Red		Dot Embellishments	Cricut	
ST41	Velour Contact Paper		Pupils	Cricut	

8.5 Paints and Dyes

SDS sheets are available in the separate SDS Project Packet.

Part #	Part	Usage	Vendor	Vendor Part ID
ST42	Fl. Blue airbrush paint	stage makeup mixture, embellishment color	Createx Colors, wicked colors	5403
ST43	wicked violet airbrush color	stage makeup mixture	Createx Colors, wicked colors	0006
ST44	fl. magenta airbrush color	embellishment color	Createx Colors, wicked colors	0029
ST45	Bright Orange Wildfire Luminescent Paint	Eyes	World Paint Supply	WF6OZ
ST46	Brilliant Yellow Wildfire Luminescent Paint	Eyes	World Paint Supply	WF6OZ
ST47	Aqua Tropic acid dye	light blue fuzzelle - 1/16% depth of shade 50%	Jacquard	647
ST48	Blacklight Blue acid dye	light blue fuzzelle - 1/16% depth of shade 50%	Jacquard	645
ST49	Blacklight Blue acid dye	medium blue fuzzelle - 4% depth of shade 80%	Jacquard	645
ST50	Brilliant Blue acid dye	medium blue fuzzelle - 1% depth of shade 20%	Jacquard	623

ST51	purple pop acid dye	f3 details - 1% depth of shade 10%	Dharma Trading company	478
ST52	fluorescent fuchsia acid dye	f3 details 1% depth of shade 90%	Dharma Trading company	406

8.6 Glues, Treatments, Coatings, and Chemicals

SDS sheets are available in the separate SDS Project Packet.

Part #	Part	Usage	Vendor	Vendor Part ID
ST53	Barge	all over	Frankford Leather	BAPC
ST54	Fabri-tac	adhering wing details	Beacon	N/a
ST55	Fraycheck	stabilizing edges of wing details	Dritz	B013WTDO3A
ST56	JB Weld 5 minute Epoxy	Stabilizing springsteel with larger sized carbon fiber tube	Lowe's	#1229768
ST57	JB Weld SteelStik	Stabilizing inner plastizote ring	Amazon	B07JJYLGSG
ST58	Black Hot Glue	Attaching plastizote ring to body	Amazon	B0CB3D49VY
ST59	Top Stick	Pupils	Amazon	B00WY1J2I4
ST61	Insta-Shield Flame Retardant	Fire treatment	Northeast FireShield	N/A