

# INSTALLATION INSTRUCTIONS FOR COZY CAB A-1&&' ) AIR CONDITIONING KIT



05-1188:

# INSTALLATION INSTRUCTIONS A-12235 Air Conditioner Kit



**Cab set up instructions;**

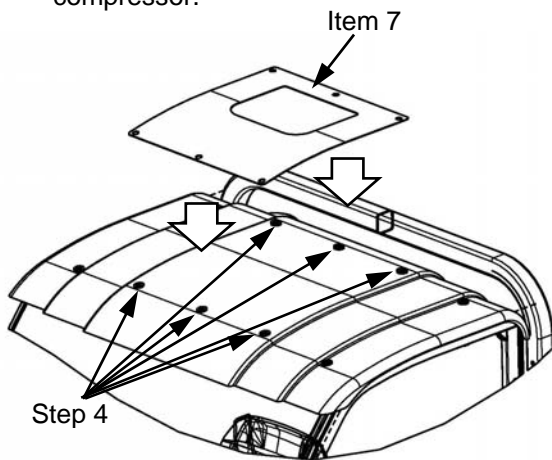
This air conditioning kit is designed to be used with Cab Kit A-11836 for model year 2010 and newer, **Multi-Pro 5800 Sprayer Vehicles equipped with a ROPS.**

**Preparation of cab;**

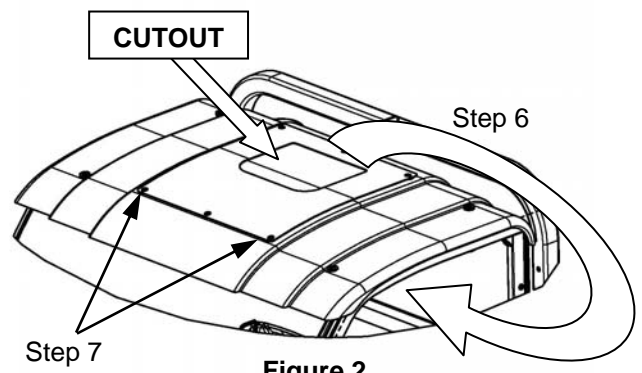
1. **Install A/C unit from A-12235 kit on cab kit A-11836 before taking out of stand.**
2. Unpack and identify components.

Parts list;	ITEM	QTY	DESCRIPTION	CP P/N
	1	1	AIR CONDITIONER KIT WITH COMPRESSOR COMP	3-21597
	2	2	FRONT MOUNT BRACKET	1-47064
	3	2	5/16 x 1.50" LONG BUTTON HEAD BOLT	3-18538
	4	4	5/16" RUBBER GLASS WASHER	3-16217
	5	2	5/16" FLAT WASHER	3-10085
	6	2	5/16" NYLOCK NUT	3-10072
	7	1	STIFFENING PANEL	1-47082

3. Using the stiffening panel as a template, set stiffening panel on top of roof, locating panel using the (6) roof hardware bolts and mark/transfer cutout onto roof panel (**Figure 1**).
4. From the top of the roof, use a jigsaw or grinder to remove cutout from roof panel (**Figure 2**).
5. Remove (6) roof panel bolts **and install stiffening panel in the inside of cab** against the bottom roof panel surface (**Figure 2**).
6. Secure (2) front mount brackets to roof and front cross member as shown in Figure 2 using;
  - (2) 5/16 x 1.50" button head bolts
  - (2) 5/16" rubber glass washers
  - (2) 5/16" flat washers
  - (2) 5/16" nylock nuts
7. Re-install remaining roof hardware.
8. Open air conditioner kit and locate instructions supplied with kit to install air conditioner unit and compressor.



**Figure 1**



**Figure 2**

**Installation is now complete. For questions or comments, contact;**



PO BOX 70, 1715 S. Sibley Avenue, Litchfield, MN 55355-0070  
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## **3-21597 Air Conditioning Installation Instructions for Toro5800**

### **~ Procedure Suggestions ~**

- 1) Install A/C unit from A-12235 kit on cab kit A-11836 before taking out of stand.**
- 2) Install compressor per instructions.**  
(NOTE: Install fuse block BEFORE compressor)
- 3) Install cab per instructions.**

#### **A. Mounting the Unit on Cab Roof**

NOTE: It is easier to install the unit on the cab while still in the shipping crate, per A-12235.

- 1) Remove the headliner or loosen enough to drop the center portion. Disregard if there is no headliner.
- 2) Clean the outside roof area around the cut-out and mounting holes using mild solvent.
- 3) Apply a thin film of adhesive (included in kit) 1" wide around upper surface of roof cut-out and mounting holes. Apply sealer to the face of the sealing ring on the unit. **See Photo 1.** Make sure that the drain tube is located within the sealing ring. A wire or string may be wrapped around the sealing ring to keep it in place, if necessary.
- 4) Set unit on cab. Make sure that the drain tube is not pinched and roof brace is installed, if required.
  - a. Do not mount the unit with the front lower than the rear, as this will prohibit water drainage.
  - b. The minimum recommended spacing width is 14 inches to ensure proper support. The channels bolt directly to the unit and either one large or two tapered rubber spacers are used to space the unit away from the roof. **See Photos 1 & 2.**
- 5) Select spacers as required to level and support unit. **See Photo 2.**



**Photo 1**

- 6) Apply adhesive to the faces of all spacers and locate over mounting holes.
- 7) Tighten the four cap screws provided evenly until the spacers take the load and just begin to “bulge” slightly. Do not over-tighten. Bottom of unit and roof may distort and cause water leakage.



**Photo 2**

- 8) Remove cover and install (4) 3/8-16 nuts on mounting cap screws to prevent them from backing out. Apply sealant around bolt threads and nut plates to prevent water leakage into the cab.

## **B. Compressor Mount Installation**

### **IMPORTANT – READ THIS**

#### **ENGINE MOUNT AND DRIVE ADAPTABILITY**

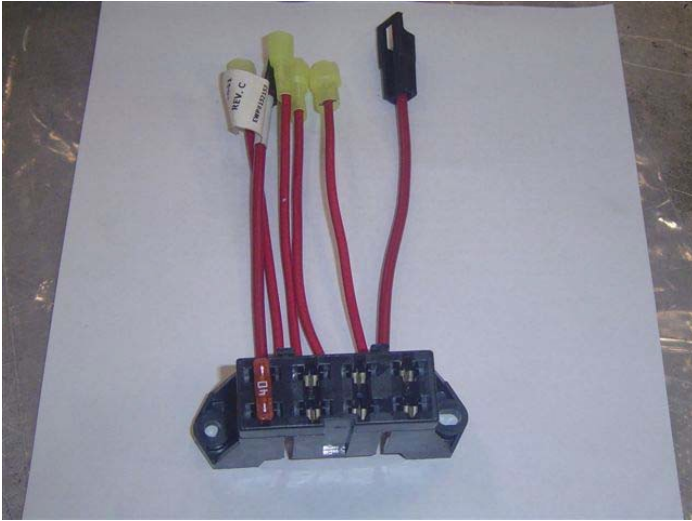
NOTE: IMPORTANT – Minor modifications are occasionally necessary and are considered part of an installation. These kits are designed to fit vehicles with standard equipment. Each model adapter kit is thoroughly checked by installation of the bracket on a standard vehicle. The addition of special or optional equipment may interfere with normal installation. Compressor mounts are an accessory and are of no concern to the engine manufacture. Casting dimensions and bosses utilized in the bracket mounting vary as they are of no value to the engine manufacture. Extra tolerances have been built into the bracket to compensate for these differences. It is important that proper pulley alignment be assured before final securing of mounting bolts are made. If sufficient tolerance has not been allowed for that particular engine, further modification, such as elongating a hole or reshaping a strap, may be necessary to achieve proper alignment and fit. Some installations may require a slight modification or rearrangement of radiator mounting, gas or water lines for proper clearance. Vehicles are quite often custom built and you may find differences in the supplier of power steering and other accessory equipment. It may be necessary to purchase a special accessory pulley, which is not furnished in the kit from the vehicle distributor.



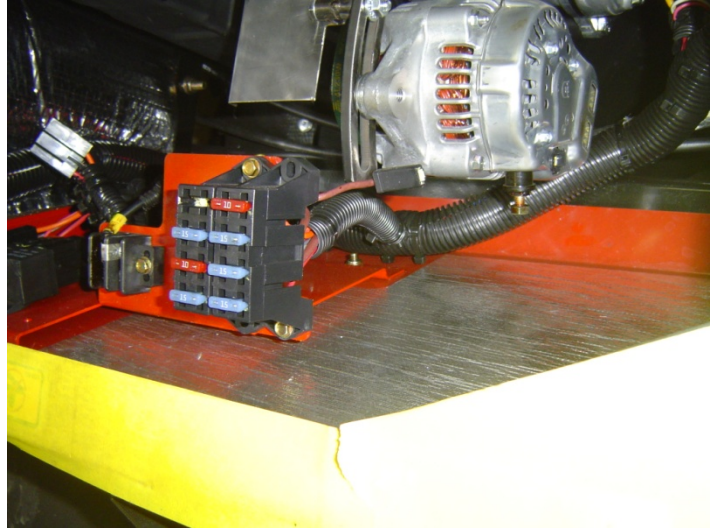
## Compressor Mount Instructions

**NOTE: Reference BT5-9022 service parts (attached) for any item numbers referenced throughout the compressor mount instructions.**

- 1) Disconnect battery cables. Remove alternator, alternator guard, belt, tension arm, and upper radiator hose (partially drain coolant before removing hose).
- 2) Install fuse block, per Photos 3 & 4.



**Photo 3**



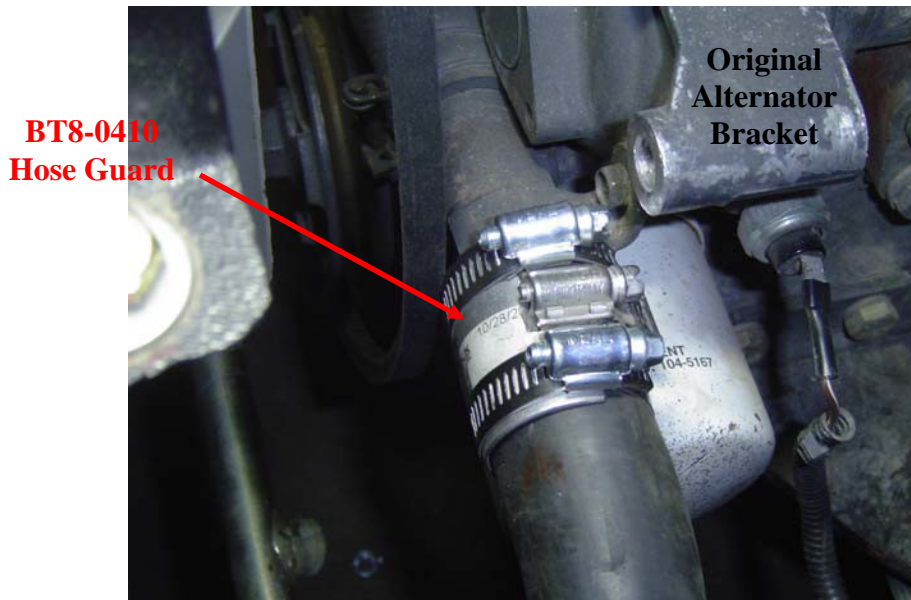
**Photo 4**

- 3) Install brackets on compressor as shown in Photo 5 (refer to drawing BT5-9022).



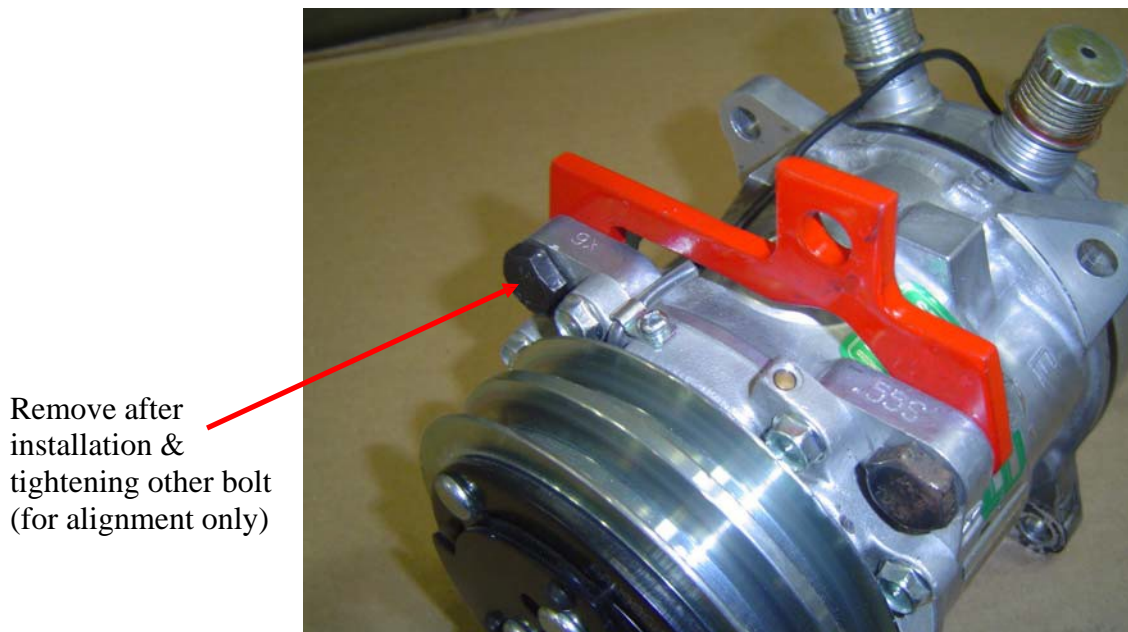
**Photo 5**

4) Attach BT8-0410 hose guard as shown in Photo 6 with 20HC clamps.



**Photo 6**

5) Install BT100394 bracket on compressor with items #15 & 16 as shown in Photo 7.

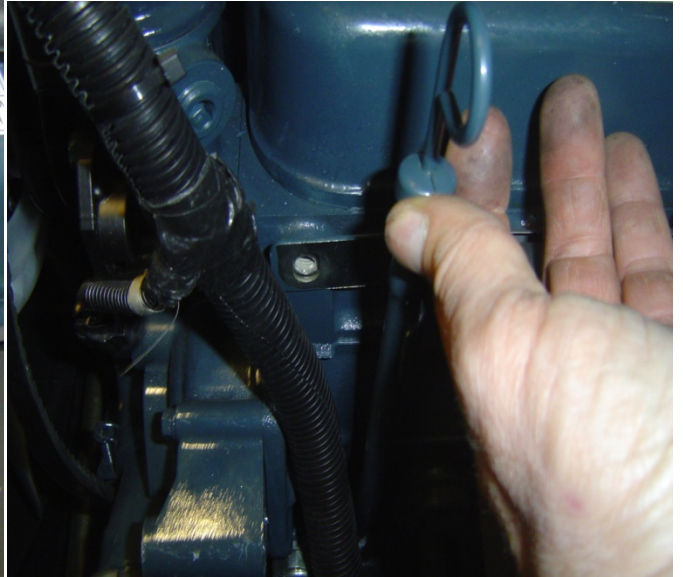


**Photo 7**

- 6) Remove dipstick assembly and engine lifting eyelet (discard eyelet). **Removal of these items is only necessary for gas engine models.** Install brackets BT100210 with items #13 & 21 and BT100211 using existing mounting bolts, as shown in Photo 10.



**Photo 8**



**Photo 9**



**Photo 10**



- 7) Install compressor to original alternator bracket (reference Photo 11).  
NOTE: Bolt #18 put in from fan side.

**Original  
Alternator  
Bracket**

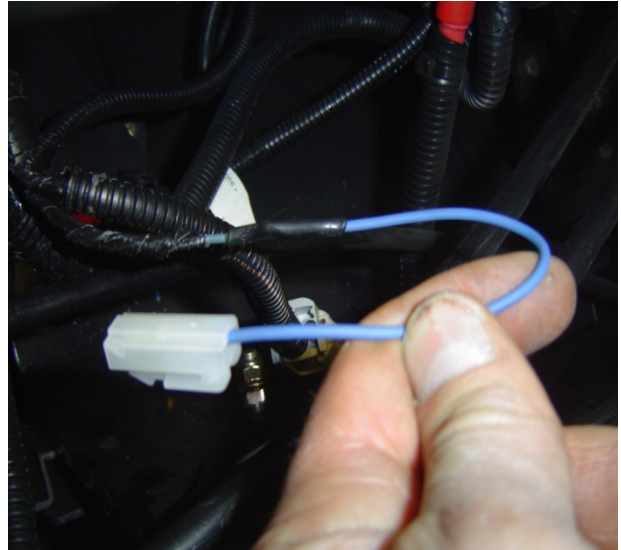


**Photo  
11**

- 8) Disconnect oil pressure sending wire. Remove existing plug (photo 12). Splice provided wire to existing wire with shrink connector. Complete wire assembly using PH-26-405-05B. (photo 13)



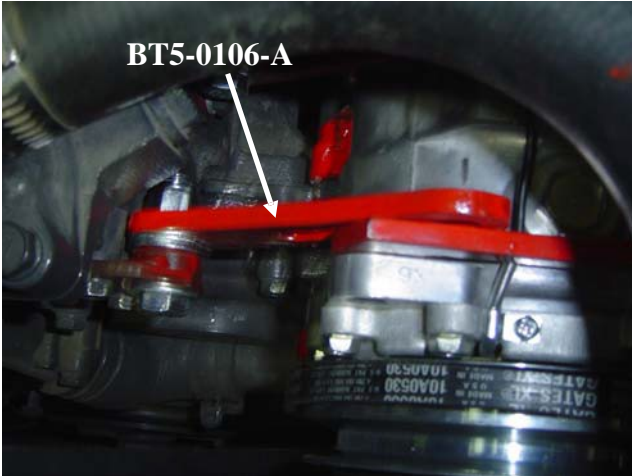
**Photo 12**



**Photo 13**



- 9) Install the alternator and adjustment arms (BT5-0106-A with items #16 & 20 & BT100206 with items #14 & 19) as shown in Photos 14 & 15.

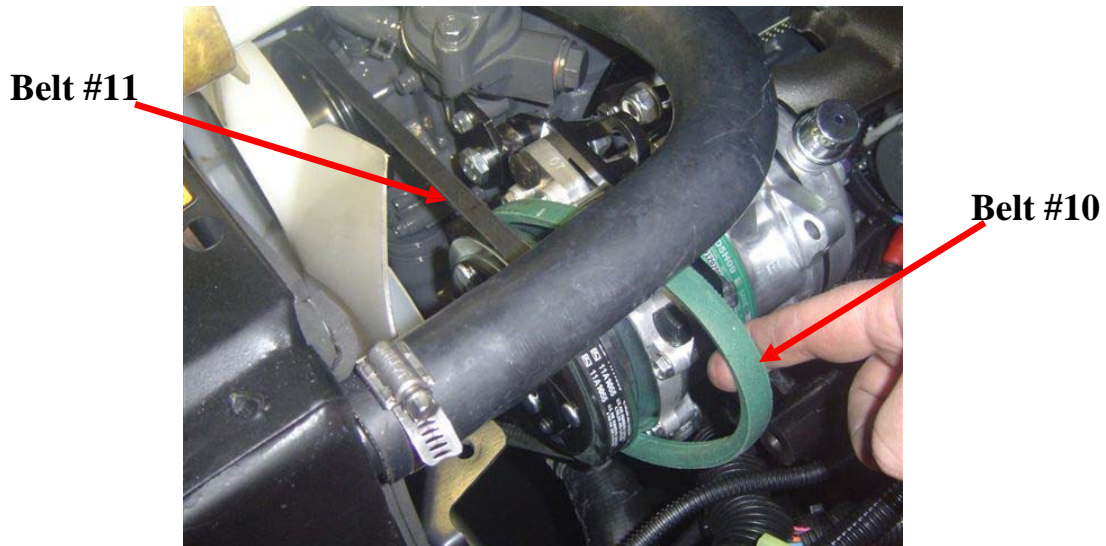


**Photo 14**



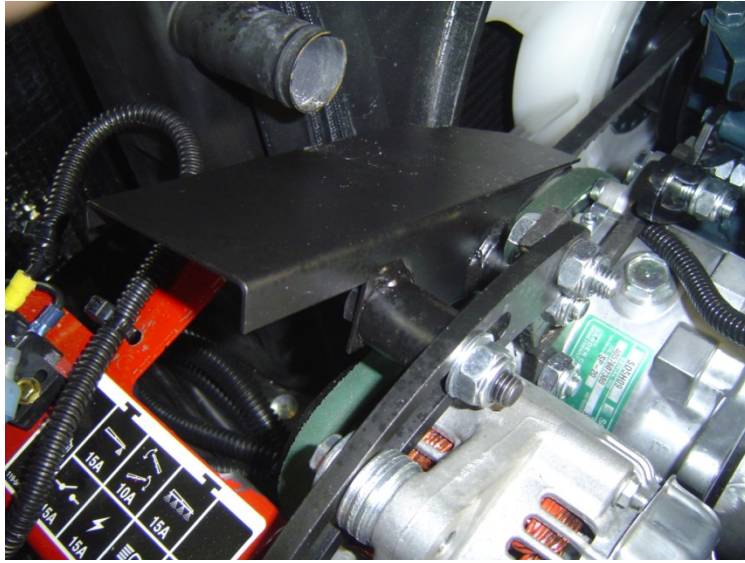
**Photo 15**

- 10) Install smaller belt (item #10) on inside of compressor pulley to alternator and larger belt (item #11) on outside of compressor pulley to crank as shown in Photo 12. Tighten compressor and compressor belt. Reinstall fan shroud.



**Photo 16**

11) Install alternator and belt guard per Photo 17. Use bolt #27 for alternator mount from fan side, use (2) bolt #17 for belt guard and #2 adjustment arm, use existing alternator tightening bolt.



**Photo 17**

12) Tighten alternator bolts and belt. Reconnect alternator wires and ty-wrap wires away from alternator.

### C. Refrigerant Hose Installation

NOTE: See Crimping Instructions Attached

- 1) Install hoses as shown in **Figure 1**. Use crimping tool supplied. Start from unit and plumb to compressor.
- 2) Install o’rings and connect hoses to fittings on unit (cover must be removed). Reference **Photos 20a & 20b** for proper fitting locations (page 14).
- 3) Clamp hoses within unit using clamps provided. Cut off end of mounting cap screw if it interferes with hose.
- 4) Route hoses over the top of cab and down the back wall to the compressor, per **Photos 18 & 19** as well as **Figure 1**.



Photo 18



Photo 19

- 5) **Please note drain hose and electrical wires will be run with refrigerant hoses. Please complete routing of those items before securing in place.** Use zip ties provided to secure hoses and prevent hose movement. Hoses must not come in contact with hot vehicle components, exhaust manifolds, etc., and they should not be subjected to mechanical abrasions.

### C. Drain Hose Installation

NOTE: The drain hose is stepped down in size at two places to promote siphoning water from the drain pan under evaporator. The reduction in diameter forces the water to flow in a solid column. This creates a suction that draws the rest of the water out of the pan. For this effect to work properly, the last two feet of 5/16 O.D. drain tube should point straight down or as close to this as possible.

- 1) Locate small end of drain tube (5/16 O.D.) so that it exits at desired location. Make sure that it points downhill and secure with clamps or tie wraps. Do not crush the tube or cut off the 5/16 O.D. tubing.
- 2) Route the drain tube to the unit so that it travels in a downward direction from the unit.
- 3) Cut off the 7/16 O.D. tube to length and connect to reducer fitting on drain hose from unit. Secure drain tubes with tie wraps. Attach to refrigerant hoses if they run downhill properly.
- 4) Inspect to make sure that drain tubes are not kinked, especially at back of cab and at drain pan with plenum.



## D. Wiring

NOTE: Reference Electrical Diagram (R-6100-4-C) Attached

- 1) Disconnect battery.
- 2) Connect the wire harness assembly to the terminal within the air plenum and route protective loom through  $\frac{3}{4}$ " slot in plenum ring.
- 3) Route wire harness across back through slot near air outlet, per **Photo 20**. Route wiring with refrigerant hoses as discussed in section C.



**Photo 20**

- 4) Black Wire: Connect to ground block next to fuse block (p/n 32505).
- 5) Red Wire: Connect to 40 amp fuse block supplied in kit (p/n 32515).

Ground  
Block



**Photo 21**

- 6) White Wire: Connect to compressor clutch with connector supplied in kit (p/n 31568).

## E. Air Diffuser Plenum

- 1) Install headliner.



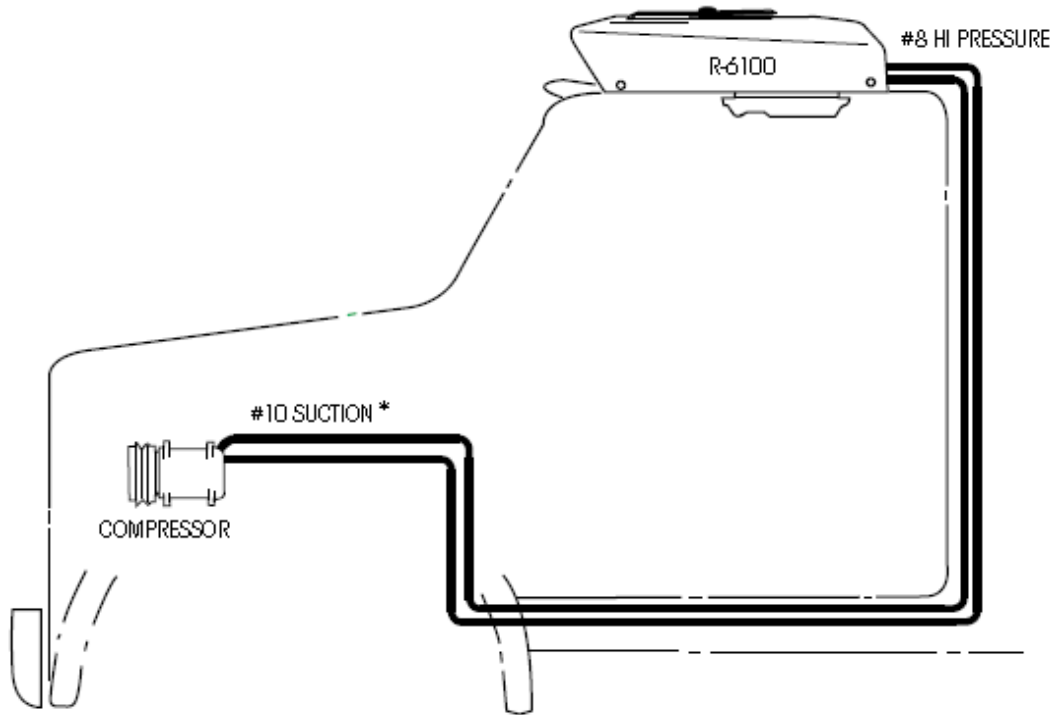
Photo 22

- 2) Install four M5 x 75 screws in the plenum assembly and secure with retainers provided.
- 3) Place one foam gasket in plastic plenum assembly. If headliner is over 1 inch thick, glue two foam gaskets together. An extra foam gasket may be ordered (Part #RD-2-1297-0) if required.
- 4) Place the plenum assembly up to the unit and start one M5 x 0.8 x 75 screw.
- 5) Attach the switch and thermostat to the plenum with three 7/16-28 nuts (two with switch, one with thermostat).
- 6) Tighten the four plenum assembly screws evenly until the plenum fits snugly against headliner. Make sure that gasket does not shift out of place and electrical connectors remain attached.
- 7) Align D-flats and push on two knobs.

## F. Final Assembly and Check

- 1) Install cover. Check condenser fan for adequate blade clearance.
- 2) Evacuate the system, test for leaks and charge with **1 pound 14 ounces R-134a**. *System must be charged by a properly certified A/C technician.*
- 3) Connect the battery.
- 4) Turn the ignition switch to the “on” position, turn the thermostat to the coldest point and the fan switch to “high”.
  - a. The clutch should click on and be engaged.
  - b. The condenser fan and evaporator blower should be turning at high speed.
- 5) Turn the fan switch to medium and low positions and check that the evaporator blower slows down.
- 6) Turn the thermostat off and clutch should disengage.
- 7) Start engine and run at 1500-2000 rpm. Turn unit on “full cold”, “high fan”.
- 8) Check thermostat to be sure clutch cycles on and off.

**PLUMBING SCHEMATIC**



**\*NOTE:** #12 Suction Line Recommended For Increased Efficiency.

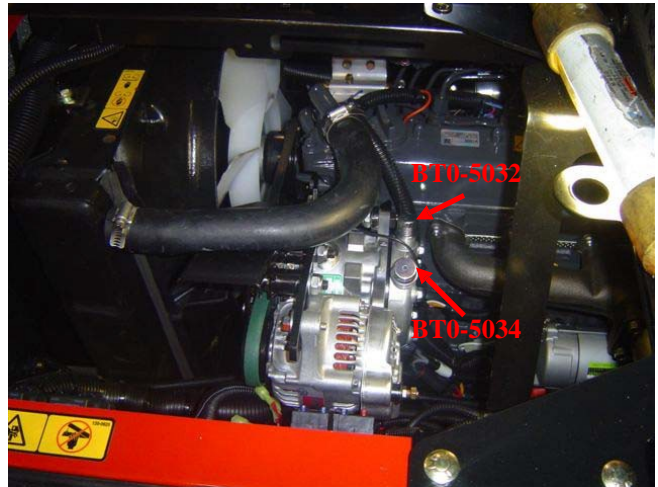
**Figure 1**

**Discharge:** Compressor Fittings BT0-5032  
**Suction:** BT0-5034

Unit Fittings  
 BT0-5001  
 BT0-5042



**Photo 20a**



**Photo 20b**



## ASSEMBLY INSTRUCTIONS - Type "AN"



1. Cut or trim the hose to the desired length using the **ATCO Kwikcut Hose Cutter**. The cut should be made square to the hose length.



2. Assemble the clamp assembly all the way onto the hose with the locator tab touching the hose.



3. Assemble the fitting into the hose until the hose touches the bead and locator tab on the fitting.



4. Use the manual crimp pliers to crimp each clamp separately. (BT9-3802 Pliers)

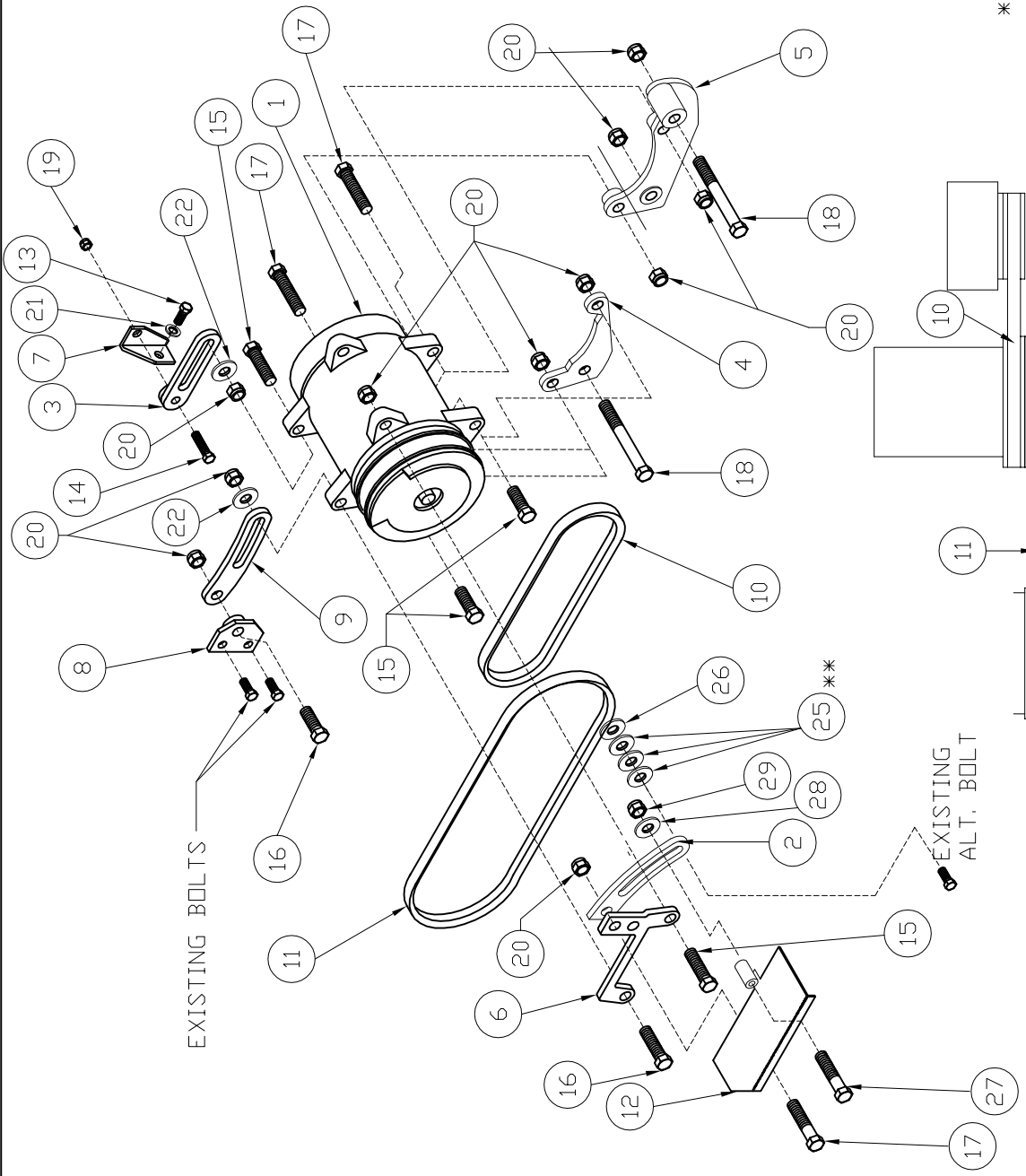


**Caution:** Make sure that there is a metal to metal contact of the clamp ear when the crimp is made. There will be a slight amount of spring-back of the clamp ear when the crimp pliers are released. **Failure to fully close the clamp may result in refrigerant leaks.**

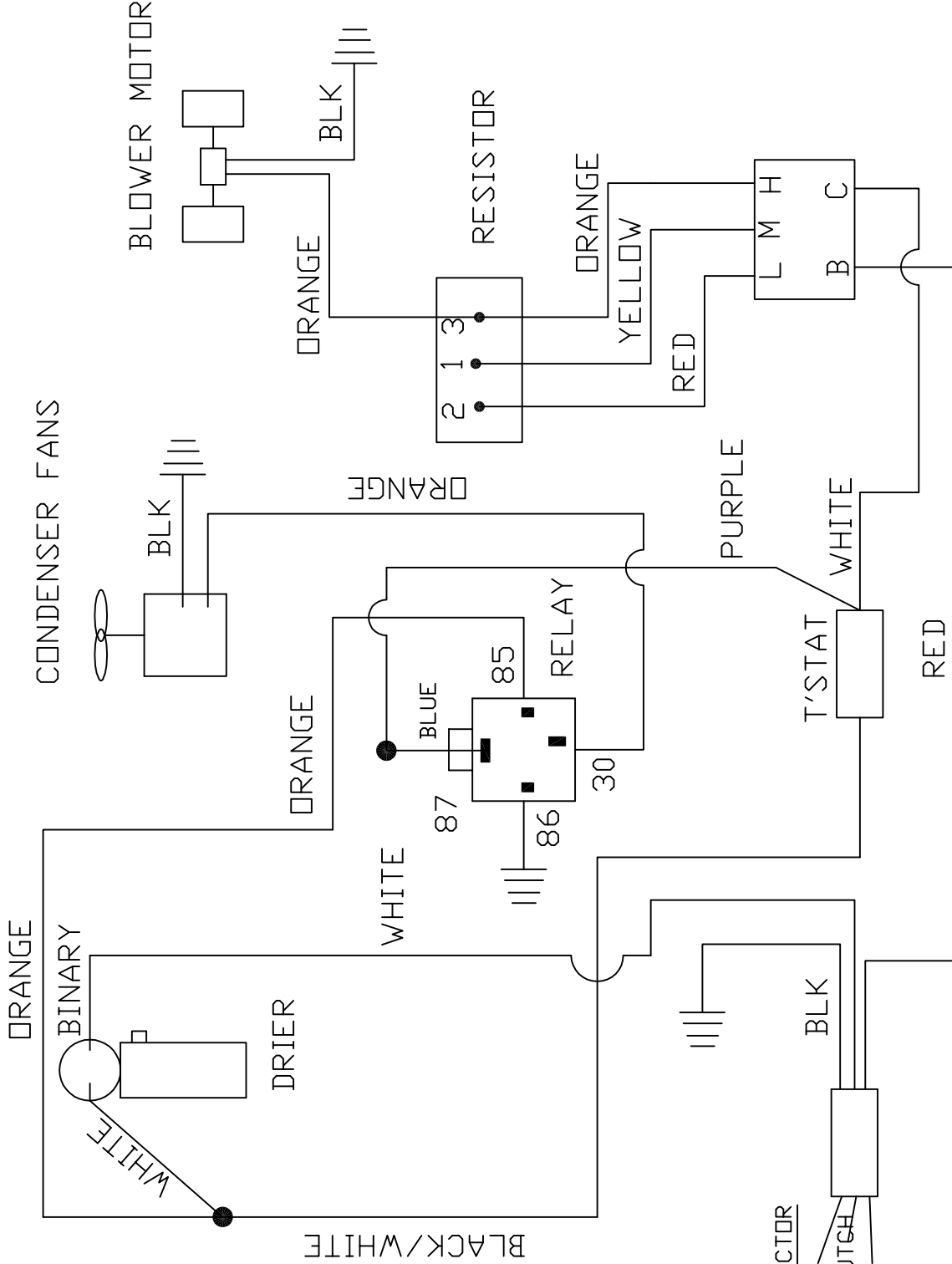
ITEM	PART #	DESCRIPTION	QTY
1	BT5-5072	COMPRESSOR	1
2	BT100205	ADJUSTMENT ARM	1
3	BT100206	ADJUSTMENT ARM	1
4	BT100207	MOUNT BRACKET	1
5	BT100208	MOUNT BRACKET	1
6	BT100394	MOUNT BRACKET	1
7	BT100210	MOUNT BRACKET	1
8	BT100211	MOUNT BRACKET	1
9	BT5-0106A	ADJUSTMENT ARM	1
10	6823	BELT	1
11	7417	BELT	1
12	BT100398	GUARD	1
13	40671	M8x1.25x16mm BOLT	1
14	40674	M8x1.25x30mm BOLT	1
15	40694	M10x1.5x30mm BOLT	4
16	40696	M10x1.5x40mm BOLT	2
17	F554	M10x1.5x50mm BOLT	3
18	40705	M10x1.5x90mm BOLT	2
19	1140163	8mmx1.25 LOCKNUT	1
20	1140167	10mmx1.5 LOCKNUT	11
21	MLW4	8mm LOCK WASHER	1
22	MLW5	10mm FLAT WASHER	3
23	BT8-0410	HOSE GUARD	1
24	20HC	HOSE CLAMP	2
25	DEI9	5/16 WASHER THK	3
26	WU52	5/16 FLAT WASHER	1
27	B108	1/4-20x2 BOLT	1
28	DEI7	1/4 WASHER THK	1
29	NANI	1/4-20 NYLOC NUT	1

NOTE: ITEMS 23 AND 24 NOT SHOWN  
 \*\* NOTE: ITEM 25 USE AS NEEDED

NOTE: THE COMPRESSOR IS NOT PART OF  
 THE MOUNT KIT-IT IS PURCHASED SEPARATE



UNLESS OTHERWISE SPECIFIED	SYM.	DESCRIPTION	DATE	E.C.N.	BY	APP. BY
		COMPRESSOR				
		ALTERNATOR				
		CRANK				
REVISIONS						
NAME		CLASS CODE		FIRST MACH.	DWG. SIZE	
COMPRESSOR MOUNT TORO					A	
MATERIAL		SEE ABOVE				
FINISH		PER ENGR. SPEC. # NONE				
DRAWN		BK				
CHECKED						
APPRV'D.						
SCALE	NO	DATE				
1:1		2/24/2015				
BADGER TRUCK REFRIGERATION INC. 6302 TEXACO DRIVE EAU CLAIRE, WI. 54703 PHONE (715)874-6811						
BT5-9022						



ORANGE

BINARY

WHITE

DRIER

WHITE

87

BLUE

85

RELAY

30

BLK

MATING CONNECTOR

BLK TO GND

WHITE TO CLUTCH

RED TO FUSE

BLOCK

ORANGE

ORANGE

2

1

3

RESISTOR

ORANGE

YELLOW

RED

PURPLE

T' STAT

WHITE

RED

L M H

B C

BLOWER MOTOR

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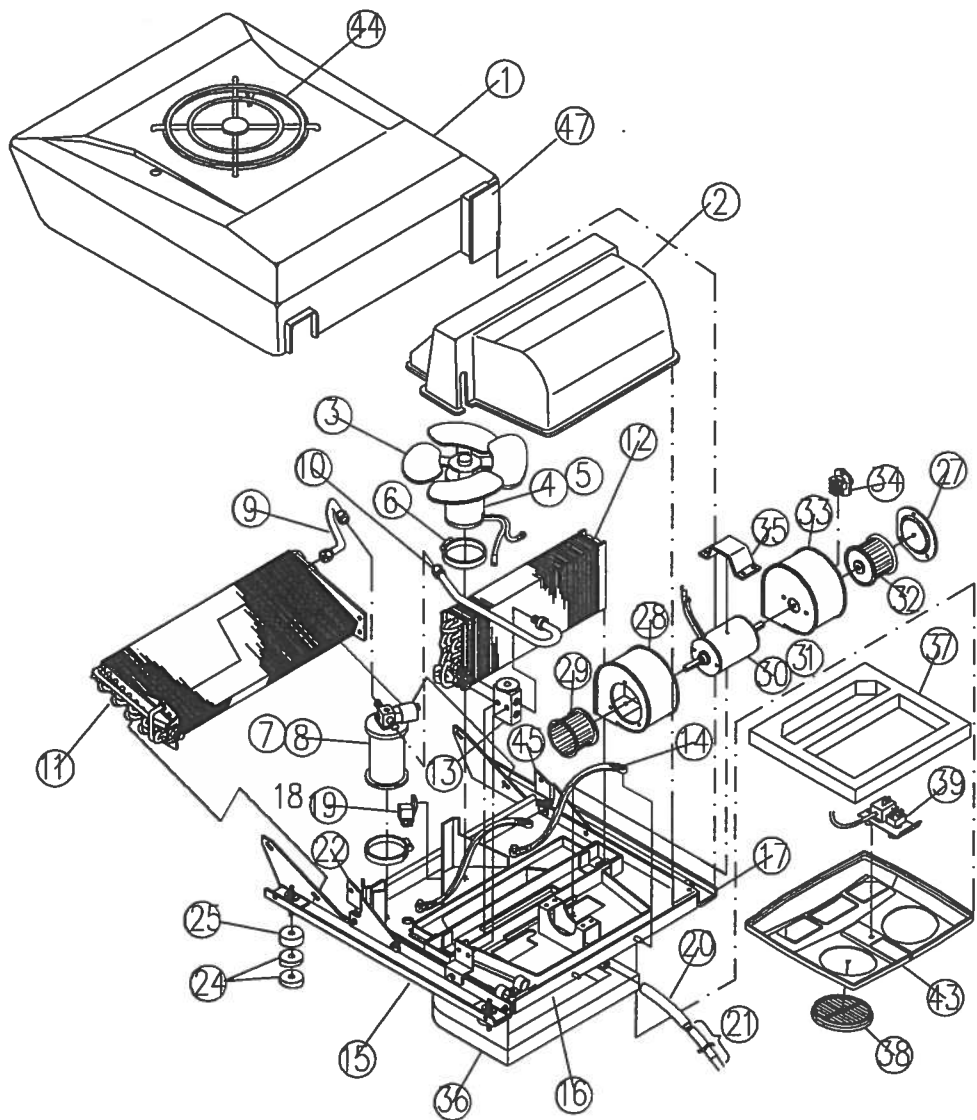
CONDENSER FANS

CONDENSER FANS

CONDENSER FANS

REV.	DESCRIPTION	DATE	E.C.N.	BY	APP. BY
<b>BADGER TRUCK REFRIGERATION INC.</b>					
6302 TEXACO DRIVE EAU CLAIRE, WI. 54703					
PHONE (715)874-6811					
DRAWN <b>BLK</b>					
CHECKED					
APPRV'D.					
SCALE NONE					
DATE 5/10/11					
UNLESS OTHERWISE SPECIFIED					
DEBURR & REMOVE ALL SHARP EDGES & CORNERS BY .004 TO .016					
DIMENSIONS ARE IN INCHES TOLERANCES ON					
1 PLACE DEC. ±.1	2 PLACE DEC. ±.06				
ANGLES ± 1					
ELECTRICAL DIAGRAM					
MATERIAL SEE ABOVE					
FINISH PER ENGR. SPEC. # NONE					
R-6100-4-C					





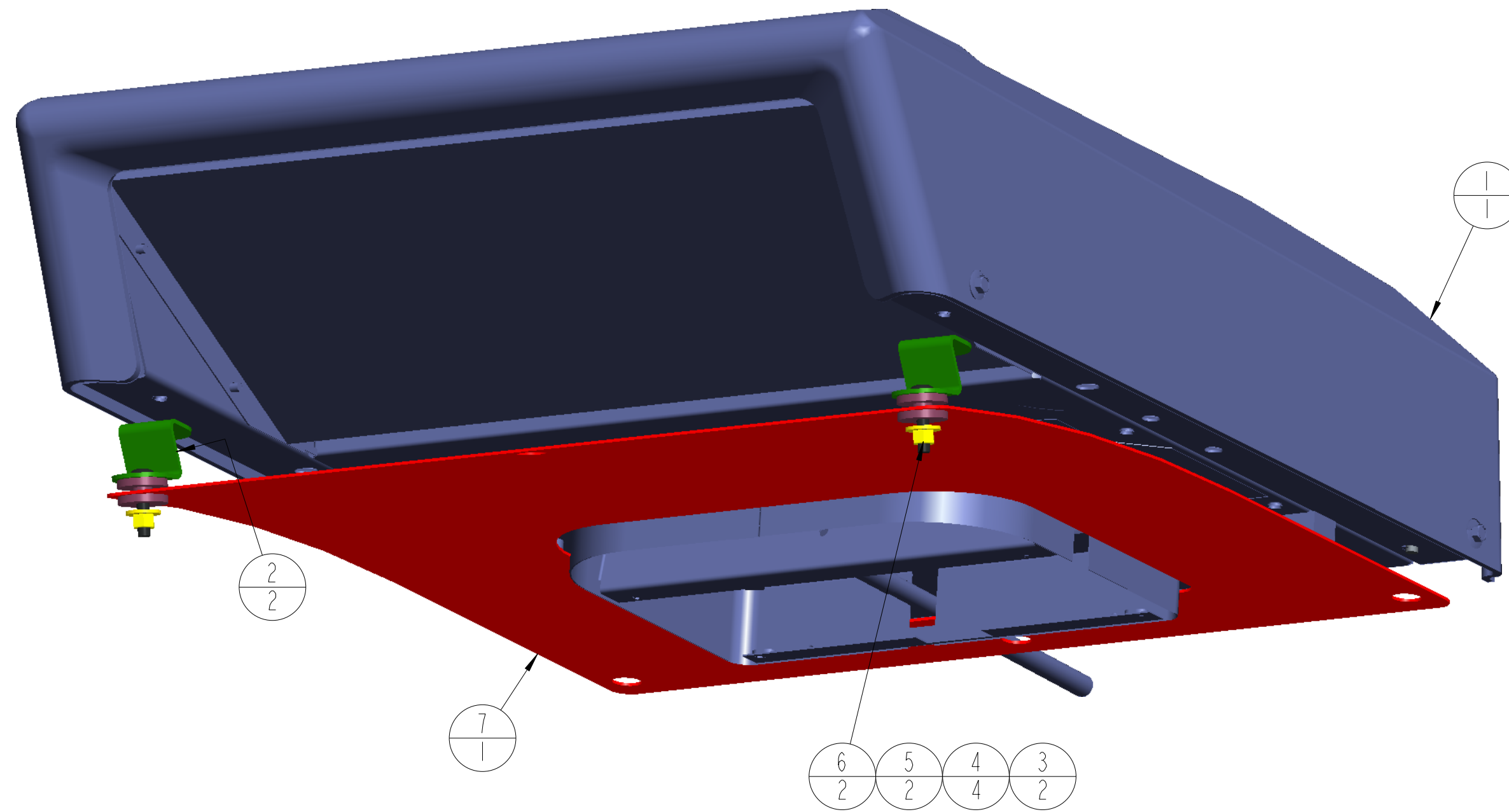
ITEM	NOTE	PART NO	DESCRIPTION	CAT. NO.
1		RD-2-1189-0	OUTER COVER ASSY	
2		RD-2-1245-0	INNER COVER ASSY	
3		RD-5-7297-0	FAN - CONDENSER	
4		RD-5-7809-0	MOTOR - CONDENSER (12V)	
5		RD-5-7129-24	MOTOR - CONDENSER (24V)	
6		70R 5650	CLAMP - 3 1/2" (2)	
7		RD-5-7272-0	RECEIVER/DRIER	
8		71R7175	PRESSURE SWITCH	
9		RD-4-4747-0	TUBE - FREON	
10		RD-2-2330-0	TUBE - FREON	
11		RD-4-4738-0	CONDENSER - ASSY	
12		76R 5500	EVAPORATOR COIL	
13		71R 8510	EXPANSION VALVE	
14		RD-5-4647-15	STRAP (2)	
15		RD-2-2329-0	RAIL ASSY (L.H.)	
16		RD-2-1218-1	BOTTOM ASSY	
17		RD-2-2329-1	RAIL ASSY (R.H.)	
18		71R 1902	RELX - 12V	
19		71R 1904	RELX - 24V	
20		78R 0070	DRAIN HOSE	
21		RD-2-1284-0	DRAIN HOSE ASSY	
22		RD-2-1288-0	BRACKET ASSY	
23 A		RD-2-1250-0	WIRE HARNESS ASSY	

ITEM	NOTE	PART NO	DESCRIPTION	CAT. NO.
24		RD-5-4636-0	SPRINGER APHRED (8)	
25		RD-5-3855-1	SACER - RUBBER (4)	
26 A		71R 2250	THERMOSTAT	
27		RD-5-3928-2	ENTRIRINGS (2)	
28		RD-2-1207-1	BLOWER ASSY (L.H.)	
29		73R 6300	BLOWERWHEEL CCW	
30		73R4252	MOTOR (12V)	
31		73R4254	MOTOR (24V)	
32		73R6350	BLOWER WHEEL (CW)	
33		RD-2-1207-0	BLOWER ASSY (R.H.)	
34		71R1450	RESISTOR	
35		RD-3-3174-0	REXINER - MOTOR	
36		RD-2-1240-0	ROOF SEAL ASSY	
37		RD-2-1297-0	GASKET (PLENUM)	
38		RD-5-9053-0	LOUVER ASSY (2)	
39		RD-2-1296-0	CONTROL PANEL	
40 A		71R4040	KNOB (2)	
41 A		71R1150	3 SPEED SWITCH	
42 A		RD-2-1293-0	LABEL CONTROL	
43		RD-5-9053-0	PLENUM ONLY	
44		RD-5-3894-2	FAN GUARD	
45		RD-2-1266-4	BRACKET ASSY (R.H.)	
46		BT8-1085	AIR FILTER BOX	
47 A		BT1-0700	BINARY BOOT	
48 A		RD-5-5937-0	FILTER PLENUM	

NOTES: A= Not shown

UNLESS OTHERWISE SPECIFIED		<p>6302 TEXACO DRIVE EAU CLAIRE, WI. 54703 PHONE (715)874-6811</p>	REV.	DESCRIPTION	DATE	E.C.N.	BY	APP. BY	
DEBURR & REMOVE ALL SHARP EDGES & CORNERS BY .004 TO .016									
DIMENSIONS ARE IN INCHES TOLERANCES ON									
2 PLACE DEC. ±.01	3 PLACE DEC. ±.005								
DRAWN BK		NAME SERVICE PARTS R-6100-4-C			CLASS CODE	FIRST MACH.	DWG. SIZE A		
CHECKED		MATERIAL SEE ABOVE			R-6100-4-C				
APPR'D.		FINISH PER ENGR. SPEC. # NONE							
SCALE NONE		DATE 7/24/13							

REV.	DCR NO.	DESCRIPTION	DRAFTSMAN	DATE
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SCALE 0.333

ITEM #	DESCRIPTION	QTY
1	3-21597_AC_UNIT	1
2	1-47064_FRONT_AC_MOUNT	2
3	3-19342_MSCR_313X150_TRUSS_TORX	2
4	3-16217_GLASS_WASHER	4
5	3-10085_3125_WASHER	2
6	3-10072_3125_NYLOCK	2
7	1-47082_STIFFENING_PANEL	1
8	3-XXXXX_BOX_AC_KIT	1
9	05-11668_INSTRUCTIONS	1
10	05-11667-1_LABEL_BOX	1
11	05-11667-2_LABEL_BOX	1

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TOLERANCES UNLESS NOTED OTHERWISE	CUSTOMER NAME & MOD NO: TORO 5800 MY 15		MATERIAL SPEC:		
	CUSTOM PRODUCTS 1715 SOUTH SIBLEY AVE. LITCHFIELD, MN 55355				
.X ± .09 .XX ± .06 .XXX ± .03 HOLE SIZE +.015/-0.010 ANGLE ± 5°	TITLE: AIR CONDITIONER KIT		DRWG SIZE: C	DRWG NO: A-12235	REV LEVEL: -
	DRAWN: SRB	DATE: 3/13/15			

3-21597

**VENDOR PART (NAME):** ROOFTOP AC KIT

**DESCRIPTION:**

ROOF MOUNTED AC UNIT, BASIC HOSES AND FITTINGS, COMPRESSOR AND ENGINE MOUNT HARDWARE

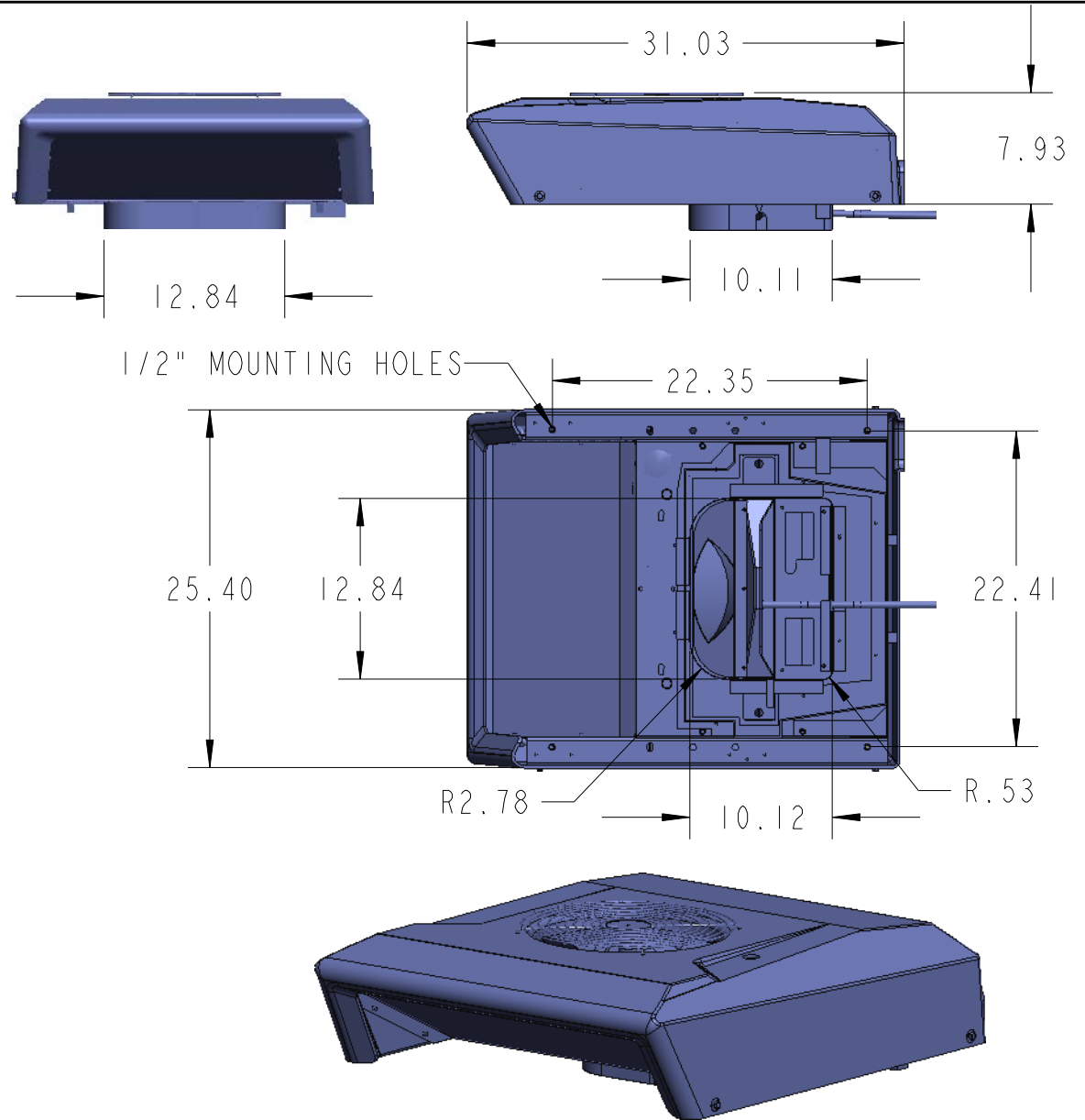
**MANUFACTURER NO. AND, OR VENDOR NO.:**

3-21597  
(RED DOT R-6100-0 AC UNIT)

**VENDOR AND, OR MANUFACTURER ADDRESS:**

BADGER TRUCK AND REFRIG INC.  
6302 TEXACO DRIVE  
EAU CLAIRE WI 54701

715-874-6811



ROOFTOP AC KIT

USED ON TORO 5800 DRAWN SRB DATE 3/13/15 SCALE SHEET