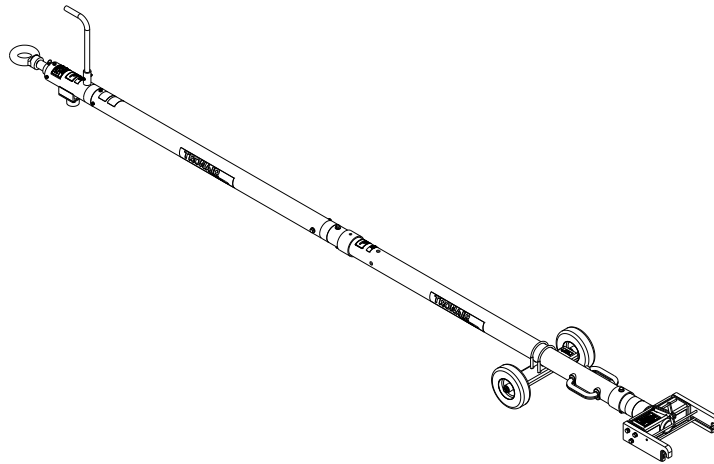




OPERATION & SERVICE MANUAL



Model: 01A1231-0014
Custom Towbar
Alenia G-222/C-27J



02/2019 – Rev. 02

For Spare Parts, Operations & Service Manuals or Service Needs
Scan the QR code or visit Tronair.com/aftermarket



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| REVISION | DATE | TEXT AFFECTED |
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| OR | 07/2006 | Original Release |
| 01 | 12/2007 | Added Declaration of Conformity, Modified Parts Lists |
| 02 | 02/2019 | Major 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.

1.0 PRODUCT INFORMATION

1.1 DESCRIPTION

The Tronair Models 01A1231-0014, and 01A1231-0014-SP custom Towbar are designed for towing Alenia G-222/C-27J Aircraft manufactured by Alenia Aerospazio.

The custom towbar has an aircraft attachment by machined hooks on the towing head to the nose landing gear tow point. There is a handle and an eyebolt 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 USA

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 Alenia G-222/C-27J Aircraft manufactured by Alenia Aerospazio
Maximum Aircraft Gross Weight..... 70,107 lbs (31.8 metric tons)
Length 187 ½ in (476 cm) From eyebolt centerline to aircraft attachment centerline
Width 22-7/8 in (58.1 cm)
Height 9 ¼ in (23.5 cm) From ground to aircraft attachment centerline.
Weight 168 lbs (76.2 kg)
Finish Powder Coat

2.0 SAFETY INFORMATION

2.1 GENERAL

The Tronair Models 01A1231-0014, and 01A1231-0014-SP Custom Towbar are to be used for moving the Alenia G-222/C-27J 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! 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! 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.



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 LANDING GEAR ASSEMBLY

Place landing gear assembly in desired location. Torque clamp nuts to 35 ft-lbs (47.5 N-m).

4.2 PRELIMINARY CHECKLIST

4.2.1 Towbar

- Check towing eye mounting bolts. Ensure fasteners are not loose or missing.
- Check towing eye for bending, excessive wear and/or deformity.
- Check shear pin. Ensure shear pin is not broken or missing; replace as required.



WARNING!

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

4.2.2 Towing Head

- Check welds between head tube and connector tube for cracks.
- Check fastener connection of towing head to towbar. Ensure the connection is not loose or missing.
- Check hooks on towing head for bending or excessive wear.
- Check axle locking mechanism, ensure operation of lock bars. Inspect for excessive wear or damage. Replace if necessary.

4.3 USAGE PROCEDURE

4.3.1 Aircraft Attachment

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

CAUTION!



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

4.3.2 Tug Attachment

- 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.

CAUTION!



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

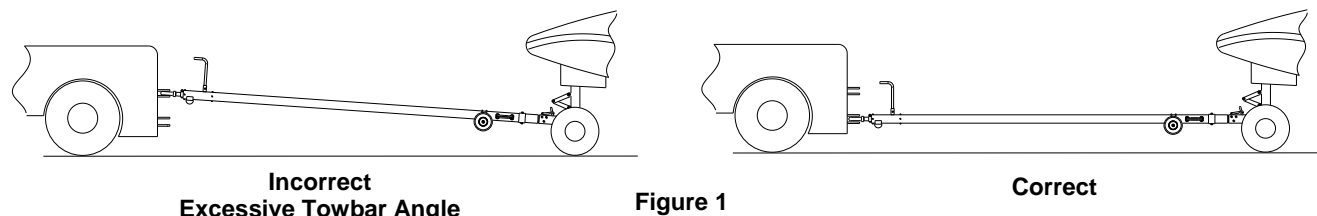


Figure 1

4.3.3 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 eyebolt. Indicators of binding are wear on outside diameter of the eyebolt and indentation on the inside diameter of the eyebolt. **Reference Figure 2.**

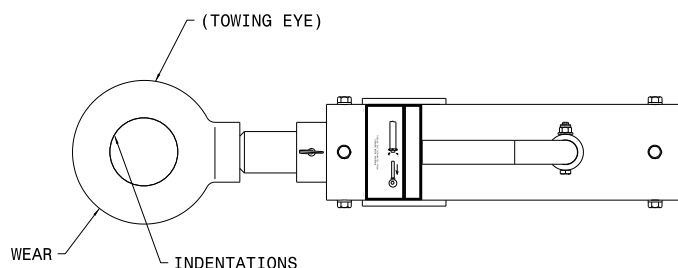


FIGURE 2

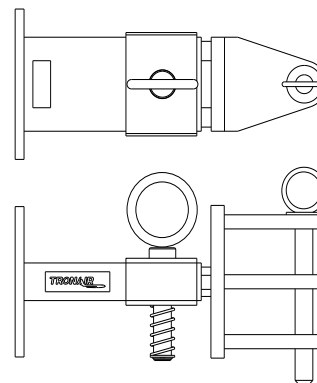


FIGURE 3
01-1950-5000 Standard Telecoupler

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 3.**

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 ($\frac{1}{2}$ ") 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.

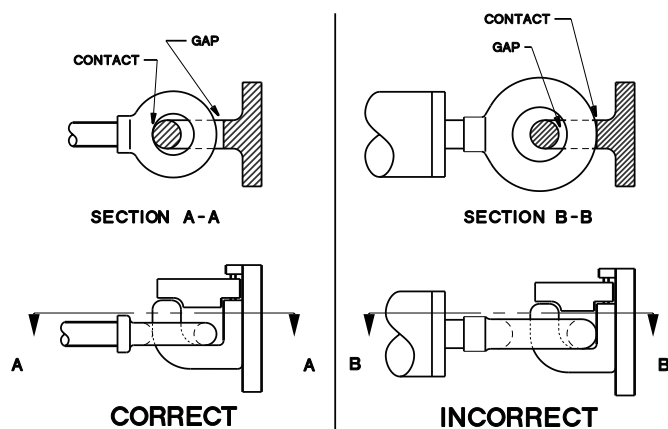


FIGURE 4

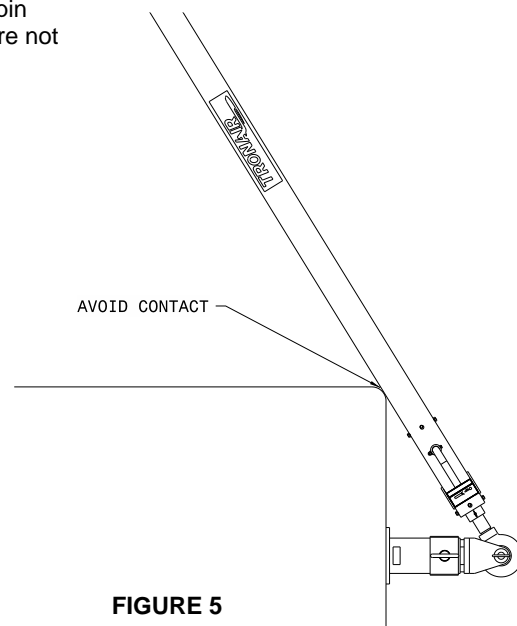


FIGURE 5

4.3.4 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°. **Reference Figure 5**

5.0 PROVISION OF SPARES**5.1 SOURCE OF SPARE PARTS**

Spare parts may be obtained from the manufacturer:

TRONAIR, Inc.

1 Air Cargo Pkwy East

Swanton, Ohio 43558 USA

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

Fax: (419) 867-0634

E-mail: sales@tronair.com

Website: www.tronair.com

For Spare Parts, Operations & Service Manuals or Service Needs:
Scan the QR code or visit Tronair.com/aftermarket

**5.2 RECOMMENDED SPARE PARTS LISTS**

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

Recommended Spares to be kept on hand:

K-1112.....Kit, Wheel (Single) Replacement

K-2863.....Kit, Latch Replacement

K-2884.....Kit, Shear Pin Replacement

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.

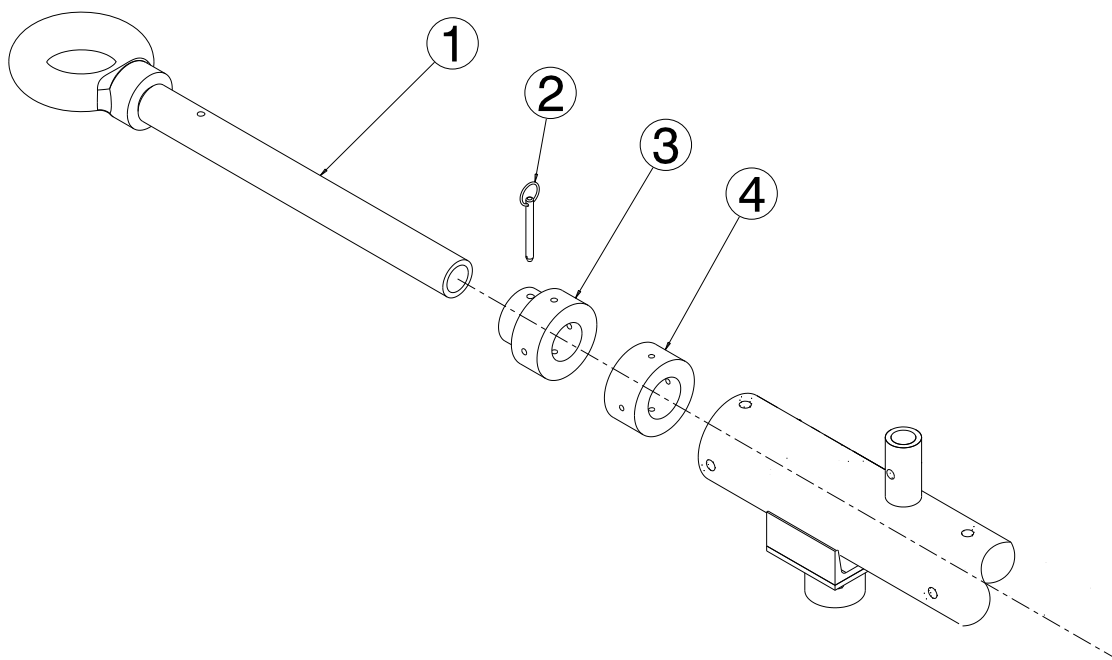
The obligations of Tronair expressly stated herein are in lieu of all other warranties or conditions expressed or implied. **Any unauthorized modification of the Tronair products or use of the Tronair products in violations of cautions and warnings in any manual (including updates) or safety bulletins 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

Parts List

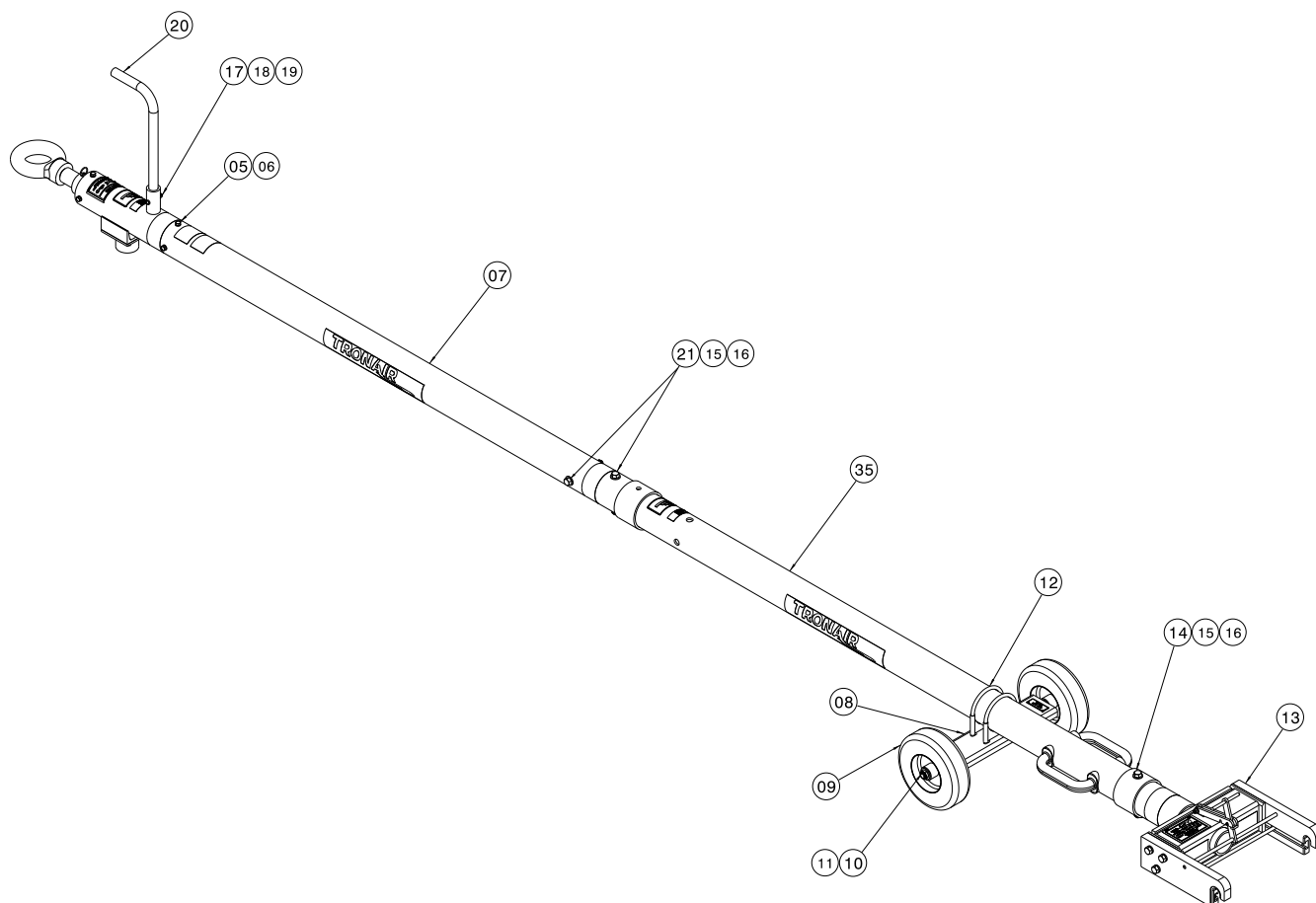
When ordering replacement parts/kits, please specify Model, Serial Number & color of your product.



| Item | Part Number | Description | Qty |
|------|---------------|---|-----|
| 3 | R-1400-01 | Sleeve, Outer | 1 |
| 4 | B-017-03 | Sleeve, Inner | 1 |
| | K-2860 | Kit, Eyebolt Replacement; consists of: | |
| 1 | Z-2442 | Machining, Eyebolt | 1 |
| 2 | G-1307-0525 | Pin, 5/16" diameter x 2.5 long | 1 |
| 5 | G-1420-106006 | Bolt, Hex Head, Grade 8, 5/16 – 18 x 3/4 long | 8 |
| 6 | G-1251-1060R | Lockwasher, 5/16 Regular | 8 |
| | K-2884 | Kit, Shear Pin Replacement; consists of: | |
| 2 | G-1307-0525 | Pin, Shear | 3 |

Parts List

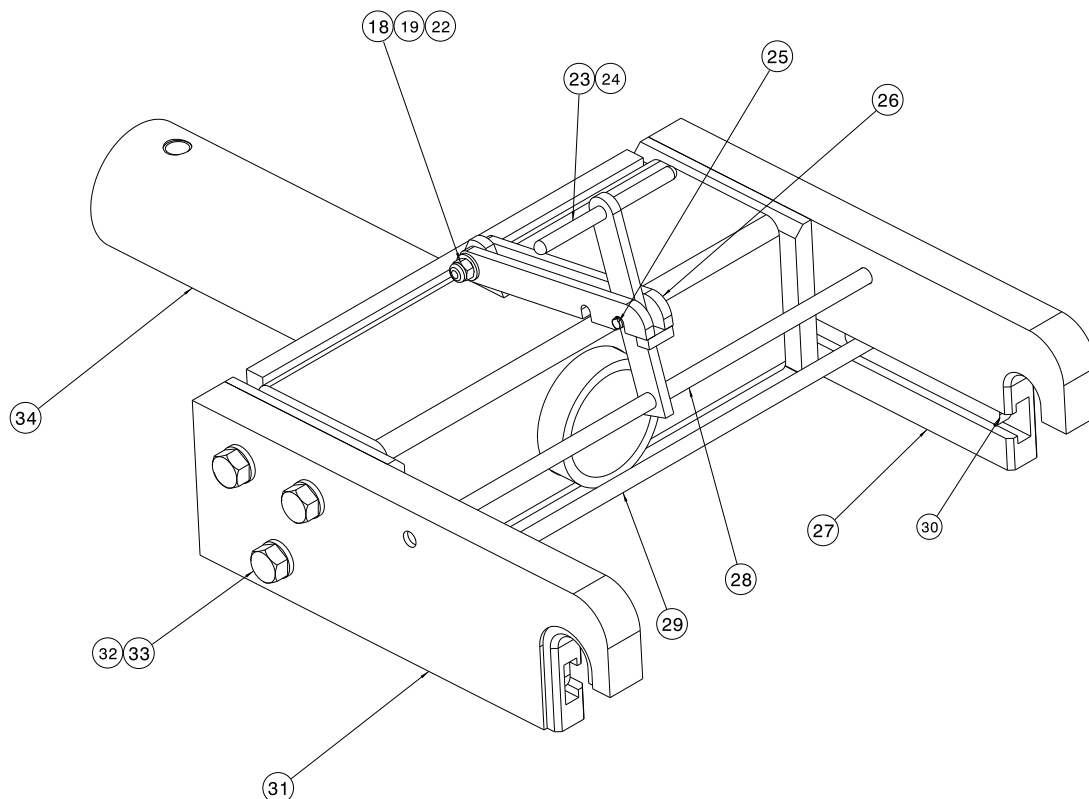
When ordering replacement parts/kits, please specify model, serial number and color of your unit.



| Item | Part Number | Description | Qty |
|------|---------------|---|-----|
| 5 | G-1818 | Bolt, Drilled Hex Head, Grade 8, 5/16 – 18 x ¾ " long | 8 |
| 6 | G-1251-1060R | Lockwasher, 5/16 Regular | 8 |
| 7 | Z-6242-01 | Weldment, Towbar Ring-End | 1 |
| 8 | Z-5643-01 | Weldment, Axle Mounting | 1 |
| 12 | H-1537-08 | Clamp, Muffer | 2 |
| 13 | X-1091 | Assembly, Head | 1 |
| 14 | G-1100-109554 | Bolt, Hex Head, Grade 5, ½ - 20 x 5 – 1/2" long | 1 |
| 15 | G-1250-1090N | Flatwasher, ½ Narrow | 2 |
| 16 | G-1203-1095 | Jamnut, ½ - 20 Elastic | 1 |
| 17 | G-1100-105520 | Bolt, Hex Head, Grade 5, ¼ - 28 x 2" long | 1 |
| 18 | G-1250-1050N | Flatwasher, ¼ Narrow | 1 |
| 19 | G-1202-1055 | Stopnut, ¼ - 28 Elastic | 1 |
| 20 | TR-1857-01 | Tube, Handle | 1 |
| 21 | G-1100-105512 | Bolt, Hex Head, Grade 5, ¼ - 28 x 1 – 1/4" long | 2 |
| 35 | Z-6240-01 | Weldment, Towbar Head-End | |
| | K-1112 | Kit, Wheel Replacement; consists of: | |
| 9 | U-1024 | Wheel, Pneumatic Tire | 1 |
| 10 | G-1250-1100N | Flatwasher, 5/8" Narrow | 1 |
| 11 | G-1203-1105 | Jamnut, 5/8 – 18 Elastic | 1 |

Parts List

When ordering replacement parts/kits, please specify Model, Serial Number & color (if applicable) of your product



| Item | Part Number | Description | Qty |
|------|---------------|--|-----|
| 30 | J-1999 | Bar, Sliding | 2 |
| | K-2861 | Kit, Axle Adaptor Replacement; consists of: | |
| 27 | J-1964-01 | Adaptor, Axle | 1 |
| 31 | J-1964-02 | Adaptor, Axle | 1 |
| 32 | G-1100-109516 | Bolt, Hex Head, Grade 5, 1/2 - 20 x 1-3/4" long | 6 |
| 33 | G-1251-1090R | Lockwasher, 1/2 Regular | 6 |
| | K-2863 | Kit, Latch Replacement; consists of: | |
| 18 | G-1250-1050N | Flatwasher, 1/4 Narrow | 1 |
| 19 | G-1202-1055 | Stopnut, 1/4 - 28 Elastic | 1 |
| 22 | G-1100-105512 | Bolt, Hex Head, Grade 5, 1/4 - 28 x 1 - 1/4" long | 1 |
| 26 | Z-2437 | Weldment, Latch | 1 |
| | K-2883 | Kit, Head Replacement; consists of: | |
| 34 | Z-2390-01 | Machining, Head (includes labels) | 1 |

Head **MUST** be returned to Tronair for proper repairs:

| Item | Part Number | Description | Qty |
|------|---------------|---|-----|
| | K-2862 | Actuator Replacement; consists of: | |
| 23 | | Cover, Red Handle | 1 |
| 24 | | Pin, 1/4" diameter x 3" long | 1 |
| 25 | | Pin, 1/4" diameter x 1" long | 1 |
| 28 | | Weldment, Actuator | 1 |
| 29 | | Rod, Sliding Bar Connector | 1 |



APPENDIX I

Declaration of Conformity



DECLARATION of CONFORMITY

Custom Towbar
01A1231-0014
01A1231-0014-SP

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