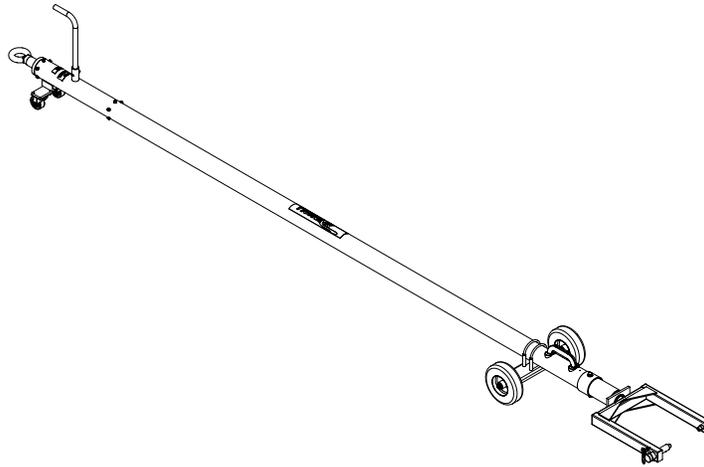




Operation & Service Manual



Model: 01A1185-0011
Custom Towbar
Sikorsky S-61 & S-70, Boeing Apache
(3" Eye Option)

10/2004 – AB – Rev. OR

Includes Illustrated Parts Lists

Tronair, Inc.

1740 Eber Road
Holland, Ohio 43528-9794
USA

Telephone: (419) 866-6301 • 800-426-6301

Fax: (419) 867-0634

Web Site: www.tronair.com E-mail: sales@tronair.com

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REVISION	DATE	TEXT AFFECTED
OR	10/2004	Original Release

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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.

1.0 DESCRIPTION

The Tronair Model 01A1185-0011 Custom Towbar designed for towing the Sikorsky S-61 & S-70 Aircraft manufactured by Sikorsky Aircraft and the Boeing Apache manufactured by The Boeing Company.

The custom towbar has an aircraft attachment by machined pins on the towing head to the nose landing gear axle. There is an eyebolt which incorporates a dampening spring at the end of the towbar for towing.

1.1 SPECIFICATIONS

Aircraft Application:	Sikorsky S-61 & S-70 Aircraft manufactured by Sikorsky Aircraft Boeing Apache manufactured by the Boeing Company
Maximum Aircraft Gross Weight:	25,000 lbs (11.34 Metric tons)
Dimensions:	Length: 194 ¼ in (493 cm) From eyebolt centerline to aircraft attachment centerline when fully extended
	Width: 21 7/8 in (55.6 cm)
	Height: 6 7/8 in (17.5 cm) From ground to aircraft attachment
Weight:	144 lbs (65.3 kg)
Material:	Towbar – Aluminum Towing Head – Steel
Finish:	Blue Powder Coat

2.0 SAFETY INFORMATION

2.1 GENERAL

The Tronair Model 01A1185-0011 Custom Towbar is used for moving Sikorsky S-61 & S-70 Aircraft and the Boeing Apache Aircraft only.

To ensure safe operation, please read the following statements and understand their meaning. This manual contains safety precautions which are explained as follows. Please read carefully.



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

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

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3.0 OPERATION

3.1 TOWBAR CHECKLIST

- Check towing eye for bending, excessive wear and/or deformity. Contact Tronair for repair/replacement if towing eye is bent, excessively worn or deformed.
- Check towing eye mounting bolts. Ensure fasteners are not loose or missing. Tighten to 25 ft-lbs or replace as required.
- Ensure that the towing eye does not turn; if the towing eye can turn it indicates that the centering pin within the shock assembly may have been broken and repairs are needed.
- Check the shock assembly for preload on the spring by pulling on the towing eye. If the shock can be moved by hand it indicates that the spring is worn out and Tronair should be contacted for repairs.
- Inspect the towbar tube for cracks, gouges greater than 1/16 inch, and bends or deformities. A damaged or bent towbar should not be used. Contact Tronair for replacement.
- Check the casters to ensure the swivels operate freely and the bearings are not missing. Replace if needed.
- Ensure that the caster mounting fasteners are not loose or missing. Tighten or replace as required.
- Check the caster mounting plate and channel. If the caster mounting plate is bent or broken or if the channel welds are broken, contact Tronair for repairs.
- Inspect the lifting handle at the towing eye end. Replace or repair the handle if it is missing or damaged. Ensure the mounting fasteners are not loose or missing. Tighten or replace as required.
- Check the towbar undercarriage. Inflate the pneumatic tires to the proper pressure; fix any air leaks or replace if needed, ensure the wheels can rotate freely, wheel rims are not bent, and tire axle is not bent. Ensure mounting fasteners are not loose or missing; tighten or replace as required. Grease the tire axle every 90 days to 6 months.
- Inspect towing head attachment bolt. Verify that the factory supplied bolt is used; contact Tronair for replacement if required. Do not substitute without Tronair approval.
- Inspect the towing head for any weld cracks or deformed members. Replace if required.
- Check towing head aircraft engagement pins to ensure they do not have any cracks or bends. Replace as required.
- Check all ball loc pins to ensure they are not missing and are firmly attached to the towing head via their lanyards. Replace as required.



WARNING!

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



WARNING!

Towbars should be used with category 1 tugs ONLY in accordance with AHM 995 "Functional specifications for an aircraft tractor". Using a category 2 or higher tug may result in excessive loads and stresses being applied to the towbar and/or aircraft. These excessive loads may cause failure of the towbar which could cause damage to the aircraft or personal injury.

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3.0 OPERATION (continued)

3.2 USAGE PROCEDURE

3.2.1 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.

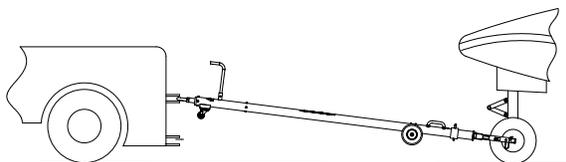
3.2.2 Tug Attachment



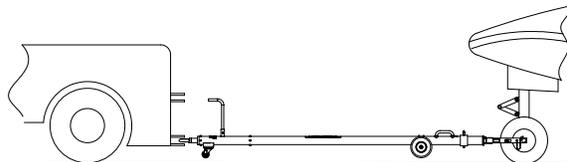
CAUTION!

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.



**Incorrect
(Excessive Towbar Angle)**



Correct

FIGURE 1

3.2.3 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 lunette eye. Indicators of binding are wear on outside diameter of the eyebolt and indentation on the inside diameter of the eyebolt. Reference Figure 2.

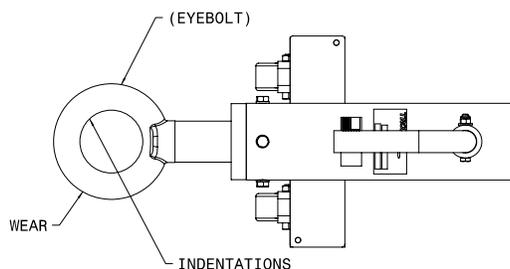


FIGURE 2

3.2.3 Couplers continued on following page.

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3.2.3 Couplers (continued)

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 3.**

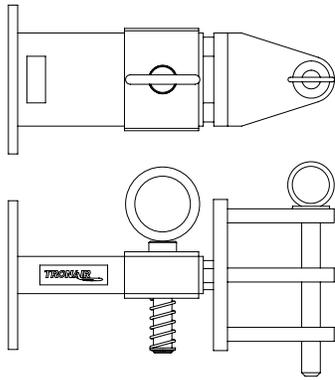


FIGURE 3
01-1950-5000 Standard Telecoupler

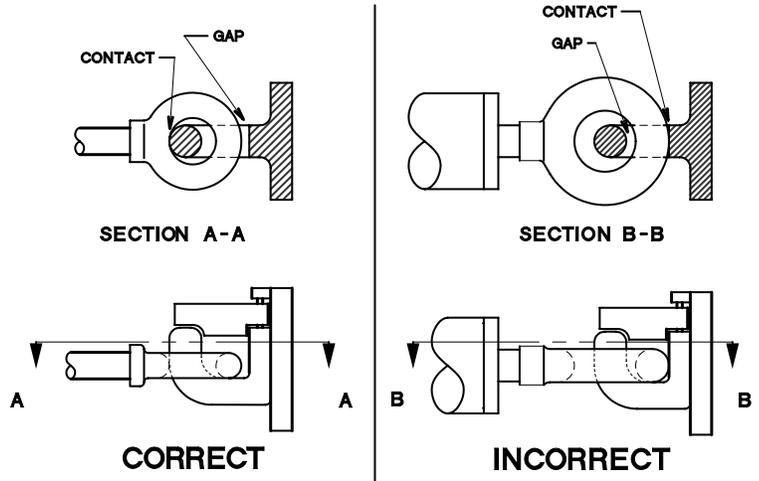


FIGURE 4

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 4.**

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.

3.2 USAGE PROCEDURE (continued)

3.2.4 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 degrees.

Reference Figure 5.

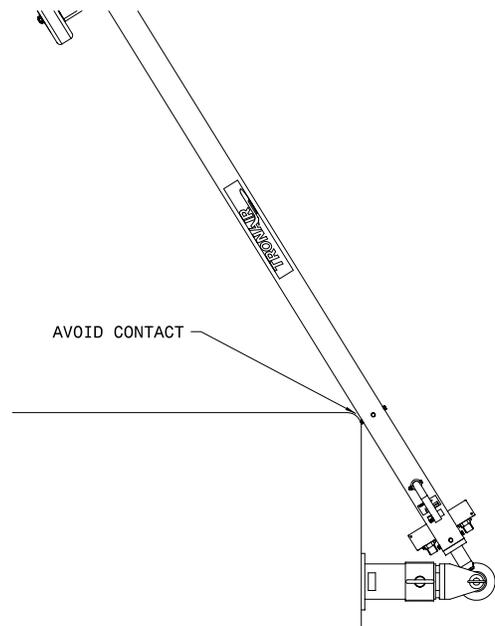


FIGURE 5

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4.0 TRAINING

4.1 TRAINING REQUIREMENTS

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

4.2 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.

4.3 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.

5.0 PROVISION OF SPARES

5.1 SPARE PARTS CAN BE OBTAINED FROM THE MANUFACTURER

TRONAIR, INC.
1740 Eber Road
Holland, Ohio 43528-9794 USA
Telephone: 419-866-6301
Fax: 419-867-0634
E-mail Address: sales@tronair.com

5.2 PARTS LIST & ILLUSTRATIONS

Reference Pages 6 to 8 for part and assembly replacements.

6.0 IN-SERVICE SUPPORT

Contact Tronair for technical services and information.

7.0 GUARANTEES

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 warranty does not cover the following items:

- a. Parts required for normal maintenance.
- b. Parts covered by a component manufacturer's warranty.

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 since any action may effect 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. 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.

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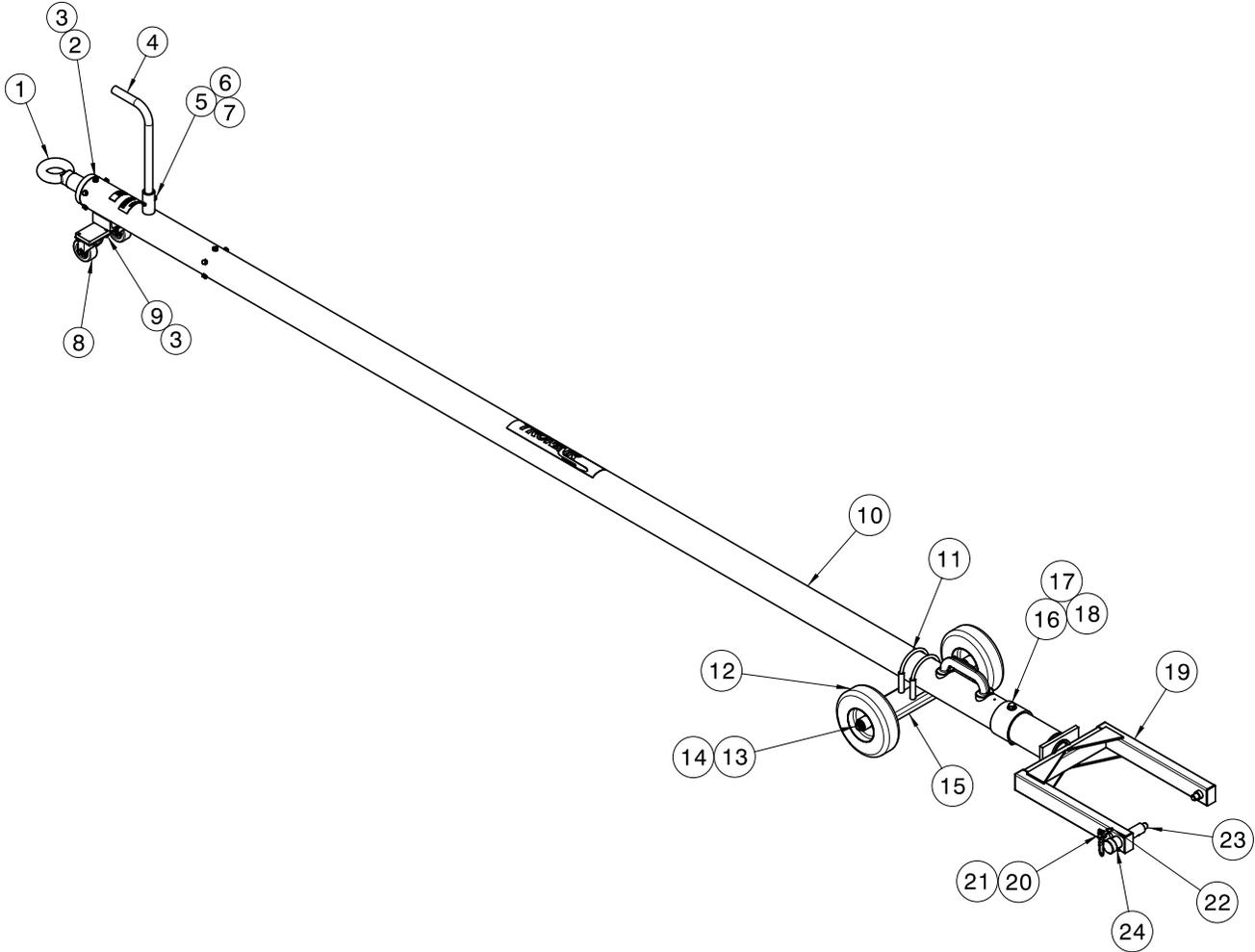
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Parts List

When ordering Replacement Parts/Kits, please specify Model & Serial Number of your product.



ITEM	PART NUMBER	DESCRIPTION	QTY
1	Z-4137	Assembly, Shock	1

Item 1 consists of items which are not sold separately. Due to the high compression used in assembly, it is suggested this Shock Assembly be returned to Tronair for repair. Discuss with your Salesperson.

2	G-1420-106006	Bolt, Hex Head, Grade 5, 5/16 -18 x 3/4" long	12
3	G-1251-1060R	Lockwasher, 5/16 Regular	16
4	TR-1857-01	Tube	1
5	G-1100-105520	Bolt, Hex Head, Grade 5, 1/4-28 x 2" long	1
6	G-1250-1050N	Flatwasher, 1/4 Narrow	1
7	G-1202-1055	Stopnut, 1/4-28 Elastic	1
8	U-1000	Caster, Swivel	2
9	G-1100-106005	Bolt, Hex Head, Grade 5, 5/16 -18 x 5/8" long	4

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ITEM	PART NUMBER	DESCRIPTION	QTY
10.....	Z-5746-01	Machining, Towbar	1
11.....	H-1537-08.....	Clamp, Muffler	2
12.....	U-1024.....	Wheel, Pneumatic Tire	2
13.....	G-1250-1100N.....	Flatwasher, 5/8 Narrow	4
14.....	G-1203-1105	Jamnut, 5/8 18 Elastic	2
15.....	Z-5643-01	Weldment, Axle Mounting	1
16.....	G-1100-109554	Bolt, Hex Head, Grade 5, 1/2 -20 x 5 1/2" long.....	1
17.....	G-1250-1090N.....	Flatwasher, 1/2 Narrow	2
18.....	G-1203-1095	Jamnut, 1/2 -20 Elastic.....	1
19.....	Z-5226-01	Weldment, Head.....	1
20.....	H-1026*07.0	Assembly, Lanyard.....	1
21.....	G-1351-04	Rivet, Pop	1
22.....	G-1310-0415	Pin, Ball Lok-T	1
23.....	R-2041	Pin, Sliding.....	1
24.....	G-1300-19040	Pin, Roll	1