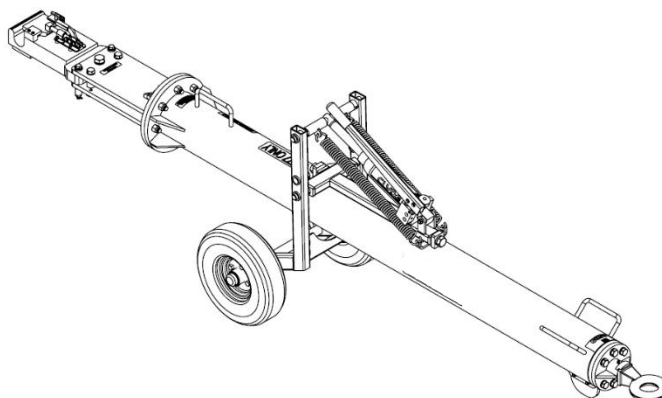




# OPERATION & SERVICE MANUAL



**Model: A212635D**  
**Boeing 777 Towbar**

10/2022 – Rev. 02

**For Spare Parts, Operations & Service Manuals or Service Needs**  
**Scan the QR code or visit [Tronair.com/aftermarket](https://www.tronair.com/aftermarket)**



REVISION	DATE	TEXT AFFECTED
01	12/2014	Original release
02	10/2022	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. Only Tronair OEM replacement parts shall be used.

## **1.0 PRODUCT INFORMATION**

### **1.1 DESCRIPTION**

This towbar is designed to tow all Boeing 777 aircraft. The following operational instructions are only intended to familiarize the operator with the basic functions of the towbar. They are not intended to teach actual pushback procedures or techniques.

### **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](mailto:sales@tronair.com)  
Website: [www.tronair.com](http://www.tronair.com)

## **2.0 SAFETY INFORMATION**

### **2.1 USAGE AND SAFETY INFORMATION**

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.

## **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 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 a skilled and trained technician.**

## 4.0 OPERATION

### 4.1 PREPARATION FOR USE

The towbar has been lubricated and adjusted at the factory and no additional preparation is required.

A general inspection should be made to determine if any damage was sustained in transit. If any damage was sustained the transportation company should be notified immediately.

### 4.2 AIRCRAFT ATTACHMENT

It is recommended that you attach the towbar to the aircraft first, and then connect it to the tug to avoid potential aircraft damage.

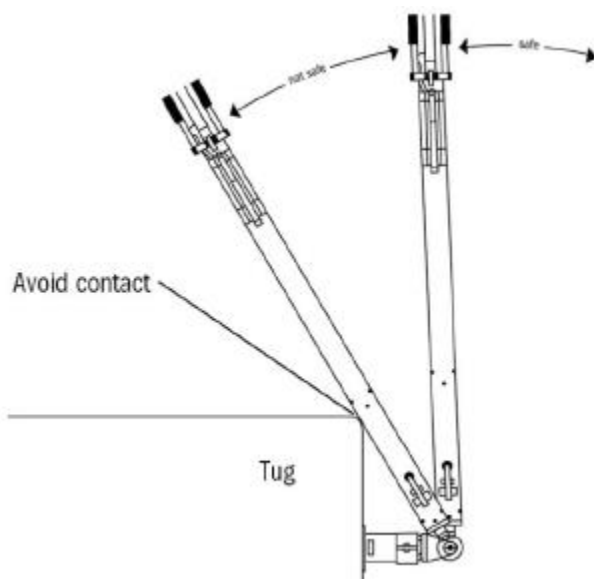
### 4.3 TOWING

Damage to the towbar or aircraft can result from pushing an aircraft at too sharp of an angle between the tug and the aircraft. Contact between the tug and towbar tube must be avoided.



#### WARNING!

**DO NOT EXCEED 90° angle between the tug and towbar.**



#### WARNING!

**A damaged or bent towbar should not be used. BENT TOWBARS CAN NOT BE REPAIRED AND MUST BE REPLACED.**

### 4.4 TOWING SPEED

A maximum towing speed of 10 mph (16 kph) is recommended.



#### CAUTION!

**Exceeding the maximum towing speed may result in damage to the aircraft, tug, or towbar.**

### 4.5 BOLT TORQUE

Torque Values of Grade 5 Fine Thread (SAE) Fasteners  
(all torque specified in ft-lbs)

BOLT DIAMETER	1/4-28	5/16-24	3/8-24	7/16-20	1/2-20	5/8-18	3/4-16	7/8-14	1-12
INSTALL TORQUE	9	20	35	55	90	90	90	90	90

**Do Not Follow** the above torque value chart for **Shear Bolt** and/or **Retention Bolts**.

**Replacing Shear Bolt / Retention Bolt Instructions:** tighten bolts only enough to remove slack or until nut reaches the end of the threads, and then loosen one half turn. Bolts should turn freely with hand wrench.

## 5.0 MAINTENANCE

### 5.1 DAILY INSPECTION

- Visually check towbar for physical damage. Repair or replace parts if necessary.
- Check head for proper operation, damaged parts, binding, etc. Readjust or replace as necessary.

### 5.2 BI-YEARLY INSPECTION

- Check shear bolts by turning heads with a hand wrench. Any binding indicates a partial sheared bolt, replace if necessary.
- Grease the axle lift pivots with the provided grease zerks.
  - Use Lithium EP2 or equivalent
- Check hydraulic hand pump for proper operation and adequate oil level
  - Add ATF Fluid if necessary
  - For extreme cold 5606 oil is acceptable
- Check tire pressure. Pressure should be 24 psi
- Check lunette ring for excessive wear. Measure ring at the thinnest point, ring cross section should be no less than 1.25 inches. Replace if necessary.
- If so equipped, check lunette and head retention bolt cushions for cracking, replace if necessary.

### 5.3 YEARLY INSPECTION

- The wheels should be removed and the hub bearings repacked with grease.
  - Use Lithium EP2 or equivalent

### 5.4 AS REQUIRED

When replacing shear bolts and/or retention bolt, tighten bolts only enough to remove slack and then loosen one half turn. Bolts should turn freely with hand wrench.



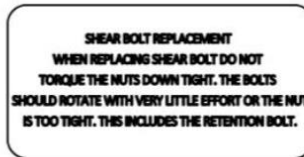
#### CAUTION!

Over tightening of shear bolts and/or retention bolt will cause bolts to shear at a higher load than desired.

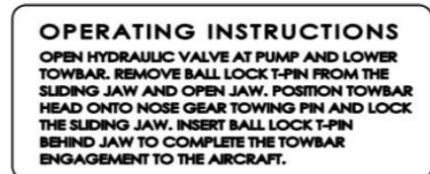
### 5.5 PLACARDS



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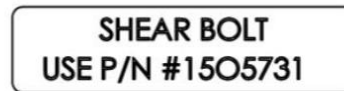
1505751



1505878



15L18769



15L22286

**6.0 PROVISION OF SPARES****6.1 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

**6.2 RECOMMENDED SPARE PARTS LISTS**

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

Recommended Spares to be kept on hand:

K-5545.....Kit, Shear Bolt Replacement

15O5416 .....Ball Lock Pin

15O6017 .....Kit, Cylinder Seal

15O6020 .....Kit, Handle Replacement

15O6235 .....Kit, Handle Pin

**7.0 IN SERVICE SUPPORT**

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

**8.0 GAURANTEES/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:

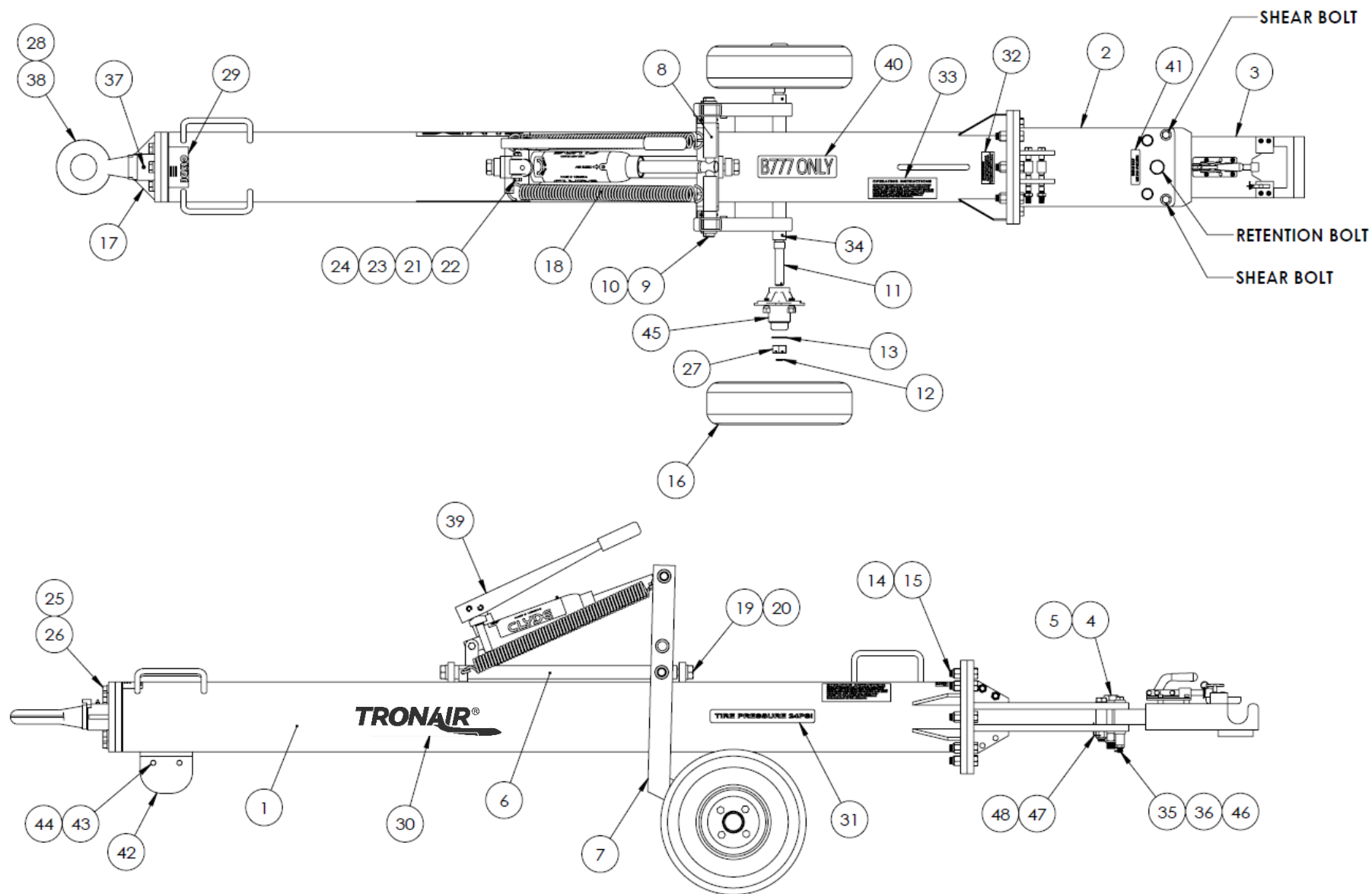
- a) Product Model Number
- b) Product Serial Number
- c) Description of the problem

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.**

## Parts List

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





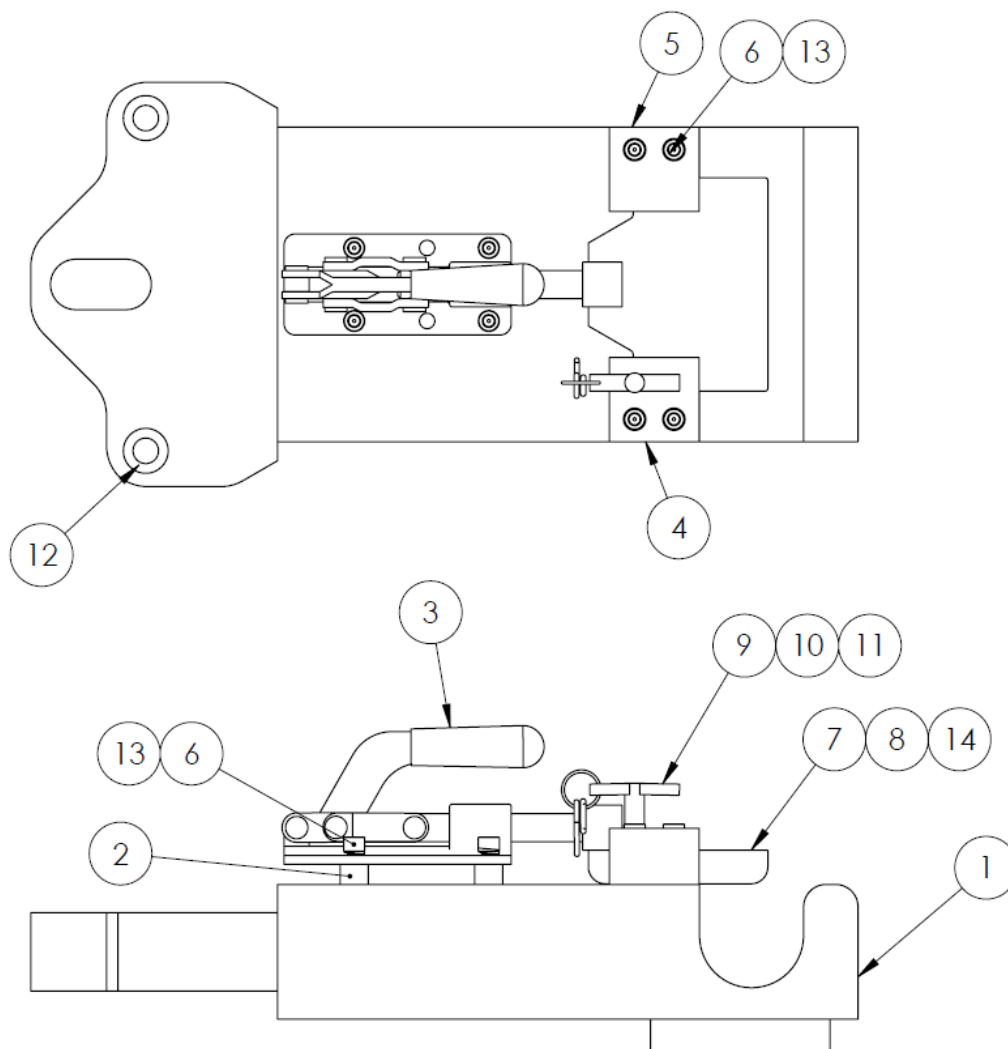
## Parts List

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

Item	Part Number	Description	Qty
1	15W4751	TOWBAR TUBE	1
2	15F2933	HEAD MOUNT ASSEMBLY	1
3	15F2934	B777 HEAD ASSEMBLY	1
4	15O2544	1-14 x 5-1/2" LG. C.S.	1
5	15O597	1-14 NYLOK NUT	1
6	15W4754	CYLINDER MOUNT	1
7	15W4753	RUNNING GEAR	1
8	15W4752	SPRING ATTACH	2
9	15L18806	CYLINDER PIN	2
10	15O318	1/4 x 1-3/4" LG. ROLL PIN	4
11	15L21303	AXLE	2
12	15O269	1/8" x 1-1/2" LG. COTTER KEY	2
13	15O4722	1" AN WASHER	2
14	15O320	3/4-16 NYLOK NUT	8
15	15O3579	3/4"-16 X 2-3/4" LG. C.S	8
16	15O4553	WHEEL ASSEMBLY	2
17	15W4746	LUNETTE MOUNT	1
18	15L2726	EXTENSION SPRING	2
19	15L18805	BOLT MODIFICATION	2
20	15O3584	1" SPRING LOCK WASHER	2
21	15L506	CYLINDER END SLEEVE	1
22	15O592	1/2-20 x 3" LG. C.S.	1
23	15O302	1/2" AN WASHER	1
24	15O660	1/2-20 NYLOK JAM NUT	1
25	15O157	3/4" LOCK WASHER	6
26	15O4857	3/4-16 X 2 LG. NYLOK C.S.	6
27	15O5509	1-14 CASTLE NUT	2
28	15O4693	5/16" X 2-1/2" LG. ROLL PIN	1
29	15O4099	SERIAL NUMBER PLATE	1
30	V-1033	TRONAIR LOGO	2
31	15L18769	PLACARD, TIRE PRESSURE	1
32	15O5751	PLACARD, SHEAR BOLT REPLACEMENT	1
33	15O5878	OPERATING INSTRUCTIONS/TOWBAR	1
34	15O590	1/4 x 1-1/2" LG. ROLL PIN	2
35	15O5731	SHEAR BOLT	4
36	15L23730	SPACER, SHEAR BOLT	4
37	15O5865	ZERK, GREASE	1
38	15O6040	TOWING EYE	1
39	15O6016	HYDRAULIC COMBO PUMP	1
40	15O6831	PLACARD B777 ONLY	1
41	15L22286	PLACARD	1
42	15L26455	PLATE, SKEG	1
43	15O337	3/8-24 x 1-1/2" LG. C.S.	2
44	15O308	3/8-24 NYLOK NUT	2
45	15O5507	HUB ASSEMBLY	2
46	15O6146	9/16-18 NYLOK JAM NUT	4
47	15O6041	NYLON LANYARD	2
48	15O6042	CLIP RETAINING PIN	2
N/S	K-5545	KIT, SHEAR BOLT REPLACEMENT	

### Parts List

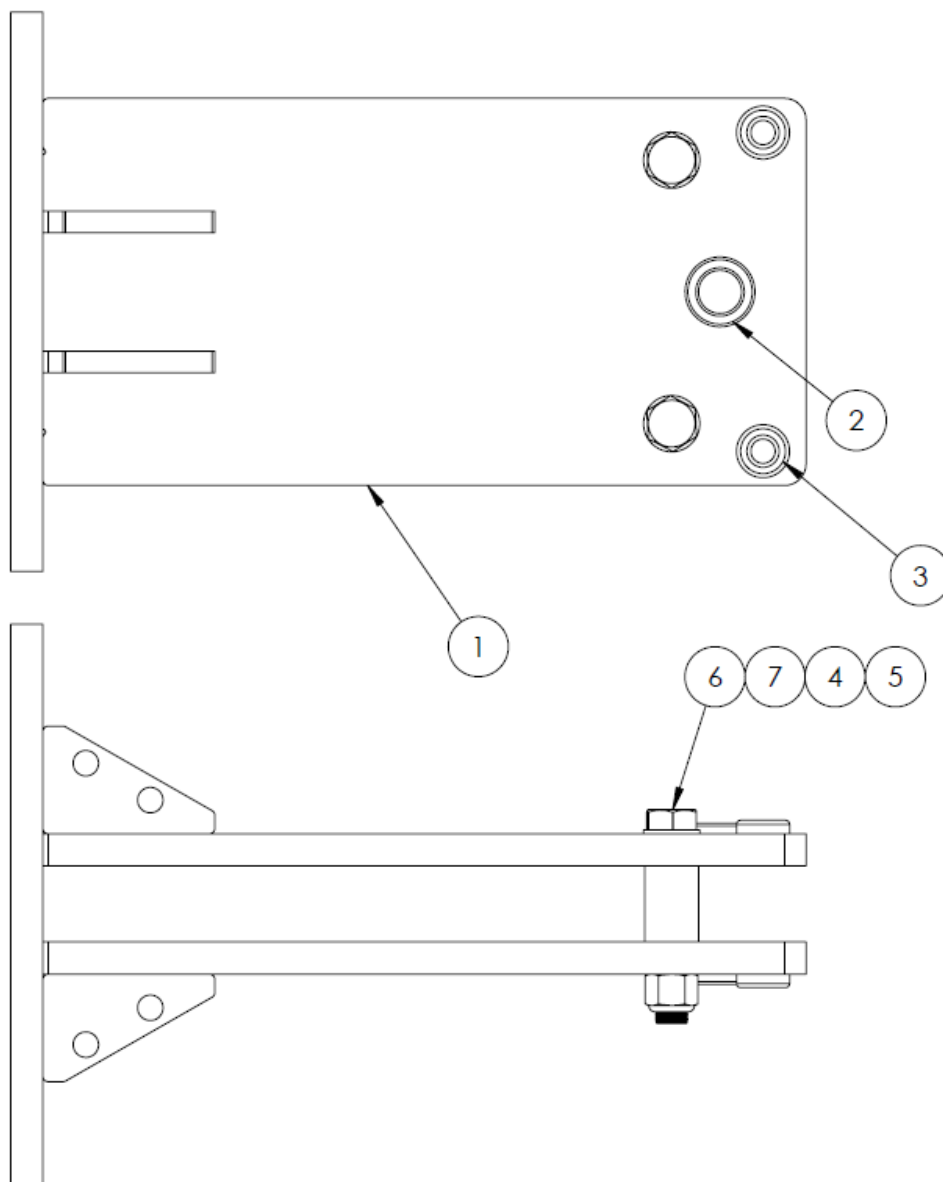
When ordering replacement parts/kits, please specify model, serial number and color of your unit.



Item	Part Number	Description	Qty
	<b>15F2934</b>	<b>B777 HEAD ASSEMBLY; consists of:</b>	
1	15W5998	BWW TOWBAR HEAD	1
2	15L19473	SPACER	4
3	15O4570	TOGGLE CLAMP	1
4	15L15158	HOLDING BLOCK RH	1
5	15L15161	HOLDING BLOCK LH	1
6	15O2269	5/16-24 X 1-1/2 " LG. S.H.C.S	8
7	15W4857	LOCKING PAD WELD	1
8	15O1916	3/8-16 X 1" LG ALLEN HEAD C.S.	1
9	15O5416	BALL LOCK PIN	1
10	15L21886	CHAIN	1
11	15O5375	S HOOK	1
12	15O6033	BUSHING	2
13	15O6732	5/16" HIGH COLLAR LOCK WASHER	8
14	15O6037	3/8" HIGH COLLAR LOCK WASHER	1

## Parts List

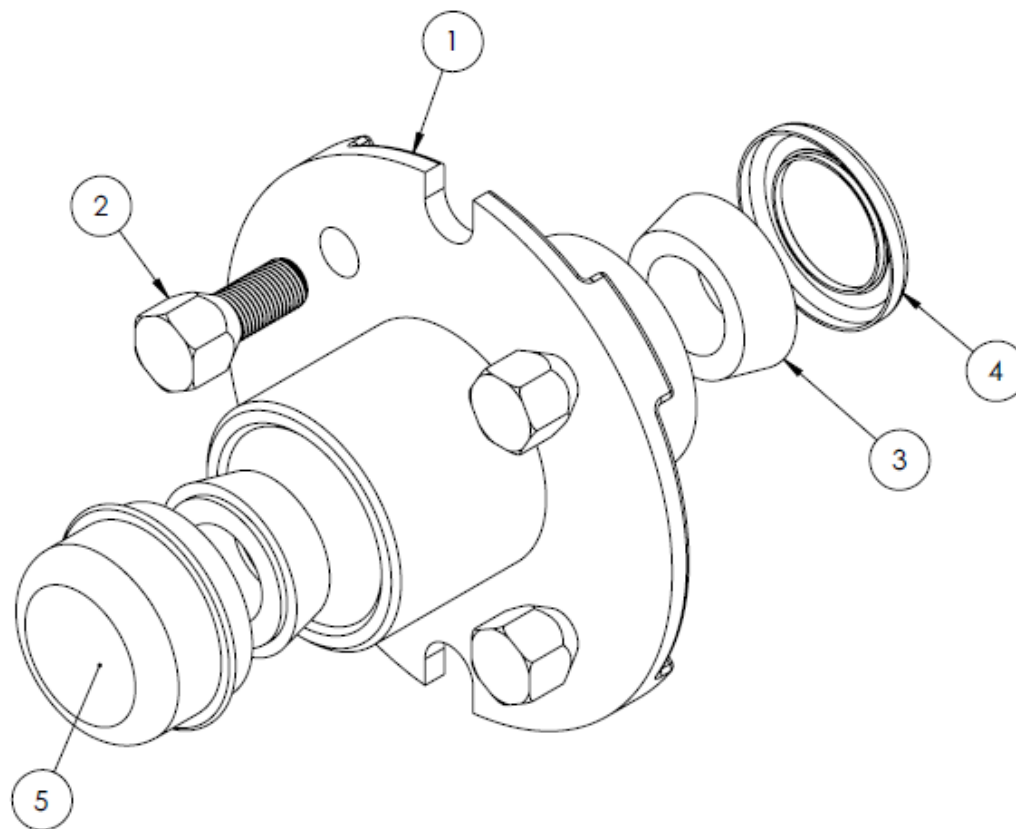
When ordering replacement parts/kits, please specify model, serial number and color of your unit.



Item	Part Number	Description	Qty
	<b>15F2933</b>	<b>HEAD MOUNT ASSEMBLY; consists of:</b>	
1	15W5997	HEAD MOUNT WELD	1
2	15O4571	BUSHING	4
3	15O5194	SHEAR BOLT BUSHING	2
4	15L29178	TUBE, SPACER SLEEVE	2
5	15O321	3/4" AN WASHER	2
6	15O823	3/4-16 X 4-1/2" LG. C.S.	2
7	15O320	3/4-16 NYLOK NUT	2

### Parts List

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



Item	Part Number	Description	Qty
	<b>15O5507</b>	<b>HUB ASSEMBLY</b> ; consists of:	
1	15O5335	HUB HOUSING WITH CUPS	1
2	15O5657	WHEEL BOLTS	4
3	15O5655O	BEARING CONE	2
4	15O5654	GREASE SEAL	1
5	15O5656	GREASE CAP	1

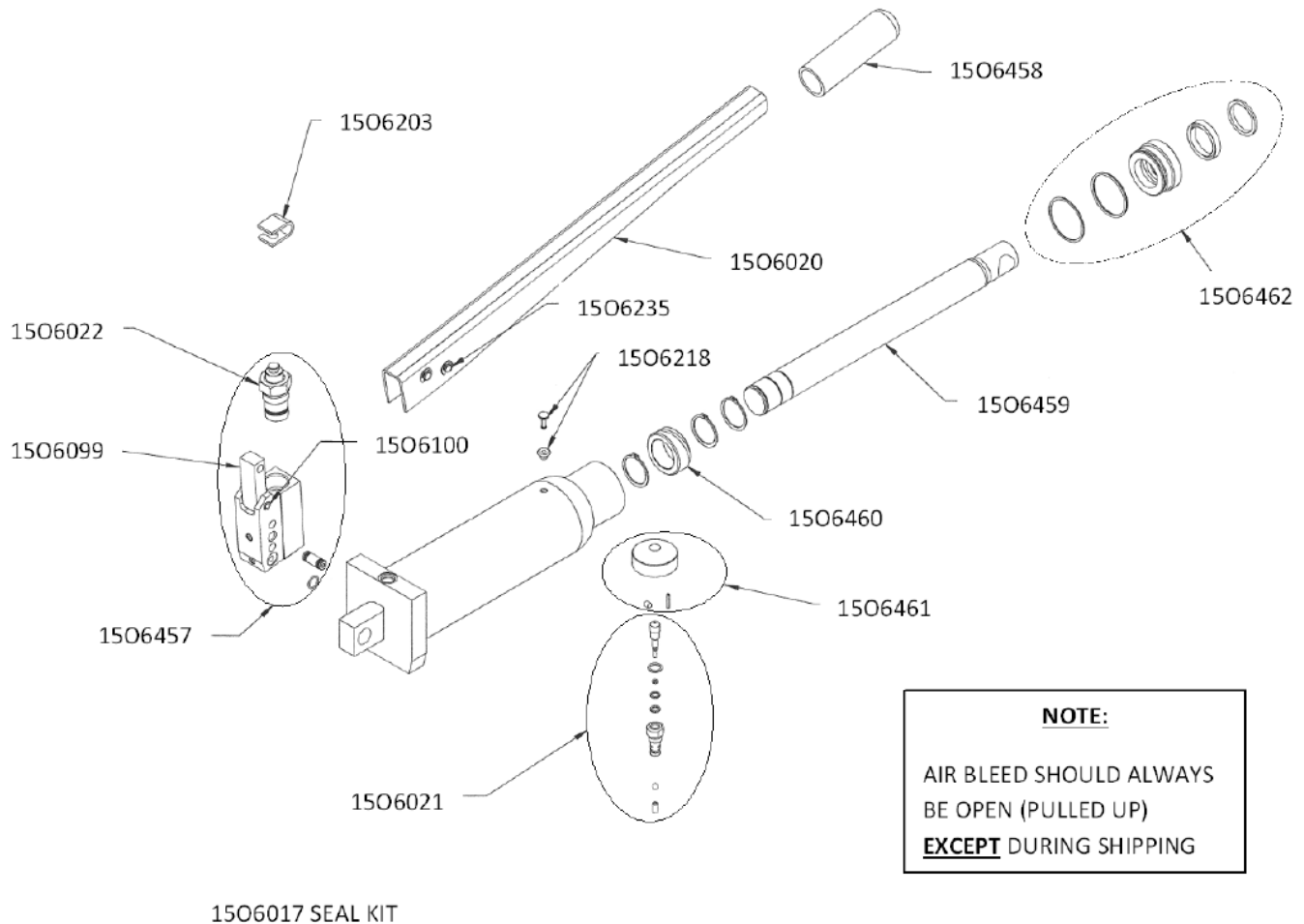
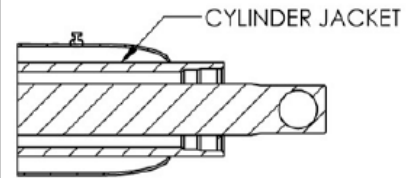
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## Parts List

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

### FILL PROCEDURE:

- REMOVE THE BRASS VENT PLUG THEN THE RUBBER GROMMET.
- FILL TILL THE ATF FLUID JUST COVERS THE CYLINDER JACKET.
- DO NOT OVER FILL. OVER FILLING WILL
- CAUSE OIL TO LEAK OUT THE AIR BLEED.
- REPLACE THE RUBBER GROMMET
- THEN THE BRASS VENT PLUG.



### AIR BLEED PROCEDURE

1. Elevate the towing eye end of towbar until combo pump is pointing downward (handle end raised).
2. Extend cylinder fully by pumping handle.
3. Retract cylinder SLOWLY by opening release knob SLIGHTLY.
4. Repeat step 3 until no sign of air is noticeable.

## Parts List – 1506016

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

Part Number	Description	Qty
<b>1506017</b>	<b>CYLINDER SEAL KIT</b> ; consists of:	
	SPRING	1
	O-RING	1
	O-RING	4
	B/U WASHER	4
	BALL	1
	O-RING	1
	O-RING	1
	B/U WASHER	1
	O-RING	1
	SCREEN	1
	ROD SEAL	1
	ROD WIPER	1
	O-RING	1
	B/U WASHER	1
	RETAINING RING	3
	WIPER	1
	SEAL, U-CUP	1
<b>1506020</b>	<b>REPLACEMENT HANDLE KIT</b> ; consists of:	
	HANDLE	1
	PIN	2
	RETAINING RIN	4
	GRIP	1
<b>1506021</b>	<b>RELEASE VALVE KIT</b> ; consists of:	
	SPRING	
	RELEASE VALVE BODY	
	O-RING	
	O-RING	
	B/U WASHER	
	BALL	
	O-RING	
	RELEASE VALVE SCREW	
<b>1506022</b>	<b>PUMPING STATION KIT</b> ; consists of:	
	B/U WASHER	1
	O-RING	1
	PISTON	1
	PISTON RETAINER	1
	WIPER	1
	SEAL, U-CUP	1
<b>1506218</b>	<b>VENT VALVE/FILL PULG KIT</b> ; consists of:	
	VENT PLUG	1
	VENT VALVE	1

Part Number	Description	Qty
<b>1506457</b>	<b>PUMP KIT</b> ; consists of:	
	PUMP BLOCK	1
	CHECK VALVE	3
	EXPANDER PLUG	2
	HANDLE LINK	1
	SPRING PIN	1
	PISTON RETAINER	1
	PISTON	1
	O-RING	1
	B/U WASHER	1
	WIPER	1
	SEAL, U-CUP	1
	PLUG SAE	1
	RELIEF VALVE TUBE	1
	RELIEF VALVE SEAT	1
	BALL	1
	RELIEF VALVE GUIDE	1
	WASHER	1
	COMPRESSION SPRING	1
	B/U WASHER	3
	O-RING	3
	BUSHING	1
<b>1506464</b>	<b>RELEASE KNOB KIT</b> ; consists of:	
	KNOB	1
	PIN	1
	SET SCREW	1
<b>1506462</b>	<b>RETAINER NUT KIT</b> ; consists of:	
	RETAINER NUT	1
	ROD SEAL	1
	ROD WIPER	1
	O-RING	1
	B/U WASHER	1
<b>1506235</b>	<b>HANDLE PIN KIT</b> ; consists of:	
	PIN	1
	RETAINING RING	2
1506099	HANDLE LINK	1
1506100	SLOTTED SPRING PIN	1
1506203	U-CLIP PISTON TAB	1
1506458	HANDLE GRIP	1
1506459	PISTON ROD	1
1506460	PISTON, CYLINDER BEARING	1
1506015	PLACARD	1