Installation & Service Manual

10-16K CLC HotShoX AiRide & ReliAIR Kit

NO WELD U-bolt and seat socket axle connection
10K to 16K suspension/axle rating
Axle to have electric or electric/hydraulic brakes
5.0” round (std wall) axle with spring pads
Narrow hanger to fit on frames better
Heavy-Duty narrow bushing
Shear-Tite Nut for ease of installation
Industry standard shocks, bushing, air springs
CompacTrac design for better ground clearance
Low 5.0" ride height to a 6.5" ride height range
Integrated shock absorber & HCV mounts
3/4" axle alignment at all hangers
Bolt-on modular axle lift kit

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Suspension Installation & Maintenance Items

- Notes
- Fastener Torque Specifications
- Cush Shear-TITE™ Nuts
- U-Bolted Non-Weld Axle Integration
- Customer Welding Notes
- CLC16UB6 Suspension Installation & Parts
- CAL-16 Bolton Lift Kit Installation & Parts (Wi-3815)

Suspension Warranty

Suspension Inspection Schedule

- Original Inspection
- Daily Inspection
- First 6,000 Mile Inspection
- Every 12,000 Mile Inspection
- Axle Alignment Inspection
- Axle Inspection
- Key Suspension Component Inspection
- Post Inspection Notes

ReliAIR air supply manual (Wi-3814)

Please note that it is important that the entire installation manual must be read thoroughly before proceeding with installation of these kits.

Suspension Installation & Maintenance Items

The Cush trailer air suspension system is designed to minimize service issues. With proper maintenance the life of your suspension system can be extended. Please refer to the application specific engineering drawing from your trailer OEM or contact Cush Corp with your suspension Serial Tag ID to get a pdf drawing of your model.

Suspension Identification:
All Cush suspensions are identified by a 1”x 2” metal tag on the hanger. On this tag is a Cush serial Number that is recorded at Cush to identify suspension unit, parts, and warranty date information.

Parts:
For best performance from your suspension system, only use official Cush replacement parts, contact your OEM. Replacement parts are shown in this manual or visit Cush website for more online information at www.cushcorp.com. Replacement parts are shown in parts explosion drawings of this manual.

Caution

All installation and service work should be performed by a trained technician in the craft with access to proper tools & using safe working processes. Vehicles should always be secured and properly blocked on level ground with all means of potential energy eliminated that can cause damage or personal injury.

Installer Responsibilities

- The installer is responsible that the Gross Suspension Weight Rating of the unit chosen (GSWR) meets the load requirements and matches to the Gross Axle Weight Rating (GAWR).
- The installer is responsible for location of the suspension on the vehicle for proper load distribution.
- The installer is responsible for all the structural support of the suspension components to the vehicle frame and into the vehicle frame, including but not limited to vertical and lateral support.

- The installer is responsible for meeting all the federal & local bridge laws with respect to axle count, axle spacing, and axle lift means.
- The installer is responsible for air reservoir volume requirements and components to meet all requirements of the DOT and if air brakes are used to meet the FMVSS 121 brake requirements.
- The installer is responsible for all clearance issues.
- The installer is responsible for all suspension connecting welds, fastener torque, suspension assembly, setting proper suspension ride height, and axle alignment.
- The installer is responsible to contact Cush Corp when welding or altering suspension components that is not expressly documented in Cush Corp drawings for model.

Sales, Service, and Warranty Information:
For any information on parts or questions with this product, please contact us and we will be glad to be of service to you.

Address :
Cush Corp.
1001 Falconcrest Ct.
Nixa, MO 65714

Phones, Fax and Email:
Phone: 417-724-1239
Toll Free: 877 R U ON AIR
Fax: 417-724-0126
Email: info@cushcorp.com
www.cushcorp.com

Caution Notes

- Trailer walk can occur due to loading, unloading, or loss of air spring pressure.
- For safe loading and unloading, dump air spring pressure to lower vehicle onto air spring bump stops.
- Do not tow or pull vehicle by suspension components.
- Fasteners should never be reused, over-torqued, or lubricated other than instructed.

Do not operate vehicle suspension with:

- Broken welds or metal parts
- Loose, broken, or missing fasteners or suspension components
- Loss of air pressure in air springs
- Broken or missing shocks.

Trailer “Lean” or “Dog Tracking”

If your trailer is having problems with “Lean” or “Dog Tracking” please refer to the Troubleshooting guide in Appendix A1 of this manual.

Fastener Torque Specifications

It is the customer's responsibility to check and tighten fasteners to specified torque at installation, after the suspension has been in operation for 6000 miles, and at suspension inspection cycles. Failure to do so can result in loss of warranty.

- Torque values given are specified for the fasteners in the condition supplied by Cush Corporation.
- DO NOT APPLY ANY ADDITIONAL LUBRICANTS.
- **!CAUTION:** Fasteners should never be reused if removed or loss of clamp load occurs. For proper joint clamping contact Cush for replacement fasteners or use fasteners of equal strength.
- **!CAUTION:** Over-torquing fasteners could result in material failure.

WRENCH OR SOCKET SIZE	DESCRIPTION	SHEAR-TITE™ NUT TORQUE							
					FT*LBS				DORKEN PLATING ON NUT IS EQUIVALENT TO LUBED SPEC. DO NOT USE ADDITIONAL LUBE OR ANTI-SEIZE.
		SIZE	GRADE	TPI	SNUG	MIN	NOMINAL	MAX	
1 5/8	PIVOT NUT, Torque control	7/8	8/C	9-UNC	100	500	550	600	
WRENCH OR SOCKET SIZE	LOCK NUT DESCRIPTION	LOCKING NUT TORQUE (TOP LOCK, CENTER LOCK, NYLOCK)							
					DRY FT LBS				*LUBED FT*LBS K=.2
		SIZE	GRADE	TPI	MIN	MAX			MIN
1 1/8	SHOCK BOLT	3/4	5/B	10-UNC	261	307			196
WRENCH OR SOCKET SIZE	U-BOLT DESCRIPTION	U-BOLT NUT TORQUE							
					Dorken ShearTITE FT LBS				
		SIZE	GRADE	TPI	MIN	MAX			
1 5/16	AXLE U-BOLT ShearTite nut	7/8	8/C	14-UNF	500	600			

Common Air Spring Torque Specifications (See Cush Safety and Inspection Sticker on your trailer)

AIR SPRING PROVIDED MOUNTINGS		**MAX.**
SIZE	**Threaded Studs**	(ft*lbs.)
3/8"	24-UNF STUD	20
3/8"	16-UNC BLIND NUT	25
1/2"	13-UNC STUD	25
1/2"	13-UNC BLIND NUT	50
3/4"	16-UNF COMBO STUD	50
	Air Ports	
1/4"	18-NPTF AIR FITTING	11
1/2"	14-NPTF AIR FITTING	23

SHEAR-TITE™ INSTALLATION & INSPECTION NOTES 7/8" NUT

This HotShot AiRide model comes with Cush Shear-TITE nuts at the pivots and at the u-bolts to assure proper fastener torque at these critical joints.

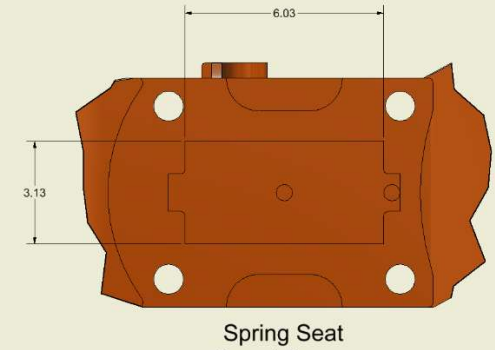
- REQUIRED MATERIALS: 1-5/8" SOCKET, 1-5/16" WRENCH (BOLT HEAD), AIR IMPACT WRENCH CAPABLE OF 600 FT*LBS (813 N*M) MINIMUM, ALIGNMENT TOOLS.
- DO NOT APPLY UNDERCOATING TO THE SUSPENSION HANGER AREA UNTIL AFTER AXLE ALIGNMENT AND PIVOT BOLT TORQUE HAS BEEN APPLIED.

- CUSH DOES NOT RECOMMEND REUSE OF PIVOT FASTENER HARDWARE ONCE THE PIVOT CONNECTION IS DISASSEMBLED, USE A NEW BOLT AND NUT.
- CHECK FOR PROPER TIRE CLEARANCE WITH FASTENER HARDWARE. THE SHEAR-TITE NUT SHOULD BE INSTALLED ON THE INBOARD SIDE OF THE FRAME HANGER TO ALLOW ACCESS WITH AN AIR IMPACT WHEN TIRES ARE ON.
- NOTE: CHECK FOR ANY FLASHING OR OBSTRUCTIONS TO CAUSE THE BEARING WASHERS TO BE RAISED AND NOT ALLOW FLUSH MOUNTING AGAINST THE HANGER SIDES (GEAR OR ECCENTRIC TYPE).
- CHECK PROPER AXLE ALIGNMENT, SEE INSTALLATION MANUAL FOR INSTRUCTIONS ON ALIGNMENT.
- SNUG THE PIVOT FASTENERS SO THAT THE ALIGNMENT WASHERS DO NOT MOVE WHILE APPLYING INITIAL TORQUE, RECHECK ALIGNMENT.
- TORQUE THE SHEAR-TYPE PIVOT NUT WITH THE 1-5/8” DRIVE SOCKET UNTIL THE HEAD OF THE SHEAR-TITE™ NUT SHEARS OFF.
- THE 1-5/8” DRIVE SOCKET SHOULD FULLY ENGAGE THE SHEAR HEAD BEFORE AND WHILE APPLYING TORQUE.
- APPLY PAINT TO THE SHEARED AWAY AREA AS A RUST PREVENTATIVE.

U-Bolted Non-Weld Axle Integration

This suspension design for HotShot AiRide uses a non-welded axle assembly so that standard spring axles can be used and replacement of axle beams is made easier for end users to service. This design is for 10K to 16K axles with spring pads on axles. The axles must have spring pads so to resist brake loads.

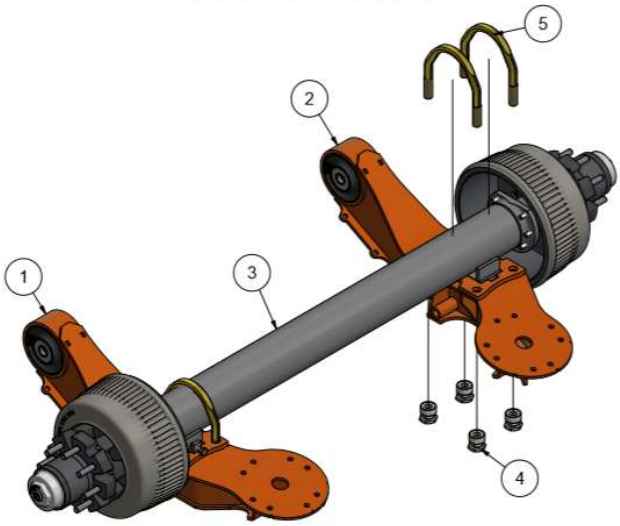
U-BOLTS SHOULD BE INSTALLED AND TORQUED AFTER PRELIMINARY ALIGNMENT AND SQUARE BEAMS TO AXLE WITH SPRING PADS SITTING IN THE FEMALE 6”x 3.1” DOWEL PICTURE FRAME OF BOTH BEAMS.



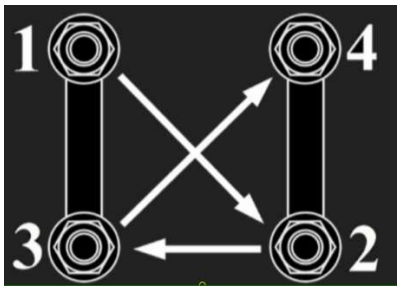
Spring Seat
Dowel Frame
NOTE: spring seat should be ~6" x 3", if not contact Cush

SNUG U-BOLTS EVENLY BEFORE APPLYING TORQUE. CHECK THAT U-BOLTS ARE PARALLEL AND SQUARE TO AXLE AND THAT THE AXLE SPRING SEAT IS SQURE TO DOWEL PICTURE FRAME.

NOTE: The beam hanger centers will be inline with the axle spring pad centers, see suspension layout drawing, contact Cush for your suspension application drawing if you do not have one.



THE U-BOLTS TO BE TIGHTENED IN A THREE STEP PROCESS TO AVOID AN IMPROPERLY CLAMPED AXLE AND RESULTING DAMAGE. THIS ALLOWS THE U-BOLT TO STRETCH/RELAX AND HOLD TORQUE. PROPER TIGHTENING WILL ALLOW EQUAL AMOUNT OF TREAD ABOVE EACH NUT.



Torque and tighten u-bolts using a 3-step cross pattern sequence per each beam. Snug down fastener in a crisscross fashion to 1/3 of final torque 1-4-2-3 sequence (see figure). Repeat crisscross sequence 1-4-2-3 to get to 2/3 of final torque required. Continue torque on remanding nuts in crisscross sequence 1-4-2-3 for the last 1/3 of the torque required.

NOTE: AXLE INSTALLER TO TORQUE OFF 7/8” U-BOLT SHEAR-TITE™ NUTS WITH 1" AIR IMPACT OR HYDRO TORQUE GUN. *Trailer OEMs are to contact Cush for a customer specific axle integration jig.*

- FIRST STEP-1/3 OF FINAL TORQUE ~ 180 FT*LBS
- SECOND STEP-2/3 OF FINAL TORQUE ~ 370 FT*LBS
- THIRD STEP-FINAL TORQUE ~ 550 FT*LBS ShearTite nuts

Customer Welding Notes:

- It is the responsibility of the suspension installer and vehicle designer to provide adequate vehicle frame design, gusset support in the area of suspension attachment, and proper securing method for the suspension system. The suspension installer has the responsibility to determine the proper welding parameters for the materials being used. For specifications of suspension component materials, contact Cush.

- Required cross member locations are shown. Actual size and shape may vary per trailer design. It is the responsibility of the suspension installer to ensure structural adequacy of the trailer frame and related cross members.
- No welding of any of the suspension components is permitted, except where specified by Cush.
- Any alteration of the suspension components or installation deviations must be approved, in writing, by Cush Corporation.

Recommended Steel Welding Procedures, If Required:

- WARNING: If these procedures and specifications are not followed, damage to the axle or suspension could result. The resulting axle or suspension damage could cause an accident, property damage, and/or serious injury.
- A welder qualified in 2G positions per ANSI/AWS D1.1-94 Section 5 Part C "Welder Qualification" must perform the welding.
- The specification shown below is for horizontal (2F) positioning.
- Suspension components and their mating parts must be at a minimum temperature of 60°F(15.5°C) and free from moisture, dirt, scale, paint, grease, and other contaminates.
- All welds must be performed in a flat, or horizontal, position.

Achieve spray arc transfer with the following welding parameters:

- Standard Electrode: AWS E-7018(Oven Dried), 0.125"DIA., 120-140 AMPS D.C., Electrode positive.
- Standard Wire: AWS ER-70S-6 or AWS ER-70S-3, 0.045"DIA
- Volts: 26-30 DCRP
- Current: 275-325 AMPS
- Wire Feed Speed: 380-420 Inches per Minute
- Electrode Extension: 0.75" to 1"
- Gas: 86%AR 14%CO2 at 30 to 35 CFH

Any deviation from these welding parameters must be of equal strength or approved by Cush Corporation in writing.

CLC16UB6 Suspension Installation & Parts

The CLC16UB suspension is designed around industry standard service parts commonly used in the heavy duty trailer market for extra durability. This suspension can be designed with full length hanger bolster to eliminate frame crossmembers or loose independent frame hangers. This suspension is designed to be used with standard wall 5” round axles with welded spring pads that are also used on spring suspension models, no special heavy wall axle for a weld only axle connection. This suspension is designed with an extra large OD air spring to lower the air pressure requirements to carry the load. See the suspension load chart sticker for more information, C0343UB.

CUSH Suspensions

MADE IN USA

AXLE LOAD CHART

Axle Load Chart Sticker Part Number: C0343UB Rev 1

Drain moisture from all air tanks during each pre-trip safety inspection and after each use. After loading or unloading, air compressor should stop running before vehicle operation. See Preventative Maintenance Guide.

Estimated PSI	Axle Group Load (lbs)*		
	Per Axle	Tandem	Triaxle
70	17,850	35,700	53,550
65	16,625	33,250	49,875
63	16,000	32,000	48,000
60	15,400	30,800	46,200
55	14,000	28,000	42,000
50	12,900	25,800	38,700
46	12,000	24,000	36,000
45	11,700	23,400	35,100
40	10,400	20,800	31,200
38	10,000	20,000	30,000
35	9,200	18,400	27,600
30	7,900	15,800	23,700
25	6,700	13,400	20,100
20	5,400	10,800	16,200

*Approximate Ground Load Values with Suspension at 6" Ride Height

Cush Suspensions 1001 North Falconcrest Court Nixa, MO 65714 www.cushcorp.com 877.786.6247

See sticker located on outside of trailer for QR code to bring you to this document, C0601-H.

HotShoX™

Equipped By

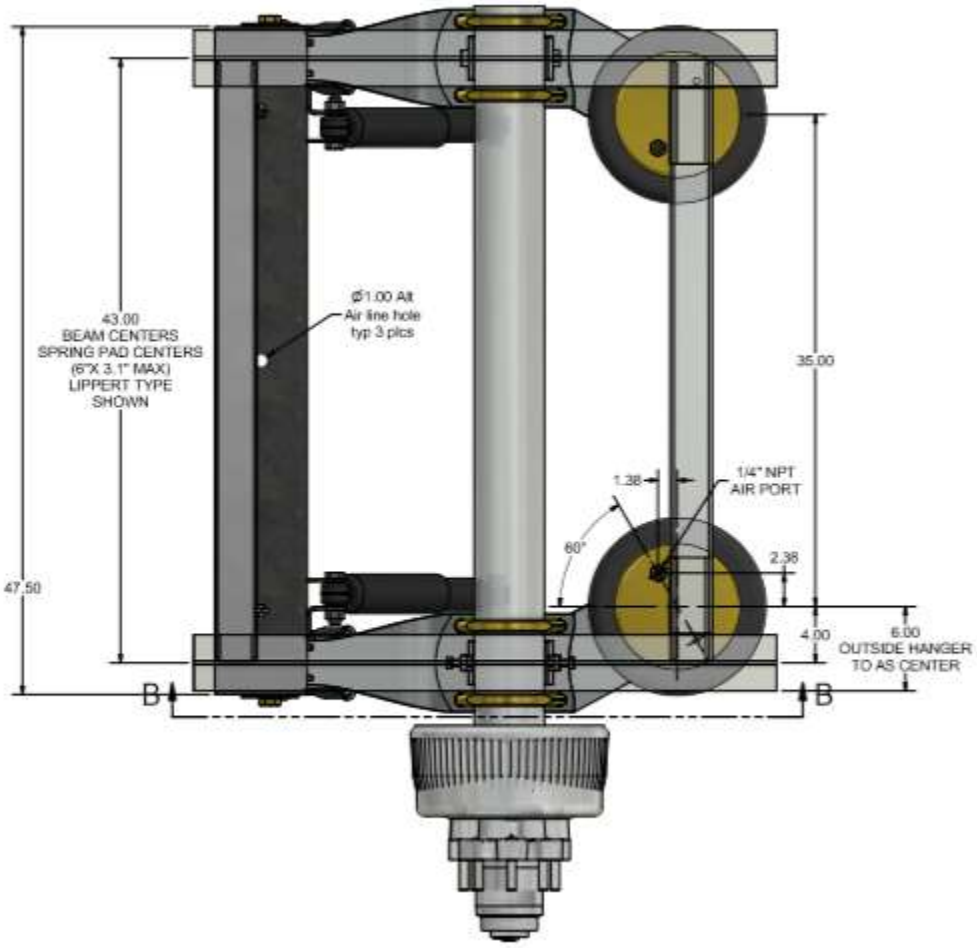
CUSH® Suspensions

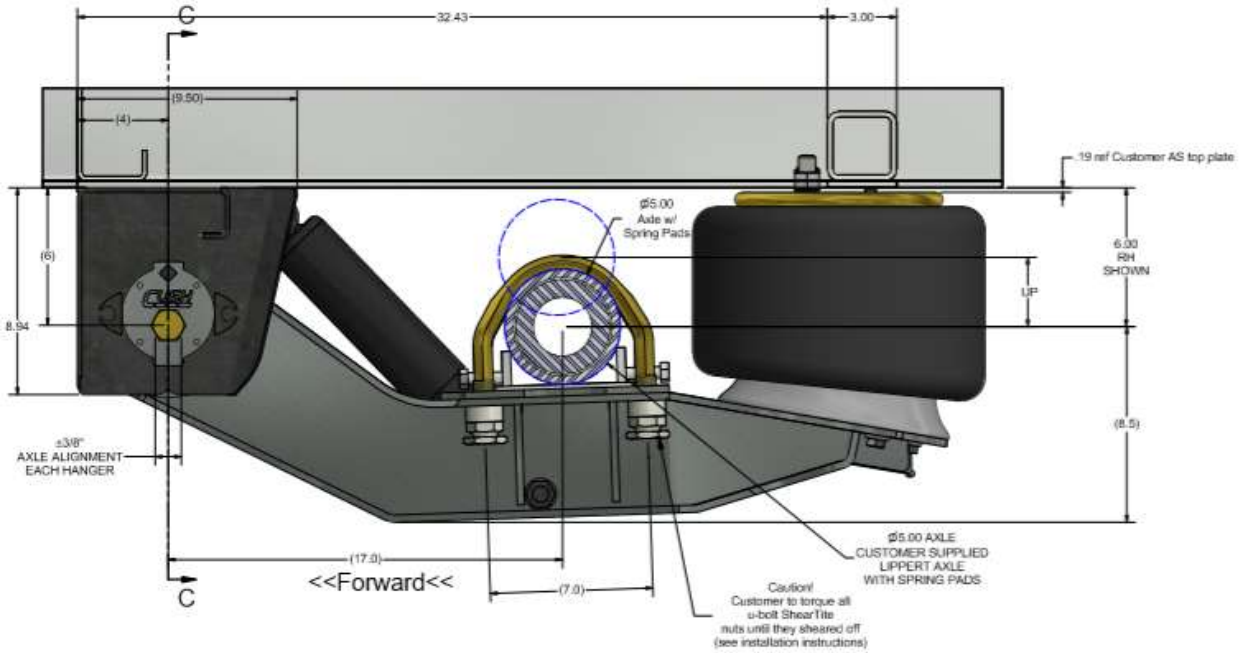
MADE IN USA

www.cushcorp.com
HotShoX & ReliAIR info

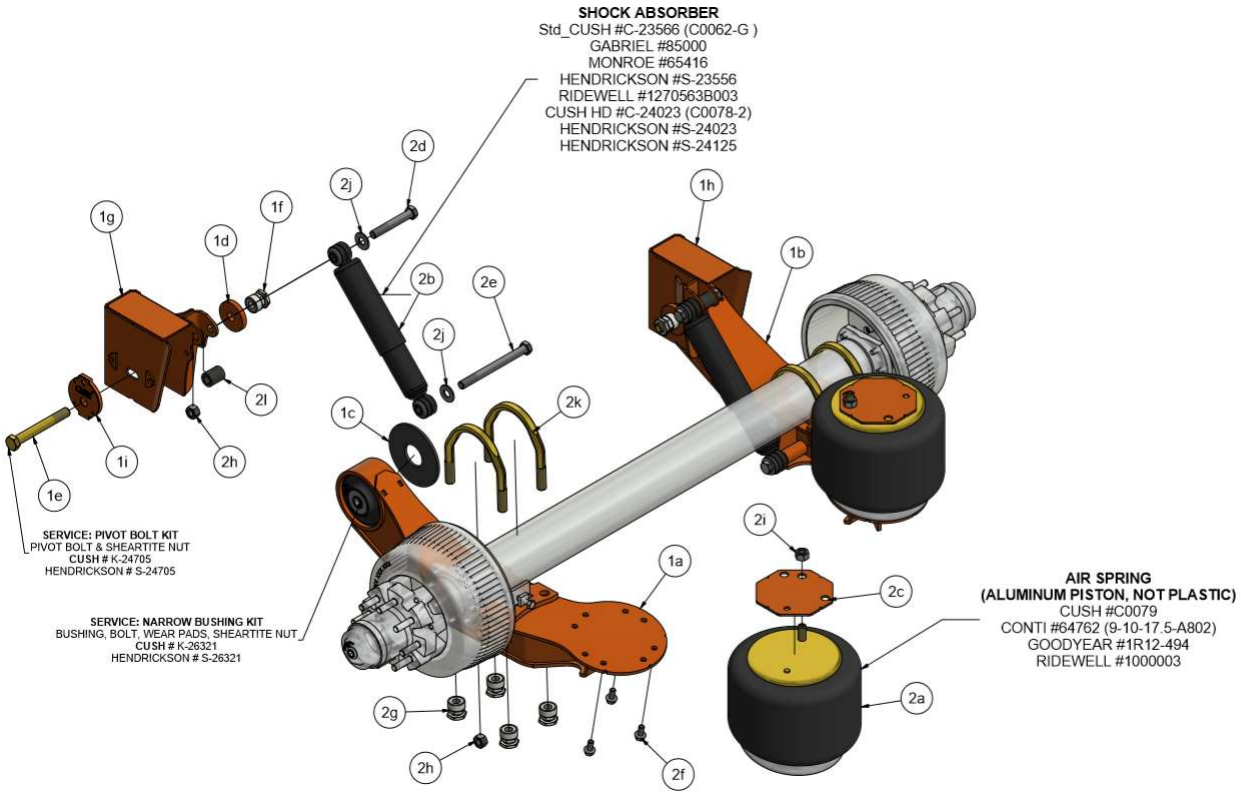
Coatings available for hanger and beam parts: no paint (-NP), Black Primer, Powder Coated (-X), or with Galvanized parts that are not welded to trailer frame (-G). Contact Cush with your suspension serial number to get the proper application/parts drawing for your model.

General Layout top and side view. Contact Cush with your serial number for drawing.



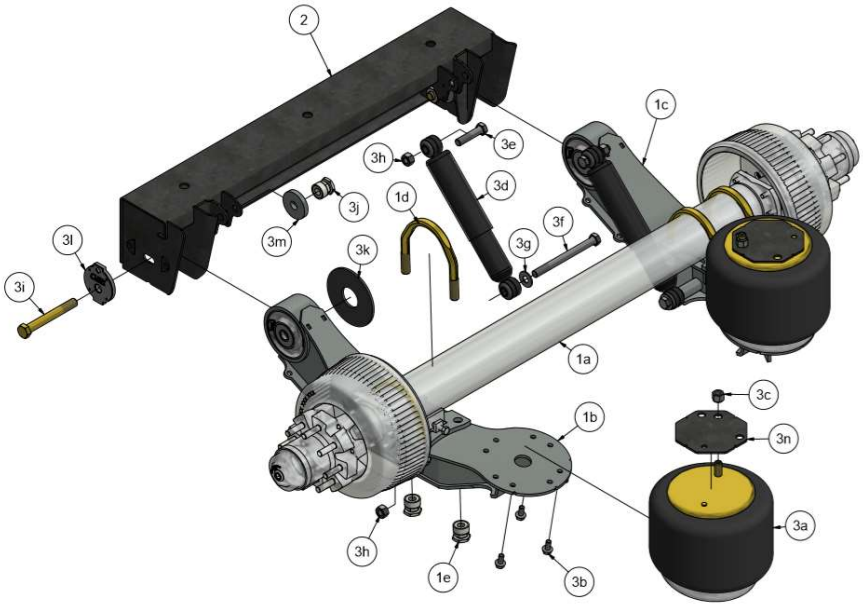


For independent hanger style unit



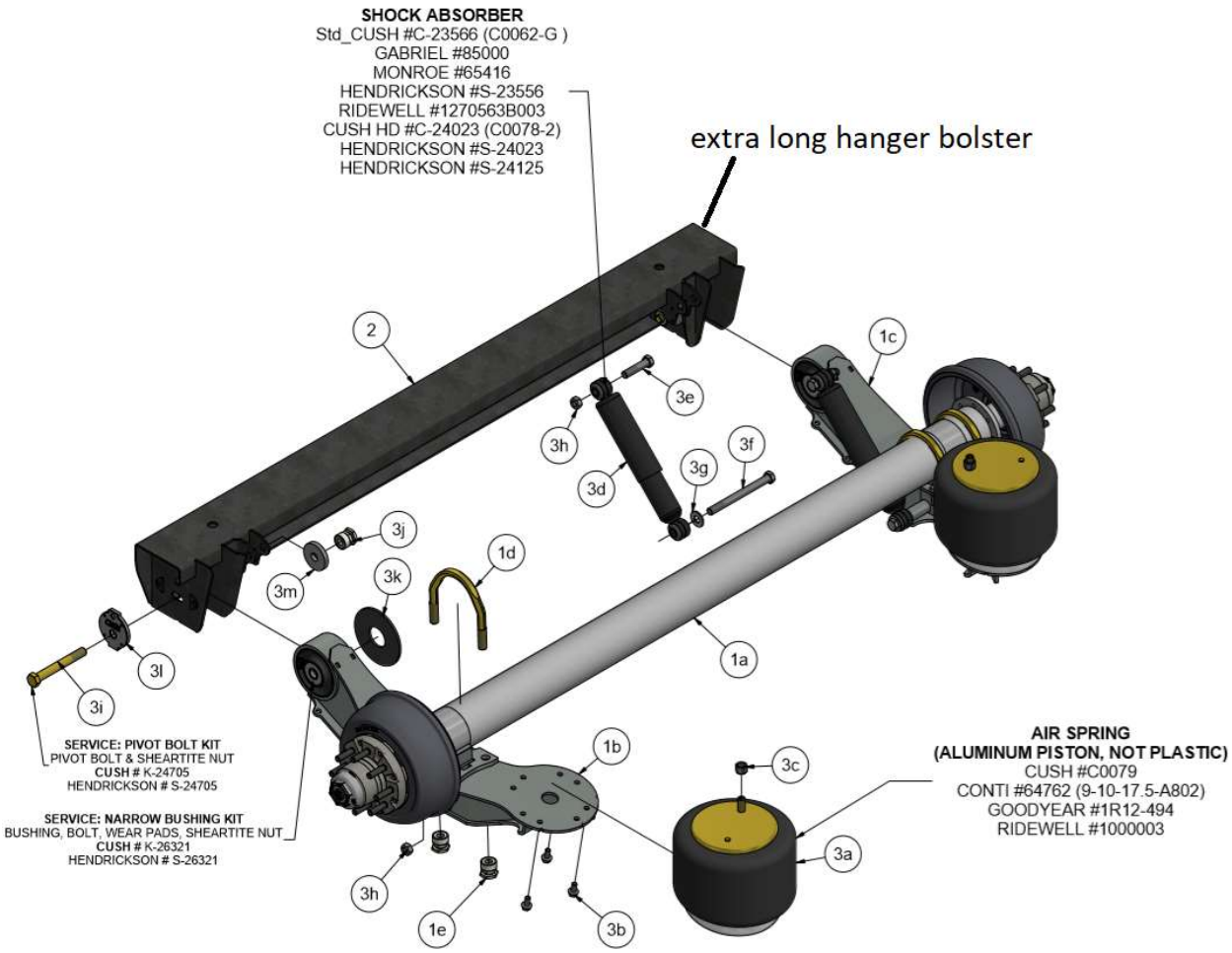
ITEM	DESCRIPTION	PART NO.	QTY	
1	**LH - BEAM AND HANGER ASSEMBLY**	**ACLC16UB6-L**	**1**	
	RH - BEAM AND HANGER ASSEMBLY	**ACLC16UB6-R**		**1**
1a	LH - U-BOLT BEAM W/ BUSHING	AW0761-U-3	1	
1b	RH - U-BOLT BEAM W/ BUSHING	AW0761-U-4		1
1c	Washer, Wear, 3.13" I.D. x 6.5" O.D. x 0.18" thk., UHMW	C0406	1	1
1d	3.1" OD ALIGNMENT WASHER 1/2" THICK	F0626-50	1	1
1e	HHCS, 7/8"-9 UNC X 7" LONG, GRADE 8, ZINC	H0126	1	1
1f	SHEAR-TITE NUT, 7/8"- 9 UNC	H1120	1	1
1g	LH - NARROW BUSHING HANGER, P=6"	W1027-3	1	
1h	RH - NARROW BUSHING HANGER, P=6"	W1027-4		1
1i	7/8" ALIGNMENT GEAR W/ CUSH LOGO	W1738	1	1
2	**BOX KIT FOR CLC16UB6**	**K1103**	**1**	
2a	AIR SPRING, GY 1R12-494	C0079-CONTI	2	
2b	SHOCK, GABRIEL 85000, 17.5" MAX, 12" MIN	C-23566	2	
2c	PERFORMANCE AIR SPRING PLATE, 7.25" OCTAGON	F0790	2	
2d	HHCS, 3/4-10NC X 5 LG	H0210	2	
2e	HHCS, 3/4-10NC X 8-1/2 LG	H0212	2	
2f	HHCS, FLANGE LOCK, 1/2"-13 X 1" LONG GRADE 5, ZINC	H0304	8	
2g	SHEAR-TITE NUT, 7/8"-14 UNF	H1121-14-9	8	
2h	L'NUT, 3/4"10 UNC, GRADE C, ZINC PLATED	H1201	4	
2i	L'NUT, NYLOCK, 3/4"-10 UNC, GRADE C, ZINC	H1202	2	
2j	WASHER, 3/4" ZINC USS FLAT	H2203	4	
2k	7/8" U-BOLT, 5" RD TAPERED	HU107	4	
2l	SHOCK MOUNTING TUBE	T0035-1.75	2	

For the hanger bolster style unit, this suspension can be designed with full length hanger bolster to eliminate frame crossmembers or loose independent frame hangers.



ITEM	DESCRIPTION	PART NO.	QTY
1	**CUSH INTEGRATED CUSTOMER SUPPLIED AXLE, GALVANIZED BEAMS, REF, 71" HF, 43" SC, U-BOLTS**	**Z1070-HL12E-CS**	**Ref**
1a	CUSTOMER SUPPLIED AXLE, H=43"SC, LIPPERT 10K-16K AXLE BEAM, 5" RD WITH SPRING SEATS	ref	1
1b	LH - GALVANIZED BEAM W/ BUSHING AND 7/8" BOLT INSERTS	AW0761-U-3G	1
1c	RH - GALVANIZED BEAM W/ BUSHING AND 7/8" BOLT INSERTS	AW0761-U-4G	1
1d	5" RD TAPERED/COINED OUT TO 6" UBOLT 7/8"X14UNF-2A 7.75" LG GRADE 8	HU107	4
1e	SHEAR-TITE™ NUT WITH HEX, 7/8"-14 UNF	H1121-14	8
2	**43" HC, NARROW BUSH, CLC16UBL6 BOLSTERED HANGER SET (not painted)**	**W2018-NP**	**1**
3	**BOX KIT FOR CLC16UBL6 W/ BOLSTERED HANGERS, GALANIZED GEAR PLATES**	**K1103-NBA**	**1**
3a	GY 1R12-494 AIR SPRING, ALUMINUM PISTON	C0079-CONTI	2
3b	HHCS, 1/2-13 X 1 INCH LG, GRADE 5 ZINC PLATED	H0304	6
3c	L'NUT, 3/416 NF NYLOCK, GR2 OR GR5, SILVER ZINC PLATED	H1202	2
3d	SHOCK, 17.5" MAX, 12" MIN (GABRIEL 85000)	C-23566	2
3e	HHCS, 3/4-10NC X 3 1/4" LONG, GRADE 5 ZINC	H0204	2
3f	HHCS, 3/4-10NC X 8 1/2" LONG, GRADE 5 ZINC	H0212	2
3g	WASHER, 3/4 USS FLAT PLATED	H2203	2
3h	L'NUT, 3/4-10 NC, TOP LOCK, GRADE C	H1201	4
3i	HHCS, 7/8-9 UNC X 7 LONG, GRADE 8 YELLOW ZINC	H0126	2
3j	SHEAR-TITE™ NUT, 7/8"-9 UNC	H1120	2
3k	WEAR WASHER, 3.13" ID X 6.5" OD X 0.18" THICK	C0406	2
3l	GALVANIZED OUTSIDE LOGO GEAR, 7/8" ALIGNMENT W/ CUSH LOGO	W1738-G	2
3m	GALVANIZED, 1/2" THICK INSIDE BEARING WASHER	F0626-G	2
3n	Air Spring Top Plate, not painted - NP	F0790-NP	2

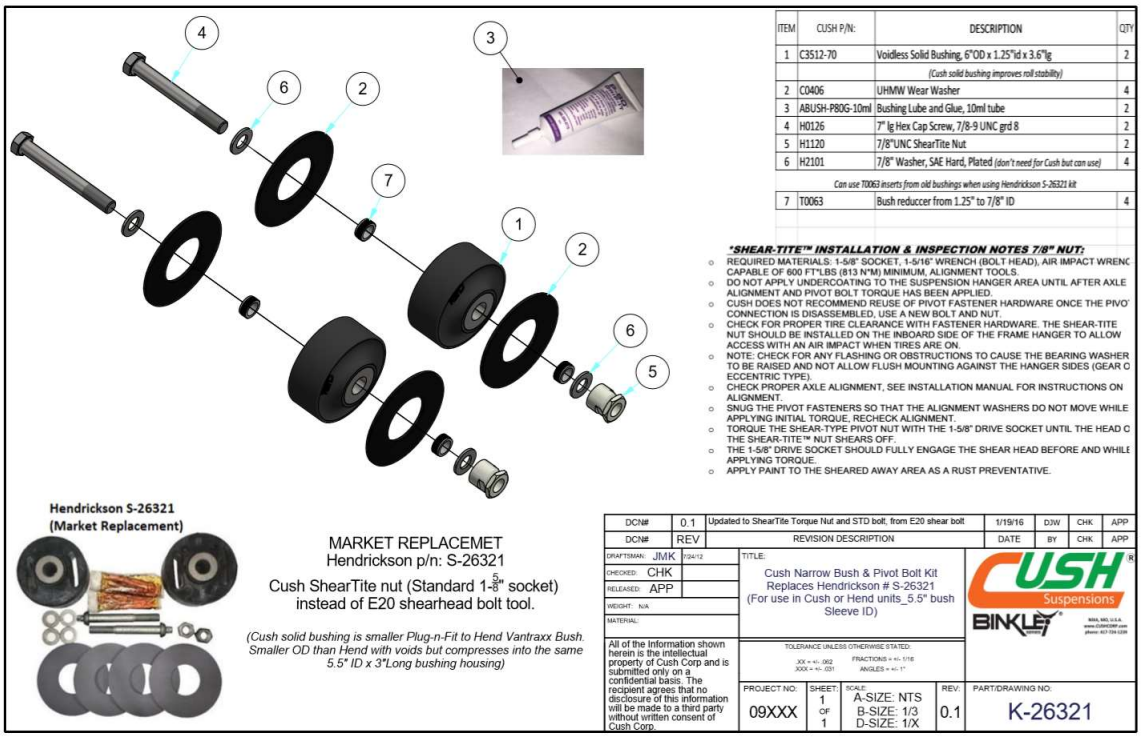
The CLC16UB6 suspension can also be offered for single tire axles with extra wide axle and extra wide hanger bolster configurations.



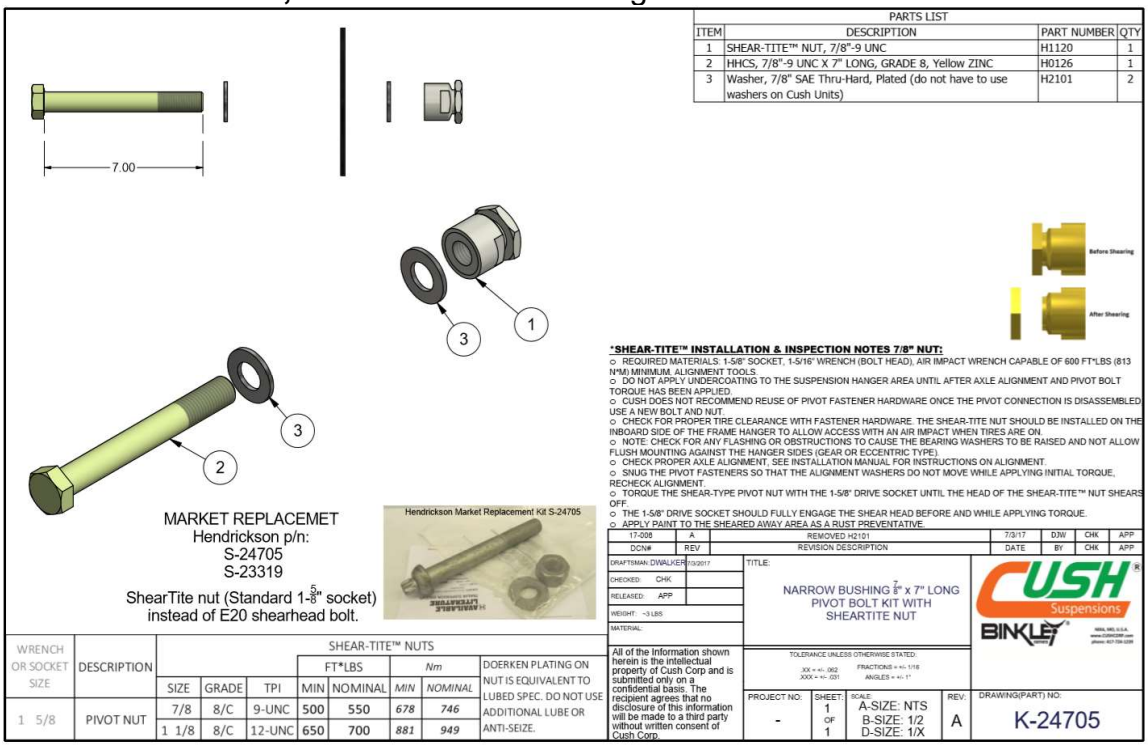
ITEM	DESCRIPTION	PART NO.	QTY
1	CUSH INTEGRATED CUSTOMER SUPPLIED AXLE, PowderCoated BEAMS, 10-15K LIPPERT, 71" HF, 43" SC, U-BOLTS	Z1070-HL10E-94HF72.5SC-XCS	1
1a	CUSTOMER SUPPLIED AXLE, H=72.5"SC, LIPPERT 10-15K BEAM, 5" RD	AXL_HL10E94HF	1
1b	LH - PowderCoated(X) BEAM W/ BUSHING AND 7/8" BOLT INSERTS	AW0761-U-3X	1
1c	RH - PowderCoated(X) BEAM W/ BUSHING AND 7/8" BOLT INSERTS	AW0761-U-4X	1
1d	5" RD TAPERED/COINED OUT TO 6" UBOLT 7/8"X14UNF-2A 7.75" LG GRADE 8	HU107	4
1e	SHEAR-TITE™ NUT WITH HEX, 7/8"-14 UNF	H1121-14-P	8
2	72.5" HC, NARROW BUSH, CLC16UBL6 BOLSTERED HANGER SET	W2018-72.5HC-NP	1
3	BOX KIT FOR CLC16UBL6 W/ BOLSTERED HANGERS, PowderCoated(X) GEAR PLATES	K1103-NBA-X	1
3a	GY 1R12-494 AIR SPRING, ALUMINUM PISTON	C0079-CONTI	2
3b	HHCS, 1/2-13 X 1 INCH LG, GRADE 5 ZINC PLATED	H0304	6
3c	L'NUT, 3/416 NF NYLOCK, GR2 OR GR5, SILVER ZINC PLATED	H1202	2
3d	SHOCK, 17.5" MAX, 12" MIN (GABRIEL 85000)	C-23566	2
3e	HHCS, 3/4-10NC X 3 1/4" LONG, GRADE 5 ZINC	H0204	2
3f	HHCS, 3/4-10NC X 8 1/2" LONG, GRADE 5 ZINC	H0212	2
3g	WASHER, 3/4 USS FLAT PLATED	H2203	2
3h	L'NUT, 3/4-10 NC, TOP LOCK, GRADE C	H1201	4
3i	HHCS, 7/8-9 UNC X 7 LONG, GRADE 8 YELLOW ZINC	H0126	2
3j	SHEAR-TITE™ NUT, 7/8"-9 UNC	H1120	2
3k	WEAR WASHER, 3.13" ID X 6.5" OD X 0.18" THICK	C0406	2
3l	PowderCoated(X) OUTSIDE LOGO GEAR, 7/8" ALIGNMENT W/ CUSH LOGO	W1738-X	2
3m	PowderCoated(X), 1/2" THICK INSIDE BEARING WASHER	F0626-X	2

Service kits

K-26321 Pivot Bolt & Bushing Kit



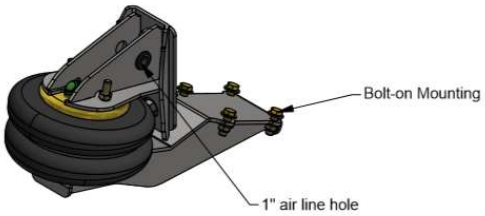
K-24705 Pivot Bolt Kit, use for service to do alignment.

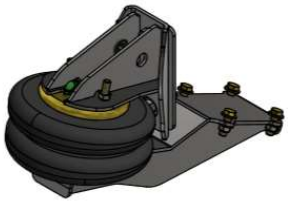


CAL-16 Bolton Lift Kit Installation & Parts (wi-3815)

The CLC16UB6 10-16K trailer suspension is preconfigured with mounting holes for easy mount optional front bolt-on dual air spring CAL-16 lift kit: standard is black primer, not painted(-NP), or galvanized

weldments(-G). Two lift air springs per axle, one per hanger mount. The air control for this lift kit is sold separately or may be configured into your ReliAIR kit.

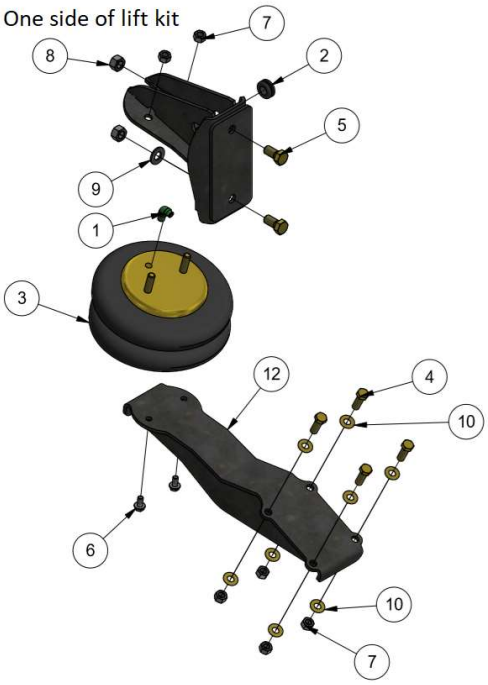




Any hanger crossmember support will need to be between the hangers, or a diagonal behind the front of the hanger, as to not interfere with the front mount of the add-on lift kit.

Installation

- Reference the full drawing for you lift kit, contact Cush if you do not have a drawing.
- For OEM lift kit installation best is done with the trailer upside down for easy access or mount lift kit components to suspension components before mounting them to the trailer.
- For upright trailer installation the vehicle must be unloaded on a flat & level surface with the non-lift axles chocked and the trailer secured at the front.
- Exhaust all air from the load air springs.
- Remove the tires and raise and jack up the axle to get the lift kit installed. Support with safety stands.
- Bolt the upper air spring support brackets to the front of the hanger loosely so that the lower mounts can be aligned.
- Bolt the lower air spring support brackets to the bottom of the suspension beam with the bolt heads on top and nuts to the underside and torque upper and lower fasteners per chart.
- Mount the air spring to the upper support bracket with the air port in the clearance position of the upper bracket (to the front). Torque the fasteners per the chart.
- Mount the lower air spring to the lower beam bracket, you may need to lower the axle some to allow better access to the mounting holes. Torque the fasteners per the chart.
- Connect the lift springs to your air control system for lifting the axle. Contact Cush for variety of types of lift controls: push/pull, toggle valve, or electric solenoid lift valve. The lift spring should not see more than 120psi of air pressure.
- Replace tires and any other components that were removed to allow for lift kit installation.



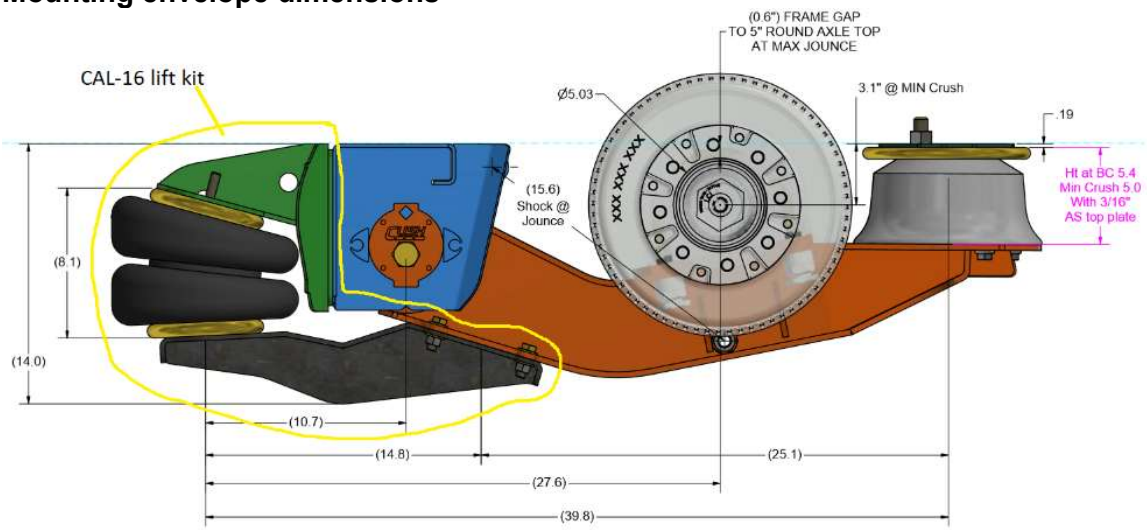
ITEM	DESCRIPTION	PART NUMBER	QTY
1	1/4" PIPE TO 1/4" TUBE 90DEG SWIVEL	AC0163-GREEN	2
2	RUBBER GROMMET FOR 1" HOLE, .69" ID, 3/16" PANEL THICKNESS	AC0317-1	2
3	(64510) FD200-19-315 CONTI (3.75"min-BC/10.5"Max w/10"OD) EQUIV TO GY 2B9-206, Firestone 6905	C0084-CONTI	2
4	HHCS, 1/2-13 UNC X 1.5" LONG, GRADE 8, YELLOW ZINC PLATED	H0307	8
5	HHCS GRD 8, 5/8-11 UNC X 1.5" LG	H0313	4
6	HHCS, FLANGELOCK 3/8"-16UNC X 1" LONG	H0401	4
7	L'NUT, 1/2"-13 UNC, GRADE C, ZINC	H1302	12
8	LOCK NUT, 5/8-11 UNC, CENTER LOCK	H1601	4
9	WASHER 5/8 USS FLAT	H2303	2
10	WASHER, 5/8" USS, FLAT, PLATED	H2307	16
11	BOLT ON HANGER TOP LIFT BRACKET (not primered)	W2019-np	2
12	BOLT ON LIFT (not primered)	W2020-NP	2

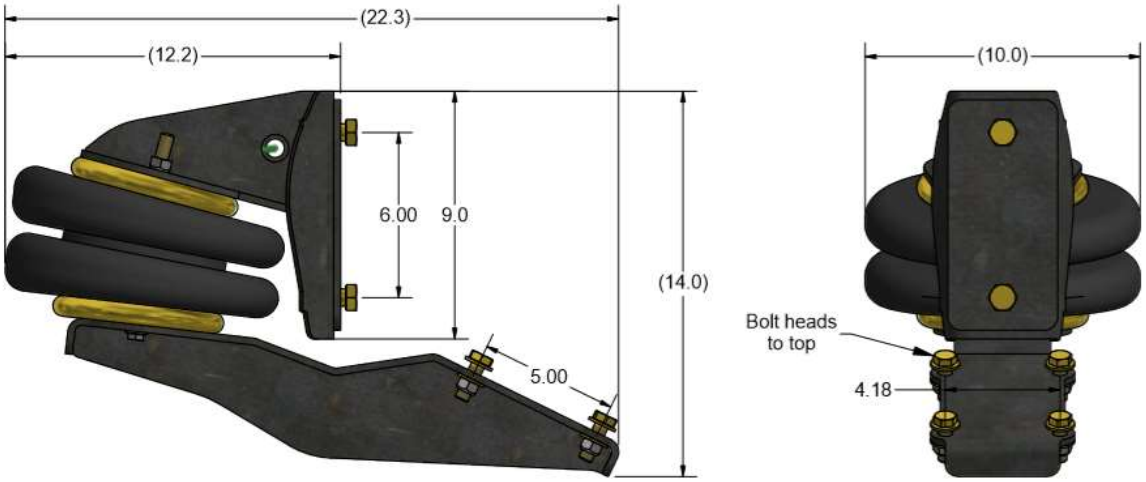
For proper torque of the mounting fasteners please see the chart below

WRENCH OR SOCKET SIZE	AIR SPRING FASTENER DESCRIPTION	AIR SPRING NUT/BOLT TORQUE						
					DRY IN*LBS		DRY FT*LBS	
		SIZE	GRADE	TPI	MIN	MAX	MIN	MAX
9/16	LIFT SPRING BOTTOM	3/8	5/B	16-UNC	180	240	15	20
3/4	LIFT SPRING TOP	1/2	2/A	13-UNC	300	420	25	35

WRENCH OR SOCKET SIZE	LOCK NUT DESCRIPTION	LOCKING NUT TORQUE (TOP LOCK, CENTER LOCK, NYLOCK)						
					DRY FT LBS		*LUBED FT*LBS	
		SIZE	GRADE	TPI	MIN	MAX	MIN	MAX
3/4	BOLTON LIFT KIT	1/2	8/C	13-UNC	**105**	**123**	**78**	**92**
15/16	LIFT BRACKET	5/8	8/C	11-UNC	**209**	**246**	**157**	**184**

Mounting envelope dimensions





NOTE: Operate the lift kit thru the full range of suspension motion and check ground (4” min ground clearance when lifted) and air spring clearance (3/4” around lift air spring).

General Cush Warranty Summary for HotShoX style unit (ref Wi-1204)

This warranty applies to suspensions manufactured by CUSH Corp that have been properly assembled and installed by the OEM. It applies to product that meets its intended use and recommended application within its design intent. Any deviation from this requires written approval from engineering in order to be covered under this warranty. We cannot be liable for any hazards, misuse or abuse of the product such as road hazards, over extension of shocks and air bags due to function outside of its intended purpose. This warranty shall not apply to situations where there has been incorrect repair, replacement, substitution or alterations. CUSH Corp has the sole discretion and authority to approve or deny any warranty. Our warranty coverage begins at the time, which the vehicle is initially placed into service. For severe operating conditions, use a higher capacity or heavy-duty model. For use of CUSH suspensions in Canada, Mexico, and off-road conditions: contact CUSH Engineering. Off-road in the context of our product is described as that portion of roadbed that is unpaved, but is still considered a roadbed. This warranty is non-transferable.

This Trailer Suspension warranty defaults to it's parent warranty document Wi-1204 that is only summarized in this manual.

COVERAGE

CUSH warrants products based on an annual basis from the time of delivery of purchase to the original owner only, the "In Service Date". This date should be on the Bill of Sale. Cush warranty goes into effect on the "In Service Date" of the vehicle or 1 year from the Cush manufacturing date on the serial tag, whichever comes first.

CUSH bases an annual year as 12 months with no mileage limit for the warranty period, **See Raw Wood Application exception.** See CUSH Trailer Service Manual for Service Instructions. Refer to chart for period of coverage on components.

TRAILER APPLICATIONS

1. ON-HIGHWAY LINEHAUL APPLICATION is typically high-mileage operation (over 60,000 miles/year); a well- maintained highway of concrete or asphalt construction; greater than 30 miles between stops. On-Highway use with single or close-spaced tandem applications.

2. VOCATIONAL GENERAL APPLICATIONS are typically lower mileage operations (less than 60,000 miles/year); generally on-road service with less than 10% off-road; average of 3 miles between stops. Vocational trailers are specialty or spread-axle, primary & liftable suspensions.

3. OFF-HIGHWAY SEVER SERVICE APPLICATIONS are generally with more than 20% off-road; heavy-duty, raw wood, & oilfield.

4. Includes Hub, Wheel Seals and Wheel Bearings. Requires annual inspections and proper documentation to ensure full coverage.

5. Installed by Cush Corp or installed by recommended Cush Corp instructions.

6. Manufactures Warranty (Mfgr) is per the component supplier allowances.

Wix-1204 ref

			On-Highway Vocational Application		Off-Highway SeverService Application		
			Parts	*Labor*	Parts	*Labor*	Notes (Limitations)
Suspension & Axle Components			(years)		(years)		
Integrated Cush Axle / Trailing Arm Assembly			5	*1*	3	*1*	
Axle-To-Trailing Arm Connection			1		1		Proper OEM Installation Required*
Suspension Components							
Suspension Trailing Arm (Beam)			5	*1*	3	*1*	
Suspension Frame Hangers			5	*1*	3	*1*	
Fabricated Suspension Components			5	*1*	3	*1*	
Pivot & Bushings							
Narrow BigFoot Trailing Arm Pivot Bushings			5	*3*	3	*1*	
Pivot Assembly & Related Parts			1	*1*	1		Proper OEM Installation Required*
Suspension Components							
Air Springs			1	*1*	1	*Mfgr*	Proper Installation Required
Shocks			2	*Mfgr*	1	*Mfgr*	Proper Installation & Ride Height set
Air Controls			1	*Mfgr*	Mfgr	*Mfgr*	

WARRANTY CLAIM CONSIDERATIONS

Cush Corporation Trailer Suspension Systems (Cush) warrants that all trailer suspensions, shall be free of defects in material or workmanship. The warranty coverage applies when the suspension has been properly assembled and installed by a trailer original equipment manufacturer (OEM), properly maintained (as described in all applicable Cush publications), and used in its recommended application and within the rated capacities for its intended use & vocation. All non-recommended suspension applications must receive written approval from CUSH in order to be covered under this warranty. Coverage may differ on some items used in applications for which special written approval from CUSH has been granted. For more warranty coverage information, contact the CUSH Warranty Department. The CUSH suspension warranty coverage begins when the vehicle is put into service and ends when the time or mileage period specified in this warranty is reached.

<u>The warranty shall not apply to or include any repair or replacement as a result of the following conditions:</u>

- Accident, fire or other casualty
- Misuse or negligence including, but not limited to, overloading
- Lack of reasonable and proper maintenance
- Repairs improperly performed or replacements improperly installed
- Uses of component parts, replacement or otherwise, that are not manufactured or distributed by Cush
- Modifications not recommended or approved by Cush (in writing)
- Use other than those intended by Cush and the trailer OEM
- Normal wear and deterioration occasioned by the use of the suspension system
- Products not paid for per CUSH Corp SOAP terms, or non-payment

The liability of CUSH under this warranty is limited solely to the repair or replacement of defective material or workmanship by an authorized party. CUSH shall not be liable for repairs performed by any unauthorized parties. This warranty does not include any expense of or related to transportation of the parts to or from the place where the repair is to be performed or compensation for inconvenience or loss of use while the suspension system is being repaired. CUSH shall not be liable for any expense, loss or damage (direct, incidental, consequential or exemplary — including, but not limited to, towing expenses, downtime expenses, cleaning expenses, cargo damage, incidental charges or any other losses arising in connection with the sale, use or inability to use the suspension system) resulting from the warranty-covered part found to be defective. CUSH gives no expressed warranty with respect to its suspension systems and products except as specifically set forth herein. Any warranty implied by law, including any warranty of merchantability or fitness for a particular purpose, is limited to the expressed warranty term provided in this warranty.

WARRANTY CLAIM CONSIDERATIONS

• **SYSTEM PROBLEMS OR PARTS FAILURES THAT RESULT FROM IMPROPER INSTALLATION ARE THE RESPONSIBILITY OF THE INSTALLER OF THE SUSPENSION**. CUSH does not warrant these.

• **THE CUSH WARRANTY DEPARTMENT MUST AUTHORIZE REPAIRS PRIOR TO THEM BEING PERFORMED.** When authorizing repairs or services, Cush warranty will determine the costs and procedures. Failure to receive Cush authorization may result in partial or complete loss of warranty coverage.

• PLEASE DO NOT DESTROY THE PARTS BEING CONSIDERED FOR WARRANTY!
Upon CUSH approval, all parts in question must be returned to CUSH for evaluation. Failure to return such parts may result in partial or complete loss *of warranty coverage. Get RMA# & approved shipment method before sending parts to CUSH prepaid for warranty reimbursement.*

FILING WARRANTY CLAIMS (form 1201)

1. Please review warranty coverage for the component(s). If the component complies with the stated time for warranty coverage, continue with step two.

2. Please locate, record and provide to CUSH the following information:
   - CUSH suspension tag number or axle serial number.
   - Type of vehicle, name of vehicle manufacturer and VIN (vehicle identification number)
   - Vehicle or model in-service date.
   - Description of the system problem and/or the part number of the non-functioning part.
   - A written explanation may be required of the optional failure.
   - Digital pictures.
   - Cush Warranty Job Sheet, fax to Cush before starting job, Fax# 417-724-0126.

This warranty is subject to the conditions, exclusions and limitations listed below.

• Please contact the CUSH Warranty department to receive written warranty authorization.

• Prior to the warranty repair or replacement of suspension systems or parts (by a dealer or other service provider authorized by the OEM of the subject trailer), the warranty claim must first be approved by the CUSH Warranty department. Trailer dealers should inspect all suspensions involved in a warranty claim and then contact CUSH for assistance.

• Parts returned under a warranty authorization must be sent prepaid. CUSH will reimburse the customer for the standard rate for freight charges if the returned parts are confirmed to be defective or non-functioning. Contact CUSH for approved shipment method.

- Only genuine CUSH parts, or parts approved by CUSH, may be used to repair CUSH suspension systems. Our warranty also applies only to genuine CUSH parts.
- Contact the CUSH Warranty department to discuss labor allowances, overtime rates not allowed.
  - A warranty job estimate sheet should be faxed to CUSH for approval on service work.
  - CUSH has the sole discretion and authority to approve or disapprove a warranty claim, authorize the repair or replacement of non-functioning systems and authorize the repair or replacement of parts.

When contacting the CUSH Warranty department to receive warranty authorization, costs and procedures will be determined. CUSH will pay a specified labor allowance rate, determined by the CUSH Warranty department, for the authorized repair or replacement of any defective component. CUSH is not responsible for any additional costs that may be incurred when replacement parts or materials are not acquired through CUSH.

3. Please contact the proper authority:

   A. **IF YOU ARE AN END USER (OWNER) OR DEALER:** Report the problem to the trailer manufacturer or the suspension installer. If the problem is not related to installation, the manufacturer or installer will contact CUSH to file the warranty claim.

   B. **IF YOU ARE A TRAILER MANUFACTURER:** Contact the CUSH Warranty department and provide the information recorded in step two. The Warranty department will issue a warranty authorization for each submitted claim. Parts to be returned to CUSH or its vendors must be labeled with this authorization for timely processing of the warranty claim.

4. Please submit a work order job description with your warranty claim number describing what is to be repaired or replaced. This work order job description should be as itemized and detailed as possible for prompt processing and maximum consideration.

PIVOT ASSEMBLY PARTS

CUSH's coverage only applies to CUSH pivot assemblies where proper installation and final assembly were performed. The respective trailer OEM performs the installation and final assembly of the suspension pivot connection. Proper installation includes, but is not limited to, proper pivot assembly torque along with the proper mounting of the alignment washers. AudiTorx pivot bolts must have the torx head sheared off to be considered for warranty. Pivot assembly components must be available for review for warranty consideration.

- It may help your field service if you apply Lock-tite or Vibra-tite at the time you install a new pivot bolt for a Sever Service Application.
- Confirm with your drivers that the trailer is not operated with air springs dumped. Un-inflated air springs will damage pivot connections and break steel components: hangers, beams, and axles. Operation of vehicle without air in the air springs is considered abuse and damage from this abuse is not covered by Cush warranty.

Form 1201

- Refer to Cush Warranty Statements for definition of coverage, exclusions & limitations. Warranties limited by application and age.
- Once a decision has been made by the Warranty Department, the claimant will be notified via email with the Warranty Summary. Cush reserves the right to use sole discretion when approving or denying claims, replacement parts, and labor.
- Any repairs, labor, or replacement parts purchased for a warranty repair, without prior authorization, may not covered.
- Labor allowances and acceptable shop rates will be determined by Cush, and must be approved before work begins.
- Cush requires the Cush Serial number to proceed with any claims.

Cush is committed to providing a timely resolution on warranty claims submitted. Cush does not consider a claim "OPEN" until all requested information below has been submitted.

Cush Warranty Claim Form Sheet 1201

Cush Warranty Claim Number	
Warranty Claim Date	
Warranty Initiator (Point of Contact)	
Point of Contact Phone Number	
Point of Contact email	
Owner/Fleet Name	
Trailer Manufacturer	
Manufacturer VIN	
Trailer “In Service” Date	
Is trailer in service	
Trailer Type (i.e. Flatbed, ChipVan, Lowboy, Truck, Bus)	
Trailer Application (Highway, Vocational, VacTank or Severe Service)	
Cush Serial Number	
Axle Serial Number	
Warranty Request: Parts or Parts & Labor	
Warranty Claim Estimated Cost	
Shop Labor Rate	
Please Describe the Issue Below.	
Example Of Cush Serial Tag	Please Describe the Recommend Remedy Below.
	

Please Submit the following items via email to Warranty@CushCorp.com

- ✓ Warranty Request Form
- ✓ Clear Photos of the Issue
- ✓ Itemized **Estimate** for the Repairs, with the VIN Clearly Marked on the **Estimate**

Inspection Schedule

The following inspection schedule is a guide to help with the preventative maintenance of your suspension system. Your air suspension will provide trouble free miles of service by using the information in this publication.

Original Installation Inspection

When reviewing the suspensions on your trailer for the first time, check the following:

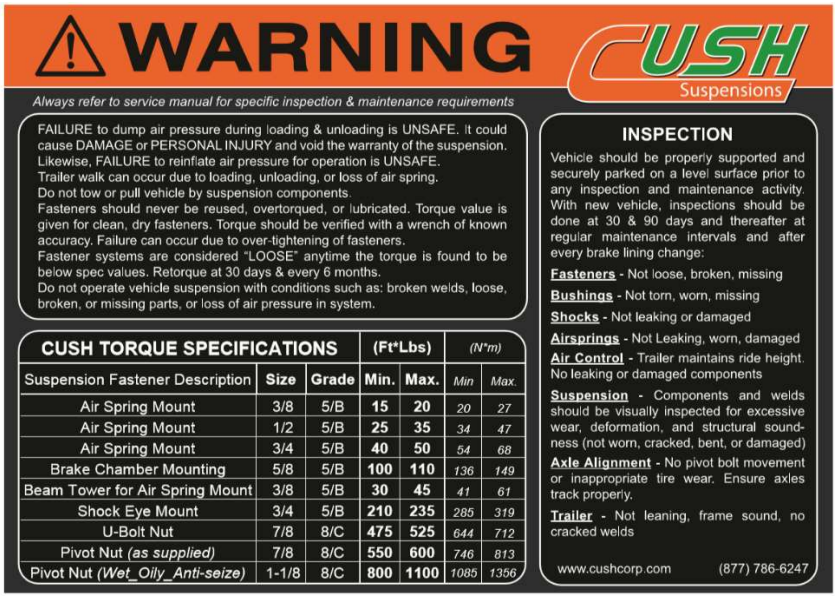
- The axles have been aligned properly.
- The suspension frame bracketry and air spring plate mountings have been properly supported.
- The suspension ride height is set properly.
- Trailer is level
- All welds are of good and acceptable quality
- All fasteners are in place and securely torqued
- No component interferences are visible
- No air spring, air fittings, air lines, or shock absorber leaks are visible
- There should be 0.75" minimum clearance must be maintained around load & lift air springs when at maximum diameter.
- There should be 1/2" minimum clearance between top of tire and bottom of trailer structure when axle is at full bottom out jounce.
- There should be 2" minimum clearance between inside of tire and trailer frame structure for lateral movement.
- There should be ample fore and aft clearances.

Daily Inspection

A quick visual inspection before operating the trailer will often detect obvious problems,

- Check tires for abnormal wear & proper psi per loading
- Check axles for any leaking wheel ends or missing/loose parts
- Check visually the suspension components and attachment welds
- Check for missing suspension parts or movement of fasteners
- Drain all moisture from air tanks before use

Also, see your vehicle sticker C0093



WARNING

CUSH Suspensions

Always refer to service manual for specific inspection & maintenance requirements

FAILURE to dump air pressure during loading & unloading is UNSAFE. It could cause DAMAGE or PERSONAL INJURY and void the warranty of the suspension. Likewise, FAILURE to reinflate air pressure for operation is UNSAFE.
Trailer walk can occur due to loading, unloading, or loss of air spring.
Do not tow or pull vehicle by suspension components.
Fasteners should never be reused, overtorqued, or lubricated. Torque value is given for clean, dry fasteners. Torque should be verified with a wrench of known accuracy. Failure can occur due to over-tightening of fasteners.
Fastener systems are considered "LOOSE" anytime the torque is found to be below spec values. Retorque at 30 days & every 6 months.
Do not operate vehicle suspension with conditions such as: broken welds, loose, broken, or missing parts, or loss of air pressure in system.

CUSH TORQUE SPECIFICATIONS

Suspension Fastener Description	Size	Grade	(Ft*Lbs) Min.	(Ft*Lbs) Max.	(N*m) Min	(N*m) Max.
Air Spring Mount	3/8	5/B	15	20	20	27
Air Spring Mount	1/2	5/B	25	35	34	47
Air Spring Mount	3/4	5/B	40	50	54	68
Brake Chamber Mounting	5/8	5/B	100	110	136	149
Beam Tower for Air Spring Mount	3/8	5/B	30	45	41	61
Shock Eye Mount	3/4	5/B	210	235	285	319
U-Bolt Nut	7/8	8/C	475	525	644	712
Pivot Nut *(as supplied)*	7/8	8/C	550	600	746	813
Pivot Nut *(Wet_Oily_Anti-seize)*	1-1/8	8/C	800	1100	1085	1356

INSPECTION

Vehicle should be properly supported and securely parked on a level surface prior to any inspection and maintenance activity. With new vehicle, inspections should be done at 30 & 90 days and thereafter at regular maintenance intervals and after every brake lining change:

Fasteners - Not loose, broken, missing

Bushings - Not torn, worn, missing

Shocks - Not leaking or damaged

Airsprings - Not Leaking, worn, damaged

Air Control - Trailer maintains ride height. No leaking or damaged components

Suspension - Components and welds should be visually inspected for excessive wear, deformation, and structural soundness (not worn, cracked, bent, or damaged)

Axle Alignment - No pivot bolt movement or inappropriate tire wear. Ensure axles track properly.

Trailer - Not leaning, frame sound, no cracked welds

www.cushcorp.com (877) 786-6247

First 6,000 mile Inspection (start your suspension inspection log)

Check clearances around all moving suspension parts such as air springs, tires, and shock absorbers for any signs of wear or component interferences.

Retorque

After original break in period, retorque all suspension bolts & nuts to original torque spec. Spot check torque on all ShearTITE nuts.

Check each of the following:

- Fasteners – Not loose, broken or missing
- Pivot Bushing – Not protruding, off-center, torn or worn
- Pivot Washer – Not worn through or torn
- Shock Absorber - Not leaking or damaged
- Air Spring - Not leaking, worn, or damaged
- Air Control – Trailer maintains ride height; no leaking or damaged valves, fittings, or piping
- Frame Hanger – Not worn, cracked, bent, or damaged
- Suspension Beam – Not worn, cracked, bent, or broken
- Beam/Axle – Not cracked, bent, or broken
- Axle Attachment- U-bolts secure and no inappropriate wear or loose parts

  Axle Alignment – No hanger pivot movement or inappropriate wear, axles tracking properly
  Tires – No tire wear that might indicate an alignment problem.
  Trailer – Trailer not leaning, trailer frame suspension attachment structurally sound, no cracked or missing welds at suspension frame attachment.

Every 12,000 mile of use Inspection (document in your inspection log date & issues)

Thoroughly check all items checked at the 6,000 mile inspection. Also check:

- Retorque air spring mounting bolts & nuts to original specs.
- Check all air lines and connections for leaks with soapy water spray application.
- Check axle brake components & wheel ends for excessive play.
- Check all frame attachment joints

CAUTION! Failure to torque suspension fasteners to specification can result in failure and void suspension warranty. Keeping of accurate suspension inspection log can avoid this warranty issue.

Axle Alignment Inspection

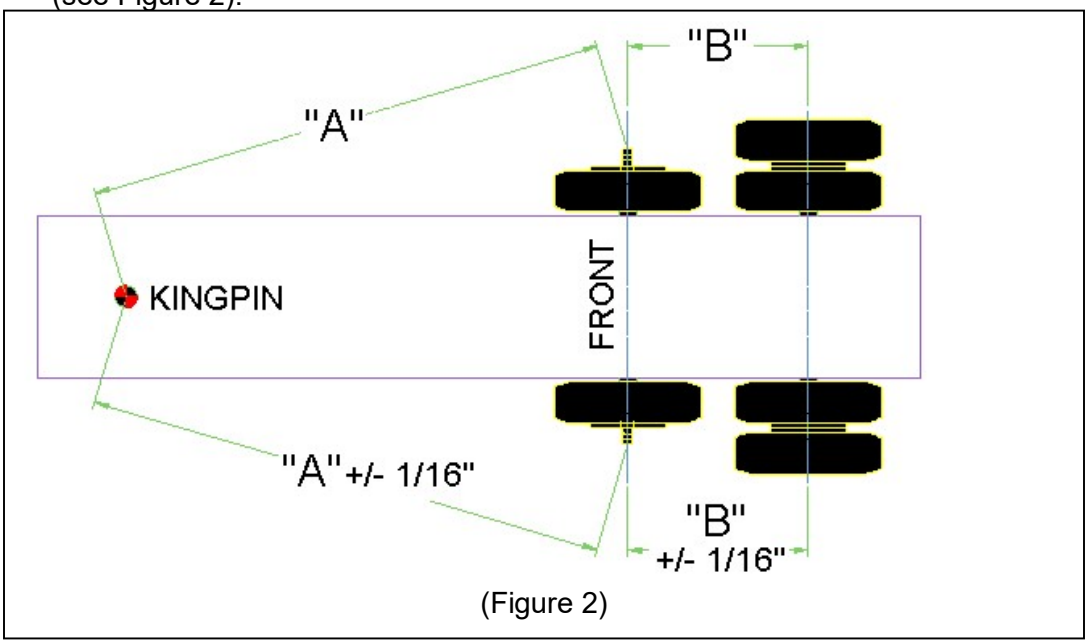
Check the hanger alignment connection for change of position at every inspection. Re-align if necessary using new pivot hardware.

Axle Alignment

Cush has several different alignment means available for different applications. Listed here are some general alignment guidelines and alignment procedures for the styles of Cush Alignment.

CAUTION: DO NOT APPLY undercoating to the "Cush-Align" area until after alignment and torque of the suspension pivot bolts.

- Check that the tire inflation pressure is correct on all tires.
- Alignment should be performed with the vehicle empty and the brakes released.
- On a level floor move the vehicle forward and back to straighten, make sure last movement is forward.
- Remove the outer tires and any other parts from under the chassis that obstruct the measuring distances between the kingpin and the axle ends. If you use a commercially available kingpin and axle spindle extenders or the edge of the wheel rim, you will not need to remove this equipment.
- Measuring from the trailer's kingpin, determine the alignment of the forward axle.
- After achieving proper alignment of the forward axle, torque the Cush Pivot fasteners per Cush torque specifications on the Cush installation drawing.
- Align, to within 0.063" tolerance, any additional axles to the forward axle per the "Cush-Align" method. Use a commercially available alignment gauge or trammel bar if available (see Figure 2).



(Figure 2)

Std Warranty Labor Allowance__0.5 (hours/axle)

NOTE: Failure to follow the procedure for your axle alignment application and/or properly torque the pivot fasteners can result in a failed pivot connection and a loss of warranty coverage!

INSTALLATION OF "TRAC-ALIGN" NOTES:

OVERVIEW: THE "TRAC-ALIGN" PIVOT JOINT FEATURES OUTSIDE ECCENTRIC CAM GEAR WASHER THAT COVER THE ALIGNMENT SLOT. THE “TRAC-ALIGN" WAS DESIGNED TO GIVE OUR CUSTOMERS EXTRA PIVOT INTEGRITY WITHA MORE FAMILIAR ALIGNMENT MEANS WITH THE USE OF AN ECCENTRIC CAM ADJUSTMENT ON THE OUTSIDE OF EACH HANGER.

CAUTION: DO NOT APPLY UNDERCOATING TO THE "CUSH-ALIGN" AREA UNTIL AFTER ALIGNMENT AND TORQUE OF THE PIVOT BOLT.

· THE ECCENTRIC CAM GEAR WILL HAVE THE ½” SQUARE HOLE AT THE 12 O’CLOCK POSITION FOR NEUTRAL SLOT POSITION.

SNUG THE PIVOT BOLTS OF THE "TRAC-ALIGN" TO BE TIGHT ENOUGH TO HOLD THE JOINT TOGETHER BUT LOOSE ENOUGH TO PERMIT USE OF THE ECCENTRIC CAM

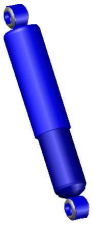
ADJUSTMENT. BE SURE THAT THE ECCENTRIC CAM PLATE IS CLAMPED DOWN FLUSH AGAINST THE HANGER SIDE AND IS NOT RIDING UP THE GROUNDING TABS/RING.
· FOR ADJUSTMENT USE A BREAKER BAR IN THE ½" SQUARE HOLE.
· THE "TRAC-ALIGN" GIVES YOU PIVOT MOVEMENT FORE AND AFT PER HANGER SIDE.
· TO ALIGN THE AXLE, ROTATE THE ALIGNMENT GEAR OF ONE SIDE OF THE SUSPENSION TO GET THE AXLE ALIGNED. IF NEEDED, GO TO THE OTHER SIDE OF THE SUSPENSION AND ROTATE THE ALIGNMENT GEAR IN THE OPPOSITE DIRECTION TO FULLY ALIGN THE AXLE.
· AFTER ALIGNMENT, CLAMP THE JOINT PER CUSH TORQUE SPECIFICATIONS. AFTER ALIGNMENT, THE SUSPENSION INSTALLER CAN WELD THE OUTSIDE WASHER TO THE HANGER SIDE WITH 1/2" WELDS TO PREVENT TAMPERING & FOR OFF-ROAD APPLICATIONS.

Axle Inspection (general notes, see axle manufacture's service manual for details)
Visually inspect the seal and hub cap for leaks and oil level every 7,500 miles (if oil bath type). Repair if necessary.

At 100,000 miles or 12 months, visually inspect seal and hub cap for contaminants, oil level, or leaks. Check the wheel bearing adjustment by jacking the tire off the ground and physically check play with both hands at north-south and east-west positions on the tire. Repair if necessary.

KEY SUSPENSION COMPONENTS & INSPECTION NOTES

Shock Absorber



The shock absorber is used to dampen the bouncing of an air spring suspension. Without shocks in place damage can occur to the suspension or trailer. Shocks are a replaceable item of an air suspension and when maintained can extend the life of your air suspension and trailer. Some things can indicate it is time to replace shocks: Uneven tire wear, poor ride characteristics, broken or torn air springs.

Part Number cross reference of CUSH #C-23566:
GABRIEL #85000, MONROE #65416, HENDRICKSON #S-23556, RIDEWELL #1270563B003, CUSH HD #C-24023 (C0078-2), HENDRICKSON #S-24023, HENDRICKSON #S-24125
Contact Cush Corp for information on available nylon shock strap kit.
Inspection:

- Broken upper or lower shock eye mounting at the welds
- Worn out upper or lower shock eye bushings
- Broken dust tube cover
- Bent or dented lower shock body tube
- Bent shock rod
- Shock leaking streams of oil

To replace a shock absorber:

- Contact your trailer manufacture or Cush Corp for replacement parts or cross-reference
- Remove the shock end mounting hardware
- Check the mounting surface for wear problems
- Insert the new shock absorber and appropriate mounting hardware
- Torque the fasteners to specification

Warranty Labor Allowance__0.3 (hours each)
(See the troubleshooting guide for more information on shock absorber issues)

Air Spring

The air spring is used to carry and cushion the load of an air spring suspension. Without an air spring in place damage can occur to the suspension or trailer. If damaged, air springs are a replaceable item and when maintained can extend the life of your air suspension and trailer. Air Springs can also be used to lift the suspension, observe the same safety precautions below when changing lift springs.

Part Number cross reference of CUSH #C0079:

CONTI #64762 (9-10-17.5-A802), GOODYEAR #1R12-494, RIDEWELL #1000003

To replace an air spring:

- Contact your trailer manufacturer or Cush Corp for replacement parts or cross-reference
- Support the trailer in a safe manner at a working height prior to exhausting the air
- Exhaust all air from the air suspension system
- Disconnect the air fittings from the air spring
- Remove the mounting hardware from the air spring and remove the air spring
- Check the mounting surface for wear problems
- Insert the new air spring and appropriate mounting hardware
- Torque the fasteners to specification
- Reconnect the air fittings and air lines to the air spring
- Lower the trailer
- Supply air to the suspension system
- Check for air leaks

Warranty Labor Allowance__0.3 (hours each)

(See the troubleshooting guide for more information on air spring issues)

U-BOLT INSPECTION & INSTALLATION NOTES

CAUTION! Do not apply any lubricants to the u-bolts, improper clamp loading can occur causing failure

Inspection

- Check each U-bolt threaded area for damage or burrs.
- After installation, an equal amount of thread should be visible beyond the head of the nut on each side of the U-bolt within 30%.

Installation

- Check that U-bolts fit properly in area, if U-bolt is to tight tap on top of U-bolt to hard surface to open up. Be careful that U-bolt installation does not damage threads.
- Snug all U-bolts evenly before applying clamping torque with hand wrench. Check that u-bolts are parallel and square to axle.
- Torque U-bolts in a three-step process to avoid an improperly clamped axle and resulting damage. Torque the u-bolts in an "**X**" pattern with each torque step (1-2-3-4). This allows the U-bolt to stretch and relax for the clamp to hold torque. Proper tightening will allow equal amount of tread above each nut.

Pivot Bushing Components

- The pivot of a suspension component is a main link to connect the suspension to your trailer. This rubber bushing link provides a resilient connection that allows an axle to walk without excessive flexing. Re-bushing of a suspension may require the use of a bushing removal/installation tool and bushing kit, containing the required components for

re-bushing. Contact Cush for information regarding the tool and the proper kit for your suspension and review any instructions on your suspension drawing.

- The bushing used in the CLC16UB model is 3.6" wide with a 1.25" ID (use T0063 insert to reduce from 1.25" to 0.91") and is pressed into a sleeve that is 5.5" ID x 3.1" lg.
- Rebush tool for narrow bushing is VS-24736
- The Cush narrow rubber pivot bushing is a standard part on several Cush suspensions. Proper operation of this bushing is a key component to suspension life. Bushings are a replaceable service item of an air suspension and when maintained can extend the life of your air suspension and trailer. Some things can indicate it is time to replace bushings: Uneven tire wear, poor ride characteristics, broken or torn air springs, broken shocks, loose pivot bolt hardware.

Pivot Bushing Inspection:

With the trailer unloaded on flat level ground, the pivot bushing should be inspected visually and by measuring the bushing "settle".

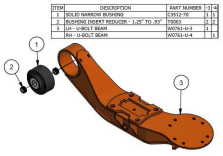
Visual inspection: Do not take apart the pivot connection to inspect the bushing unless the bushing "settle" is ¾" or more or other visual indicators lead you to believe the bushing is bad. If you disassemble the pivot connection to visually inspect the bushing and find a bushing that has a rubber crack or rubber to inner metal sleeve separation, replace the bushing and pivot hardware. Also, visually inspect the beam and hanger for any metal damage.

Physical Inspection: Insert the flat end of a prybar between one side of the hanger sidewall and the bushing housing. Test the free play of the bushing by moving the prybar back-forth to look for excessive movement more than typical with the rubber bushing when comparing to all the other bushings on the trailer.

If needed, Disassembling Pivot Connection:

- On level ground, securely chock the tires and apply trailer parking brakes
- Support the trailer in a safe manner at a working height prior to exhausting the air
- Exhaust all air from the air suspension system
- Loosen and remove shock connection
- Loosen and remove pivot nut
- Remove Pivot bolt and alignment gears
- Disassemble any other parts that interfere with lowering the trailing arm/axle assembly out of the suspension hangers
- Using a hydraulic jack or other lifting device, lower pivot end of trailing arm/axle from inside hanger.

<u>Bushing Replacement (Frame Hanger style):</u>



- Use Cush bushing replacement kit shown on parts explosion for your suspension, or contact Cush Corp for cross-reference.
- Some models, remove the flanged inserts from the inner diameter of the bushing tube
- Remove old bushing using bushing tool
- Clean inside surface of trailing arm bushing sleeve.
- **Note**: if using the Hendrickson tool (L427) & not the Cush tool you may need to die grind a 1/8" bevel on the inside of the bushing housing you are pulling the bushing into so as to help center the tool and ease installation.

- Lubricate outside of new Cush bushing and inside of trailing arm bushing sleeve with proper rubber lubricant (P-80 or Ru-glyde)
- Center inner metal bushing in sleeve with the outer metal bushing housing with tool, it may be necessary to push bushing thru a little and pull back to center rubber and inner metal sleeve.

Reassembling pivot connection (Frame Hanger style):

- Position wear washers over the outside diameter of the bushing tube
- *Some models*, Install the flanged inserts in the inner diameter of the bushing tube

Place the pivot bolt through the partial assembly

- Hand tighten a non-locking nut to hold the position of all loose items
- Using a hydraulic jack or other lifting device, raise pivot end of trailing arm until flanges of flanged inserts enter the inside of the hanger
- Holding this raised position, remove pivot bolt and standard hex nut continue to raise pivot end of trailing arm until hole in bushing lines up with slots in hanger
- Place adjustment gear on pivot bolt per suspension drawing (Always use new fastener hardware)
- Re-insert pivot bolt through side of hanger or yoke beam engaging all teeth of the alignment gear as shown in Figure 1 (Note: one gear tooth outside of alignment rack, both sides for neutral position).
- Place adjustment gear on end of pivot bolt against inner face of hanger, engaging all teeth of the alignment gear as shown in Figure 1 (Note: one gear tooth outside of hanger rack, both sides for neutral position).
- Place pivot nut on end of pivot bolt and tighten until “snug” to hold tooth engagement of alignment gears
- Using a wrench, move alignment gear pointers to nominal position
- Align axle with relation to the kingpin as shown in Figure 2 (see Axle Alignment)
- Reinstall shock absorbers
- Torque all the fasteners to specification

Warranty Labor Allowance__5.0 (hours/axle)
(See the troubleshooting guide for more information on pivot connection issues)

Bushing Replacement Process Use Narrow Bushing Tool VS-24736

1. Before using this tool lubricate the washers, thrust bearing, threads of bolt, and reduction sleeve with extreme pressure lube/grease.

2. Assemble the Bushing Tool in order starting at the head end of the bolt. First side should start with 2 washers, thrust bearing, 2 more washers, cap, then reduction sleeve and tube. Now insert bolt through bushing. Second side on opposite side of the bushing place the spacer, then drive plate.

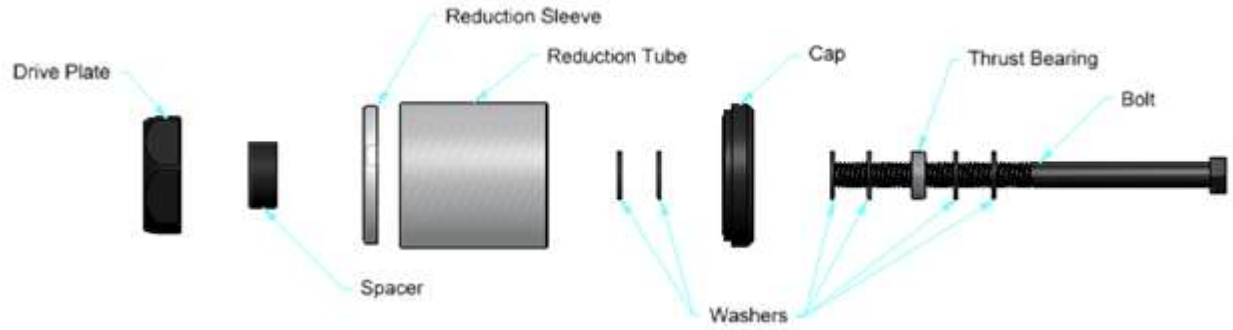
3. Turn bolt by hand until everything is snug and tightly in place, then use air impact and socket on the head end of the bolt to continue to pull bushing all the way through into reduction tube.

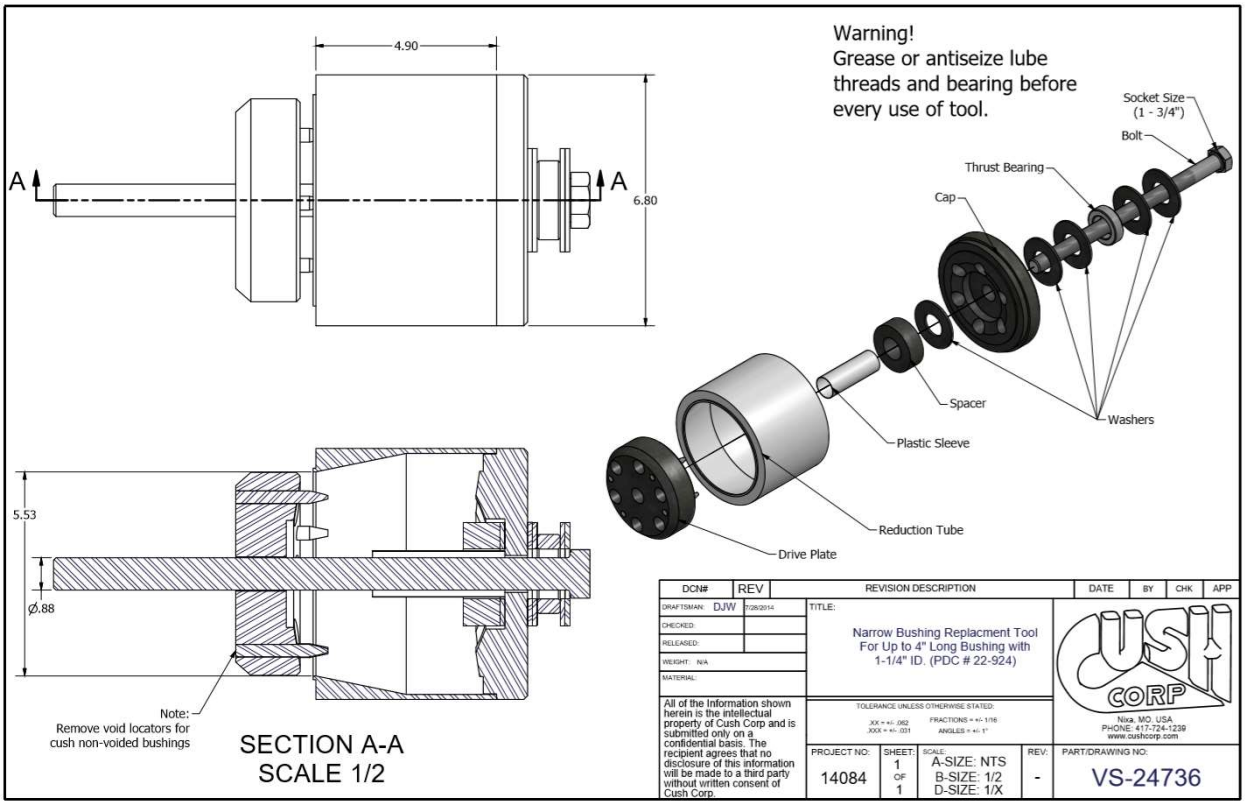
4. Lubricate the bushing and inside of “cleaned” reduction tube with P-80 or P-80 gripit. Then place bushing inside of reduction tube.

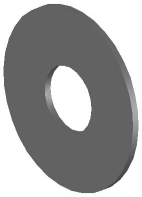
5. Assemble the tool starting with the head of the bolt again. First place 2 washers, thrust bearing, 2 washers, the cap and then 2 more washers. Now put bolt through beam eye with cap tight against empty bushing housing side. Place bushing with reduction tube and sleeve onto the bolt end. Now thread drive plate with short set screws onto bolt until hand tight (spacer not required), concave side of plate facing bushing. Make sure bushing is still at proper orientation.

6. Use ¾" or 1" air drive impact and begin tightening the bolt until reduction tube falls off.

7. After bushing is through reduction tube, continue to tighten the bolt until it stops. Now loosen bolt and remove all parts. Check to make sure bushing is centered properly before reinstalling beam.







Pivot Wear Washer

The pivot wear washer is used to prevent metal-to-metal contact of the suspension beam and the inside of the hanger. These wear washers can cup and misshape and still function. At the point the wear washer is worn thru, they should be replaced to prolong the life of the suspension.

To replace wear washers:

- Contact your trailer manufacturer or Cush Corp for replacement parts or cross-reference
- On level ground, securely chock the tires and apply trailer parking brakes
- Support the trailer in a safe manner at a working height prior to exhausting the air
- Exhaust all air from the air suspension system
- Disassemble the pivot connection and any other parts that interfere with lowering the axle/beam assembly out of the suspension hangers
- Lower the axle beam assembly, check for any damaging hanger wear
- Remove the flanged inserts from the inner diameter of the bushing tube
- Remove the old wear washers
- Check for any damaging beam, hanger, or insert wear
- Insert the new wear washers and appropriate flanged inserts
- Place a pivot bolt through the partial assembly
- Hand tighten a standard hex nut to hold the position of all loose items
- Raise the axle/beam assembly and reassemble the pivot connection, use new pivot bolts & nuts
- Reassemble any other parts that were disassembled to lower axle/beam assembly
- Align axle with relation to the kingpin as shown in Figure 2 (see Axle Alignment)
- Torque all the fasteners to specification

Warranty Labor Allowance__2.0 (hours/axle)
(See the troubleshooting guide for more information on wear washer issues)

Cush Corp Suspension Fabricated Components

Some issues are discussed here but if other deficiencies occur contact your trailer manufacturer or Cush Corp for information.

Suspension Frame Hanger (Welded type)

Cush manufactures various hangers for different applications; because of this it would be best for you to contact Cush for an installation drawing per your application. On these drawings we show recommended cross-member and support locations. Failure to have the proper support in place can cause a reoccurring failure mode. If for some reason it is required to replace a frame hanger, please follow the guidelines below as a minimum safety procedure when repairing these items.

To replace welded frame hanger:

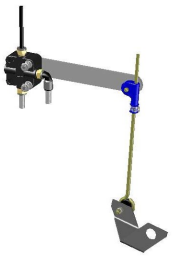
- Contact your trailer manufacturer or Cush Corp for replacement parts
- On level ground, securely chock the tires and apply trailer parking brakes
- Support the trailer in a safe manner at a working height prior to exhausting the air
- Exhaust all air from the air suspension system
- Disassemble the pivot connection and any other parts that interfere with lowering the axle/beam assembly out of the suspension hangers
- Lower the axle beam assembly, check for any damaged beam wear

- Check that the wear washers are in usable condition
- Check that the bushing inserts are in usable condition
- Mark the hanger position on the frame side for reference
- Cut away the frame hanger and clean up the frame with grinder, do not gouge frame
- Put new hanger component on beam/bushing and reassemble the pivot connection, use new pivot bolts & nuts
- Move the alignment gears to the nominal notch position and snug up hanger bolt
- Raise the axle/beam/hanger assembly to the frame and clamp hanger to frame squarely
- Weld hanger to frame per Cush Corp installation drawing
- Reassemble any other parts that were disassembled to lower axle/beam assembly
- Align axle with relation to the kingpin as shown in Figure 2 (see Axle Alignment)
- Torque all the fasteners to specification

Warranty Labor Allowance__4.0 (hours each or 6.0 hours/axle)
(See the troubleshooting guide for more information on frame hanger issues)

Original Equipment Manufacturer's Warranty Reference WLA

Warranty for the following non-exclusive list of parts, (if supplied by Cush), will default to the Manufacturer's Warranty, and no labor to repair or replace these parts unless allowed. If damage to these parts is caused by a defect from a Cush Corp product then use these WLA as a guide when filing an approved warranty claim.



Ride Height Control Valve

The ride height control valve (HCV) is used to carry and cushion the load of an air spring suspension. Without an HCV in place damage can occur to the suspension or trailer. If damaged, HCV are a replaceable item and when maintained can extend the life of your air suspension and trailer. The HCV should maintain equal air spring heights for a set of grouped suspensions that are the same to maintain equal load carrying. When the suspension is lowered from loading the HCV lever arm moves up and adds air to the suspension air springs. When the suspension is raised from unloading the HCV lever arm moves down and removes air from the suspension air springs in order to bring the arm back to neutral position. The HCV is covered under the original OEM of the valve and this procedure is given as a guide only.

To replace a Height Control Valve:

- Contact your trailer manufacturer or Cush Corp for replacement parts or cross-reference
- Support the trailer in a safe manner at a working height prior to exhausting the air
- Exhaust all air from the air suspension system
- Disconnect the air fittings from the HCV
- Remove the mounting hardware from the HCV and remove the HCV
- Insert the new HVC and appropriate mounting hardware
- Torque the fasteners to specification
- Reconnect the air fittings and air lines to the HCV
- Supply air to the suspension system
- Check for air leaks with soapy water
- Set the trailer at ride height by adjusting the HCV to allow air in or out
- Pin the HCV handle (horizontal arm) thru the hole to the HCV and adjust the vertical linkage

- Mount the vertical linkage bottom pin in place to the closest hole when using a fixed vertical link
- Mount the vertical linkage bottom pin in place and adjust the link in the p-grommet and clamp the grommet collar in place when set with the handle pinned to the HCV center position
- Caution – Remove HCV centering pin otherwise damage to HCV could occur

Reference Warranty Labor Allowance__1.0 (hours each-Contact Original Manufacturer)

(Barksdale Height Control Valve Installation)

Physical Description

The Barksdale Height Control Valve (HCV) is a three-mode valve used to control the height of a vehicle by directing air to the air spring suspension. The main physical features of the valve are the following; (2) delivery ports*, (1) Exhaust port, (1) inlet/supply port, (1) Height Control Handle, and (2) ¼" Mounting Studs.

(* All ports are ¼" NPT, the (2) delivery ports are clearly marked, "C1" and "C2" on the back of the valve.)

Modes of Operation

The three modes of operation of the HCV are as follows;

1. Fill Mode
2. Exhaust Mode
3. Dead Band Mode

When the vehicle suspension is at the factory set ride height, the valve will be in Dead Band Mode. In Dead Band Mode, the Valve will not allow air to flow in or out of the air bags. As the vehicle becomes laden, the suspension will settle, causing the handle of the valve to rotate upwards. The valve will now enter Fill Mode, allowing air to enter the air bags, causing the vehicle to rise. As the vehicle approaches factory set ride height, the valve will once again enter Dead Band Mode. Similarly, if the bus is unloaded, the suspension will rise causing the control handle of the valve to rotate downward. When the handle rotates downward, the valve enters exhaust mode, thereby letting air out of the air bags, causing the vehicle to lower until Dead Band Mode is reached again at the factory set ride height.

Installation

Attach all fittings to valve before mounting to vehicle. Thread sealant must be applied to all fittings, which are tightened by hand until firm, at which point a wrench should be used to tighten additional 1- 1 ½ turns.

Recommended proper orientation for the valve handle for installation is when the valve handle is in line with the "C1" port.

Mount the Valve to a bracket using the ¼" studs. Do not fully tighten nuts at this time, to allow fine-tune adjustment of ride height. Attach Air Supply line to the port at the top of the valve. Attach the air bag air lines to the "C1" and "C2" ports.

Set-Up

1. Adjust approximate ride height by turning the valve handle up toward the air supply line to add air to the bags to raise the vehicle above the ride height, down to exhaust air from the air bags to adjust to approximate ride height. Then put the handle in the horizontal position.
2. Install wood Centering Pin in hole provided in valve handle.
3. Connect linkage from suspension mount to valve handle and tighten linkage.
4. Adjust to final factory recommended ride height by rotating the valve assembly on the bracket.
5. Tighten nuts to 45 Inch pounds torque.
6. Remove the centering pin.

Post Inspection Notes

If issues arise from any inspection, review troubleshooting guide (Appendix A1 of this service manual). If the issue can't be resolved from the troubleshooting guide or for warranty information, contact your trailer manufacture. If the problem is not related to installation, the trailer manufacturer or suspension installer should contact Cush to resolve the issue or file the warranty claim.

Appendix A1-Air Ride Troubleshooting Guide

Suspension Maintenace Items Troubleshooting Guide Appendix A1

Axle Alignment Troubleshooting Guide	**Potential Issues**	**Possible Causes**	**Possible Solutions**
	Changing axle alignment - pivot fore/aft movement	Pivot bolt not clamped per spec	Inspect pivot bush-collars-hanger-gear-hardware, replace if needed, replace hardware, realign
	Axle out of alignment	Poor installation, loss of pivot clamp load-movement, bent axle, bent suspension components, worn pivot bushing, broken axle weld, overload impact	Inspect suspension components-repair or replace if needed, realign and retorque
	Trailer "Dog Tracks" constantly to one side	Suspension not aligned at installation, Suspension & structure settling has caused misalignment	Realign suspension axles and retorque pivot bolts, inspect for damaged parts
	Trailer "Dog Tracks" constantly to one side	Trailer frame not square, king pin off center, crowned highways causing problems	Realign suspension axles and bias the alignment of axle group equally in opposite direction of the dog tracking
	Trailer "Dog Tracks" constantly to one side	Broke or missing: Trailer cross-members, axle, hardware, hanger, or beam welds	Inspect suspension and trailer, rework or replace broken parts, realign
	Trailer "Dog Tracks" constantly to one side	Bushing out of square to beam eye enough to cause tracking isssues	Recenter & square bushing with installation tool, install a new bushing, reassemble and realign the axle
	Trailer "Dog Tracks" varies from side to side	Loose pivot joint, damaged bush collar, pivot bush failed-destroyed	Inspect hanger, realign trailer & retorque bolt, replace pivot bush and pivot hardware/washers, inspect hanger & beam, realign
	Trailer "Dog Tracks" to one side under load	Suspension not square to axle	Determine which beams not square, cut from axle, reposition and reweld, repace beam/axle assembly
	Trailer "Dog Tracks" to one side under load	Air springs misaligned, different air spring heights, wrong air spring, bent air spring support	Compare the installation to suspension drawing, reposition air spring offset, replace with correct spring, repair air spring support
	Trailer "Dog Tracks" to one side under load	Pivot bush installed wrong, worn, or failed	Replace pivot bush and pivot hardware/washers, inspect hanger & beam, realign
Trailer Lean Troubleshooting Guide	**Potential Issues**	**Possible Causes**	**Possible Solutions**
	Trailer leans constantly in one direction	Suspension beams installed out of parallel, wrong air spring installed one side, wrong spring spacer one side	Determine which beam not parallel, cut from axle, reposition and reweld, replace beam/axle assembly, inspect air spring and any spacer symmetry
	Trailer lean varies in one direction	Pivot bushing failed, pivot bush installed voids wrong	Determine failed bush, inspect hanger, replace bush & pivot hardware, realign
	Trailer lean varies from side to side	Axle, hanger, or beam welds missing or broken	Cut beam from axle, reposition and reweld, repace beam/axle assembly

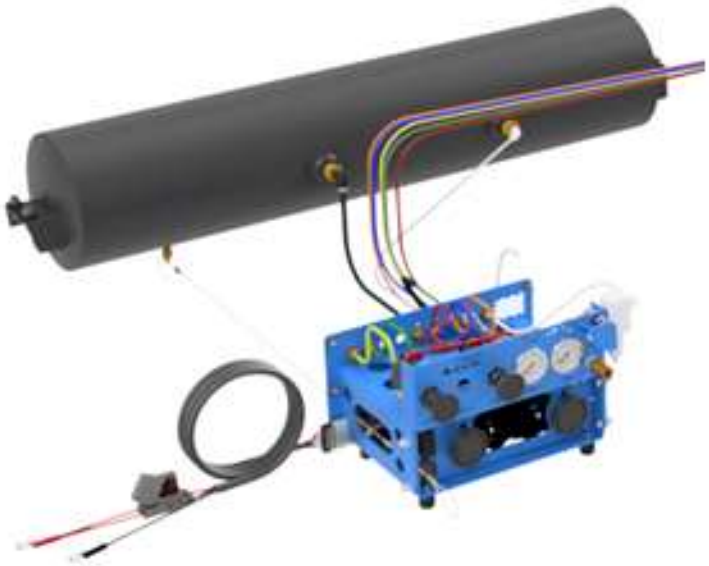
Suspension Service Items

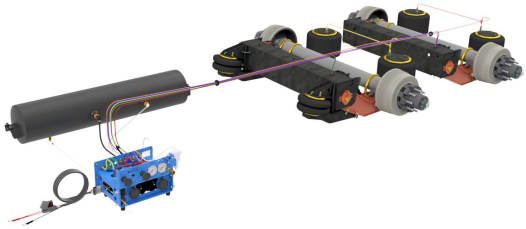
Shock Absorber Troubleshooting Guide	**Potential Issues**	**Possible Causes**	**Possible Solutions**
Shock Absorber Component	Shock eye breakage	Wrong shock, ride height to tall, bad shock	Inspect shock, review installation drawing for proper ride height
	Shock not fitting up	Wrong shock, poor install, shock upside-down, bracket	Inspect shock, review installation drawing, spread bracket
	Leaking Oil	Over-fatigued, too hot, input frequency to high	Replace shock, inspect mounting hardware
	Bushing Deterioration	Over-stressed, overloaded, wrong bushing mount	Replace shock, inspect mounting hardware
	Broke/Bent Rod	Overload, side load, mounting failure, miss application	Replace shock, inspect mounting hardware
Shock Mounting Bolt	Loss of bolt	Loss of torque where bolt broke and fell out	Inspect shock mounting, inspect shock-replace if needed, rehardware
	Slipped bolt in joint	Loss of clamp load, Loss of torque, poor install	Inspect shock mounting, inspect shock-replace if needed, inspect hardware-replace if needed
	Cross-threaded	Poor installation of nut, thread size	Use new bolt and nut
	Galled/stripped threads	Overtorqued fastener, overloaded fastener, thread size, grade	Inspect shock mounting, inspect shock-replace if needed, rehardware
	Broken head of bolt	Overtorqued fastener, overloaded fastener, grade of bolt	Inspect shock mounting, inspect shock-replace if needed, rehardware
	Broken bolt at threads	Overtorqued fastener, overloaded fastener, grade of bolt	Inspect shock mounting, inspect shock-replace if needed, rehardware

Shock Mounting Nut	Loss of nut	Loss of torque where nut worked its self off of bolt	Inspect shock mounting, inspect shock-replace if needed, rehardware
	Loss of torque	Overload, vibration, slippage, poor install, grade wrong	Inspect shock mounting, inspect shock-replace if needed, inspect hardware-replace if needed
	Cross-threaded	Poor installation of nut	Use new bolt and nut
	Galled/stripped threads	Overtorqued fastener, overloaded fastener, thread size, grade	Inspect shock mounting, inspect shock-replace if needed, rehardware
	Broken nut	Too low a grade of nut, wrong style of nut	Inspect shock mounting, inspect shock-replace if needed, rehardware
Air Spring Troubleshooting Guide	**Potential Issues**	**Possible Causes**	**Possible Solutions**
Air Spring Component	Air spring not fitting up	Wrong air spring, poor install of suspension-spring plate	Review installation drawing-check dimensions, check air spring
	Loss of air spring	Air spring mounting harware not installed properly	Inspect suspension air spring mounting areas for damage, replace air spring
	Air spring piston moving on beam	Piston mounting bolts not torqued up, threads stripped out	Inspect air spring for damage, check mounting holes, replace air spring
	Air spring top rotated	`	Inspect air spring top mounting plate, inspect air spring stud, reinstall
	Air spring burst	Puncture of air spring, wearing of air spring, too hot, too cold	Inspect area for obstructions or exposure to heat, inspect suspension movement, replace air spring
	Worn air spring rubber	Rubbing on: suspension beam, airspring plate, tire	Inspect suspension movement-pivot joint, replace air spring
	Cracked air spring piston	Overload, hit by object, wrong material for conditions	Contact Cush about your application, inspect suspension, replace air spring
	Cracked rubber on air spring	Rubber effected by heat, ozone, agging	Contact Cush about your application, inspect suspension, replace air spring
	Leaking Air	Air fittings leak, air spring cracked	Inspect fittings and air spring, replace or repair if needed
Air Spring Mounting Bolt-piston	Loss of mounting bolt	Loss of torque where bolt broke and fell out	Inspect air spring and mounting, replace air spring if needed
	Slipped bolt in mounting joint	Loss of clamp load, Loss of torque, poor install	Inspect air spring and mounting, replace air spring if needed
	Cross-threaded stud or blind hole	Poor installation of nut, thread size	Repair or replace air spring
	Galled/stripped threads	Overtorqued fastener, overloaded fastener, thread size, grade	Replace air spring, inspect air spring mounting
	Broken stud	Overtorqued fastener, overtorqued stud	Replace air spring
Air Spring Mounting Nut-top	Loss of mounting nut	Loss of torque where nut worked its self off of bolt	Inspect air spring and mounting, replace nut
	Loss of torque	Overload, vibration, slippage, poor install, grade wrong	Inspect air spring and mounting, retorque nut
Air Spring Mounting blind stud-top	Broke out, leaking spring	Stud not seated in upper air spring mounting plate	Inspect mounting plate holes, replace air spring
	Broken nut	Too low a grade of nut, wrong style of nut, overtorqued	Inspect air spring stud, replace nut at proper torque
Pivot Components Troubleshooting Guide	**Potential Issues**	**Possible Causes**	**Possible Solutions**
Pivot Bushing	Bushing not fitting in hanger	Wrong bushing, hanger too narrow, wrong bush collars	Inspect parts & measure, spread hanger with portapower & install
	Bush slip in beam eye (off-center)	Overload, bound up suspension, poor installation	Recenter bushing with tool, install new bush and pivot hardware, reassemble and realign the axle
	Bush slip in beam eye (off-center)	Suspension beams out of parallel vertically or longitudinally	Determine which beam out of position, cut from axle, reposition and reweld, rebush-realign, repace beam/axle assembly
	Bush slip in beam eye (off-center)	Trailer hanger centers do not match the suspension beam centers	Reposition the hanger components, rebush-rehardware-realign both pivots
	Bush slip in beam eye (off-center)	Use of improper bushing installation lubricant	Clean inner bush eye metal, rebush with proper rubber lubricant, realign
	Bushing protrudes from the beam eye	Failed or worn bushing, bushing off-center	Recenter bushing or rebush-rehardware-realign
	Bush voids rotated in housing	Wrong installation, wrong lubricant, bushing failure	Rebush-rehardware-realign
	Permanent rubber Set	Overload, wrong bushing material, bush got too hot	Rebush-rehardware-realign, inspect suspension for other damage
	Performance/Deterioration	Wrong bushing choice, bush got too hot, over-stressed	Rebush-rehardware-realign

	Rubber Tear/Cracking	Overload, overarticulated, to hot, to cold, fatigue	Rebush-rehardware-realign
	Rubber meltdown	Over-fatigued, bush got too hot, input frequency to high	Contact Cush about your application, rebush-rehardware-realign
Pivot UHMW Washer	Washer not fitting on bushing pivot sleeve	Wrong washer, poor install of bushing (off-center)	Measure washer, recenter bush with installation tool
	Washer worn thru or missing	Loss of pivot clamp load causing excessive movement, bush off-center, application causes high side loading	Inspect hanger & bushing, if needed rebush-rehardware-rewasher-realign, contact Cush about your application
	Washer tearing	Washer pinched metal to metal, bushing off-center, using too much adjustment on one side of the trailer	Inspect hanger & bushing, if needed rebush-rehardware-rewasher, realign using adjustment on both hangers to align axle
	Washer cupping	Typical loaded condition of washer around inner collar	This is the normal function of the washer and only becomes an issue if the washer begins to wear thru
Pivot Inner Collar Washer	Cracked metal	Overloaded, loss of clamp load causing excessive movement	Inspect hanger, replace collar, rehardware-realign
	Galling metal	Not seated properly initially-causing movement, loose joint	Inspect hanger & collar, rehardware-realign
	Slipped in joint	Loss of clamp load, overload condition, poor install	Inspect hanger & collar, rehardware-realign
Outer Gear Washer	Cracked metal at hole	Overload, overtorque, loss of torque-movement, wrong material	Inspect hanger, new gearwasher, rehardware-realign
	Galling metal	Loss of joint clamp load, low torque	Inspect hanger & gear, rehardware-realign
	Slipped in joint	Overload, vibration, loss of torque, poor install, debree under washer at intallation, washer welded unseated before torque	Inspect hanger & gear, rehardware-realign
	Broken gear tooth	Suspension bind-overloaded tooth, loss of clamp load-movement	Replace gear, rehardware-realign
Pivot Joint Bolt	Loss of bolt	Loss of torque where bolt broke and fell out, poor install or high impact	Inspect hanger & pivot joint, rehardware-realign
	Slipped bolt in joint	Loss of clamp load, Loss of torque, poor install or high impact	Inspect hanger & pivot joint, rehardware-realign
	Cross-threaded	Poor installation of nut, thread size	Use new bolt and nut
	Galled/stripped threads	Overtorqued fastener, overloaded fastener, thread size, grade	Use new bolt and nut, realign
	Broken head of bolt	Overtorqued fastener, overloaded fastener, grade of bolt	Inspect hanger use new bolt and nut, realign
	Broken bolt at threads	Overtorqued fastener, overloaded fastener, grade of bolt	Inspect hanger use new bolt and nut, realign
Pivot Joint Nut	Loss of nut	Loss of torque where nut worked its self off of bolt	Inspect hanger & pivot joint, rehardware-realign
	Loss of torque	Overload, vibration, slippage, poor install, high impact	Inspect hanger & pivot joint, rehardware-realign
	Cross-threaded	Poor installation of nut	Inspect bolt-replace if needed, use new nut
	Galled/stripped threads	Overtorqued fastener, overloaded fastener, thread size, grade	Inspect bolt-replace if needed, use new nut
	Broken nut	Too low a grade of nut, wrong style of nut	Inspect bolt-replace if needed, use new nut
Beam	**Potential Issues**	**Possible Causes**	**Possible Solutions**
Suspension Beam Structure	Beams not fitting up to axle or axle shell	Wrong beams, beams made wrongly, check fixture	Inspect beams, inspect fixture, replace if necessary
	Beams not fitting up to hangers on frame	Beams off-center, bushing off-center, hangers off-center	Inspect beams-replaceor relocate if necessary, inspect bushings-rebush, inspect hangers-relocate
	Beams shifted off-center of pivot bushings	Suspension beams out of parallel vertically or longitudinally	Determine which beam out of position, cut from axle, reposition and reweld, rebush-realign, repace beam/axle assembly
	Bushing eye tube wear (polished metal)	Normal wear due to pivoting motion	Inspect bushing pivot joint
	Bushing eye tube missing metal-up to 1/8"	Metal to metal contact, washer worn thru	Remove bushing, Repair edge, install new bush & pivot hardware/washers, realign axle

	Bushing eye tube missing metal-up to 1/4"	Metal to metal contact, washer worn thru	Remove bushing, Repair edge, install new bush & pivot hardware/washers, realign axle
	Bushing eye tube missing metal-more 1/4"	Metal to metal contact, washer worn thru	Replace beam/axle assembly, install new pivot hardware/washers, realign axle
	Cracked metal at beam to axle seat	Overload, wrong material, bad welding, improper ride height set	Replace or repair beam/axle assembly, check ride height, rehardware-realign
	Cracked metal at beam butt weld	Overload, wrong material, bad welding of joint	Replace or repair beam/axle assembly, realign
	Cracked metal at bushing eye to beam	Overload, wrong material, bad welding of joint, bushing to hard	Replace beam/axle assembly, rebush-rehardware-realign
	Cracked metal at bushing eye sleeve	Overload, wrong sleeve material, sleeve joint in wrong position	Replace or repair beam/axle assembly, rebush-rehardware-realign
	Cracked metal at beam tail butt weld	Overload, wrong material, bad welding of joint	Replace or repair beam/axle assembly, realign
	Cracked metal at beam tail to axle seat	Overload, wrong material, bad welding of joint	Replace or repair beam/axle assembly, realign
	Cracked metal at beam tail ends	Overload, wrong material, bad welding of joint, loose air spring	Replace or repair beam/axle assembly, check air spring mounting, realign
	Cracked metal at shock tube thru	Overload, wrong material, bad weld, to high dampend shock	Replace or repair beam/axle assembly, inspect shock, realign
	Air spring mounting holes elongated	Loose air spring pistion bolts, poor install	Remove spring, determine to use washer or weld on repair plate, torque bolts
	Twist of tail section beam at end	Overload, loss of air spring piston bolts clamp load-movement	Replace beam/axle assembly, inspect air spring
Hanger	**Potential Issues**	**Possible Causes**	**Possible Solutions**
Suspension Hanger Structure	Hanger not fitting up to frame	Wrong hanger, hanger made wrongly	Review installation drawing and proper hanger support requirements
	Bush/Beams not fitting into hangers	Wrong hanger, hanger made to narrow, wrong collar on bushing	Inspect hanger-spread if required, inspect pivot stack up
	Cracked metal at chain restraint ear	Overload of chain restraint, did not use threaded link as fuse	Repair ear, inspect chain restraint fitup
	Cracked metal at pivot slot	Overload, loss of clamp load-movement, no inner collar used	Replace hanger, inspect pivot bush, realign
	Cracked metal at inner web	Overload, hanger wings not supported properly	Replace or repair hanger, review installation drawing on proper hanger support, check hgr/frame welds
	Cracked metal at inner wall	Overload, hanger wings not supported properly, bad weld	Replace or repair hanger, review installation drawing on proper hanger support, check hgr/frame welds
	Cracked metal at front wing	Overload, front hanger wing not supported properly, bad weld	Replace or repair hanger, review installation drawing on proper hanger support, check hgr/frame welds
	Cracked metal at rear wing	Overload, rear hanger wing not supported properly, bad weld	Replace or repair hanger, review installation drawing on proper hanger support, check hgr/frame welds
	Cracked metal at shock ear	Overload, loss of clamp load-movement, wrong bolt used	Replace or repair hanger, inspect shock mounting hardware
	Cracked metal at tank mounting slots	Overload, loss of clamp load-movement, wrong bolt used	Replace or repair hanger, inspect shock mounting hardware, review installation drawing on proper hanger support, check hgr/frame welds
	Cracked metal at alignment rack	Overload, loss of clamp load-movement, suspension in bind	Replace or repair hanger, inspect pivot joint-rehardware, realign
	Cracked metal at hanger front plt notch	Overload, hanger wings not supported properly, bad material	Replace or repair hanger, review installation drawing on proper hanger support, check hgr/frame welds
	Cracked metal at hanger to frame	Overload, poor install, hanger not supported by trailer frame	Review installation drawing on proper hanger support, check all hanger and frame welds





ReliAIR SUPLY SYSTEMS FOR 7K TO 16K AXLE TRAILERS (this is ref of Wi-3814 manual)

Table of Contents

ReliAIR™ Twin T3X Premium Model *For single, tandem, triaxle vehicles*
To provide a more reliable air supply system for vehicles than currently available. Optimize the air supply system. 3X modes of HCV, Lift, & Dump Valves
ReliAIR™ Twin T2X Premium Model *For single, tandem, triaxle vehicles*
To provide a more reliable air supply system for vehicles than currently available. Optimize the air supply system. 2X modes of HCV, & Dump Valves (no lift axle valves on panel)
ReliAIR™ Twin T1X Model *For single, tandem, triaxle vehicles*
To provide a reliable air supply system for vehicles in an upgradable box. Optimize the air supply system to connect to a HCV. *Dump or Lift valves can be added downstream of the HCV air on side of the trailer.*
ReliAIR™ Twin 4x4 Off Road Portable **Base** Model *For single, tandem, triaxle vehicles*, or portable use. To provide a basic reliable air supply system that can be portable or mounted on trailer or vehicle. Dump or Lift valves can be added downstream of the HCV air on side of the trailer.

1. Advantages of Cush **T3X** air schematic system: Plug-n-run air system with color coded air lines and fittings on rear of compressor box kit for ease of installation and maintenance for end user, Integrated push/pull valves for system lift axle "LIFT" and system dump "DUMP" control on control box front face, integrated autodump air filter/water separator, pressure switch regulated to turn on at 90psi & off at 120psi, front face 2" liquid filled "LOAD" scale gauge reads from 0-100 psi for correlation to load chart for suspension.

2. Advantages of Cush **T2X** air schematic system: Plug-n-run air system with color coded air lines and fittings on rear of compressor box kit for ease of installation and maintenance for end user, Integrated push/pull valves for system dump "DUMP" control on control box front face, integrated autodump air filter/water separator, pressure switch regulated to turn on at 90psi & off at 120psi, front face 2" liquid filled "LOAD" scale gauge reads from 0-100 psi for correlation to load chart for suspension. (no lift axle valves on panel).

3. On Twin **T1X** 12VDC air compressors: 2 x 0.6 HP motors, pressure switch regulated to turn on at 90psi & off at 120psi, front face 2" liquid filled "LOAD" scale gauge reads from 0-100 psi for correlation to load chart. This box is not as premium as the T3X with no air filter, no load scale gage. But the T1X box is upgradable to the T3X box with change of the face mounting and some internals.

4. "X" kit standard features: Tank kit, HCV kit, and box with fold down front face box for ease of access, 2 x breather filters mounted on front face of box for easy access for to open and clean the bronze filters or replacement, 12VDC lighted on/off toggle switch, 12VDC waterproof voltmeter turns on with toggle switch, LED light turns on with toggle switch, front face 2" liquid filled "TANK" gauge reads from 0-160 psi, industrial type brass quick connect fitting for use with tools-tirefill-quickfill of air tank, rubber bushed bumper feet for reduced vibration, battery power cord with 2 x 40amp fuses (one for each compressor motor) connects with waterproof Metri-Pack style plugs.

5. On Twin **4x4** model the air compressor box kit is base kit with on/off toggle and 12VDC voltmeter. This box is mounted with a quick coupler so that can hook up as air supply to tank or direct to air pressure needs. Comes std with 135psi on / 150psi off pressure switch.

PREVENTIVE MAINTENANCE

CAUTION: Securely chock the vehicle on flat level ground, exhaust all pressure from the air system without anything under the vehicle, disconnect or turn off all power sources, never touch possible hot items with bear hands like batteries or the air compressor, wear proper eye protection & safety PPE, & be safe when working on a vehicle air or electrical system.

- ReliAIR™ switch should be turned "OFF" when trailer is not in use
- Replace/clean air compressor bronze air filter element at yearly service and more frequent inspection-service-replace in dusty environment.
- Clean the dust and dirt from the compressor housing and cooling fins and the inverter at the yearly service and more often if in a dusty environment.
- Check all hardware to be secure: air fittings, mounting bolts, electrical plugs.
- The batteries should remain at full charge of 12.6 volts, if not check all fittings and replace batteries as needed with Type 27M deep cycle.
- Drain the moisture from the air tanks before and after every use, and at periotic times if trailer sitting for extended period.
- After loading or unloading the vehicle the HCV will adjust the pressure in the air springs and may cause the air compressor to kick on. Allow time for the air compressor to build up pressure and stop operating before operating the vehicle.
- Before initial use and at yearly service, test for leaks in the air system. With full pressure in air tank listen for air leaks and test with spray bottle of soap & water. If leak is found, make sure the air line is fully pressed in & fix all lose fitting connections.
- Air fittings should be installed with liquid thread sealant on all threaded fittings and ¼" NPT fittings should be torqued to 10-12 ft*lbs.
- Air lines should have slack to allow for vehicle movement & all air lines should be cut cleanly & squarely with an airline cutting tool & not a knife or scissors.

WARNING! READ AND UNDERSTAND ALL WARNINGS AND OPERATING INSTRUCTIONS BEFORE USING THIS EQUIPMENT.

IMPROPER OPERATION OR MAINTENANCE OF THIS PRODUCT COULD RESULT IN SERIOUS INJURY AND PROPERTY DAMAGE.

The installer is responsible for making sure that the vehicle's air system requirements comply with Federal Motor Vehicle Safety Standards. DOT air fittings are required if there are air brakes in sequence with your air suspension system.

You can also refer to the recommended procedures published by the TMC
RP 643 AIR-RIDE MAINTENANCE GUIDLINES
RP 619 AIR-SYSTEM INSPECTION PROCEDURE
RP 634 RIDE HEIGHT ADJUSTMENT PROCEDURES
RP 617 AIR-SYSTEM CONTAMINANT ELIMINATION PROCEDURE

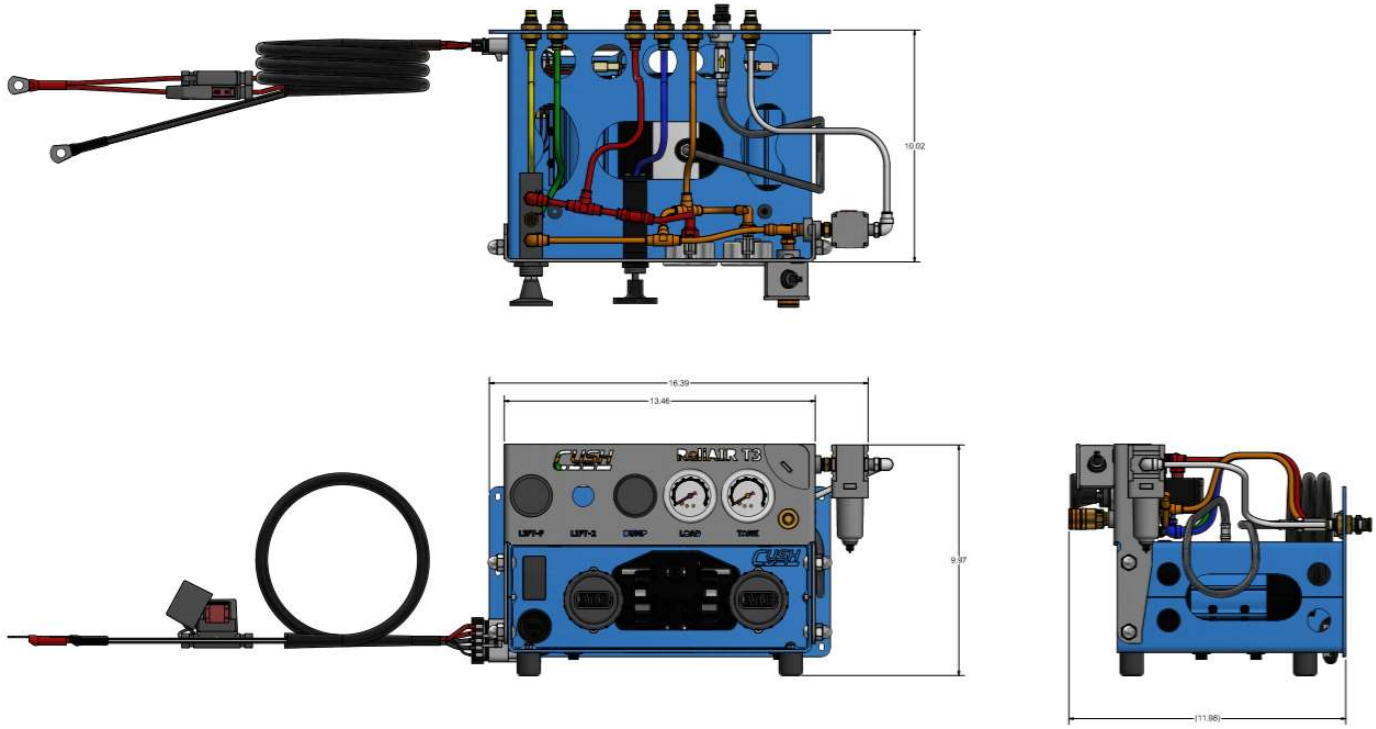
PART NUMBER CONFIGURATOR & FEATURES GUIDE

ReliAIR Twin 12VDC- Tandem Axle Kit	Part No.	Air Compressor ACK-0410-T3X 3X	Air Compressor ACK- 0410-T1X 1X	Air Compressor ACK-0410-4X4 ORP	Qty each: Lift & Load Axle	Qty each: Load Only Axle	Air Tank Kit: ACK-0304-49 Y/N	HCV Kit: ACK-0375 Y/N	Air Spring Air Fitting Kit (AFK) Y/N	Fitting Kit ACK-0376-02 (Description of AFK)	Fitting Kit ACK-0376-11	Fitting Kit ACK-0376-03	Fitting Kit ACK-0376-12	Fitting Kit ACK-0376-21
3X_0 lift & 2 load, air tank & HCV, & fittings	ACK-0410-T3X-02YYY	3X			0	2	Y	Y	Y	1				
3X_1 lift & 1 load, air tank & HCV, & fittings	ACK-0410-T3X-11YYY	3X			1	1	Y	Y	Y		1			
1X_0 lift & 2 load, air tank & HCV, & fittings	ACK-0410-T1X-02YYY		1X		0	2	Y	Y	Y	1				
1X_1 lift & 1 load, air tank & HCV, & fittings	ACK-0410-T1X-11YYY		1X		1	1	Y	Y	Y		1			
ReliAIR Twin 12VDC - Tri-Axle Kit														
3X_0 lift & 3 load, air tank & HCV, & fittings	ACK-0410-T3X-03YYY	3X			0	3	Y	Y	Y			1		
3X_1 lift & 2 load, air tank & HCV, & fittings	ACK-0410-T3X-12YYY	3X			1	2	Y	Y	Y				1	
3X_2 lift & 1 load, air tank & HCV, & fittings	ACK-0410-T3X-21YYY	3X			2	1	Y	Y	Y					1
1X_0 lift & 3 load, air tank & HCV, & fittings	ACK-0410-T1X-03YYY		1X		0	3	Y	Y	Y			1		
1X_1 lift & 2 load, air tank & HCV, & fittings	ACK-0410-T1X-12YYY		1X		1	2	Y	Y	Y				1	
1X_2 lift & 1 load, air tank & HCV, & fittings	ACK-0410-T1X-21YYY		1X		2	1	Y	Y	Y					1
ReliAIR Twin 12VDC - Air Compressor Only Base Kit														
T3X AIR COMPRESSOR & BOX	ACK-0410-T3	3X												
T1X AIR COMPRESSOR & BOX	ACK-0410-T1		T1X											
4X4_ Air compressor in Box	ACK-0410-4X4			4X4										

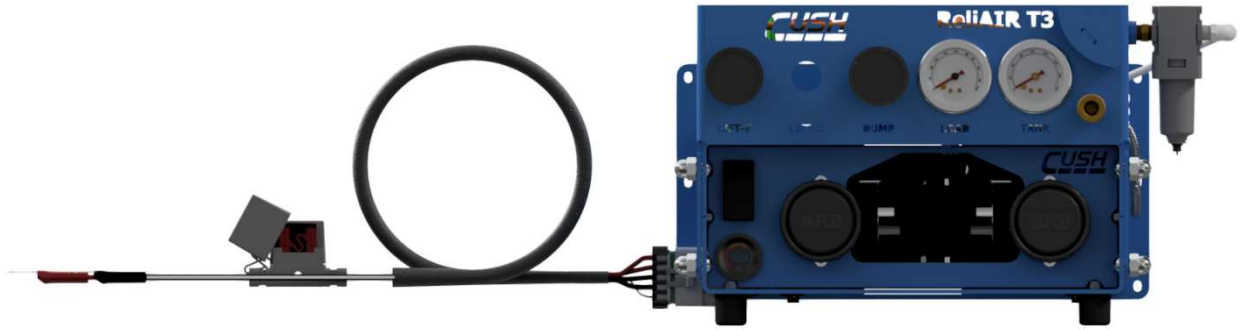
Configuration Features	Quick connect coupler port	Serviceable air filter media	LED voltmeter display	Twin 0.6 HP Air Compressor (1.2Hp total)	Brass & steel fittings-not plastic	4 bolt (pins) Removable/hindge Front Panel	Optional HCV mounted color coded fittings&plug	Back mounted air system w/ air venting	Modular Design that can be upgraded with panel	Tank pressure gauge	Air Filter/Water Separator	Panel Mounted System Dump valve	Panel Mounted System Lift Axle control valve	HCV system Load pressure gauge	12VDC LED front panel working light	Straight load air fittings 4 preassembly	ports to add 2nd Lift Axle control valve	Color coded air fittings for easy install	HCV pressure load scale sticker	Plug-in-go colored air fittings on box back
ReliAir Twin T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X	T3X
ReliAir Twin T1X	T1X	T1X	T1X	T1X	T1X	T1X	T1X	T1X	T1X	T1X										
ReliAir Twin 4X4	4X4	4X4	4X4	4X4	4X4															
Competitive 12V model	R	R	R							R	R	R	R							
Competitive 12V model	R	R	R																	

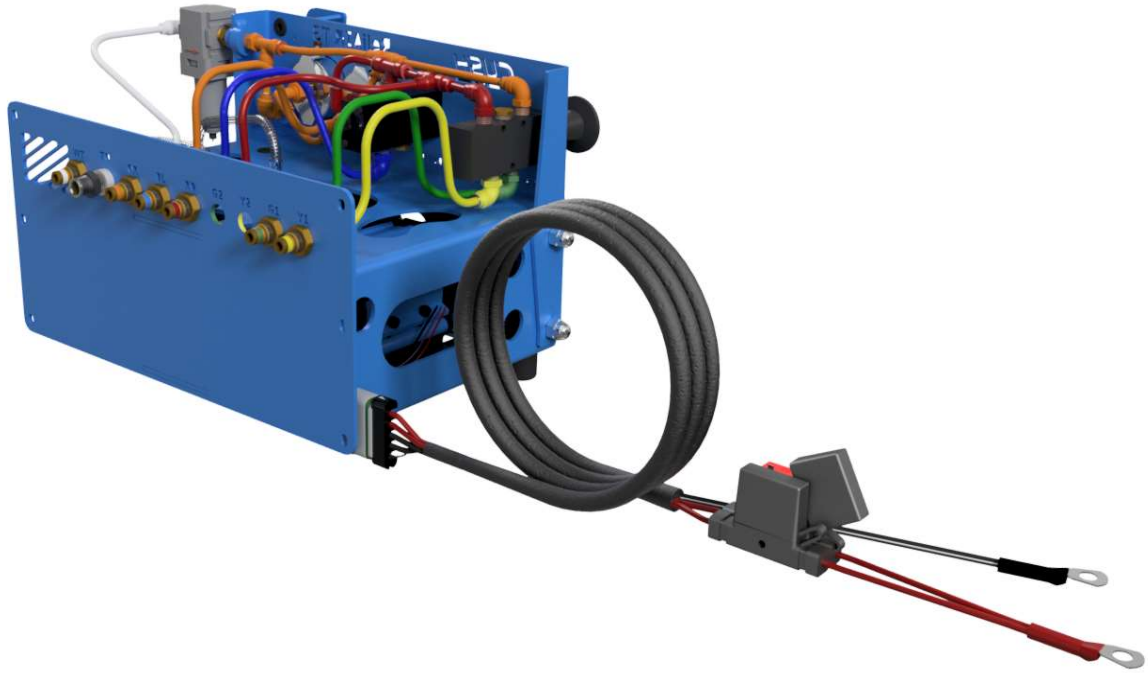
DESCRIPTION OF PARTS OPERATION, SAFETY *(WARNING! Always remove electrical and air pressure potential energy from system before working on any kit)*

T3 AIR COMPRESSOR SKID (ACS) *system dump and lift controls at compressor panel*

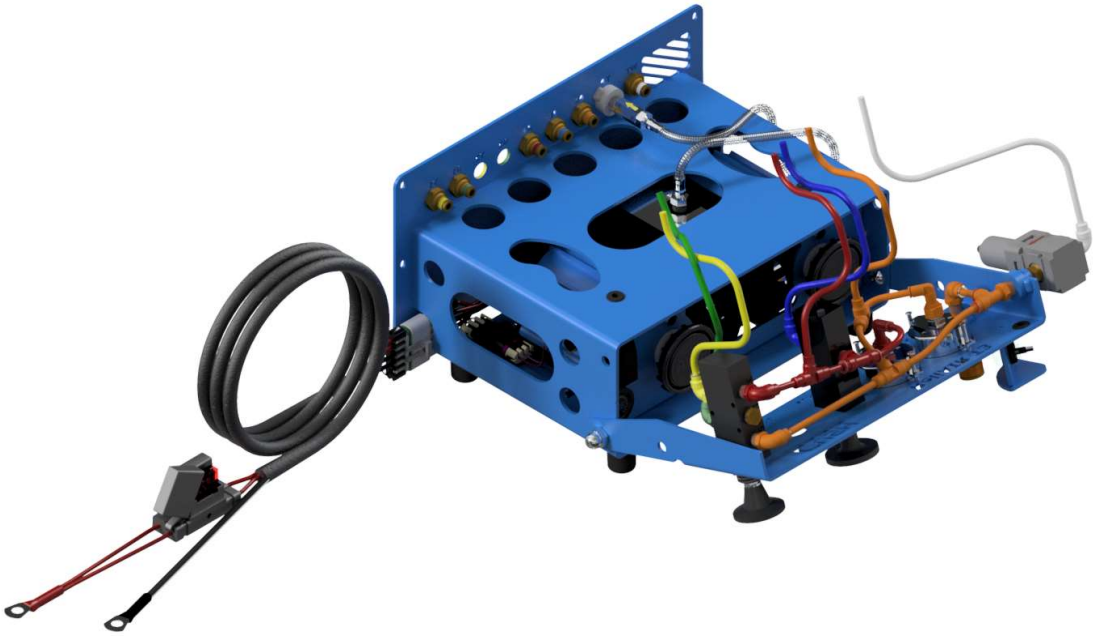


pictures font and back of T3 system box

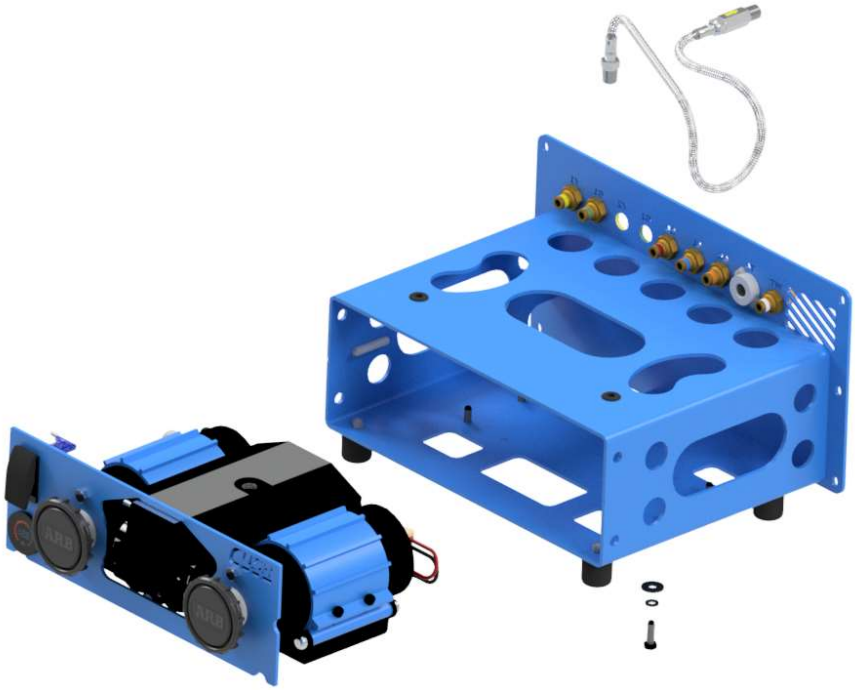




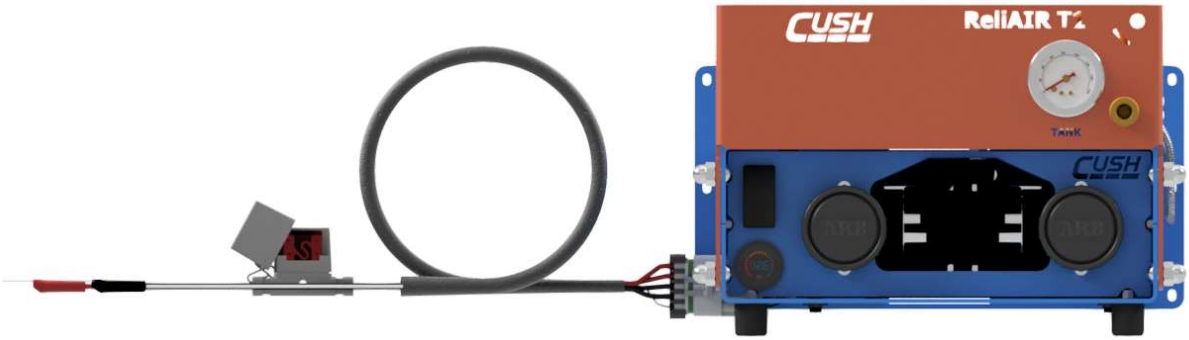
The T3 air compressor Skid is designed to be back mounted into a utility box so that it is self-contained and users only have to plug air lines into the rear panel of the skid. It also needs to mount on a flat surface so that it is resting securely on the rubber feet to reduce vibration to the skid. The front panel is removable or can be unbolted to hinge down for service access.

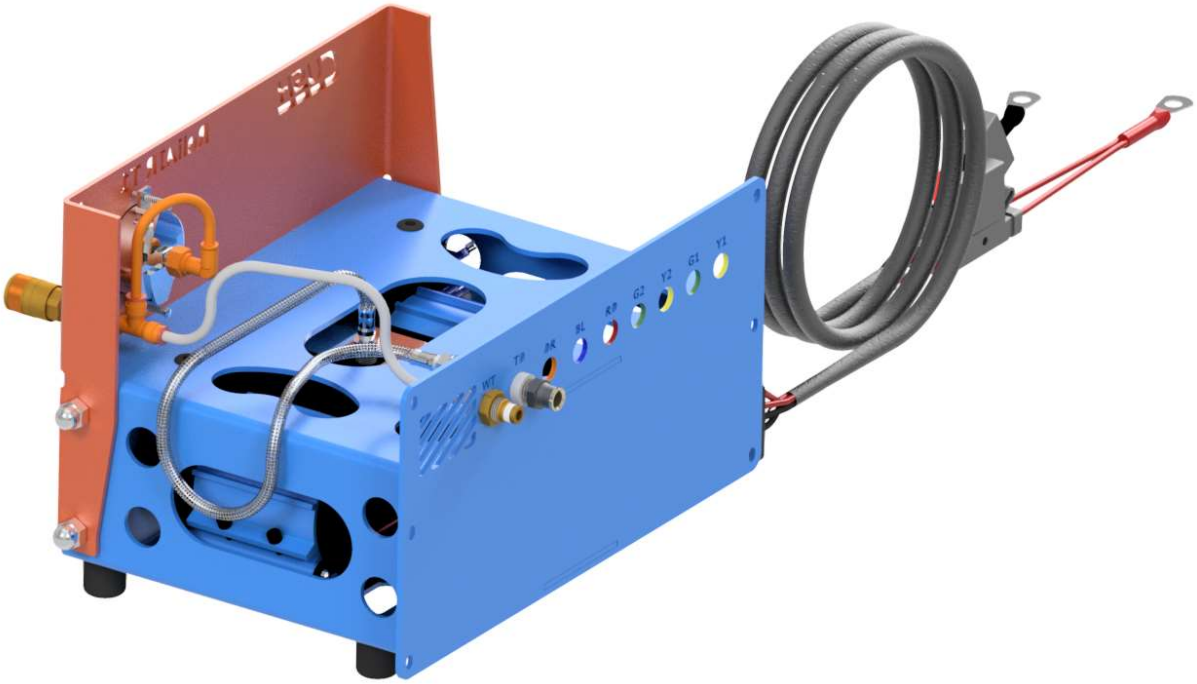


To access the compressor from the safety box, remove bottom 4 bolts, remove the air line from the top of the compressor ¼" NPT air port, and pull the compressor & face panel out of the box. You may need to do this to access the electric 90/120psi pressure switch if you can't get to it from the top.



T1 AIR COMPRESSOR SKID (ACS) *system dump and lift controls mounted remotely on trailer.*
p/n ACK-0410-T1 (T1 control box can be upgraded to T3 with modular kit/panel upgrade)
pictures font and back of T1 system box



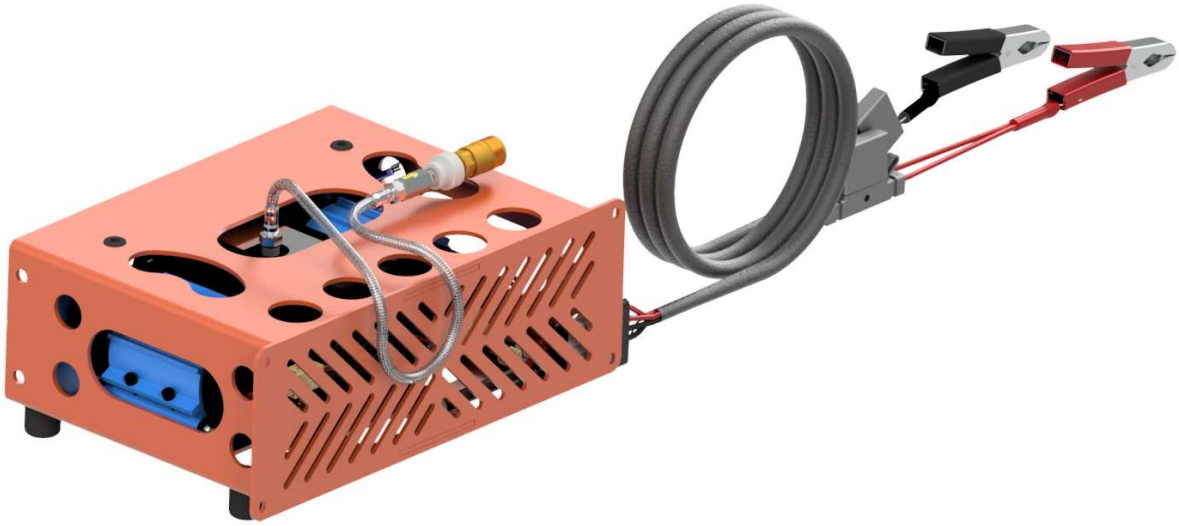


The T1 air compressor Skid is designed to be back mounted, same as the T3, into a utility box so that it is self-contained and users plug air lines into the appropriate color coded fittings on the panel from the air tank. It also needs to mount on a flat surface so that it is resting securely on the rubber feet. The front panel is removable with 4 bolts.
The ACS-T1 consists of system parts: air compressor base & T1 air system panel with tank pressure gauge. Customers can remote mount lift axle push/pull valve & system push/pull dump valve at the back of the trailer tapping into the air lines behind the system HCV.

4x4 AIR COMPRESSOR SKID (ACS)

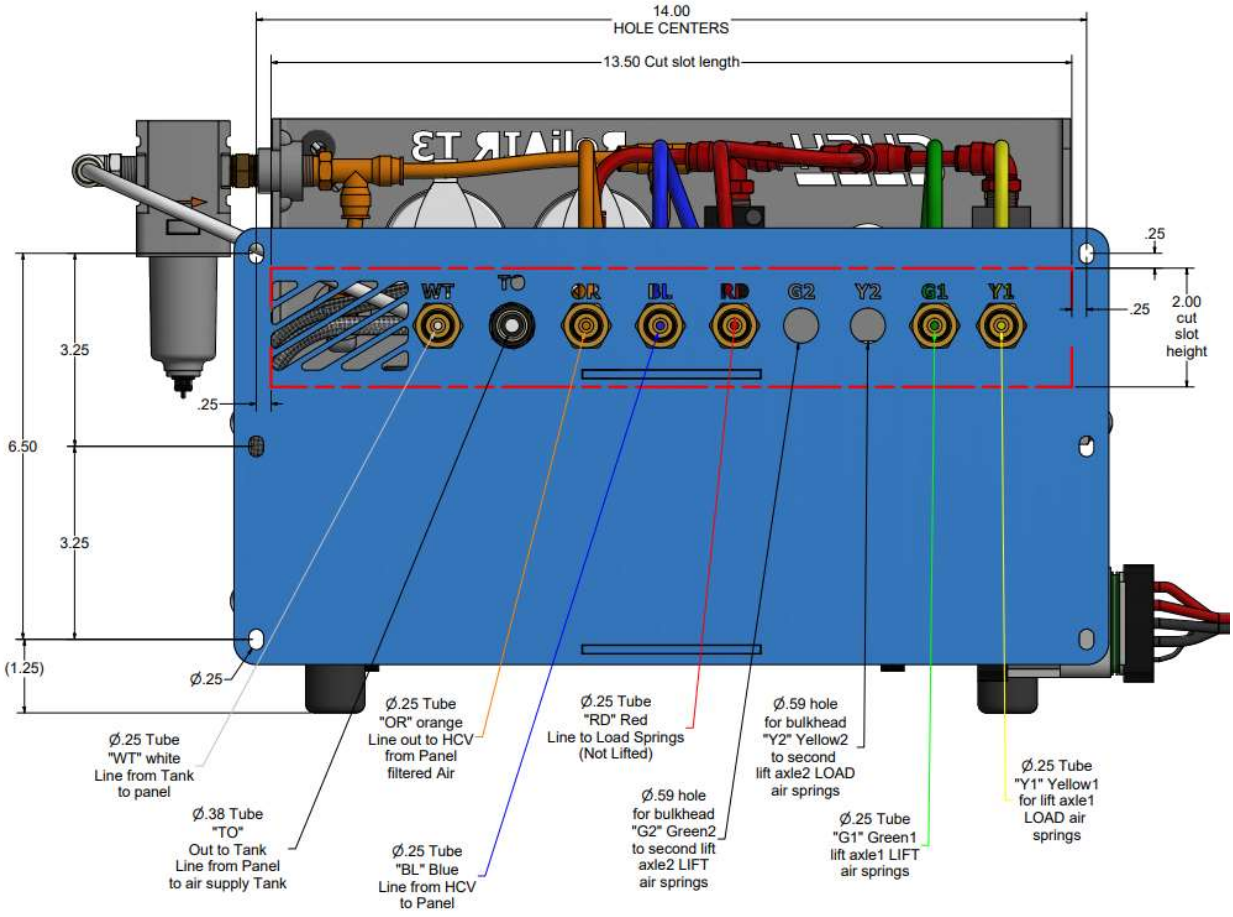
p/n ACK-0410-4x4

system with air compressor, toggle switch, 12VDC voltmeter, and safety box to mount or be portable for powered air pressure to inflate tires or other, twin compressor with 135/150psi pressure switch, high heat air line with check valve leader, and quick connect. (with 5/16" battery hookup ring spades std or allegator clips optional)



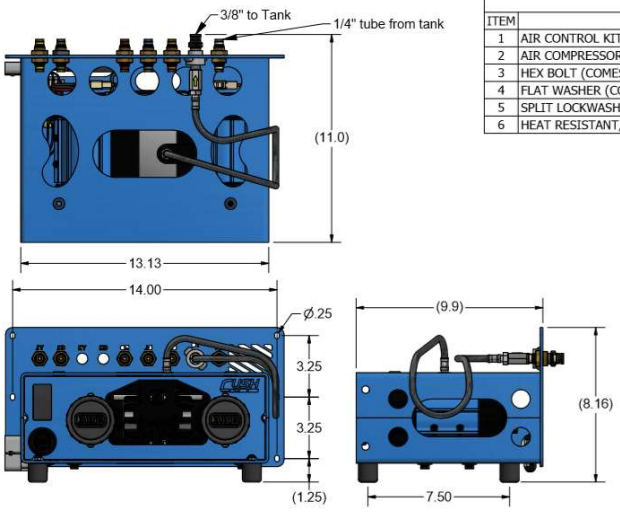
ENCLOSURE CUTOUT TO FIT

The cutout to fit in the skid box has to be taller than the box so that it can fit in and sit down on the inside bottom of the enclosure. The bottom rubber feet should sit on the base plate of the enclosure. Mount the back of the skid to an equipment box with min of 4 bolts.

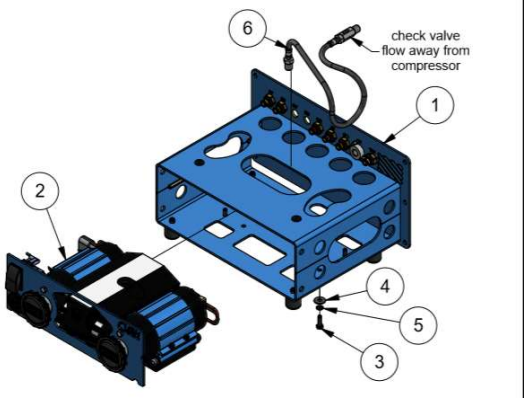


AIR COMPRESSOR BASE (ACB)

p/n AW182-T3 (T1)



PARTS LIST			
ITEM	DESCRIPTION	PART NUMBER	QTY
1	AIR CONTROL KIT BOX	AW2182	1
2	AIR COMPRESSOR & FACE PLATE ASSEMBLY	AW2180	1
3	HEX BOLT (COMES WITH COMPRESSOR)	ARB_HexBolt_M6xM20	4
4	FLAT WASHER (COMES WITH COMPRESSOR)	ARB_M6-flatwasher	4
5	SPLIT LOCKWASHER (COMES WITH COMPRESSOR)	ARB_M6-split-lockwasher	4
6	HEAT RESISTANT, 1/4" NPT SWIVEL ENDS, 1/4" TUBE STAINLESS STEEL BRAIDED HOSE	ACP919-025-21-VIAIR	1

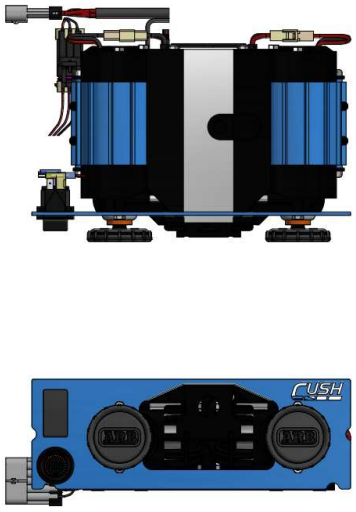


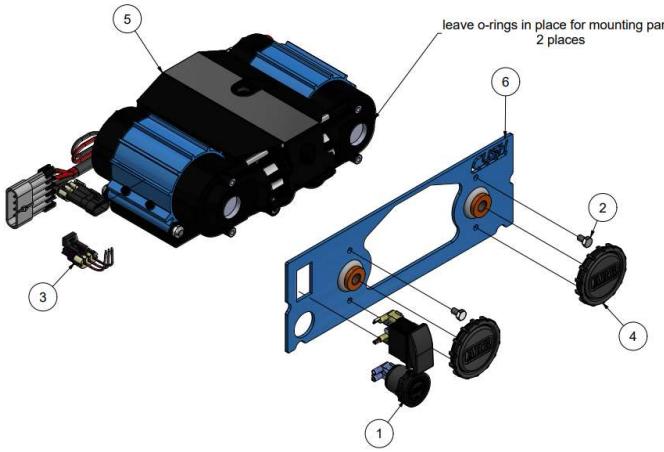
The Air Compressor Base is designed to be preassembled for a modular design. The ACB back plate is constructed with vent holes so that the air compressor does not get overheated like in traditional fully enclosed boxes & air fitting mounting holes for bulkhead fittings to system air lines for plug-n-go assembly. The ACB consists of system parts: air compressor, air compressor high temp steel braded line with check valve, mounting hardware, undermounted rubber isolators, bulkhead fittings, and ACB base weldment.

AIR SYSTEM Power PANEL

p/n AW2180

PARTS LIST			
ITEM	DESCRIPTION	PART NUMBER	QTY
1	CUSH SWITCH AND VOLTMETER ASSEMBLY WITH ANGLED QUICK DISCONNECTS	AHE010	1
2	HHCS, M6-1 X10MM, GRADE 8.8, ZINC	H0427-10	4
3	CUSH WIRE HARNESS ASSEMBLY ONTO 3-WIRE FEMALE CONNECTOR	HE000-1	1
4	ARB 1/4" NPT MALE, REMOTE AIR INTAKE WITH FILTER ASSEMBLY	VARB-320501	2
5	ARB ON-BOARD AIR SUPPLY COMPRESSOR 12VDC w/ 90/120 pressure switch	ACK-ARB-CKMTA12-120	1
6	AIR COMPRESSOR KIT FRONT PLATE	W2180-X-blue	1

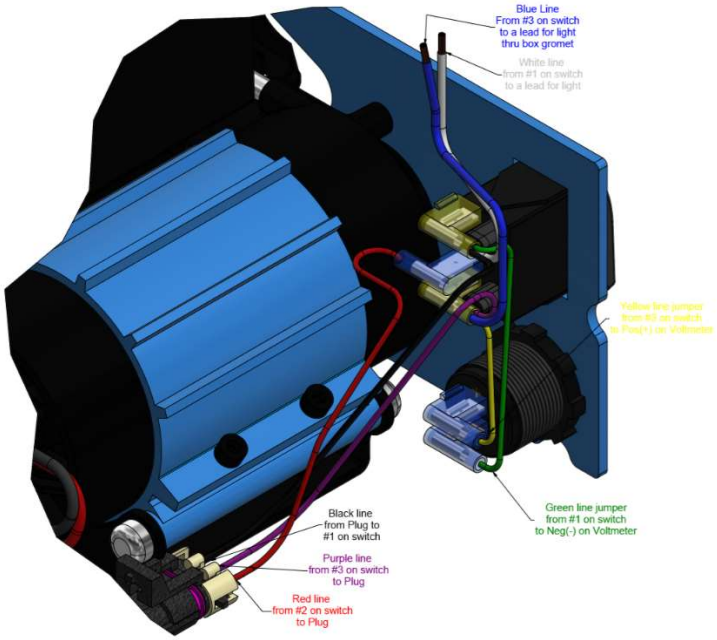




The air system panel is designed to be removable from the face of the compressor so that the electrical parts on the back side of the panel can be accessed or serviced without removing the compressor from

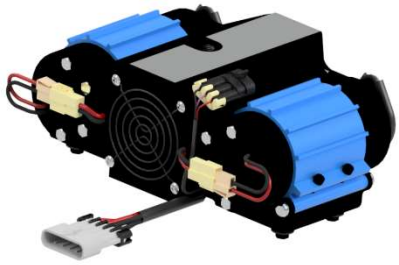
the skit box. *In RevA of this kit we changed the wiring of the fan so that it turns on only when the pressure switch is on.*

The Power Panel consists of system parts: air filters, on/off toggle switch, 12VDC voltmeter (28mm hole mount), & panel weldment.



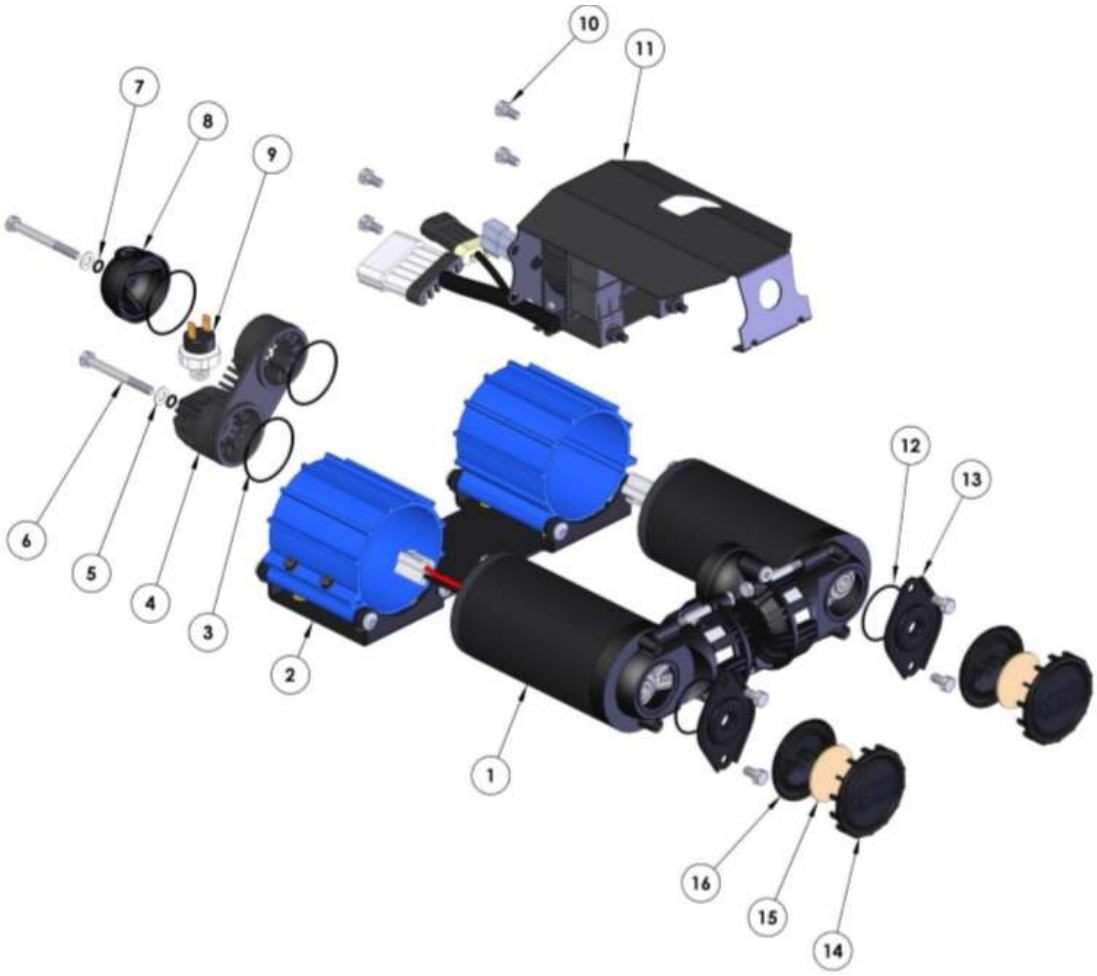
AIR COMPRESSOR W/ lower set pressure switch *p/n ACK-ARB-CKMTA12-120*

The -120 TWIN AIR COMPRESSOR consists of system parts: 2 X 0.6 Hp redundant air compressors, 90/120psi pressure switch installed.



ARB AIR COMPRESSORS			PERFORMANCE UNDER NO LOAD			PERFORMANCE UNDER LOAD				MAXIMUM LOAD			WEIGHT		WEIGHT		DIMENSIONS									
		SUPPLY VOLTAGE	CURRENT DRAW	AIR FLOW		CURRENT DRAW	AIR FLOW		DUTY CYCLE (on time / off time)	CURRENT DRAW	PRESSURE RATING		-compressor, included accessories, packaging		-compressor only		-when positioned vertically in the mounting bracket, -portable compressor sizes shown as carry case size.						AUTOMOTIVE CURRENT LOAD PROTECTION IN LOOM	PRESSURE CUTOUT SWITCH	AIR FILTER EQUIPPED	THERMAL OVER LOAD PROTECTED MOTOR	LOW HEAD SUBMERSIBLE
MODEL	DESCRIPTION			@ 0kPa	@ 0PSI		@ 200kPa	@ 29PSI	@22°C [72°F]								HEIGHT		LENGTH		WIDTH					
		V	A	lpm	cfm	A	lpm	cfm	% min/min	A	kPa	psi	kg	lb	kg	lb	mm	in	mm	in	mm	in				
CKMTA12	MAXIMUM PERFORMANCE ONBOARD	12	28.4	174.4	6.16	50.4	131.8	4.68	100 60/0	68.6	1030	150	8.8	19.4	7.9	17.4	105	4.1	278	10.9	190	7.5	✓	✓	✓	✓	✓

AIR COMPRESSOR (Brand: ARB)
p/n PRTVARB-CKMTA12 (12VDC)



ARB CKMTA12 Air Compressor – Overview of Design Features_100% Duty cycle

Description: The ARB CKMTA12 on-board compressor kits were designed specifically as a compact sized yet high-volume compressed air source to suit the high volume airflow needs of most air powered tools, and also to suit the actuation and control needs of the ARB Air Locker, and the harsh and demanding environment of the ARB Air Locker user.

Features:

- Compact twin motor, dual cylinder design makes it the highest flowing compressor in its class (voltage vs. size), at 174LPM [6.16CFM] meaning it is able to fit into tight areas where other high flowing compressors will not.
- Constructed entirely of light weight, high strength, engineering grade materials, including military and aerospace standard components.
- Pressure switch controlled air manifold system regulates pressure.
- High efficiency design consumes only 56 Amps at maximum air flow.
- Built with sealed components for moisture and dust resistance.
- Hard-anodized cylinder bores and PTFE (Teflon) impregnated carbon fiber piston seals for reduced friction and maximum trouble free life.
- Ducted IP55 sealed brushless DC cooling fan and anodized motor mounting brackets effectively dissipate heat from the motors, heads and electronics allowing for a 100% duty cycle (under room temperature conditions).
- Anti-vibration / sound deadening is integrated into the mount.
- Relocatable splash resistant air filter assembly for cleaner, cooler air supply and versatile waterproof air intake positioning.
- High density and high flow washable sintered bronze air filter element.

- Equipped with dual heavy duty 40 Amp Maxi-Fuses for professional in-line circuit protection and true circuit redundancy in case of a fault.
- Motors are water sealed, 100% ball bearing equipped (i.e. no bushings), and feature a unique linear brush pre-load system for extra long life, low heat and quiet operation throughout the life of the unit.
- Motors are internally thermal protected against extreme temperature damage.
- Compressor pistons are equipped with a European made high shock rated cylindrical roller bearing.
- Over-pressure safety valve equipped.
- Fully serviceable and all replacement parts available.
- Integrated EMC noise suppression to protect sensitive auto electronic systems.
- CKMTA12 is certified compliant to; EN 55014.1 (AS/NZS CISPR 14.1) and meets or surpasses the following Australian and European directives; 2004/108/EC – EMC directive.
- OEM quality IP54 rated compressor isolating switch.
- 2 x relocatable splash resistant air filter with washable high-flow sintered bronze filter cartridge.
- Assembled and tested air compressor (12V).

Specs
Voltage 12 Volts (CKMTA12),
Current Draw No-Load 28A (CKMTA12 only), Load 50A (CKMTA12 only)
Air Flow 174.3L/min @ 0Bar [6.16CFM @ 0psi], 131.7L/min @ 2Bar [4.65CFM @ 29psi]
Total Weight 8.8kg [19.4lbs]
Pressure Switch Open 10.3Bar [150psi] stock, Cush 120 psi installed
Pressure Switch Closed 9.3Bar [135psi] stock, Cush 90 psi installed
Safety Valve OPEN @ > ~12.4Bar [180 psi]
HP rating: 0.60Hp/motor x 2 twin redundant motors = 1.2Hp total
Min temp rating: -13deg F (failure at ~-50deg F)

For compressor parts breakdown and service manual see pdf: **Wi-3814_APPENDIX-A (**CKMTA12_service manual)

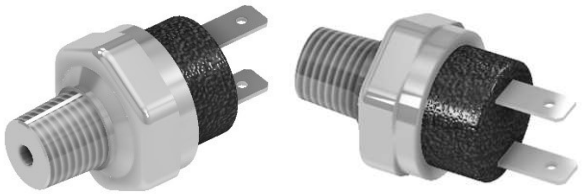
AIR COMPRESSOR FILTER SET-AIR INTAKE (Brand: ARB)

Part Number: ARB_320501

Keep the air filter clean at all times. Do not operate the compressor with the air filter removed. The compressor does not operate at full capacity if the air filter is dirty. At regular service intervals per use, always check the air filter if it is clean. If not, clean the air filter by blowing it out or replace the filter. To remove the top cap of the Air Filter puck, pry the plastic lid off with end of screw driver to get to the bronze filter. If operating in dusty conditions clean the air filter more often.

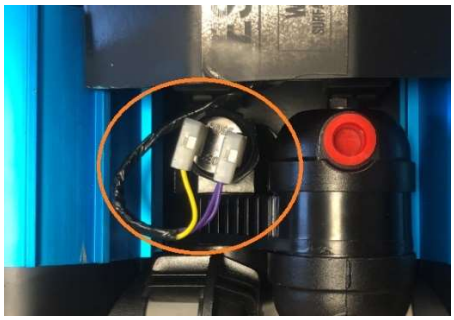
AIR COMPRESSOR PRESSURE SWITCH ASSEMBLY (12VDC)

T3 & T1 Part Number: AC0228_90-120 (90psi on / 120psi off) or AC0228_135/150
(to protect lift springs from being over 120 PSI pressure)
4x4 Part Number: AC0228_135-150 (135psi on / 150psi off) or AC0228_135/150



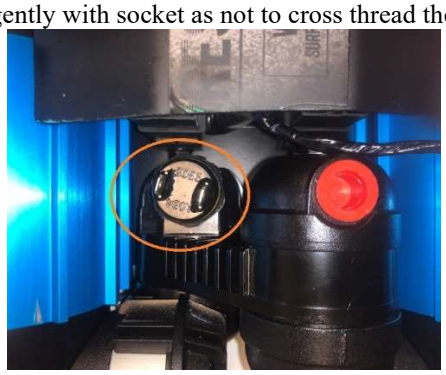
THE PRESSURE SWITCH CAN BE REMOVED FROM THE AIR COMPRESSOR WITHOUT HAVING TO REMOVE THE COMPRESSOR FROM THE BOX SKID CONTAINER WHEN THE ARB COVER PLATE HAS BEEN CUT BACK BY CUSH FOR ACCESS.

1. ACCESS THE TOP OF THE PRESSURE SWITCH, YOU SHOULD SEE 2 WIRES HOOKED TO THE TOP OF THE PRESSURE SWITCH. REMOVE THE WIRES FROM THE TERMINALS BY HAND OR WITH PLIERS.



2. Once the wires are removed from the pressure switch use a 27mm thin wall socket to get on the hex of the pressure switch, you may need to grind your outside wall of socket to get on the hex nut as this switch is mounted close to the air manifold exhaust.

3. Use a wrench to unscrew the pressure switch, apply Teflon tape to new pressure switch threads (1/4” npt) and start the threads by hand or gently with socket as not to cross thread the port.



4. Reinstall the power wires to the pressure switch terminals (not directional +/-).

PRESSURE GAUGE, OUTLET REG MAX LOAD GAUGE & LOAD-LIQUID FILLED (0 to 100psig)

Part Number: AC0154-100

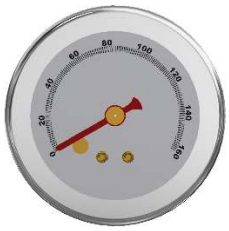
The Load pressure is set by the system Height Control Valve. This pressure can be correlated to a Load chart to get approximate ground load of the suspension system per axle. This pressure gauge will have a back port mounted by a male ¼"NPT or panel mounted with brackets.

LOAD GAUGE:

The LOAD pressure gauge shows psi per air spring and can be correlated to a load chart for the appropriate suspension. For the CLC16UBL6 model the chart below shows how load pressure can be an estimate for the vehicle operator ground loading. Ask Cush for the appropriate Load Chart Sticker for your unit.

	CLC16UB6			~640 in^3 volume /air spring		
				Air Spring Volume (in^3)		
Load/Air Spring PSI @ 6" Ride Height				*1280*	*2560*	*3840*
Estimated	Axle Group Load (lbs)			Per Axle	Tandem	Triaxle
PSI	Per Axle	Tandem	Triaxle	2800in^3 Air tank psi needed at min for equalization PV=PV		
70	17,850	35,700	53,550	32	64	96
65	**16,625**	**33,250**	**49,875**	30	59	89
63	16,000	32,000	48,000	29	58	86
60	**15,400**	**30,800**	**46,200**	27	55	82
55	14,000	28,000	42,000	25	50	75
50	**12,900**	**25,800**	**38,700**	23	46	69
46	**12,000**	**24,000**	**36,000**	21	42	64
45	11,700	23,400	35,100	21	41	62
40	**10,400**	**20,800**	**31,200**	18	37	55
38	**10,000**	**20,000**	**30,000**	17	35	52
35	9,200	18,400	27,600	16	32	48
30	**7,900**	**15,800**	**23,700**	14	27	41
25	6,700	13,400	20,100	11	23	34
20	**5,400**	**10,800**	**16,200**	9	18	27
Set Max Air Pressure to Axle Capacity + 10 PSI						
*Approximate Ground Load Values, Calibrate/Appl.						
(Air Spring Part No. C0079)						

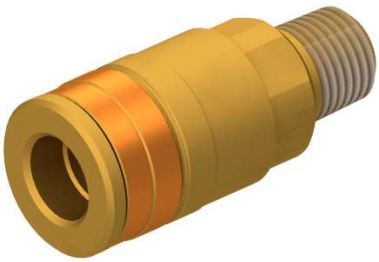
PRESSURE GAUGE, TANK PRESSURE GAUGE-LIQUID FILLED (0 to 160psig):
Part Number: AC0154-160



The tank pressure gauge indicates the air pressure in the air tank and the lines to and from the air tank. The pressure should be limited to 120psi by the pressure switch.

QUICK CONNECT COUPLER FITTING

Part Number: AC0B22 *(1/4" NPT Male, Air Quick Couplings (pneumatic, air), Industrial Interchange.*



SEE APPENDIX B: The quick connect coupler can be used to air up tires or air tools. You can also use a male quick connect fitting with a Schrader valve for quick fill of the air tank on cold start days or for temp use if the compressor is not functioning.

ASP Air Filter & Automatic Water Separator Kit (T3)

p/n ACK-0408

The air filter is used to separate water from tank supply air with a directional air flow. When a compressor works it makes the air hot and when hot air in the tank can condense water. To protect downstream valves the air filter will help. Also it is best to drain the air supply tank daily before each use to reduce the water that can get into the supply air line. Some users may not need an air filter if they are follow the daily practice to drain the air tank water before each use.

High Temp Steel Braded Hose with Check Valve

p/n ACP919-025-21

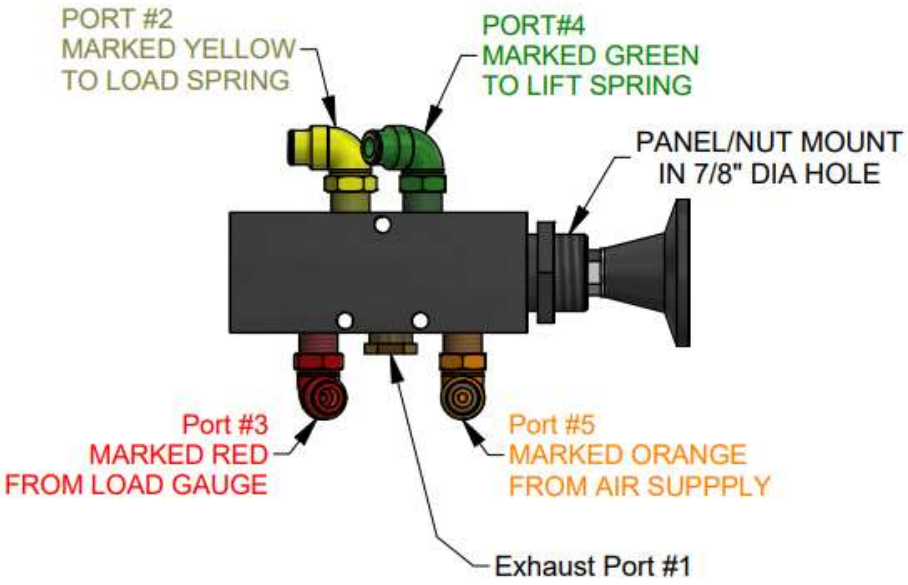
Air coming straight out of the compressor is hot and a special high temp air line is needed or a manifold to allow the air to cool down before hooking to a standard air line. Over time heat will deteriorate this air line. In this situation we are supplying an industry standard air compressor line that is longer than need be to give some length of cooling and with a check valve to protect the air compressor from backflow air with water or debris in it. The inline check valve allows air flow away from the compressor.

ASP Lift Axle Control Valve Kit

p/n KIT ACK-00406-LIFT

p/n VALVE ONLY AC0322-A

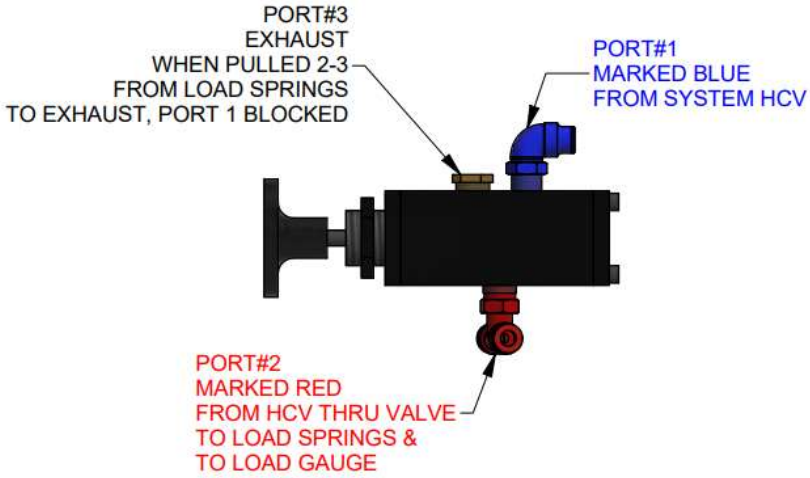
This push/pull valve kit is to operate a lift axle. The kit will come with the valve plumbed with color coded air fittings. The air supply to the load air springs comes from the system “MODE” pressure (red line) and the pressure to the lift springs comes from the air filter (orange line). This valve kit can be panel mounted in 7/8” hole at the compressor box (T3 style) or mounted back on the trailer (T1 style).

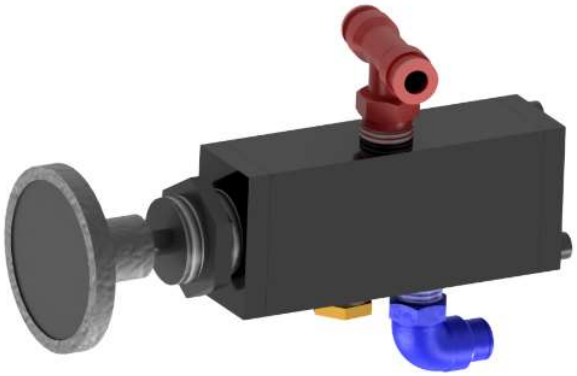


ASP T3 Valve Kit for Dump

p/n ACK-0407-DUMP
p/n VALVE ONLY AC0321-A

This 3-2 push/pull valve kit is installed inline behind the HCV so as to dump all the air suspension load bags and protect the pressure in the air tank. You should not engage the “LIFT” and also the “DUMP” valve as the “Dump” valve will do the job of both. This valve kit can be panel mounted in 7/8” hole at the compressor box (T3 style) or mounted back on the trailer (T1 style).





Fixed Battery connector to compressor.

p/n: CARB-180414

Wire loom, 6'8" Long Plug in 12VDC battery power cord with 40Amp fuses each red wire and 5/16" ring hole spade Battery Terminal connectors for fixed battery connection.

Portable Battery connector to compressor.

p/n: CARB-180412

Wire loom, 6'8" Long Plug in 12VDC battery power cord with 40Amp fuses each red wire and allegator clamp style Battery Terminal connectors for temporary portable type battery connection (4x4 model).

OPERATING PROCEDURES

Daily Start-up Checklist

INSTALLING HOSES on QUICK CONNECT FITTING **WARNING!**

Risk of unsafe operation. Firmly grasp hose in hand when installing or disconnecting to prevent hose whip. Losing control of the hose may result in personal injury and property damage.

1. Before attaching air hose or accessories, make sure the pressure switch lever is set to "OFF" and the air regulator or shut-off valve is closed.
2. Attach hose and accessories. Too much air pressure causes a hazardous risk of bursting. Check the manufacturer's maximum pressure rating for air tools and accessories. The regulator outlet pressure must never exceed the maximum pressure rating.
3. Turn the pressure switch lever to "ON/AUTO" and allow tank pressure to build. Motor will stop when tank pressure reaches "cut-out" pressure.
4. Open the regulator by turning it clockwise. Adjust the regulator to the correct pressure setting. Your compressor is ready for use.
5. Always operate the air compressor in well-ventilated areas; free of gasoline or other solvent vapors. Do not operate the compressor near the spray area.

When you are finished:

DISCONNECTING HOSES WARNING!

Risk of unsafe operation. Firmly grasp hose in hand when installing or disconnecting to prevent hose whip. Losing control of the hose may result in personal injury and property damage.

- Set the pressure switch lever to "OFF".
- Using the air tool or accessory, bleed the tank pressure down to zero.
- Remove the air tool or accessory.
- Drain water from air tank by opening drain cock valve on bottom of tank. WATER WILL CONDENSE IN THE AIR TANK. IF NOT DRAINED, WATER WILL CORRODE AND WEAKEN THE AIR TANK CAUSING A RISK OF AIR TANK RUPTURE.

Note: If drain valve is plugged, release all air pressure. The valve can then be removed, cleaned, then reinstalled. After the water has been drained, close the drain valve. The air compressor can now be stored.

WARNING!

Drain Air Tank Properly. Improper draining of the air tank can result in corrosion and possible bursting of the tank. Tank bursting could lead to personal injury and property damage.

MAINTENANCE WARNING!

Never use the air compressor which is operating abnormally. If the air compressor appears to be operating unusually, making strange noises or vibration, stop using it immediately and arrange for repairs.

WARNING!

Use only genuine ARB/CUSH replacement parts. Replacement parts not manufactured by ARB may void your warranty and can lead to malfunction and result in injuries. Genuine ARB parts are available from an authorized dealers or Cush Corp.

WARNING!

UNIT CYCLES AUTOMATICALLY WHEN POWER IS ON. WHEN DOING MAINTENANCE, YOU MAY BE EXPOSED TO VOLTAGE SOURCES, COMPRESSED AIR OR MOVING PARTS. PERSONAL INJURIES CAN OCCUR. BEFORE PERFORMING ANY MAINTENANCE OR REPAIR, UNPLUG THE COMPRESSOR AND BLEED OFF ALL AIR PRESSURE.

NOTICE:

Never use gasoline, benzine, thinner, alcohol or the like. Discoloration, deformation or cracks may result.
To ensure efficient operation and longer life of the air compressor unit, a routine maintenance schedule should be prepared and followed. The following routine maintenance schedule is geared to a unit in a normal working environment operating on a daily basis. If necessary, the schedule should be modified to suit the conditions under which your compressor is used. The modifications will depend upon the hours of operation and the working

environment. Compressor units in an extremely dirty and/or hostile environment will require a greater frequency of all maintenance checks.

ROUTINE MAINTENANCE SCHEDULE
1. Drain water from the air tank & any moisture separators.
2. Check for any unusual noise and/or vibration.
3. Manually check all safety valves to make sure they are operating properly.

WARNING!
Risk of bursting.
Check Safety Valve. If safety valve does not operate properly over pressurization of the air tank may result in rupture or explosion causing personal injury and property damage.
4. Inspect air filter, replace/clean if necessary.
5. Inspect air lines and fittings for leaks; correct as necessary.

Each year of operation or if a problem is suspected:
• Check condition of air compressor pump intake and exhaust valves.
• Check condition of check valve. Replace if damaged or worn out.

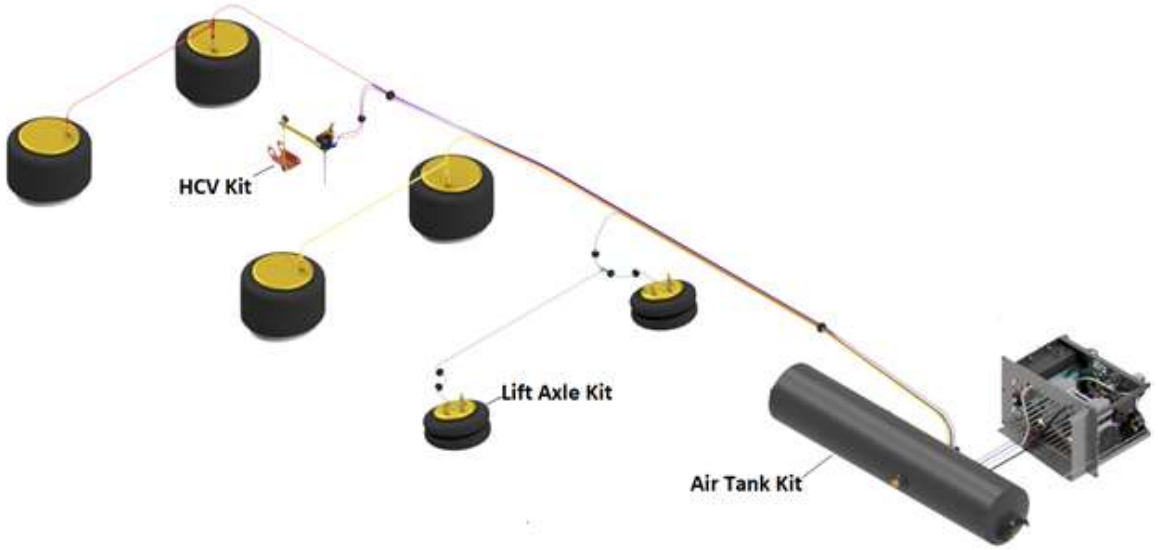
Keep all screws, bolts, and covers tightly mounted. Check their conditions periodically.

WARNING!
Keep All Screws, Bolts and Covers Properly Tightened. If screws plates or covers become loose personal injury or property damage may occur.

LIMITED WARRANTY: Air Compressor
Please refer to the annexed warranty sheet for the most current warranty terms applicable to this product.

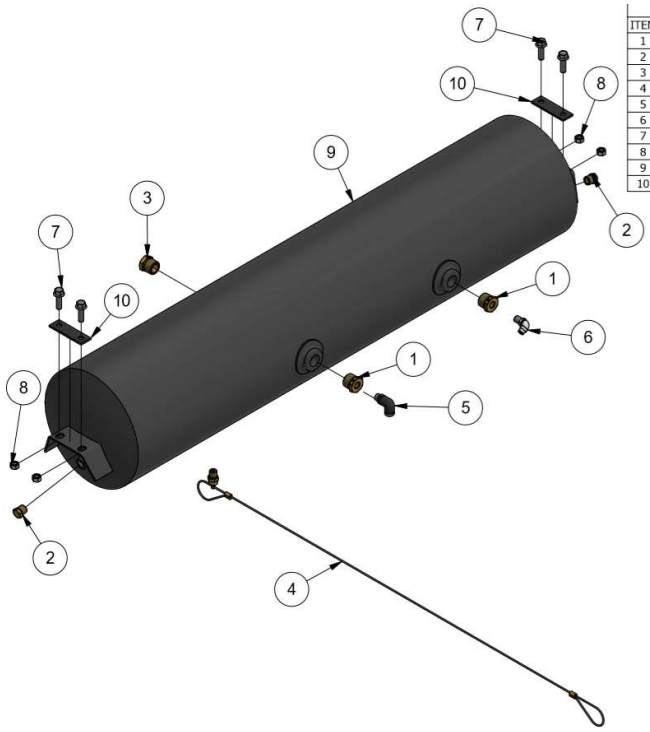
PLUMBING AIR SCHEMATIC (contact Cush for Customer Application Specific Schematic)

The air plumbing can be done various ways, we found for this type of application it is easiest to run the air lines down the street side of the vehicle (same side as HCV, tank, & ReliAIR box). This requires the least amount of air line tube and most consistent to install. For each suspension axle (non-lifting) you will need a straight fitting for the load air spring (straight so it can be pre-installed to the air spring and go thru the top plate stud hole) and a union tee to connect the air springs to the main line. See the air line color code chart that describes function of each line.



AIR TANK KIT

Part Number: ACK-0304-49



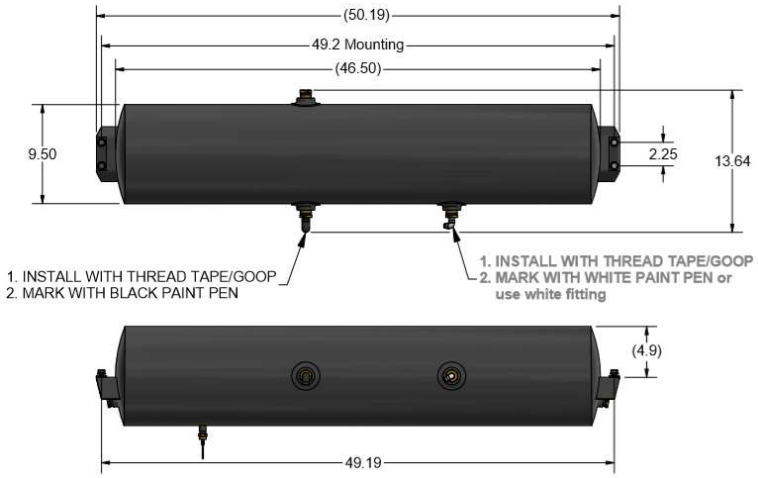
PARTS LIST

ITEM	DESCRIPTION	PART NUMBER	QTY
1	PNUEFIT, 1/4 NPT X 3/8 TUBE	AC_209P-12-4	2
2	3/8" NPT BRASS, HEX HEAD PLUG	AC_218P-6	2
3	3/4" NPT BRASS, HEX HEAD PLUG	AC_218P-12	1
4	LANYARD VALVE	AC_LV91-4-048	1
5	ELBOW, P2C AIR FITTING, 90 SWIVEL, .25 NPT X .38 TUBE	AC0153-BLACK	1
6	1/4" PIPE TO 1/4" TUBE 90DEG SWIVEL	AC0163-WHITE	1
7	FHCS 3/8-16NC X 1.25"	H0409	4
8	L'NUT, 3/8-16UNC	H1404	4
9	AIR TANK	VHT-HT95239	1
10	HTPAD, RUBBER ISO PADS FOR TANK MOUNTING	VHT-HTPAD	2

The air tank kit is designed with a 2800 in^3 (12 gallon) single air tank to reduce the number of fittings and air tanks the user has to drain after every use. This tank size will work for single, tandem, or triaxle configurations with the ReliAIR system schematic to reduce air consumption.

If filling the air tank from 0 psig, the best way to limit the duty cycle is to set the air system mode to “AIR LOCK” to fill the air tank until the compressor shuts off and then reset the air mode to “HCV” setting.

Air tank kit with fittings installed or shipped loose per customer requirements. Air tank to be mounted inside of trailer frame on the HCV side near the ReliAIR compressor kit. The installer is responsible to mount the air tank to the trailer frame with the drain port at the bottom.



AIR TANK DRAIN VALVE (Drain Cock)

Part Number: AC_LV91-4-048

The drain valve is located at the bottom of the air tank and is used to drain condensation at the end of each use. The trailer manufacture will have located a lanyard pull cable to activate the drain cock on the bottom of the air tank to release condensation by cocking the plunger in the bottom of the valve.

HEIGHT CONTROL VALVE KIT (HCVK)

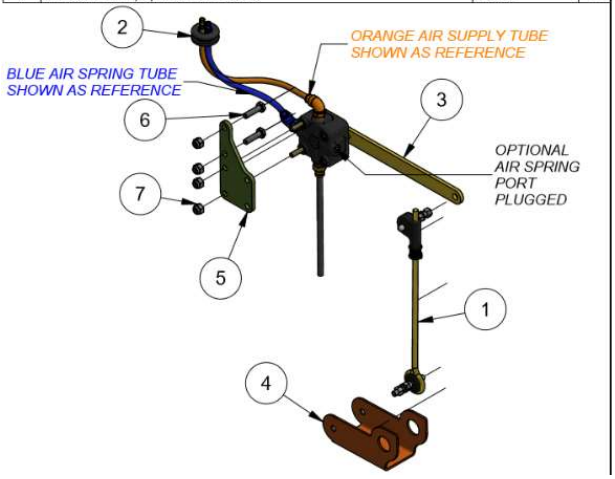
p/n ACK-0375

The height control valve kit is designed to be bolted onto the suspension hanger and the lower bracket mounted at the shock position. The height control valve is a manual lever air regulator that will maintain the height of the air suspension by exhausting air if the horizontal lever is below horizontal or inflating air if the horizontal lever is above horizontal. The height of the suspension can be adjusted if the horizontal lever is pined (with golf tee) at horizontal with ride height desired and the vertical linkage height is adjusted by loosening the clamp on the rubber p-boot & retightened after adjustment, cut off excess vertical linkage above the p-boot that will not be needed for adjusting ride height.

NOTE: the HCV should be installed so that the horizontal and vertical linkages never get below 45degree angle and can over center. This is usually done by assuring that the vertical link length is not less than 6" long, best if vertical and horizontal are approximately the same length.

PARTS LIST

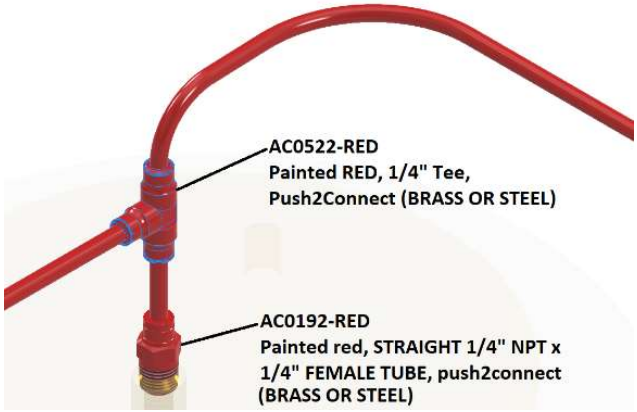
ITEM	DESCRIPTION	PART NUMBER	QTY
1	UNIVERSAL LINKAGE KIT	AC0108	1
2	RUBBER GROMMET FOR 1" HOLE, .69" ID, 3/16" PANEL THICKNESS	AC0317-1	1
3	STREETSIDE, HCV KIT WITH 1/4" TUBE FITTINGS	ACK-0374	1
4	SHOCK STRAP RETAINER / HCV MOUNT	B1313-F	1
5	ACK PLATE	F0075	1
6	HHCS, 1/4"-20 UNC X 1" LONG, GRADE 2	H0501	2
7	NYLOCK L'NUT, 1/4-20NC 1" LONG	H1501	4



(See Trouble shooting guide for more info on HCV Kit)

AIR FITTING KITS

p/n ACK-0376-XX



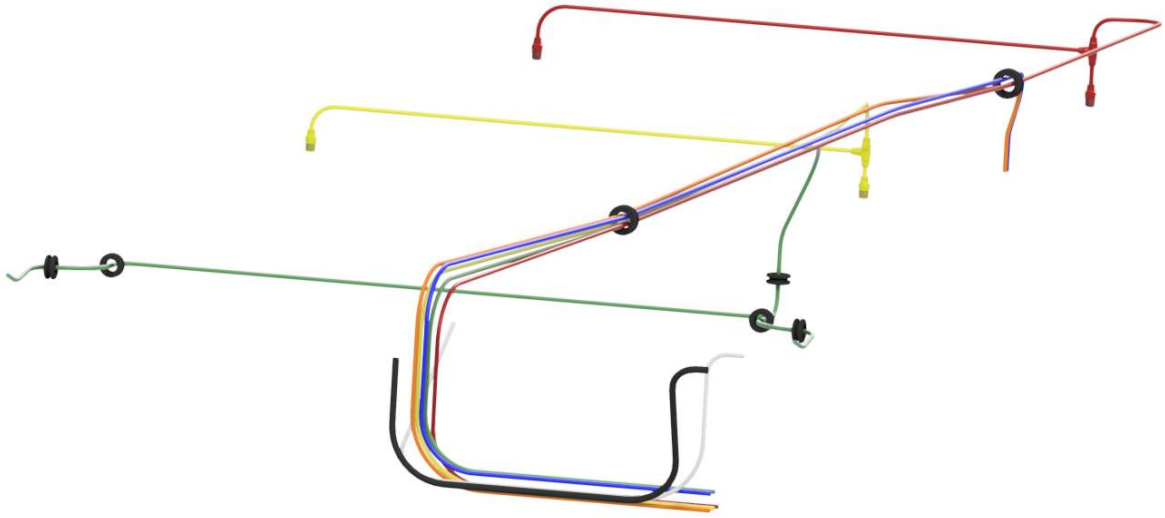
The ReliAIR™ standard kit comes equipped for a tandem axle vehicle with one lift axle. The air fitting kit is the remaining fittings and grommets needed to complete the kit. Contact Cush if additional air fitting kits are needed.

	Qty each: Lift & Load Axle	Qty each: Load Only Axle	AC0192-YELLOW (STRAIGHT 1/4")	AC0522-YELLOW (Union Tee 1/4")	AC0192-RED (STRAIGHT 1/4")	AC0522-RED (Union Tee 1/4")
Kit Part No.			X	X	X	X
ACK-0376-11	1	1	2	1	2	1
ACK-0376-02	0	2	0	0	4	2
ACK-0376-12	1	2	2	1	4	2
ACK-0376-03	0	3	0	0	6	3

AIR LINES

p/n AC0198-X (SEE CHART)

The air fittings for the kit will come color coded for ease of installation. The colors for the air fittings and air lines have been chosen as available ¼" air line tube available from Parker or other sources, Cush does not provide airline tube.



NOTE: Air line tube can be ordered from Cush by the inch in bulk.

Color	Tube Size	Cush p/n (per inch)	Air Line Job Description	T3	T2	T1	4x4
			Modes to/from:	Tank/HCV/Dump/Lift	Tank/HCV/Dump	Tank	Air Line
BLACK	3/8"	AC0198-038	Out from ACS to air tank	120 psi	120 psi	120 psi	na
WHITE	1/4"	AC0198-025-WHITE	In from air tank to ACS	120 psi	120 psi	120 psi	na
RED	1/4"	AC0198-025-RED	Out from ACS to non-liftable load air springs	HCV Reg	HCV Reg	na	na
ORANGE	1/4"	AC0198-025-ORANGE	Air pressure out from ACS to HCV	120 psi	120 psi	na	na
BLUE	1/4"	AC0198-025-BLUE	HCV air pressure @ RH in to ACS	HCV Reg	HCV Reg	na	na
YELLOW	1/4"	AC0198-025-YELLOW	Out from ACS to liftable load air springs	HCV Reg	na	na	na
GREEN	1/4"	AC0198-025-GREEN	Out from ACS to lifting air springs	120 psi	na	na	na

TROUBLESHOOTING- AIR COMPRESSOR OPERATION		
Problem	Possible Cause	Corrective Action
Compressor will not operate	Pressure switch malfunction	◦Check leads are securly on terminals of pressure switch. ◦Remove and replace pressure switch with 90/120psi for T3-T1 models.
	Inadequate grounding.	◦Check battery/compressor grounding with voltmeter.
	Motor overheated.	◦Let compressor cool for approximately 30 minutes to allow thermal overload switch to reset.
	Air tank pressure above the cut-in pressure point of 120psi.	◦Release air pressure from tank until compressor starts.
Fuses burn out repeatedly.	Wrong fuse size.	◦Confirm fuses are proper ampere rating for use size (40 amp/ea).
	Electrical ground to short.	◦Make sure battery/compressor are properly grounded.
Reset mechanism cuts out repeatedly; fuses of proper size burn out.	Malfunction/improperly adjusted.	◦Adjust, repair, or replace compressor.
	Lack of proper ventilation or ambient temperature too high.	◦Move compressor to a well-ventilated area or area with lower ambient temperature. If enclosure is used, drill additional holes for venting.
Compressor runs continuously.	Leak in air system beyond standards.	◦Pressurize system and spray soapy water solution onto the connections. Check for air bubbles (leaks). Re-cut/reassemble lines. Tighten connections as necessary.
	Compressor does not stop running (unload) at cut-off pressure point.	◦Verify air tank pressure. Check that preset cut-off pressure point has been reached (± 5 PSI). Check pressure switch connections. ***Repair/replace pressure switch as necessary.***
	Check-valve may be stuck in closed position	◦Drain tank and inspect check-valve. Clean/replace faulty parts.
	Water in air tank.	◦Drain tank.
Air flow lower than normal.	Clogged air filter element(s).	◦Clean or Replace filter element(s).
	Low voltage.	◦Verify system voltage with voltmeter to match panel gauge.
Tank pressure drops after air compressor shuts off.	Leak in air system over accepted standards.	◦Check drain valve and tighten. Spray soapy water solution onto system. Check and repair leaks as needed.
	Pressure check-valve leaking.	◦Bleed tank and disassemble check-valve assembly. Clean or replace faulty parts.
	Water in air tank.	◦Drain tank.

Troubleshooting - Height Control Valve Installation		
Problem	Possible Cause	Corrective Action
HCV is not receiving air/ HCV is not delivering air to the air springs.	Blocked air supply line.	◦Verify air lines are pressurized by removing supply line at HCV. Check for pinched lines.
	Air tank not filling/reaching set pressure.	◦Verify air tank pressure with manual/in-line pressure gauge.
	Pressure Protection Valve (PPV) not working correctly.	◦Check PPV operation by making sure that valve opens when system reaches the desired pressure setpoint (*usually greater than 70psi*).
	Pilot port is not plumbed or is plumbed incorrectly.	◦Check HCV configuration - Non-Dump; Pressure-Dump (Normally Open); Zero-Pressure Dump (Normally Closed). Reinstall, if necessary.
Air springs fill but do not exhaust.	Obstructed air line.	◦Disconnect linkage and rotate actuating lever to down position (exhaust). If springs remain inflated, check for pinched/blocked lines.
	HCV installed backwards.	◦Check installation. Reinstall, if necessary.
	Supply line installed in suspension port.	◦Move air supply line to HCV supply port.
Air system leaks down in a short period of time.	HCV installed backwards.	◦Disconnect HCV linkage and rotate actuating lever to the up position (fill). If air springs do not inflate, reinstall HCV.
	Leak in air system beyond accepted standards.	◦To find leak in the HCV area, pressurize system and spray soapy water solution onto the valve and lines. Check for bubbles (leaks): No leak found - Do not remove valve, check the rest of the system for leaks. Check that tubing cuts are straight and smooth. Re-cut and reassemble if necessary.

WARRANTY

Terms and coverage in this warranty apply only to the United States and Canada.

Cush Corp (DBA Cush Suspensions) warrants the systems manufactured by it to be free of defects in material and workmanship. Warranty coverage applies only to systems that have been properly installed, maintained, and operated within the rated capacity and recommended application. The responsibility for warranty coverage is limited to the repair/replacement of parts. The liability for coverage of purchased components is limited to the original warranty coverage extended by the manufacturer of the purchased part.

Component part warranty is a pass thru of the manufactures warranty on the parts.

Cush Part No	Description	Brand	Mfg Warranty
CKMTA12	Air Compressor: 12vdc TWIN MOTOR	ARB	12 months
	LIFT AND DUMP VALVES	ALKON	
AC0430	AIR FILTER/WATER SEPARATOR, Global Particulate Filter	Parker	12 months

All work under warranty must have prior written (e-mail) approval from the Cush warranty department. Cush has the sole discretion and authority to approve or deny a claim and authorize the repair or replacement of suspension parts. All parts must be held until the warranty claim is closed.

Parts that need to be returned for warranty evaluation will be issued a Return Materials Authorization (RMA). Parts must be returned to Cush with the transportation charges prepaid. The transportation charges will be reimbursed if the warranty claim is approved.

This non-transferable warranty is in lieu of all other expressed or implied warranties or representations, including any implied warranties of merchantability or fitness or any obligations on the part of Cush. Cush will not be liable for any business interruptions, loss of profits, personal injury, any costs of travel delays, or for any other special, indirect, incidental, or consequential losses, costs, or damages.

Contact the Cush Warranty Department at 417-724-1239 - Ext. 108, for complete warranty information.

Revision Chart			
Revision	Date	By	Description
0.0	4-16-2021	JMK	Release of manual
0.1	11-11-21	JMK	Changed LED light to be wired into trailer lights & changed fan to come on with pressure switch
0.4	4-4-2022	JMK	Updated QR code for easy of updates

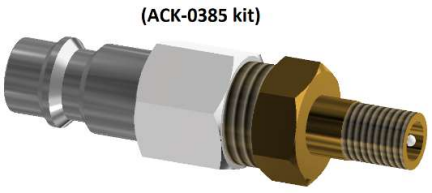
ReliAIR Appendixes

Appendix A: ARB installation & service guide pdf (contact Cush or see ARB #2102MTA12)

Appendix B: "QUICK FILL" of Air Tank with Type-M coupler & Schrader valve

Order separately coupler + Schrader Cush p/n: ACK-0385 (or add a "Q" to end of part number)

Use to fill tank or air springs of system if there is no power to the compressor, if the compressor kit is disabled, or if you want to quick fill the system without having to burden the air compressor.



To "QUICK FILL" an empty Tank & Air Springs:

1. On level ground with the tires chalked.
2. Turn the inverter power to off
3. Turn the regulator all the way down opening it all the way for full pressure backflow.
4. Turn the air selector switch to "AIR LOCK"
5. Install the Quick Fill Adapter (ACK-0385) into the quick coupler.
   NOTE: Quick Fill Adapter should not be left in the quick coupler when not in use.
6. Use a standard air chuck to fill up the air tank to 135psi max
7. Turn the air selector switch to "HCV" to allow air thru the HCV to bring the horizontal arm to level position to inflate per the trailer load. Watch the "LOAD" air gauge to check the pressure in the air springs per your axle group load chart.
8. Once the HCV lever is horizontal and air has stopped flowing turn the air selector valve to "AIR LOCK".
9. WARNING! If you change the load on your trailer or if the pressure has changed from when you set it, go thru the process again to reset the air spring pressure thru the HCV by setting to "HCV" and then "AIR LOCK".

CAUTION! Do not overinflate the air springs more than the load chart. (The correct pressure for your load should be when the Height Control Valve is at level horizontal.

Appendix C: ReliAir Compressor box TestPlate-T3

This AW2250-T3 test plate panel can be used to check air compressor boxes for operation and any fitting leaks.

1. Plug the color coded air lines into the back of the color coded compressor box and apply air to the compressor system with the Quick Fill method.
2. Use 50% Dawn dishwash soap/50% water in a spraybottle to check all fittings on the compressor box. Cush recommends pipe dope over Teflon tape to reduce air leaks.
3. Check the gages for tank & load.
4. Operate the Lift valve to see the gauge move for that axle.
5. Operate the Dump valve to see the load gauges go to 0 psi.
6. Disconnect the test plate kit and put a QC approved sticker on the box.