User Instructions Manual

skyTECH™ Turbine Catch Block

SKY-TCB-01, SKY-TCB-S01

Skyline Ziplines Ltd.

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Revision History

Revision	Sections Affected	Changes	Date
0.0	-	Original Publication	11 December, 2023

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Warnings and Important Notices

You will find on this page, and throughout this user instructions manual, many warnings and important notices that must be considered seriously when operating this system. It is imperative to understand the meaning of the warnings and potential hazards.

It is the responsibility of the operator to document and maintain a product use, inspection and maintenance logbook. Skyline Ziplines supplies inspection criteria and guidelines, forms and log sheets specific to all manufactured systems and equipment. It is the responsibility of the operator to follow all guidelines, intervals, and criteria set forth by these documents.

WARNING: This product is designed for zip line operations only. The operator(s) must read and understand the instructions in this manual before using this product. Manufacturer's instructions must be followed for the proper use and maintenance of the system and provided equipment. Alterations or misuse of this equipment, or failure to follow instructions, may result in serious injury or death.

This document does not replace a complete training necessary for the use of this product. Knowledge by the user of all appropriate techniques and risks is required.

This manual contains information and instructions specific to the skyTECH™ Turbine Catch Block and associated equipment manufactured by Skyline Ziplines Ltd. Make sure this User Instructions Manual is the latest version available. Contact Skyline Ziplines to obtain the latest document revisions, important Updates and other notices.

Products and systems manufactured by Skyline Ziplines are intended for use by professionals trained and experienced in the use, inspection, and maintenance of these products, or for use by persons under the direct visual surveillance of competent and responsible persons.

Before using this equipment, record the product identification information from the ID label in the inspection and maintenance log at the end of this document. Make sure this User Instructions Manual is readily available with the product. Contact Skyline Ziplines Ltd to obtain additional copies of this manual.

1.0 Description

1.1 Applications

The skyTECH™ Turbine Catch Block is to be used only as a trolley receiving/impact device for zipline amusement rides.

1.2 Standards

Refer to local, provincial/state and federal laws and regulations pertaining to the installation and use of this type of equipment.

1.3 Description of skyTECH™ Turbine Catch Block

1.3.1 skyTECH™ Turbine Catch Block

Product Codes:

With Swingarm:

- 3/8” Cable: SKY-TCB-S01-A1
- 1/2” Cable: SKY-TCB-S01-A2
- 5/8” Cable: SKY-TCB-S01-A3

Without Swingarm:

- 3/8” Cable: SKY-TCB-01-A1
- 1/2” Cable: SKY-TCB-01-A2
- 5/8” Cable: SKY-TCB-01-A3

Specifications:

- Designed for use with skyTECH Turbine Trolleys and other small-scale trolleys.
- CNC Machined Acetal Body and Aluminum Components
- Unique rubber-based compound bumper to absorb impact
- Stainless Steel Hardware
- Modular Design allows for Replaceable Components
- Self-Lubricating Nylon Inserts Eliminate Metal-to-Metal Contact

2.0 Limitations

Consider the following application limitations before using this equipment:

2.1 Capacity and Working Load Limit

- Not to be used in operations exceeding 50 mph braking speeds
- Not to be used in operations exceeding 300 lbs. patron weight

2.2 Environmental Hazards

Use of this equipment in areas with environmental hazards may require additional precautions to prevent injury to the user or damage to the equipment. Hazards may include, but are not limited to: heat, chemicals, corrosive environments, electrical fields and wires, gases and sharp edges.

2.3 Sharp Edges

Avoid using where the zip line equipment or other system components will be in contact with, or abrade against, unprotected sharp edges.

2.4 Training

Skyline's skyTECH™ Turbine Catch Block must only be installed and used by persons trained in their correct application and use (See Section 5).

3.0 System Requirements

3.1 Compatibility of Components

Skyline equipment is designed for use with the Skyline-approved components and subsystems only. Substitution or replacements made with non-approved components or subsystems may jeopardize compatibility of equipment and may affect the safety and reliability of the complete system.

Approved Brake Systems

- skyTECH™ 2:1 Spring Brake System
- skyTECH™ 1:1 Spring Brake System
- Head Rush Technologies zipSTOP Brake System

**Contact Skyline Ziplines for any questions regarding brake system compatibility.

Approved Trolleys for Capture

- skyTECH™ Turbine Trolley
- Most single-line third-party trolleys measuring less than 8” in length.

**Contact Skyline Ziplines for any questions regarding trolley compatibility

3.2 Compatibility of Connectors

Connectors are compatible with connecting elements when they have been designed to work together in such a way that their size and shape do not cause their gate mechanism to inadvertently open regardless of how they become oriented.

Connectors used to attach to the skyTECH™ Turbine Catch Block should meet these specifications:

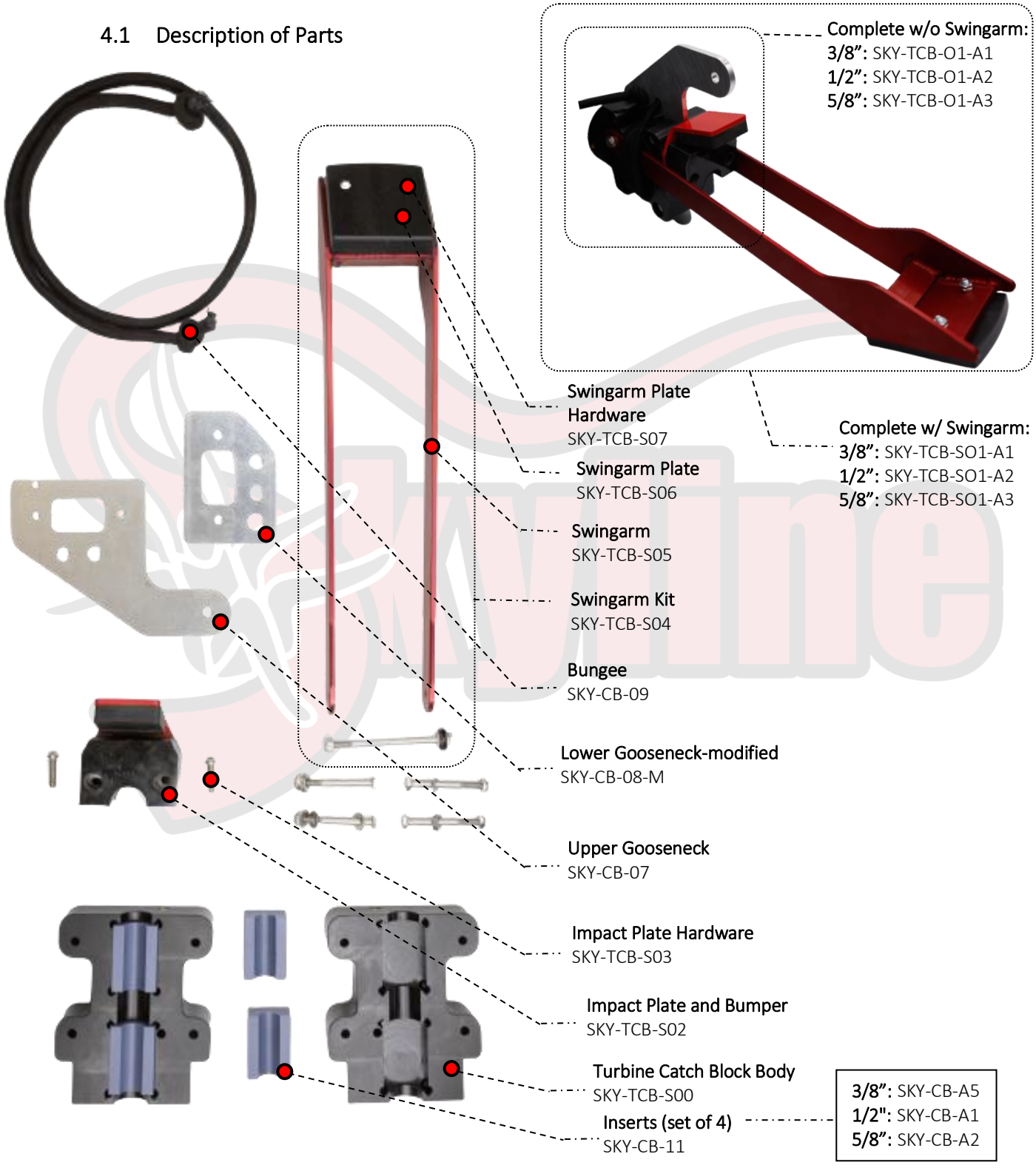
- Minimum break strength of 13 kN or ~3000 lbs
- Shape must be designed to attach to top or bottom Goose Neck with minimal hole slop (Gap < 1/8”)
- Must have a mechanism for locking, i.e. cotter pin, spring pin, lock wire, etc.
- Must have WLL or MBS label on connector
- Recommended Connector(s): Galvanized 5/16” Bolt Pin Shackle (WLL 0.75t)

3.3 Making Connections

Use only connectors that are suitable to each application. Ensure all connectors are compatible in size, shape, and strength. Do not use equipment that is not compatible. Ensure all connectors are fully closed and locked.

4.0 Nomenclature and Assembly

4.1 Description of Parts



4.2 Procedure for Installing skyTECH™ Turbine Catch Block

Tools Required: (2) 7/16” Socket with Driver, (1) 4mm Hex Wrench

4.2.1 Place appropriate ladder on steady bearings at the end of spring back (or below braking system redirect pulley).

4.2.2 Remove the bolt from one side of the impact bumper.

4.2.3 Remove the four (4) nuts on the body and pull the two halves of the body apart giving you access to the inserts, ensuring you do not misplace any components.

4.2.4 Place the two halves of the body on either side of the cable before reassembling them over the cable. Ensure the inserts are the correct size for your diameter of cable.

4.2.5 Ensure both the upper and lower goosenecks are in place before replacing the four nuts and washers and tightening down the bolts to 9 Nm.

4.2.6 Replace the bolt and washer in the impact bumper and torque to 9 Nm.

4.2.7 If you have the swingarm, install it over the body ensuring it is sitting on top of the cable.

4.2.8 Place a nylon washer between the swingarm and body on both sides of the catch block before inserting the bolt with washers on both sides.

4.2.9 Do not overtighten this bolt. Ensure the swingarm can swivel smoothly but there is no side-to-side movement in the bolt.

4.2.10 Install the bungee by tying an overhand knot on one end and running it through one of the holes in the upper gooseneck. Then wrap the body 3 times before running the other end through the second hole in the gooseneck and tying a second overhand knot.

4.2.11 Check to ensure that the brake trolley can slide freely along the cable with minimal friction and the swingarm is free to pivot upwards.

5.0 Standard Operating Procedures

The following operating procedures outline only the necessary steps required to complete each process. The procedures do not consider additional safety requirements and additional safety considerations that should be considered for each site. Please consult a qualified person and/or your site-specific manual to ensure all necessary steps are taken to guarantee safety in your operations.

5.1 Standard Procedures for Operations

5.1.1 Guest flies the line and impacts the Turbine Catch Block at landing.
5.1.2 Wait until guest has come to a complete stop before approaching.
5.1.3 Remove trolley from the line and direct guest to designated waiting area.
5.1.4 Reset braking system, ensuring all components reach their complete and proper reset locations.
5.1.5 Complete landing radio protocol.
5.1.6 Repeat steps 1 through 5 with remaining guests.

6.0 Training

It is the responsibility of the buyer/user of this equipment to make sure that they understand these instructions, and are sufficiently trained in the correct use and care of this equipment. The user must be aware of the operating characteristics, application limits, and the consequences of improper use. Training must be done prior to use and user must be evaluated for his/her competence to use this equipment. Gaining an adequate education in proper techniques and methods of safety is your own responsibility. Training should be done under the supervision of competent persons.

It is recommended that Skyline Ziplines perform a manufacturer's training session to cover the material in this document, use with other equipment, and site specific training.

**Competent persons: (OSHA) One who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are hazardous our dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them.*

7.0 Inspection

7.1 Frequency

7.1.1 The skyTECH™ Turbine Catch Block must be formally inspected daily prior to initial use and recorded in the inspection log.

7.1.2 The skyTECH™ Turbine Catch Block must be inspected by the manufacturer or approved competent person(s) at least once a year (or more frequently if deemed necessary by the frequency and/or conditions of use). The results of this formal inspection must be recorded in the inspection and maintenance log at the end of this manual.

7.2 Daily Pre-Use Inspection Process

The daily pre-use inspection process is included in Appendix A. The forms available in this manual may be used for operations and as a template for site specific forms. It is critical that every item presented on the provided form is inspected and documented.

7.3 Documentation Process

Located in Appendix A is a sample Inspection form that Skyline Ziplines recommends using as a template. Located in Appendix B is a sample Maintenance form that Skyline Ziplines recommends using as a template. Located in Appendix C is a flowchart explaining the appropriate process for inspections, maintenance, and documentation. It is important to reference this flowchart for proper Quality Assurance documentation.

7.4 Lock Out, Tag Out

To ensure the highest standard of safety, it is required that all sites produce a Lock Out, Tag Out system. The system/process is designed to identify and prevent the use of all equipment identified through the inspection process as REJECTED (not suitable for use). Below is an example provided by Skyline Ziplines and is also included in the flowchart in Appendix C:

7.4.1 Item identified as rejected or failed during inspection by staff member.

7.4.2 Failure/rejection is noted on inspection log.

7.4.3 Item is marked with a tag with the following information:

- 7.4.1.1 Name of staff member
- 7.4.1.2 Date of inspection
- 7.4.1.3 Reason for rejection

7.4.4 Item is placed in designated Lock Out, Tag Out area. This area must be removed from the operating area to avoid any chance of use.

8.0 Maintenance and Storage

8.1 Storage

Proper storage of equipment leads to longer equipment life and assurance of the integrity of the product. Follow the below guidelines for long term:

- Store the product in a cool, dry, and clean environment out of direct sunlight
- Avoid areas that vapors may exist
- Thoroughly inspect all equipment after extended storage

8.2 Replacement Parts and Repairs

All replacement parts must be purchased through Skyline Ziplines Ltd. All equipment repairs must be performed by the following: Skyline Ziplines Ltd, an authorized contractor/vendor of Skyline Ziplines Ltd with approval, or trained and authorized onsite personnel.

8.3 Turbine Catch Block Maintenance – Replace the Impact Bumper

Tools Required: (1) 4mm Hex Wrench

8.3.1 Remove the bumpers from the brake trolley by removing the two bolts and lock washers inside the bumper.

8.3.2 Remove and discard old bumper.

8.3.3 Place new bumper on catch block

8.3.4 Replace the bolts and washers.

8.3.5 Tighten the bolts to 9 Nm.

8.3.6 Check that the catch block operates smoothly.

8.3.7 Inspect unit and record maintenance in log (Appendix B).

8.4 Turbine Catch Block Maintenance – Replacing the Nylon Inserts

Tools Required: (2) 7/16” Socket with Driver, (1) 4mm Hex Wrench

8.4.1 Place appropriate ladder on steady bearings at the end of spring back (or below braking system redirect pulley).

8.4.2 Remove the bolt from one side of the impact bumper.

8.4.3 If you have the swingarm, remove the bungee by untying one of the overhand knots followed by the removal of the swingarm bolt. Ensure you do not lose the nut and nylon washers.

8.4.4 Remove the four (4) nuts on the body and pull the two halves of the body apart giving you access to the inserts, ensuring you do not misplace any components.

8.4.5 Place the two halves of the body on either side of the cable before reassembling them over the cable. Ensure the inserts are the correct size for your diameter of cable.

8.4.6 Ensure both the upper and lower goosenecks are in place before replacing the four nuts and washers and tightening down the bolts to 9 Nm.

8.4.7 Replace the bolt and washer in the impact bumper and torque to 9 Nm.

8.4.8 If you have the swingarm, install it over the body ensuring it is sitting on top of the cable.

8.4.9 Place a nylon washer between the swingarm and body on both sides of the catch block before inserting the bolt with washers on both sides.

8.4.10 Do not overtighten this bolt. Ensure the swingarm can swivel smoothly but there is no side-to-side movement in the bolt.

8.4.11 Install the bungee by tying an overhand knot on one end and running it through one of the holes in the upper gooseneck. Then wrap the body 3 times before running the other end through the second hole in the gooseneck and tying a second overhand knot.

8.4.12 Check to ensure that the brake trolley can slide freely along the cable with minimal friction and the swingarm is free to pivot upwards.

8.4.13 Inspect unit and record maintenance in log (Appendix B).

8.5 Turbine Catch Block Maintenance – Replacing Swingarm Bumper

Tools Required: (1) 3/8” Socket and Driver, (1) 1/8” Hex Wrench

8.5.1 Place appropriate ladder on steady bearings at the end of spring back (or below braking system redirect pulley).

8.5.2 Remove the two bolts holding the swingarm bumper in place with the 1/8” hex wrench and holding the nut on the rear with the 3/8” socket.

8.5.3 Remove the bumper and discard, ensuring you do not misplace the hardware.

8.5.4 Install the new bumper in the correct orientation and reinstall the two bolts using the hex wrench and socket.

8.5.5 Torque the bolts to 4 Nm.

8.5.6 Inspect unit and record maintenance in log (Appendix B).

9.0 Lifetime

The lifetime of a skyTECH™ Turbine Catch Block is determined through the inspection process described in section 7.2. The expected lifetime of the skyTECH™ Turbine Catch Block is 5 years. The actual lifetime depends on the intensity and the frequency of use as well as the environment. An exceptional circumstance might limit the product lifetime to a single use. A product that was not inspected at least once per year should be removed from service and replaced.

10.0 Incident and Failure Reporting

In the unfortunate situation that a skyTECH™ Turbine Catch Block is involved in an incident or a failure, please notify Skyline Ziplines immediately so that prompt corrective measures can be taken by Skyline Ziplines. Product Safety Alerts are available at request and are sent out to all previous customers via email.

Complete information concerning the incident (date, location, details as to event and consequence, etc.) must be communicated to admin@skylineziplines.ca and/or called in to the office at 604-905-4149.

Skyline Ziplines will investigate the incident and if a product recall alert is required, shall notify all known customers and distributors who have purchased the product.

11.0 Warranty

Subject to the following limitations, terms, and conditions, Skyline Ziplines LTD warrants to the original purchaser of each Product that such Products when purchased new, are free of defects in materials and workmanship. This limited warranty may be exercised for a period of up to one year from the date of receipt. This limited warranty does not apply to normal wear and tear, nor to claimed defects, malfunctions or failures that result from abuse, neglect, improper assembly, improper maintenance, alteration, collision, crash, or misuse.

EXCEPT AS EXPRESSLY SET FORTH ABOVE, SKYLINE ZIPLINES LTD DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PURPOSE. SKYLINE ZIPLINES LTD'S RESPONSIBILITY FOR WARRANTY CLAIMS IS LIMITED TO, AT SKYLINE ZIPLINES LTD'S SOLE DISCRETION, REIMBURSEMENT OF THE ORIGINAL PURCHASE PRICE, REPAIR OF THE PRODUCT, OR REPLACEMENT OF THE PRODUCT WITH THE SAME OR SIMILAR PRODUCT. NOTWITHSTANDING anything in THESE TERMS to the contrary, SKYLINE ZIPLINES LTD SHALL NOT be responsible or held liable for punitive, indirect, incidental or consequential damages, including without limitation, liability for loss of use, loss of profits, loss of Product or business interruption however the same may be caused, including fault or negligence of SKYLINE ZIPLINES LTD.

To exercise rights under this limited warranty, Customer must return the affected Product to Skyline Ziplines LTD (unless otherwise instructed by Skyline Ziplines LTD) to:

SKYLINE ZIPLINES LTD
6-1006 LYNHAM ROAD
WHISTLER, BRITISH COLUMBIA, CANADA V8E 0S3

Skyline Ziplines LTD will use reasonable commercial efforts to return all product in a timely manner to the designated location and will be responsible for all shipping costs. Skyline Ziplines LTD reserves the right to modify this limited warranty at any time, in its sole discretion.

Appendix A – Inspection Form

*Sample files available upon request

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INSPECTION FORM I-14

skyTECH™ Turbine Catch Block

Inspection Information Rev 0.0 - December 11, 2023

Frequency: Daily Pre-Use

Models: *Turbine Catch Block (SKY-TCB-01)*

Performed By: Trained Staff Member

Manufacturer: Skyline Ziplines LTD.

Inspect all matching equipment in accordance with the inspect criteria listed below. At the bottom, record the equipment's disposition by marking the appropriate ID number. If the answer is YES to one or more of the following questions, the unit is deemed UNFIT for service.

1. Known Equipment History

- Has the unit been used by a person weighing more than 300 lbs?
-Has the unit received an impact exceeding 60mph without a subsequent inspection?
- Has the unit been exposed to detrimental chemical products or an intensive source of heat?
- Has the unit not been formally inspected within the last year by a competent person?

2. Preliminary Observations

- Are all engravings, serial numbers and dates of manufacture present and legible?
- Has the product undergone modifications or alterations not performed or authorized by the manufacturer?

3. Body Inspection

- Are there any visual indications of damage to the body, swingarm or aluminum goosenecks such as chips, bends, cracks, or excessive wear?
-Are there any issues with the catch block running smoothly over the cable?

4. Wear Items Inspection

-Are aluminum goosenecks toughing the cable due to worn inserts?
-Are the bumpers cracking or deformed?
-Is the bungee showing signs of broken strands, necking, or other degradation?
-Is the swingarm bumper cracked, chipped, worn through, or otherwise showing serious signs of wear? Does the swingarm pivot freely?

5. Hardware Inspection

- Are any fasteners loose or missing bolts, nuts, or washers?
-Is there any deformation, marks, cracks, wear, corrosion, bent metal, or other issues with the metallic components?

Disposition - Circle all line numbers correlating with all units that have PASSED the inspection and are FIT for service

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15

Failed Equipment - List all ID numbers for units deemed UNFIT for service. Consult the manual for proper Lock Out, Tag Out Protocol

Notes/Comments

Inspected By:

Date:

Appendix B – Maintenance Log

*Sample files available upon request

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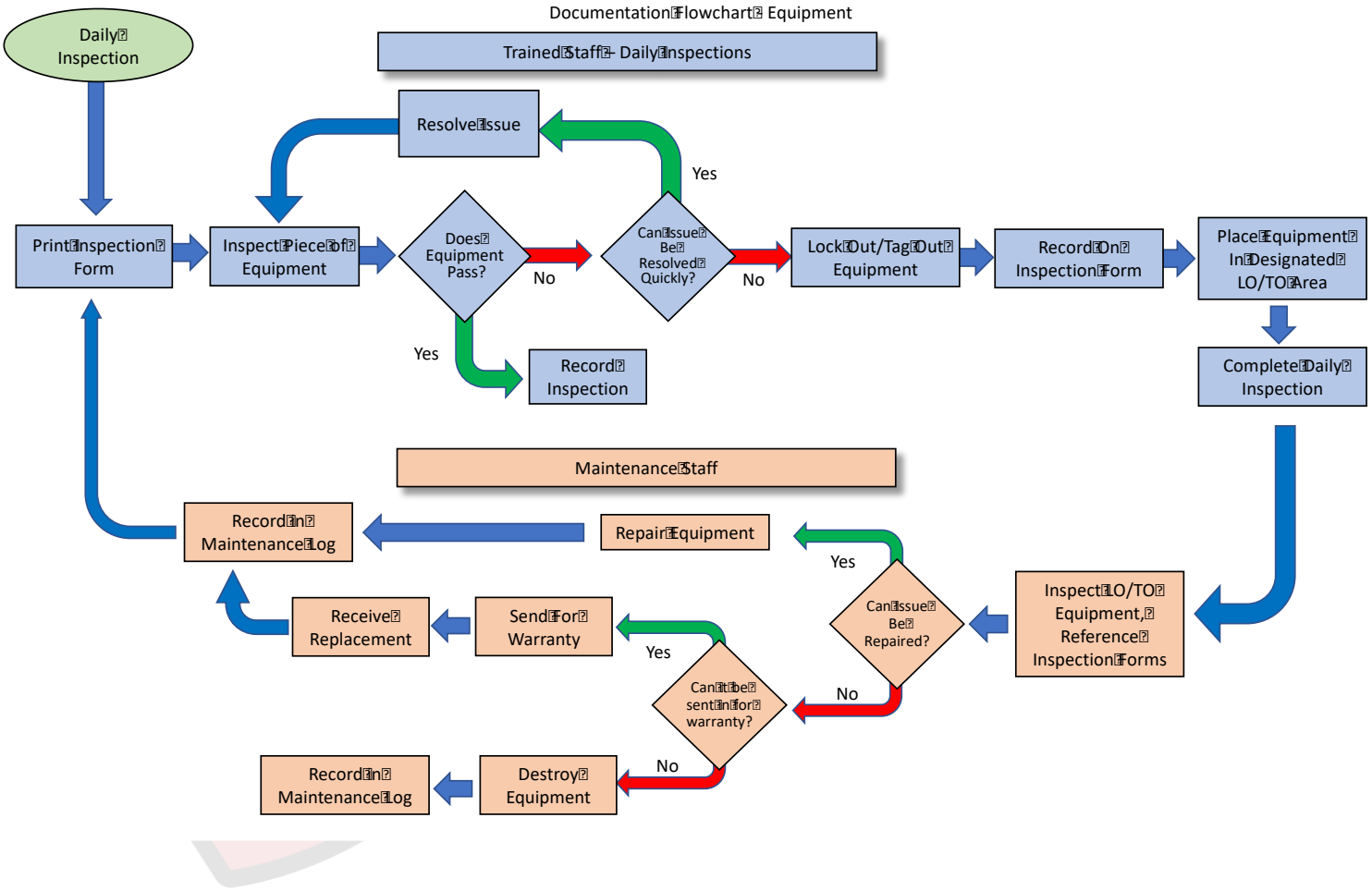
MAINTENANCE FORM M-10

skyTECH Turbine Brake Trolley

Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED
Unit ID:	Performed By:	Date:
Work Performed:		
		Verdict (Circle One): FIT UNFIT RETIRED

Appendix C – Documentation Process Flowchart



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