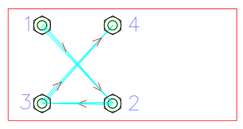
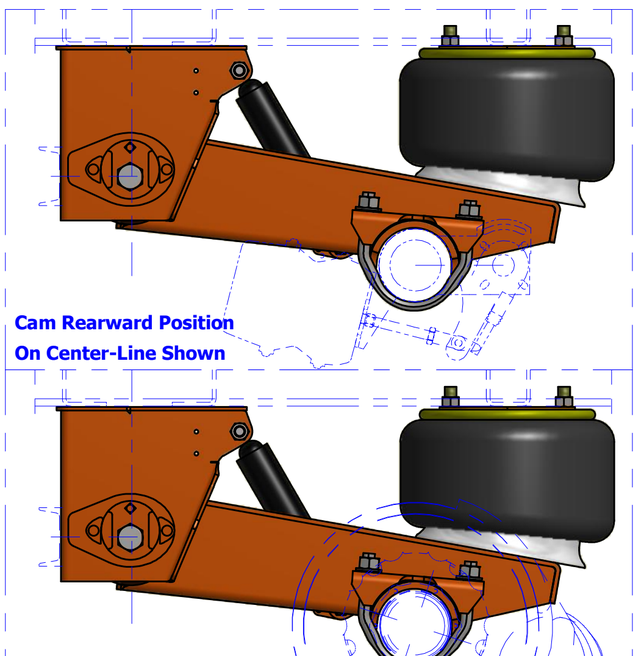
U-BOLT INSTALLATION NOTES:

WARNING: Do not apply any lubricants to the u-bolts
1) U-Bolts should only be installed and torqued after completion of axle welding. Allow sufficient axle cooling time before applying torque to u-bolts.
2) Snug u-bolts evenly before applying torque. Check that u-bolts are parallel and square to axle.
3) 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 strech/relax and hold torque. Proper tightening will allow equal amount of tread above each nut.
First Step-1/3 of Final torque
Second Step-2/3 of Final torque
Third Step-Final torque





CUSH GENERAL INSTALLATION NOTES, SEE CUSH SERVICE/INSTALLATION MANUAL

INSTALLATION DISCLAIMER NOTES:

1) It is important that the proper Cush suspension is chosen for the trailer application. The following criteria must be considered when selecting a suspension: required suspension capacity, loaded frame-to-ground measurement, ride height, axle travel, axle spacing, and axle GAWR.
2) It is the responsibility of the installer to determine the correct location of the suspension in order to provide the proper trailer load distribution. The gross axle weight rating (GAWR) of each axle must not exceed the rated capacity of any of the components involved. The suspension capacity ratings are for suspension components and axle beam only.
3) Required cross member locations maybe 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. Verify that the actual trailer cross member locations correspond with those specified on the suspension drawing.
4) It is the responsibility of the suspension installer to read the instructions on all the drawing sheets thoroughly before proceeding with a suspension installation.

CUSTOMER TORQUE INSTRUCTIONS:

1) *DUAL RATE PIVOT BUSHING JOINT SNUG FROM FACTORY. CUSTOMER TO TORQUE THIS JOINT TO SPECIFICATION AFTER AXLE ALIGNMENT.
2) It is the customer's responsibility to check and tighten fasteners to specified torque at installation, after the suspension has been in operation for 3000 miles, and at suspension inspection cycles. Failure to do so can result in loss of warranty.
3) Torque values given are specified for the fasteners in the condition supplied by Cush Corporation. DO NOT APPLY ANY ADDITIONAL LUBRICANTS.
4) CAUTION: Fasteners should never be reused if removed or loss of clamp load occurs. For proper joint clamping contact Cush for replacement fasteners.
5) CAUTION: Over-torquing fasteners could result in material failure.

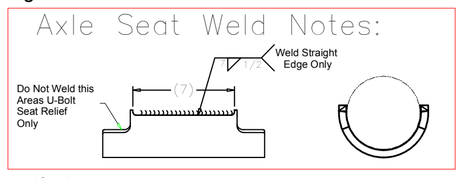
Customer to torque all fasteners!				(Ft*Lbs)		(Nm)	
General Fastener Torque Specs	Size	Thread	Grade	Min.	Max.	Min	Max.
Air Spring Mount Bolt	3/8	16-UNC	5/B	25	35	34	47
Air Spring Bottom Mount Nut	1/2	13-UNC	5/B	25	35	34	47
Air Spring Bottom Mount Bolt	1/2	13-UNC	5/B	40	50	54	68
TRAC-ALIGN Rack Lock Bolt	1/2	13-UNC	5/B	25	35	34	47
Brake Chamber Mounting Nut	5/8	11-UNC	5/B	100	110	136	149
(10K) U-Bolt Nut	5/8	11-UNC	8/C	180	210	244	285
Air Spring Top Mount Nut	3/4	16-UNF	5/B	40	50	54	68
Nyloc Jam Nut	3/4	10-UNC	A/B	80	100	108	136
Shock Mount Nut/Bolt	3/4	10-UNC	5/B	210	235	285	319
(15K) U-Bolt Nut / Pivot Bolt	3/4	10-UNC	8/C	330	380	447	515
(25K) U-Bolt Nut	7/8	14-UNF	8/C	475	525	644	712
Pivot Nut (SecureLok/Securex)	7/8	9-UNC	8/C	550	600	746	813

INSTALLATION NOTES:

1) Measure trailing arm centers and track to verify your requirements.
2) DO NOT APPLY undercoating to the suspension until after completing the alignment. Undercoating will effect clamp load of the pivot connection fastener and can damage the hardware.
3) Mount hangers onto trailer frame per suspension drawing sheets.
4) Place plastic washers on both sides of bush inner metal and insert spacer collars into bush inner sleeve.
5) Measure for fitup then mount Cushride trailing arm/axle assembly into suspension hangers. NOTE: If the assembly fits tightly, it may be necessary to spread the mounting. DO NOT GRIND material from suspension components.
6) Place"-Align" gear washer, with indicator in neutral position, and insert pivot bolt/washer
7) Mount pivot washer/nut and torque joint for a snug fit.
8) Adjust "-Align" for proper axle track alignment.
9) Torque bushing pivot bolts per Cush torque instructions.
NOTE: Failure to follow the procedures in the Cush Service and Installation manual and/or properly torque the pivot fasteners at this time can result in a failed pivot connection and a loss of warranty coverage!
10) Install air springs and shocks per suspension installation manual and drawing sheets.

AXLE WELDING NOTES, See Cush Procedure A0001:

WARNING: Review Cush Recommended Steel Welding Procedures
1) 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.
2) For the best axle to beam weld joint use the following wire.
Axle Weld Wire: AWS ER70S-6
3) Create the root pass to connect the axle to the trailing arm beam. Hit the axle seat tabs down to the axle to give you parent metal for pass 2 and 3. Finnished axle weld should be a multi-pass 1/2" weld.



ORIGINAL-INSTALLATION INSPECTION NOTES, verify that:

1) The installation clearance requirements have been met.
2) The axles have been aligned properly.
3) The suspension frame bracketry and air spring plate welds have been properly completed per specifications.
4) All suspension bolt torques are to Cush specifications.
5) The suspension ride height is set properly.
6) The suspension can articulate freely through its entire travel and adequate component clearances have been provided.

INSPECTION: 30-DAY, 90-DAY, & at every brake lining change. 1) Check installation clearance requirements.
2) Check for any signs of wear or component interferences.
3) Check suspension attachment welds for signs of problems.
4) Check that all bolts are in place and securely torqued.
5) Check pivot bushings & clamping connections for problems.
6) Check that the trailer is level.
7) Check tire wear that might indicate an alignment problem.

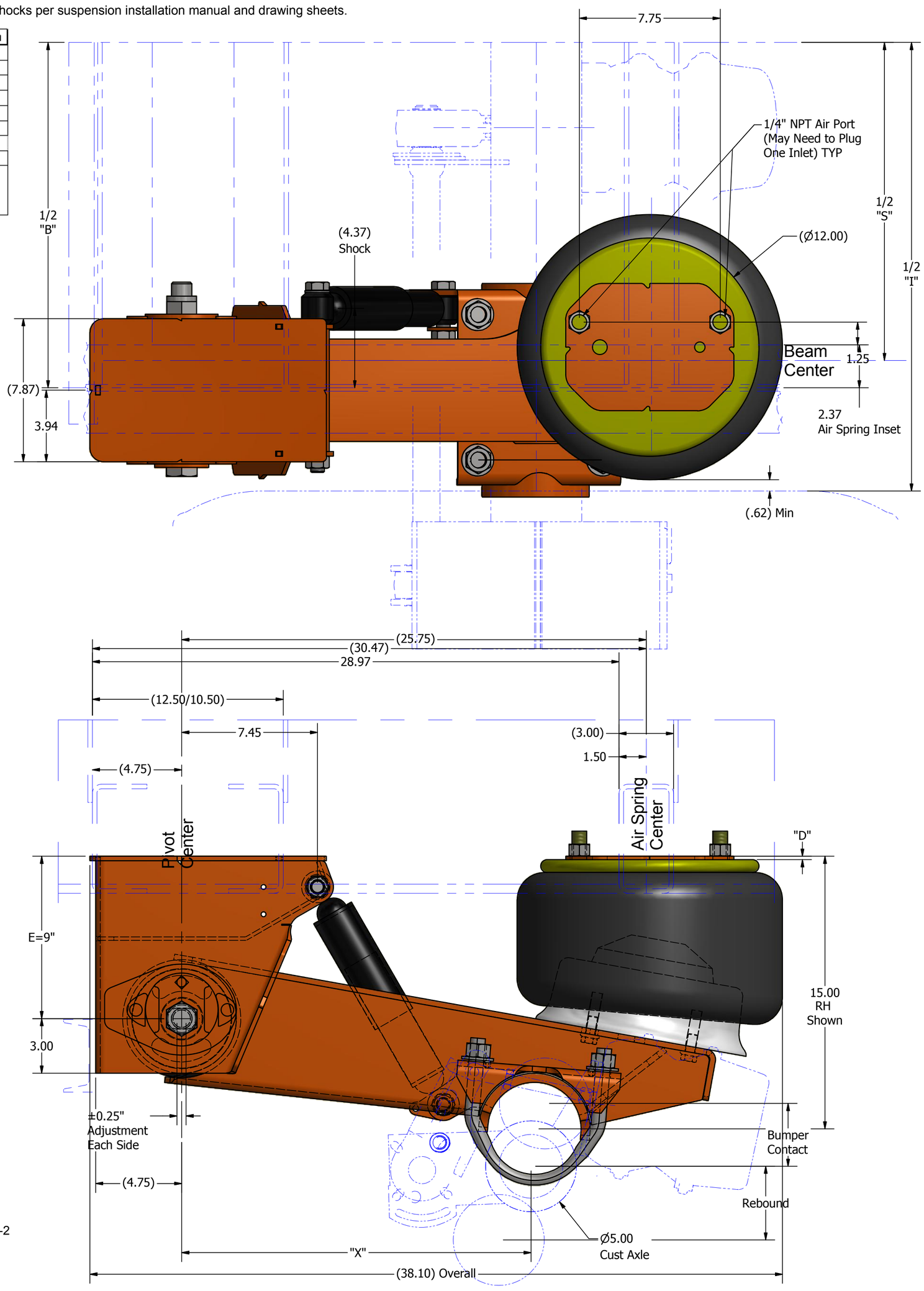
INSTALLATION OF "TRAC-ALIGN" NOTES:

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 with the addition of the **optional** locking rack and a more familiar alignment means with the use of an eccentric cam adjustment. The "Trac-Align" also has bearing washer with tabs for use with a Cush axle-welding stand to have a more precise fixturing of the suspension and axle at factory or customer integration. CAUTION: DO NOT APPLY undercoating to the "Cush-Align" area until after alignment and torque of the pivot bolt.

- If you have the optional rack lock plate, loosen the rack lock bolts to allow eccentric cam movement.
- The eccentric cam gear should always have the ½" square hole to the top.
- Set the alignment gear indicator tab at 6 o'clock, the neutral position. Snug the rack lock bolts and 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 nuts/bars.
- For adjustment use a breaker bar in the ½" square hole or use a box wrench on the lower eccentric cam gear nut.
- The "Trac-Align" gives you 3/8" pivot movement fore and aft per hanger side. (see Installation Manual)
- 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.

General Application Dimension Variables - Installation Clearance Notes Supersede all Common Variables Shown						
"B" Ref. Suspension Beam(Hanger) Centers	34	35	40	41	40	39
"S" Ref. Air Spring Centers (2.38" inset/side)	22.25	30.25	35.25	36.25	35.25	34.25
"T" Ref. Axle Track	71.5"	71.5"	76.5"	77.5"	77.5"	77.5"
"C" Approx. Chamber Centers for 16.5" x 7" Brake	9.75	9.75	14.75	15.75	15.75	15.75
"I" Ref. Inside of Tires Min (Hanger Style)	46.5	46.5	51.5	52.5	52.5	52.5
"I" Ref. Inside of Tires Min (Yoke Style)	48	48	53	54	54	54
Installation Clearance Notes						
1	0.75" minimum clearance must be maintained around air spring when it is at maximum diameter.					
2	It is the responsibility of the installer to ensure that proper clearances exist at the tires: 1" minimum clearance required between top of tire and bottom of trailer structure when axle is at full jounce, 2" minimum clearance required between inside of tire and trailer frame structure for lateral movement, and there should be ample fore and aft clearances. 0.25" clearance is recommended between suspension beam and brake s-cam shaft.					

Model	Ride	Full	Bumper	Rebound	Tabulated	Hanger	Tower	Hanger	Tower
CR30B-0__	Height	Jounce UP	Contact UP	Down	F"	E"	D"	p/n	p/n
15	14	3	2.5	5	19.7	9"	0.19"	W1251	F0620
	14.5	3.5	3	4.5	19.5				
	15	4	3.5	4	19.4				
	15.5	4.5	4	3.5	19.2				
	16	5	4.5	3	19				
17	16	3	2.5	5	19.7	11"	2.2"	W1251-10	W0424-2
	16.5	3.5	3	4.5	19.5				
	17	4	3.5	4	19.4				
	17.5	4.5	4	3.5	19.2				
	18	5	4.5	3	19				
19	18	3	2.5	5	19.7	13"	4.2"	W1251-11	W0424-4
	18.5	3.5	3	4.5	19.5				
	19	4	3.5	4	19.4				
	19.5	4.5	4	3.5	19.2				
	20	5	4.5	3	19				



DCN#	REV	REVISION DESCRIPTION	DATE	BY	CHK	APP

DRAFTSMAN: DJW 2/5/2015
CHECKED: CHK
RELEASED: APP
WEIGHT: N/A
MATERIAL:

TITLE: Layout
Cush RoughNeck Topmount U-Bolt
30,000lbs Gross Suspension Weight Rating
2.38" Air Spring Offset
Wingless Weld-On Hanger

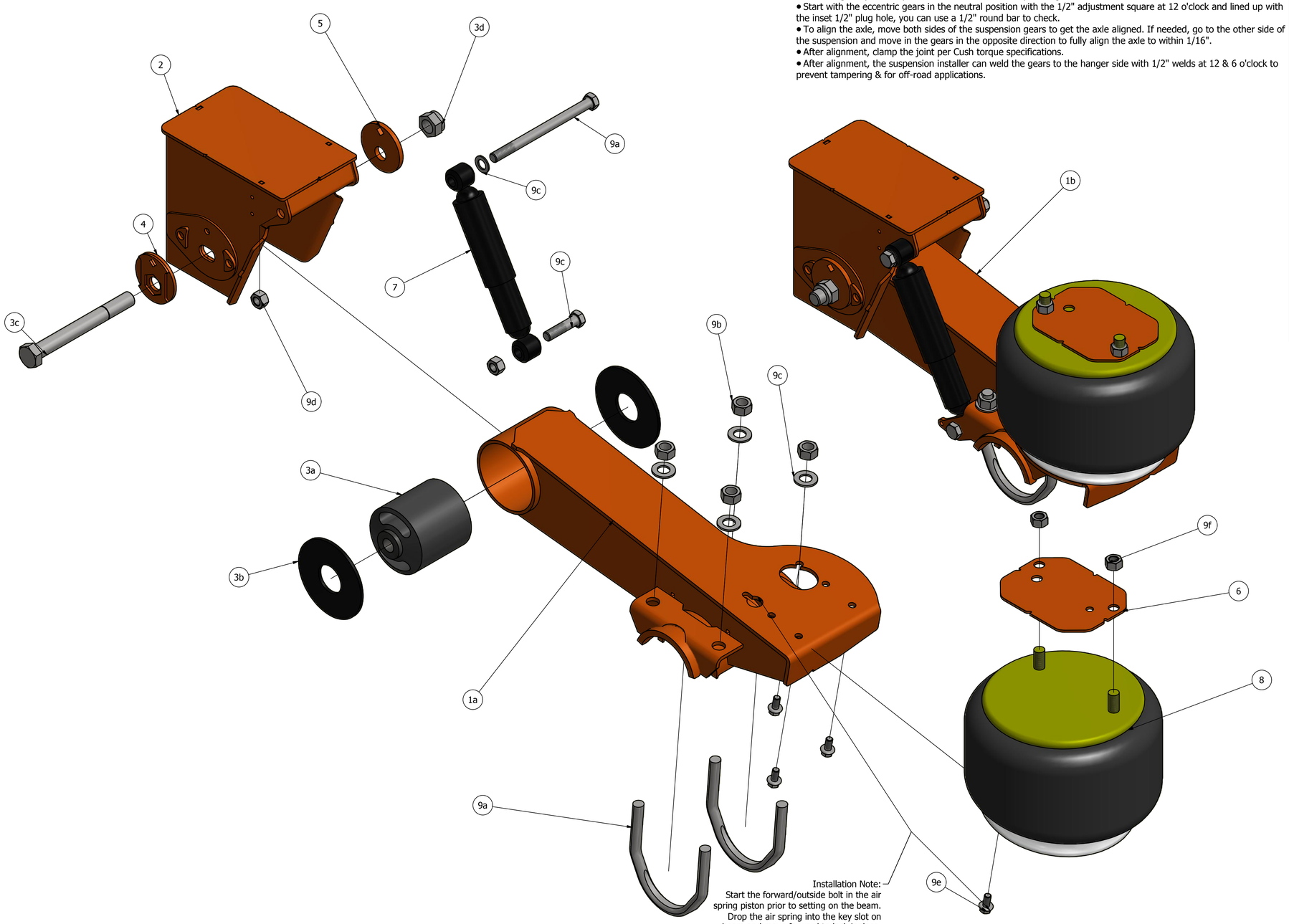
TOLERANCE UNLESS OTHERWISE STATED:
.XX = +/- .062 FRACTIONS = +/- 1/16
.XXX = +/- .031 ANGLES = +/- 1°

Nixa, MO. USA
PHONE: 417-724-1239
www.cushcorp.com

PROJECT NO:	SHEET:	SCALE:	REV:	PART/DRAWING NO:
15040	1 OF 2	A-SIZE: NTS B-SIZE: 1/X D-SIZE: 1/4	-	CR30TB-0(15/16/17)

Roughneck Features

U-Bolted & Weld Axle Connection
HD Pivot Bolt & Nut
HD Boxed Hanger
Dual Eccentric Axle Adjustment of +/- .25 at Hangers
Outside Gear Captured Bolt Head Tab
Dual Bushing Wear Washers
Integrated Shock Mounting
Integrated HCV Mounting, for ACK-0206 Kit



Installation Note:
Start the forward/outside bolt in the air spring piston prior to setting on the beam. Drop the air spring into the key slot on beam and move forward to lock inplace. install the rest of the bolts to mount the air spring piston to the beam.

ROUGHNECK HANGER WITH 1.13" LARGE PIVOT BOLT
1. Bushings with 1.125" inner sleeve ID will not need plastic insert reducer for the 1-1/8" pivot bolt.
2. Use Cush Height Control Kit bracket from ACK-0206 or weld bracket to side of hanger.

DUAL ECCENTRIC ALIGNMENT NOTES:

OVERVIEW: The DUAL ECCENTRIC pivot joint features outside eccentric cam gear washers that cover the alignment slot, Final axle alignment is required for proper bushing and tire wear.
CAUTION: DO NOT APPLY undercoating to the area until after alignment and torque of the pivot bolt.
CAUTION: With dual eccentric alignment both gears at the pivot must be moved/adjusted together at the same time and in the same direction. If not adjusted together on the same hanger this may lead to an improper pivot joint clamp and cause failure.

- With both pivot bolts snug and suspension at ride height.
- For adjustment, use (2) 1/2" square-drive breakover bars or ratchet to move the axle forward/rearward on one hanger at a time. Must move inside and outside gears together for adjustment. The square Adjustment Holes must line up side to side on each hanger.
- The Slot gives you 1/4" pivot movement fore and aft per hanger side.
- Start with the eccentric gears in the neutral position with the 1/2" adjustment square at 12 o'clock and lined up with the inset 1/2" plug hole, you can use a 1/2" round bar to check.
- To align the axle, move both sides of the suspension gears to get the axle aligned. If needed, go to the other side of the suspension and move in the gears in the opposite direction to fully align the axle to within 1/16".
- After alignment, clamp the joint per Cush torque specifications.
- After alignment, the suspension installer can weld the gears to the hanger side with 1/2" welds at 12 & 6 o'clock to prevent tampering & for off-road applications.

Item	Description	Qty	CR30TB-015	CR30TB-016	CR30TB-017
1	**Beam Assembly**				
1a	Roadside (LH) Beam for U-Bolt & Weld-On Axle Mount	1	W0818-1	W0818-1	W0818-1
1b	Curbside (LH) Beam for U-Bolt & Weld-On Axle Mount	1	W0818-2	W0818-2	W0818-2
2	**Weld-On Hanger, RoughNeck, .5" Slot Align**	2	W1251	W1251	W1251
3	**Pivot Bushing Kit (Per Hanger)**	2	K0640	K0640	K0640
3a	Dual Rate Bushing, 6.75"lg, 1.125" ID	1	C0535	C0535	C0535
3b	Wear Washer, .25" Thk	1	C0061	C0061	C0061
3c	HHCS 1 1/8"-7 UNC x 1" lg, Grade 8	1	H0150	H0150	H0150
3d	Nut, Nuitorque, Hex, 1 1/8"-7 UNC, Factory Wax, Grade C	1	H1109	H1109	H1109
4	**Alignment Gear Weldment Eccentric w/ Bolt Head Hole**	2	W1266	W1266	W1266
5	**Alignment Gear 4" Eccentric**	2	F1234-38	F1234-38	F1234-38
6	**Air Spring Top Spacer**	2	F0620-HV	W0424-2	W0424-4
7	**Shock 16" Max/ 11" Min (Gabriel #85064)**	2	C0226	C0226	C0226
8	**Air Spring (Goodyear 1R14-039/ Conti 64254)**	2	C0294	C0294	C0294
9	**Kit, Hardware Shock /Air Spring Mounting**	1	K0664	K0664	K0664
9a	HHCS, 3/4"-10 UNC x 10" lg, Grade 5	2	H0225	H0225	H0225
9b	Washer 3/4" ID, USS	2	H2203	H2203	H2203
9c	HHCS , 3/4"-10 UNC x 3" lg, Grade 5	2	H0215	H0215	H0215
9d	Nut, Center-Lock, 3/4"-10 UNC, Grade C	4	H1207	H1207	H1207
9e	HHCS, Flange Lock 1/2"-13 UNC x 1"lg	8	H0304	H0304	H0304
9f	L'Nut, Nylock 3/4"-16 UNF	4	H1202	H1202	H1202
10	**Axle Kit, Tappered U-Bolt w/ Nut & Washers**	4	K0338	K0338	K0338
10a	Tapper U-Bolt, 7/8"14 UNF x 5" Round x 7 3/4" lg Grade 8	1	HU107	HU107	HU107
10b	Nut, 7/8"-14 UNF, Plain	2	H1108	H1108	H1108
10c	Washer 7/8" SAE Thru Hard	2	H2101	H2101	H2101

CUSH TORQUE SPECIFICATIONS			(Ft*Lbs)		(N*m)	
Suspension Fastener Description	Size	Grade	Min.	Max.	*Min*	*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	1000	*1085*	*1356*

DCN#	REV	REVISION DESCRIPTION	DATE	BY	CHK	APP

DRAFTSMAN: DJW 2/5/2015
CHECKED: CHK
RELEASED: APP
WEIGHT: N/A
MATERIAL:

TITLE: Parts List
Cush RoughNeck Topmount U-Bolt
30,000lbs Gross Suspension Weight Rating
2.38" Air Spring Offset
Wingless Weld-On Hanger

TOLERANCE UNLESS OTHERWISE STATED:
.XX = +/- .062 FRACTIONS = +/- 1/16
.XXX = +/- .031 ANGLES = +/- 1°

Nixa, MO. USA
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PROJECT NO: 15040
SHEET: 2 OF 2
SCALE: A-SIZE: NTS B-SIZE: 1/X D-SIZE: 1/4
REV: -
PART/DRAWING NO: CR30TB-0(15/16/17)