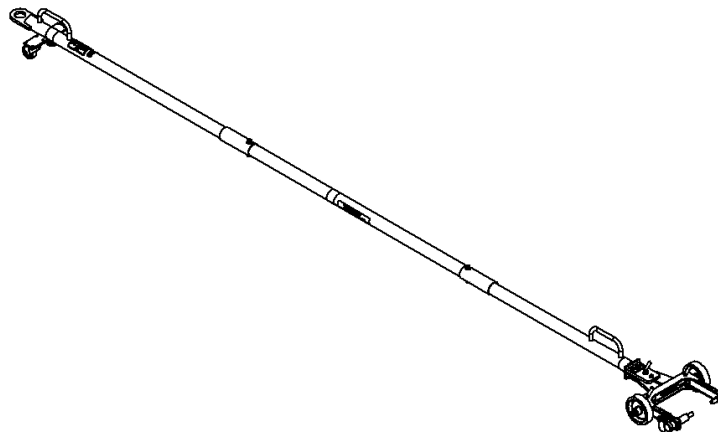




# OPERATION & SERVICE MANUAL



**Model: 01-1391-0000**  
**Predator C Hunter-Killer**  
**Custom Towbar**



06/2017 – Rev. 01

**Includes Illustrated Parts Lists**

REVISION  
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Tronair towbars/heads must only be used with matching Tronair heads/towbars, and Tronair shear pins.

This product can not be modified without the written approval of Tronair, Inc. Any modifications done without written approval voids all warranties and releases Tronair, Inc., its suppliers, distributors, employees, or financial institutions from any liability from consequences that may occur. Only Tronair OEM replacement parts shall be used.

## 1.0 PRODUCT INFORMATION

### 1.1 DESCRIPTION

The Tronair Model 01-1391-0000 Custom Towbar is for towing the Predator C Hunter-Killer Aircraft manufactured by General Atomics.

The custom towbar separates into three sections for ease of shipping. It incorporates shear protection for the nose landing gear and ships with two spare shear pins. The aircraft attachment is by machined pins on the towing head to the nose landing gear axle. There is an eye at the end of the towbar for towing.

### 1.2 MODEL & SERIAL NUMBER

Reference nameplate on unit

### 1.3 MANUFACTURER

**TRONAIR**, Inc.  
1 Air Cargo Pkwy East  
Swanton, Ohio 43558

Telephone: (419) 866-6301 or 800-426-6301  
Fax: (419) 867-0634  
E-mail: sales@tronair.com  
Website: www.tronair.com

### 1.4 SPECIFICATIONS

**Aircraft Application:** Predator C Hunter-Killer Aircraft

**Dimensions:**

Length: 190 in (483 cm) from eyebolt centerline to aircraft attachment centerline

Width: 19 5/8 in (49.8 cm)

Height: 3.0 in (7.6 cm) from ground to aircraft attachment centerline

Weight: 105 lbs (48 kg)

**Finish:** Blue Powder Coat

**Maximum Aircraft Gross Weight:** 12,500 lbs (5.6 metric tons)

## 2.0 SAFETY INFORMATION

### 2.1 GENERAL

The Tronair Model 01-1391-0000 Custom Towbar is designed for moving Predator C Hunter-Killer Aircraft only.

To insure safe operations please read the following statements and understand their meaning. Also refer to your equipment manufacturer's manual for other important safety information. This manual contains safety precautions which are explained below. Please read carefully.



**WARNING!** — Warning is used to indicate the presence of a hazard that **can cause severe personal injury, death, or substantial property damage** if the warning notice is ignored.



**CAUTION!** — Caution is used to indicate the presence of a hazard that **will or can cause minor personal injury or property damage** if the caution notice is ignored.

#### **WARNING!**

A damaged or bent towbar should not be used. Towbar should be repaired or replaced.



#### **WARNING!**

Tronair recommends the use of a towbar with a category 1 or category 2 tug and aircraft not exceeding 75,000 lbs gross weight. Using the towbar with aircraft weighing in excess of this specific limitation may result in excessive loads and stresses being applied to the towbar and/or the aircraft. These excessive loads may cause failure of the towbar which could cause damage (INCLUDING WITHOUT LIMITATION to the aircraft) and/or personal injury OR DEATH. **TRONAIR MAKES NO REPRESENTATION, WARRANTY OR GUARANTEE AS TO SUCH MISUSE AND DISCLAIMS ANY AND ALL LIABILITY FOR INJURY, LOSS OR DAMAGE ARISING FROM OR RELATING TO SUCH MISUSE.**

**3.0 TRAINING****3.1 TRAINING REQUIREMENTS**

The employer of the operator is responsible for providing a training program sufficient for the safe operation of the towbar.

**3.2 TRAINING PROGRAM**

The employer provided operator training program should cover safety procedures concerning use of the towbar in and around the aircraft at the servicing location.

**3.3 OPERATOR TRAINING**

The operator training should provide the required training for safe operation of the towbar.

**NOTE: Maintenance and Trouble Shooting are to be performed by the skilled and trained technician.**

**4.0 OPERATION****4.1 PRELIMINARY CHECKLIST**

Tronair recommends towbar inspections at least once a week.

- Check towing eye for bending, excessive wear and deformity. If any are located, remove towbar from service and contact Tronair for repair.
- Inspect the towbar tube for cracks, gouges greater than 1/16", and bends or deformities. If any are located, remove towbar from service and contact Tronair for repair.
- Check casters for damage; ensure the swivels operate freely and the bearings are not missing. Replace if needed.
- Ensure the caster mounting fasteners are tight and not missing. Tighten or replace as required.
- Inspect the caster mounting plate for bends or breaks. If any are located, remove towbar from service and contact Tronair for repair. Inspect welds, contact Tronair if repairs are needed.
- Inspect the front and rear lifting handles. Repair or replace the handle if it is missing or damaged.
- Inspect all welds for cracks. If any are located, remove towbar from service and contact Tronair for repair/replacement.
- Check the wheels on the head weldment for unusual wear or damage. Ensure the wheels can rotate freely, and wheel rims and tire axle are not bent. Ensure flatwashers and jamnut are tight and not missing. Tighten or replace as required. Grease tire axle every 90 days.
- Check the towbar section connecting fasteners. Ensure they are tight and not missing. Tighten or replace as required.
- Inspect the side and head rails on the weldment for bending or damage. If any are located, remove towbar from service and contact Tronair for repair/replacement.
- Inspect the shear plates for bending or damage. If any is located, remove towbar from service and contact Tronair for repair/replacement.
- Inspect the sliding and stationary pins for bending, cracks, and excessive wear. If any are located, remove towbar from service and contact Tronair for repair/replacement.
- Ensure the sliding pin can move freely in its wear sleeve. If binding occurs, inspect the sliding pin for bending and wear sleeve for out-of-roundness. If either condition exists, contact Tronair for repair/replacement.
- Check sliding pin alignment roll pin located in the wear sleeve. Ensure it is tight and not missing. Replace as required.
- Check ball lok-T pin. Ensure it is secured to the head weldment via its lanyard. Replace as required.
- Check the shoulder screw fastener assembly located through the shear plates. Ensure it is not missing. Replace as required. Ensure it is not applying clamping force on the shear plates. Loosen by backing Jamnut off to remove clamping force if required.
- Inspect shear pin for bending or cracks. Ensure it is not missing. Contact Tronair for repair/replacement if required

**WARNING!**

**Towing an aircraft with a broken or missing shear pin may cause damage to the aircraft.**

- Inspect shear pin bushings for chips or cracks. Contact Tronair for repair if required.
- Inspect all steel components for signs of rust. Touch up with paint as required.

4.0 Operation continued on following page.

**4.0 OPERATION** (continued)  
**4.2 USAGE PROCEDURE**  
**4.2.1 Aircraft Attachment**



**CAUTION!**

It is recommended that your towbar be attached to the aircraft first, and then connected to the tug to avoid possible aircraft damage.

- Ensure the sliding pin is locked in place using the ball lok-T pin.

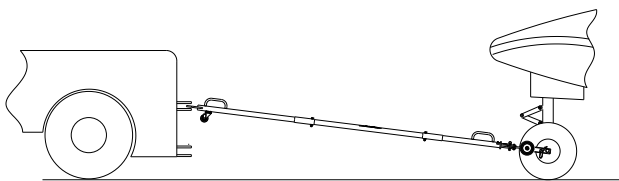
**4.2.2 Tug Attachment**



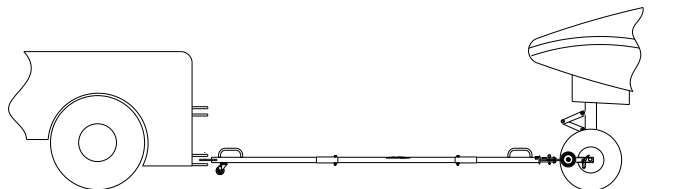
**CAUTION!**

Damage to the towbar or aircraft can result from an excessive towbar angle during towing operations. Reference Figure 1.

- Use a pintle height so that the towbar is as level as possible during towing. Also, the pintle hook height should prevent contact of the towbar with the ground during towing.



**Figure 1 - Incorrect**



**Figure 2 - Correct**

**4.2.3 Couplers**

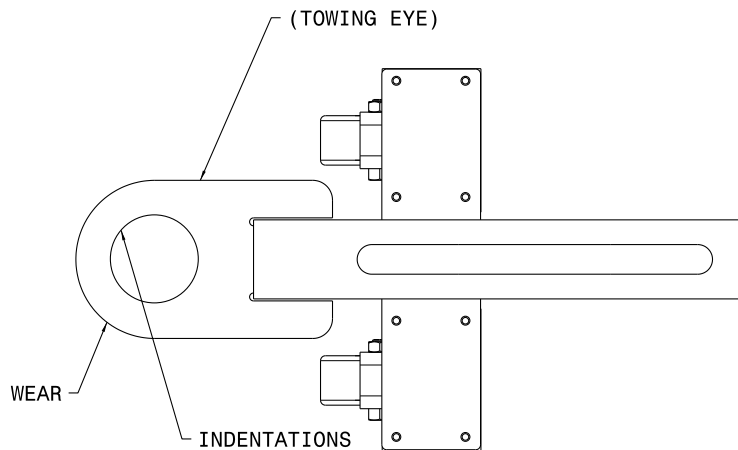


**CAUTION!**

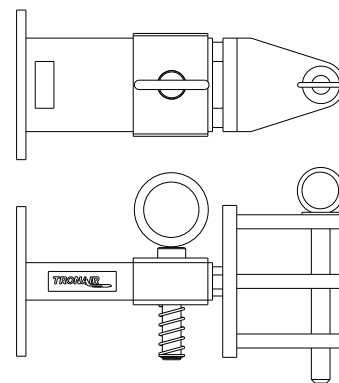
Damage to the towbar or aircraft can result while towing with the following types of couplers:

- Lift Head
- Standard Duty Latch
- Vertical Side Swing Latch
- Swivel Hook

The couplers listed above are known to cause binding and failure in the towing eye. Indicators of binding are wear on outside diameter of the eyebolt and indentation on the inside diameter of the eye. Reference Figure 3.



**Figure 3**



**FIGURE 4 – 01-1950-5000  
 Standard Telecoupler**

Tronair recommends a telecoupler pintle hook arrangement. This arrangement is known to eliminate binding. Tronair offers a Standard Telecoupler, Model Number 01-1950-5000, for use on tugs. Reference Figure 4.

4.2.3 Couplers (continued)

Damage to the towbar and/or aircraft can result by towing or pushing an aircraft with an incorrect size eyebolt or pintle pin. A correct size eyebolt will make contact with the pintle pin. A gap between the eyebolt outside diameter and the coupler face plate should be easily seen. An eyebolt which is too large will cause the eyebolt to make contact with the face plate of the coupler. When the eyebolt is too large for the coupler, a gap between the inside diameter of the eyebolt and the coupler face plate will be seen. **Reference Figure 5.**

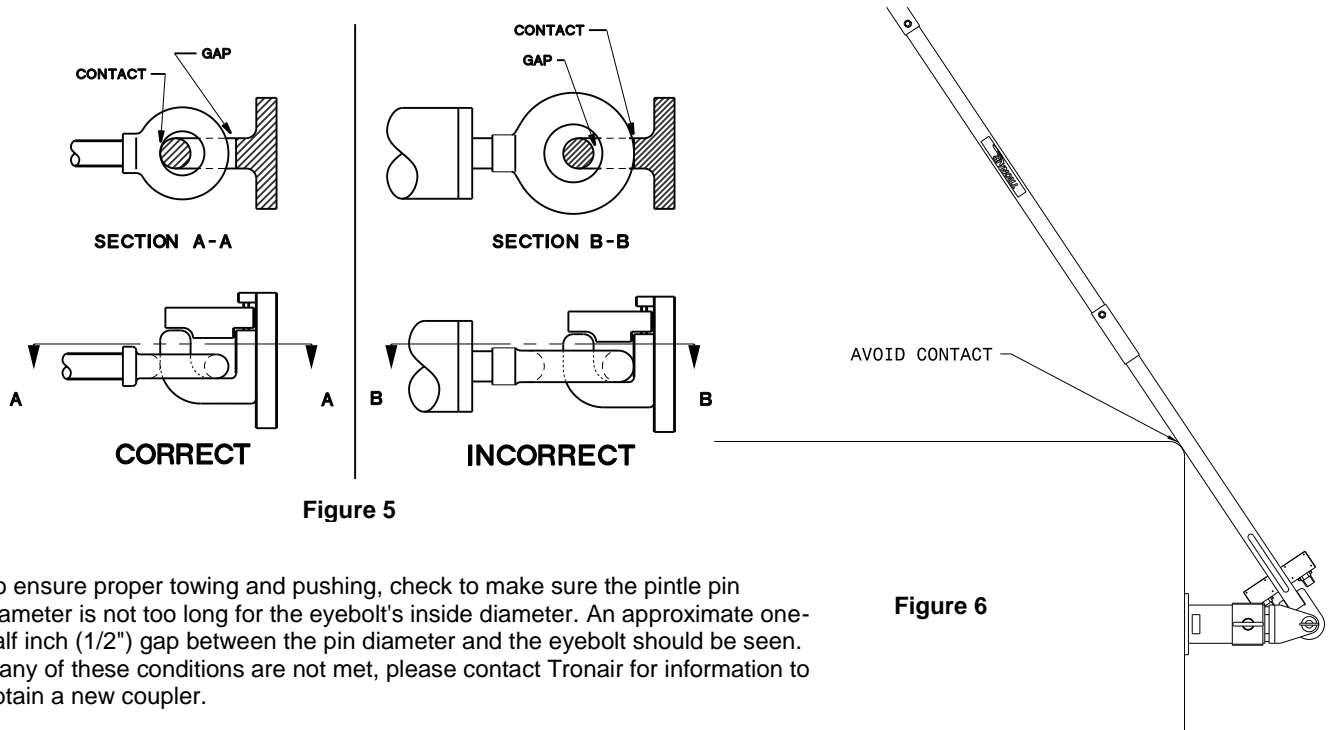


Figure 5

Figure 6

To ensure proper towing and pushing, check to make sure the pintle pin diameter is not too long for the eyebolt's inside diameter. An approximate one-half inch (1/2") gap between the pin diameter and the eyebolt should be seen. If any of these conditions are not met, please contact Tronair for information to obtain a new coupler.

4.2.5 Towing Operation:

Damage to the towbar or aircraft can result from pushing an aircraft while maintaining too sharp of an angle between the tug and the aircraft. Contact between the towbar weldment and the tug must be avoided. It is recommended that the angle between the tug and towbar not exceed 90°. **Reference Figure 6.**

5.0 PROVISION OF SPARES

5.1 SOURCE OF SPARE PARTS

Spare parts may be obtained from the manufacturer:

<b>TRONAIR, Inc.</b>	Telephone: (419) 866-6301 or 800-426-6301
1 Air Cargo Pkwy East	Fax: (419) 867-0634
Swanton, Ohio 43558	E-mail: sales@tronair.com
	Website: www.tronair.com

5.2 RECOMMENDED SPARE PARTS LISTS

Reference the following page(s) for Replacement Parts and Kits available.

6.0 IN SERVICE SUPPORT

Contact Tronair, Inc. for technical services and information. See Section 1.3 – Manufacturer.

## 7.0 GUARANTEES/LIMITATION OF LIABILITY

Tronair products are warranted to be free of manufacturing or material defects for a period of one year after shipment to the original customer. This is solely limited to the repair or replacement of defective components. This warranty does not cover the following items:

- a) Parts required for normal maintenance
- b) Parts covered by a component manufacturers warranty
- c) Replacement parts have a 90-day warranty from date of shipment

If you have a problem that may require service, contact Tronair immediately. Do not attempt to repair or disassemble a product without first contacting Tronair, any action may affect warranty coverage. When you contact Tronair be prepared to provide the following information:

- a) Product Model Number
- b) Product Serial Number
- c) Description of the problem

If warranty coverage is approved, either replacement parts will be sent or the product will have to be returned to Tronair for repairs. If the product is to be returned, a Return Material Authorization (RMA) number will be issued for reference purposes on any shipping documents. Failure to obtain a RMA in advance of returning an item will result in a service fee. A decision on the extent of warranty coverage on returned products is reserved pending inspection at Tronair. Any shipments to Tronair must be shipped freight prepaid. Freight costs on shipments to customers will be paid by Tronair on any warranty claims only. Any unauthorized modification of the Tronair products or use of the Tronair products in violation of cautions and warnings in any manual (including updates) or safety bulletins published or delivered by Tronair will immediately void any warranty, express or implied.

The obligations of Tronair expressly stated herein are in lieu of all other warranties or conditions expressed or implied. **Any unauthorized modification of the Tronair products or use of the Tronair products in violations of cautions and warnings in any manual (including updates) or safety bulletins published or delivered by Tronair will immediately void any warranty, express or implied and Tronair disclaims any and all liability for injury (WITHOUT LIMITATION and including DEATH), loss or damage arising from or relating to such misuse.**

## 8.0 APPENDICES

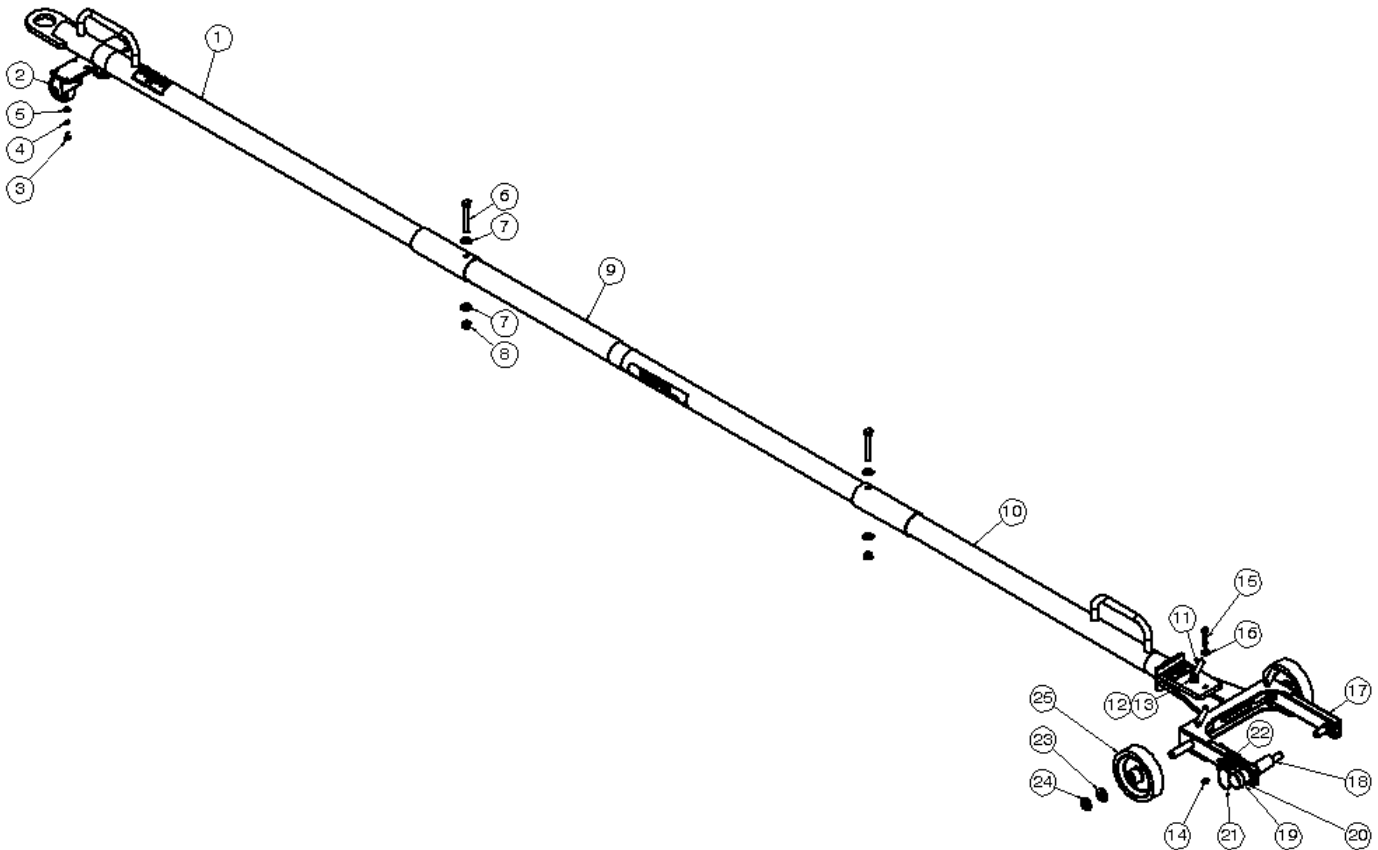
Appendix I Declaration of Conformity



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## Parts List

When ordering replacement parts/kits, please specify model, serial number and color of your unit.



Item	Part Number	Description	Qty
1	Z-9518-00	Weldment, Towbar	1
2	U-1000	Caster, Swivel	2
3	G-1100-105505	Bolt, Hex Head Grade 5, ¼ - 28 x 5/8" long	8
4	G-1251-1050R	Lockwasher, ¼ Regular	8
5	G-1250-1050N	Flatwasher, ¼ Narrow	8
6	G-1100-109534	Bolt, Hex Head Grade 5, ½ - 20 x 3 ½" long	2
7	G-1250-1090N	Flatwasher, ½ Narrow	4
8	G-1202-1095	Stopnut, ½ - 20 Elastic	2
9	TR-2494-00	Tube, Towbar	1
10	Z-9519-00	Weldment, Towbar	1
11	Z-9521	Assembly, Shear Pin	3
12	H-1724-29	Bushing, Outer	2
13	H-1725-38	Bushing, Inner	1
14	G-1203-1060	Jamnut, 5/16 - 18 Elastic	1
15	G-1155-106214	Screw, Socket Head Shoulder, 3/8" diameter x 1 ½" long	1
16	G-1250-1070N	Flatwasher, 3/8 Narrow	1
17	Z-9522-00	Weldment, Head	1
18	R-2582	Pin, Sliding	1
19	G-1300-19040	Pin, Roll	1

### Parts List

When ordering replacement parts/kits, please specify model, serial number and color of your unit.

Item	Part Number	Description	Qty
20	G-1310-0415	Pin, Ball Lok-T	1
21	H-1026*07.0	Assembly, Lanyard	1
22	G-1351-04	Rivet, Pop	1
23	G-1250-1110N	Flatwasher, 3/4 Narrow	2
24	G-1203-1115	Jamnut, 3/4 - 16 Elastic	2
25	U-1073	Wheel	2
	<b>K-1308</b>	<b>Kit, Replacement Ball Lok Pin; consists of:</b>	
20	G-1310-0415	Pin, Ball Lok-T	1
21	H-1026*07.0	Assembly, Lanyard	1
22	G-1351-04	Rivet, Pop	1
	<b>K-5219</b>	<b>Kit, Towbar Replacement; consists of:</b>	
1	Z-9518-00	Weldment, Towbar	1





## **APPENDIX I**

### **Declaration of Conformity**





## DECLARATION of CONFORMITY

The design, development and manufacture is in accordance with European Community guidelines

Custom Towbar  
01-1391-0000

Relevant provisions complied with by the machinery:  
2006/42/EC

Relevant standards complied with by the machinery:  
EN ISO 12100-1

Identification of person empowered to sign on behalf of the Manufacturer:

A handwritten signature in cursive script that reads "Patrick Finch". The signature is written in black ink and is positioned above a horizontal line.

Quality Assurance Representative