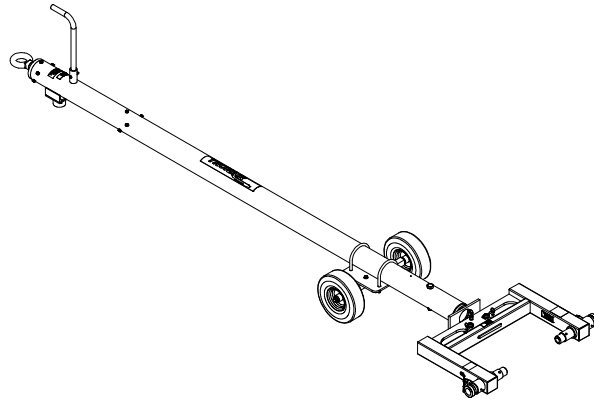




Operation & Service Manual



**Models: 01-1274-0030
01A1274-0030**

**Custom Towbar
Gulfstream
GII, GIII, GIV, GV**



03/2009 – Rev. 05

Includes Illustrated Parts Lists

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Models: 01-1274-0030 and 01A1274-0030
Gulfstream GII, GIII, GIV, GV
Custom Towbar

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Models: 01-1274-0030 and 01A1274-0030
Gulfstream GII, GIII, GIV, GV
Custom Towbar

| Revision | Date | Text Affected |
|-----------------|-------------|---|
| 02 | 07/2005 | pg 6 Modified illustration pg 7 Modified item numbers pg 8 Modified illustration and Parts List |
| 03 | 02/2007 | Major Revision |
| 04 | 05/2008 | Modified Parts Lists |
| 05 | 03/2009 | Modified Parts Lists |

Models: 01-1274-0030 and 01A1274-0030
Gulfstream GII, GIII, GIV, GV
Custom Towbar

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 DESCRIPTION

The Tronair Model 01-1274-0030 and 01A1274-0030 Custom Towbars are designed for towing Gulfstream GII, GIII, GIV, and GV Aircraft manufactured by Gulfstream Aerospace Corporation.

These Custom Towbars include pneumatic tires with a urethane bumper at the tug end. There is an eyebolt at the towing end of the towbars which incorporates a spring to dampen shock loads. The towing head has machined pins which attach to the aircraft tow point.

1.1 SPECIFICATIONS

Application: Gulfstream GII, GIII, GIV, and GV Aircraft manufactured by Gulfstream Aerospace Corporation

Maximum Aircraft Gross Weight: 89,400 lbs (40.6 Metric ton)

Finish: Powder Coat

Material: Aluminum

01-1274-0030

Dimensions: Length 145 in (368.3 cm) From eyebolt centerline to aircraft attachment.
Width 35 ³/₈ in (89.9 cm)
Height 8 ⁹/₁₆ in (21.7 cm) From ground to aircraft attachment.
Tube 4 ¹/₂ in (11.43 cm) diameter

Weight: 175 lbs (79.4 kg)

01A1274-0030

Dimensions: Length 146 ³/₈ in (371.8 cm) From eyebolt centerline to aircraft attachment.
Width 35 ³/₈ in (89.9 cm)
Height 8 ⁹/₁₀ in (22.6 cm) From ground to aircraft attachment.
Tube 4 ¹/₂ in (11.43 cm) diameter

Weight: 177 lbs (80.3 kg)

2.0 SAFETY INFORMATION

2.1 GENERAL

The Tronair Model 01-1274-0030 and 01A1274-0030 Custom Towbars are used for towing Gulfstream GII, GIII, GIV, and GV 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! 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.

3.0 OPERATION

3.1 PRELIMINARY CHECKLIST

3.1.1 Towbar

- Check towing eye mounting bolts. Ensure the fasteners are not loose or missing.
- Check towing eye for bending, excessive wear and deformity.
- Check the ball lok-T pin. Ensure ball lok-T pin is securely attached to towbar via its lanyard. Ensure ball lok-T pin is not missing.



WARNING!

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

3.1.2 Head Attachment Weldment

- Check weld between connector tube and head plate for cracks.
- Check weld between head plate and outer shear plates for cracks.
- Check weld between inner shear plate and head rail for cracks.
- Check weld between side rails and head rail for cracks.
- Check weld between side rail and sliding pin sleeve for cracks.
- Check fastener connection of towing head to towbar. Ensure the connection is not loose or missing.
- Check sliding pin roll pin. Ensure roll pin is not loose or missing.
- Check shear pin. Ensure shear pin is not broken; replace if required.
- Check shear plate pivot bolt. Ensure pivot bolt is not missing.

3.1.3 Sliding Pin

- Check sliding pin for bending or excessive wear. Ensure sliding pin slides freely.
- Check sliding pin ball lok-T pin. Ensure ball lok-T pin is securely attached to the head attachment weldment via its lanyard.
- Ensure ball lok-T pin is not loose or missing.

3.2 USAGE PROCEDURE

3.2.1 Aircraft Attachment



CAUTION!

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

3.2 USAGE PROCEDURE (continued)

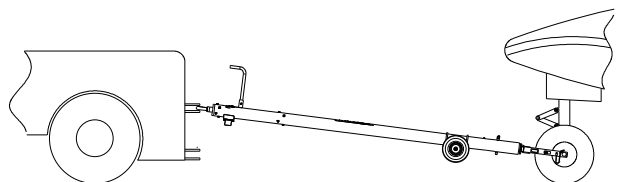
3.2.2 Tug Attachment



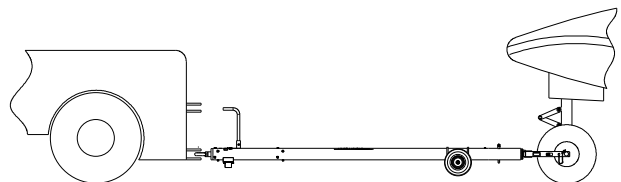
CAUTION!

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.*

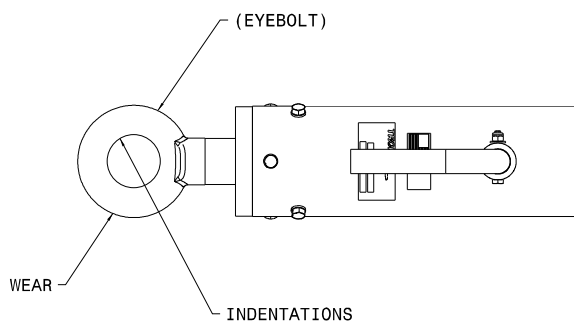


FIGURE 2

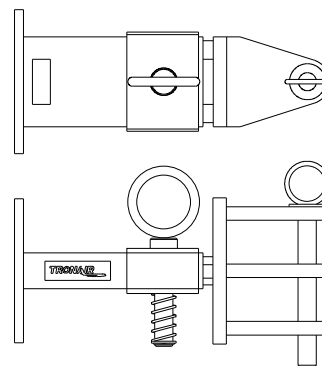


FIGURE 3

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.*

3.2.3 Couplers continued on following page.

3.2.3 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 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.

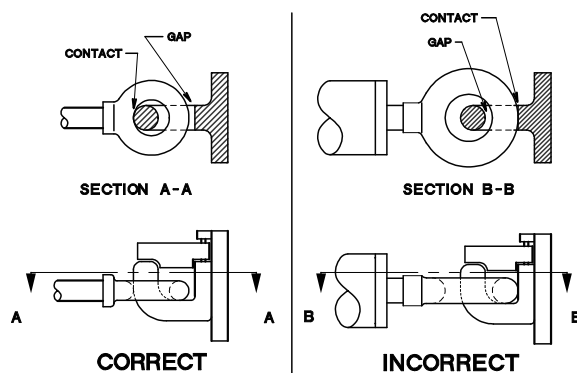


FIGURE 4

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°.

Reference Figure 5.

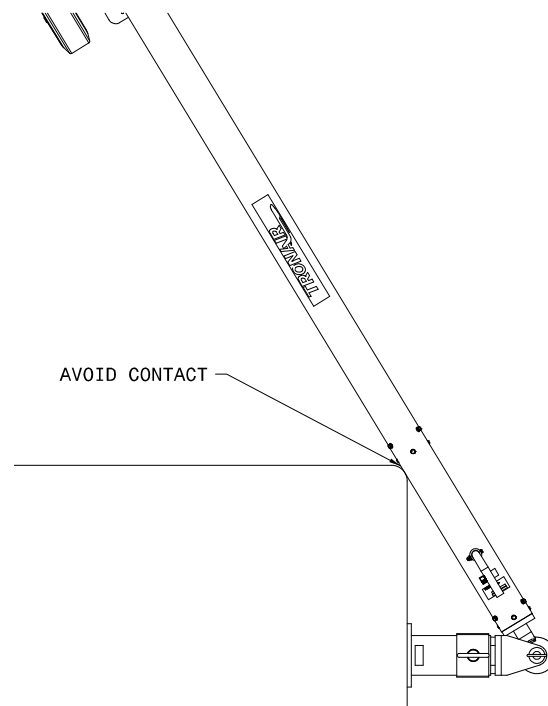


FIGURE 5

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

Spare parts may 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
www.tronair.com

5.2 PARTS LIST

Reference Pages 6 – 8 for ordering information of Replacement Parts and Kits.

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 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:

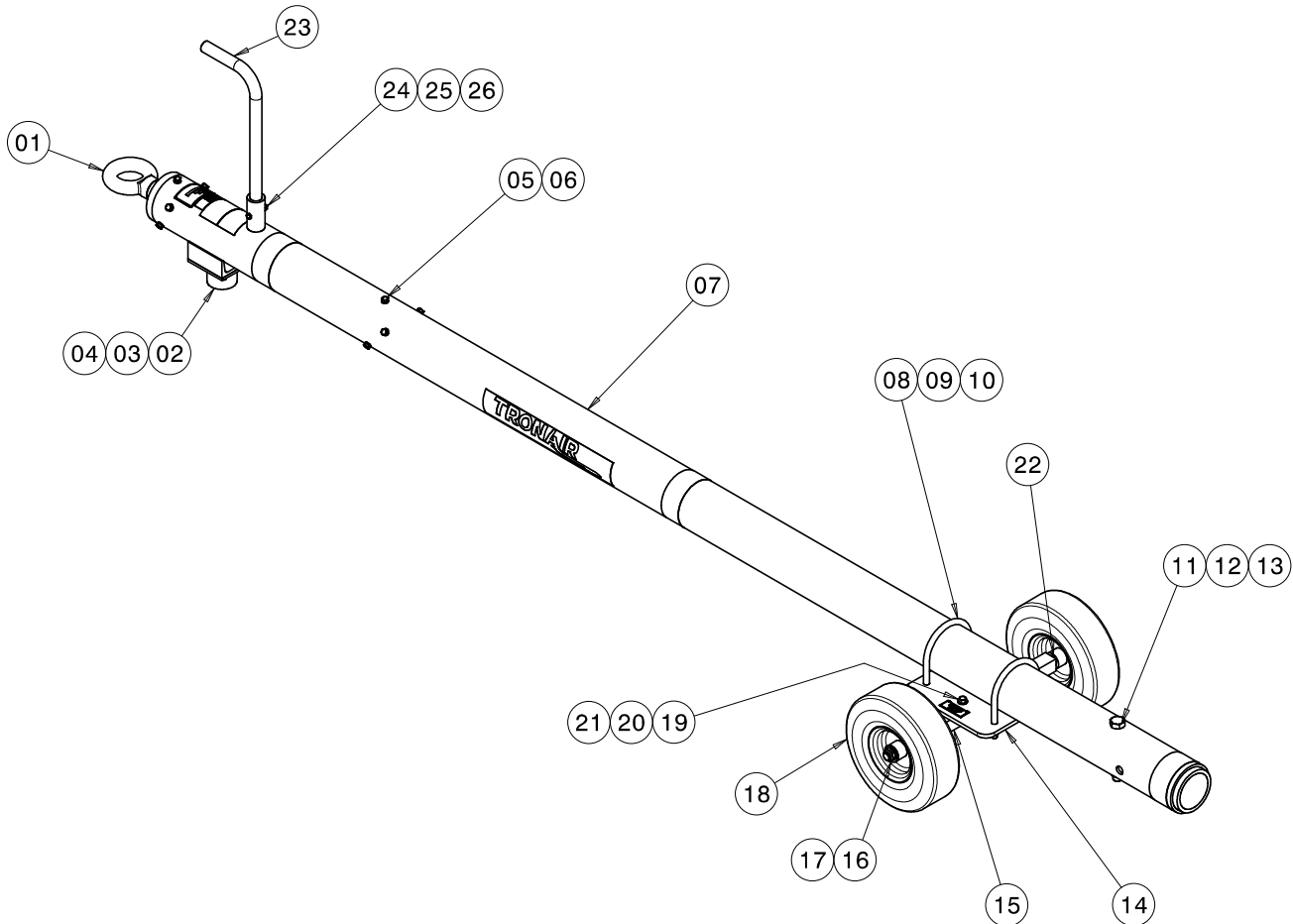
- a) Product Model Number
- b) Product Serial Number
- c) Description of the problem

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. Without limitation, to the fullest extent allowable by law, this exclusion of all other warranties and conditions extends to implied warranties and conditions of satisfactory quality, merchantable quality, and fitness for a particular purpose, and those arising by statute or otherwise in law, or from a course of dealing or usage of trade.

Parts List

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



| ITEM | PART NUMBER | DESCRIPTION | QTY |
|--------|--------------|--------------------------------------|-----|
| 1..... | Z-4753 | Assembly, Shock (01-1274-0030) | 1 |
| 1..... | Z-4752 | Assembly, Shock (01A1274-0030) | 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..... | Z-5611 | Assembly, Skid..... | 1 |
| 3..... | G-1100-105006 | Bolt, Hex Head, Grade 5, 1/4-20 x 3/4" long | 4 |
| 4..... | G-1251-1050R | Lockwasher, 1/4 Regular..... | 4 |
| ▶ 5..... | G-1420-106012 | Bolt, Hex Head, Grade 5, 5/16-18 x 1 1/4" long..... | 12 |
| 6..... | G-1251-1060R | Lockwasher, 5/16" Regular | 12 |
| 7..... | Z-5756-01 | Machining, Towbar | 1 |
| 8..... | G-1009-38..... | U-bolt..... | 2 |
| 9..... | G-1250-1090N..... | Flatwasher, 1/2 Narrow | 4 |

▶ Use Loctite 271 or equivalent during re-assembly.

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Parts List

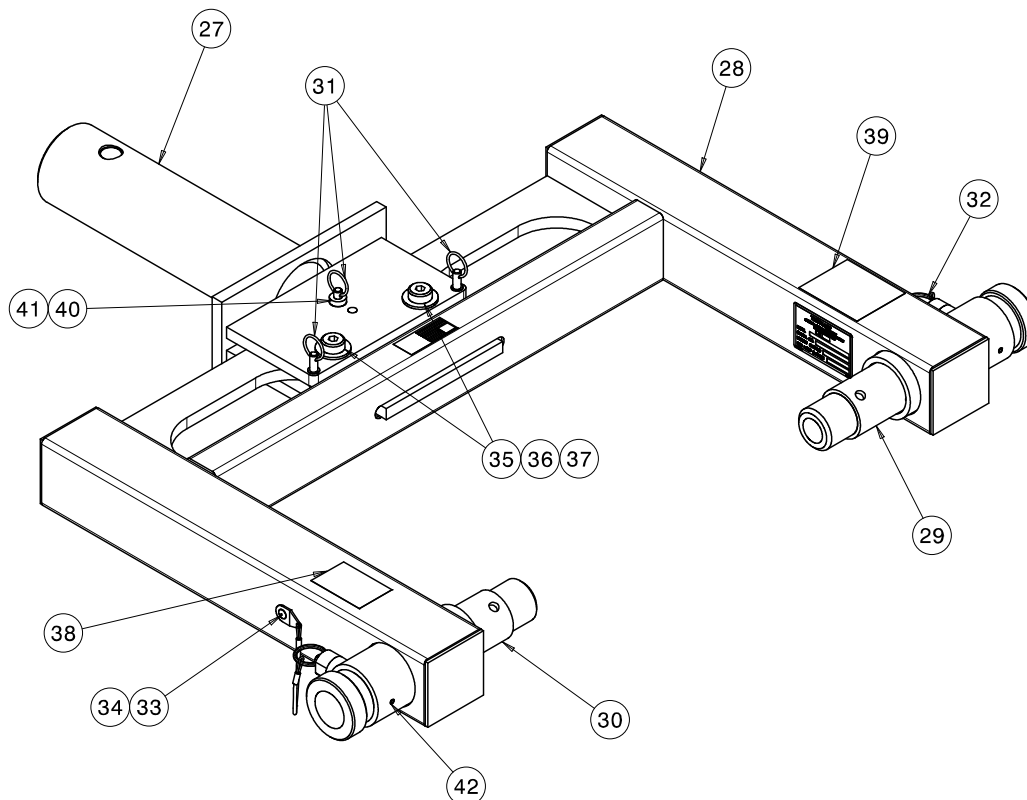
When ordering Replacement Parts/Kits, please specify Model & Serial Number of your product.

| ITEM | PART NUMBER | DESCRIPTION | QTY |
|----------|---------------------|---|-----|
| 10..... | G-1202-1090 | Stopnut, ¼ -13 Elastic | 4 |
| 11..... | G-1420-111554 | Bolt, Hex Head, Grade 8, ¾-16 x 5 ½" long | 1 |
| 12..... | G-1250-1110N | Flatwasher, ¾ Narrow | 1 |
| 13..... | G-1203-1115 | Stopnut, ¾ - 16 Elastic | 1 |
| 14..... | J-2599-01-01 | Plate, Wheel-Towbar Mounting | 1 |
| 15..... | Z-3579-01-01 | Weldment, Axle | 1 |
| 16..... | G-1203-1115 | Jamnut, ¾-16 Elastic..... | 2 |
| 17..... | G-1250-1110N | Flatwasher, ¾ Narrow | 2 |
| 18..... | U-1027 | Wheel, Pneumatic Tire | 2 |
| 19..... | G-1100-107514 | Bolt, Hex Head, Grade 5, 3/8-24 x 1 ½" long | 2 |
| 20..... | G-1250-1070N..... | Flatwasher, 3/8 Narrow | 2 |
| 21..... | G-1202-1075 | Stopnut, 3/8-24 Elastic | 2 |
| 22..... | TR-1585..... | Spacer, Wheel..... | 2 |
| 23..... | TR-1857-01 | Tube, Handle | 1 |
| 24..... | G-1100-105520 | Bolt, Hex Head, Grade 5, ¼-28 x 2" long | 1 |
| 25..... | G-1202-1055 | Stopnut, ¼-28 Elastic | 1 |
| 26..... | G-1250-1050N..... | Flatwasher, ¼ Narrow | 1 |
| | K-2664 | Kit, Axle; consists of: | |
| 15..... | Z-3579-01-01 | Weldment, Axle | 1 |
| 19..... | G-1100-107514 | Bolt, Hex Head, Grade 5, 3/8-24 x 1 ½" long..... | 2 |
| 20..... | G-1250-1070N..... | Flatwasher, 3/8 Narrow | 2 |
| 21..... | G-1202-1075 | Stopnut, 3/8-24 Elastic | 2 |
| 22..... | TR-1585..... | Spacer, Wheel..... | 2 |
| | K-1550 | Kit, Wheel Replacement (single); consists of: | |
| 16..... | G-1203-1115 | Jamnut, ¾-16 Elastic..... | 2 |
| 17..... | G-1250-1110N..... | Flatwasher, ¾ Narrow | 2 |
| 18..... | U-1027 | Wheel, Pneumatic Tire | 2 |
| 22..... | TR-1585..... | Spacer, Wheel..... | 2 |
| | K-3723 | Kit, Shock Assembly (01A1274-0030); consists of: | |
| 1..... | Z-4752 | Assembly, Shock..... | 1 |
| ▶ 5..... | G-1420-106012 | Bolt, Hex Head, Grade 5, 5/16-18 x 1 ¼" long..... | 12 |
| 6..... | G-1251-1060R | Lockwasher, 5/16" Regular | 12 |
| | K-3274 | Kit, Shock Assembly (01-1274-0030); consists of: | |
| 1..... | Z-4753 | Assembly, Shock..... | 1 |
| ▶ 5..... | G-1420-106012 | Bolt, Hex Head, Grade 5, 5/16-18 x 1 ¼" long..... | 12 |
| 6..... | G-1251-1060R..... | Lockwasher, 5/16" Regular | 12 |
| | K-3734 | Kit, Axle; consists of: | |
| 2..... | Z-5611 | Assembly, Skid..... | 1 |
| 3..... | G-1100-105006 | Bolt, Hex Head, Grade 5, ¼-20 x ¾" long | 4 |
| 4..... | G-1251-1050R | Lockwasher, ¼ Regular..... | 4 |

▶ Use Loctite 271 or equivalent during re-assembly.

Parts List

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



| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---------------|--|-----|
| 27 | Z-6128-01 | Machining, Shear Plate | 1 |
| 28 | Z-6130-01 | Weldment, Head | 1 |
| 29 | Z-5109 | Weldment, Sliding Pin | 1 |
| 30 | Z-5110 | Weldment, Sliding Pin | 1 |
| 31 | H-2849 | Pin, Shear | 3 |
| 32 | Z-5579 | Assembly, Handle | 2 |
| 33 | H-2443*07.0 | Assembly, Lanyard | 5 |
| 34 | G-1351-18 | Rivet, Steel | 2 |
| 35 | G-1155-109216 | Screw, Socket Head Shoulder, 5/8" diameter x 1 3/4" long | 2 |
| 36 | G-1250-1100N | Flatwasher | 4 |
| 37 | G-1202-1090 | Stopnut, Elastic | 2 |
| 38 | V-1701 | Label, Gulfstream | 1 |
| 39 | V-1700 | Label, Gulfstream | 1 |
| 40 | H-1724-14 | Bushing, Head Press Fit | 2 |
| 41 | H-1725-19 | Bushing, Headless Press Fit | 1 |
| 42 | G-1300-19040 | Pin, Roll, 3/16 x 12 Long | 2 |
| K-3707 Kit, Replacement Handle; consists of: | | | |
| 32 | Z-5579 | Assembly, Handle | 1 |
| 33 | H-2443*07.0 | Assembly, Lanyard | 1 |
| 34 | G-1351-18 | Rivet, Steel | 1 |
| K-451 Kit, GV Sliding Pin; consists of: | | | |
| 29 | Z-5109 | Weldment, Sliding Pin | 1 |
| 30 | Z-5110 | Weldment, Sliding Pin | 1 |
| 42 | G-1300-19040 | Pin, Roll, 3/16 x 12 Long | 2 |

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APPENDIX - I

Declaration of Conformity



DECLARATION of CONFORMITY

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

Custom Towbars
01-1274-0030
01A1274-0030

Relevant provisions complied with by the machinery:
98/37/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 black ink, reading "David L. Kiehl". The signature is written in a cursive style and is positioned above a horizontal line.

Quality Assurance Representative

Tronair, Inc.

1740 Eber Road
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USA

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Fax: (419) 867-0634

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