
APPLICATION: Trike conversion kit for Victory Cross Touring motorcycles

PRODUCT: VT-R

VERSION: 2

GENERAL NOTES: New trike conversion product with new instructions

DRIVE BELT CAUTION!

- DO NOT TWIST, KINK, OR OTHERWISE DAMAGE THE BELT DURING INSTALLATION
- DAMAGING THE BELT DURING INSTALLATION WILL DRASTICALLY SHORTEN ITS SERVICE LIFE!

- For torque specifications not listed, please follow SAE standards.
- Unless otherwise noted, use medium strength Loctite on all bolts.

- The bike shown in this document is a 2012 Victory Cross Country Tour. The bike you are working on may not exactly match the photographs and text (saddle bags, tour pack, etc.) If so, disregard the areas in question
- This document is written as though the trike body is un-painted. If the body is factory painted, some of the documented procedures are already done
- Some of the photos show assemblies done out of sequence. This is done to preserve parts-association clarity

1. Remove the following:
 - a. Remove and save seat (save the bolts)
 - b. Remove and save side covers
 - i. The covers need to be back-cut. Use the supplied overlay templates as a guide
 - c. Remove and save tour pack
 - i. Remove and discard the cast lower part and the bracket assembly
 - ii. Save the three Phillips-head screws
 - d. Remove and discard saddlebags
 - e. Remove and discard saddlebag mounting brackets
 - i. Save the two brackets in the mufflers with 6mm nuts welded to them
 - ii. Discard fasteners
 - f. Remove and save rear fender
 - i. Save (2) 6mm bolts, discard the rest
 - g. Remove and save mufflers, muffler to header exhaust shields, clamps and 6mm bolt holding the lower front of the right side exhaust shield
 - i. Trim the ends of the shields (Pic #1). Cut along the upper edge of the indentation to about the center of the shield, then cut back the other way, making a 90-degree rounded point on the end of the shields (There will no longer be a "dropped" or "indented" area on the rear of the shields when you are done)
 - ii. Loosen the header to cylinder head nuts and remove and save the allen screw securing the left side exhaust crossover pipe (from the left side of the bike/rear of the transmission)
 - h. Remove and save passenger floorboard/footpeg mounting brackets
 - i. Save all fasteners
 - ii. Remove the right side by pulling out on the previously loosened header pipe
 - i. Remove and save front belt cover
 - i. Save all bolts
 - ii. Remove by pulling out on the previously loosened header pipe
 - j. Remove ABS motor (if equipped)
 - i. Do not disconnect brake lines from ABS motor
 1. Unbolt and separate it from the inner fender/exhaust bracket
 2. Save the (3) bolts
 - k. Remove and discard rear inner fender/exhaust bracket
 - i. Save the (4) 8mm mounting bolts
 - l. Remove and discard antenna
 - i. Unscrew it from the cable, then tie the cable off as it will be replaced by a supplied electronic antenna placed inside the front fairing
 - m. Remove and discard brake caliper
 - i. Discard the banjo bolt and washers
 - ii. Leave the brake hose connected to the bike

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- n. Remove the ABS pickup
 - i. Remove it from the swing arm before removing the swingarm
 - ii. Discard the mounting bolt
 - iii. Leave the ABS sensor connected to the bike
 - o. Remove and discard swing arm
 - i. Remove the right side pivot shaft nut and washer
 - ii. Push the shaft out to the left
 1. The left side pivot shaft nut is red loctited from the factory (leave that way)
 - iii. Save the pivot shaft and all nuts and washers
 - p. Remove and discard drive belt
2. Trim the lower corner of the left plastic bracket (Pic #2 and #3). Shave it very close to the lower push pin boss
 - a. Should be able to see the side of the tin sleeve for the push pin
 3. Bolt the ABS motor (if equipped) to the supplied bracket (Pic #4), then bolt the bracket to the inner fender (Pic #5)
 - a. Install this bracket as shown on bikes not equipped with ABS as it has threaded bosses that hold and locate rear fender
 - b. Use the four 8mm bolts saved earlier
 4. Mark and cut the rear fender (Pic #6)
 - a. 5" back from the top edge of the seat opening
 - b. 5.5" back from the outside edge of the seat opening
 - c. 5.5" back from the edge of the lower bolt boss
 - i. This cut isn't critical – it is hidden when body is installed- if in doubt, mark and cut it longer, then trim it back as needed
 - d. Install the rear fender, just start the two saved 6mm bolts in the rear holes for now (Pic #7)
 5. Install the two supplied upper chassis mounting brackets (Pic #8)

NOTE: If the kit was ordered with the optional reverse system, the left upper chassis mounting bracket was temporarily installed on the chassis at the factory. This was done to be able to mount the reverse lever assembly in its correct position for shipping purposes and to help in assembly. Please remove the reverse lever from the plate (save the hardware), then remove the plate from the chassis. Discard the shipping bracket, 3/4" spacer, 5/16 x 1-3/4" bolt and nut, and the forward 1/2" x 1-1/4" bolt and nut. Re-use the 1/2" nut holding the shipping bracket to the upper dog bone and cross bar assembly (Pics #8a and 8b)

 - a. Use supplied (2) 8mm x 1.25 x 50mm and (2) 8mm x 1.25 x 60mm bolts and (4) flat washers
 - b. Run them all the way in but do not tighten yet
 6. Install the supplied drive belt onto the front sprocket
 7. Replace the stock belt cover
 8. Note the position of the parts and hardware, then remove from the trike chassis
 - a. Sway bar
 - b. Trailer hitch assembly
 - c. Rear cross bar assembly
 - d. Differential assembly
 - e. Reverse motor assembly (if equipped)
 - f. Swing arm assembly
 - g. Wheels
 9. Install the trike chassis through the belt

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10. Install a washer and the supplied short (7/8" long) swingarm bolt spacer onto the swing arm shaft (Diagram #977)
 - a. Insure that the nut on the swing arm pivot shaft is still threaded all the way onto the end of the threads
11. Install the swing arm pivot shaft with washer and short spacer starting from the left side through the left chassis mounting plate/rear pivot bore/right chassis mounting plate.
 - a. Install the long right side spacer. Start the stock washer and nut
 - b. Do not push the shaft all the way through yet – thread the nut so that there is about 1/2" of thread showing (Dia #977 and Pic #9)
 - i. Photo was taken without the belt guard in place for clarity – it should be in place on your bike
 - ii. Support the trike chassis so that the front body mounts do not interfere with the exhaust pipes during installation
12. Install provided 1/2" x 1-1/2" Grade 8 bolts and flat washers from the inside of the upper chassis mounting plates through the mating plates in the chassis
 - a. Adjust chassis height as needed to install
 - b. Install remaining flat washers and nylock nuts. Do not tighten them yet
13. Install the right side passenger floorboard mount assembly onto the protruding 1/2" of the pivot shaft
 - a. Start the Allen bolt in the lower part of the bracket, then turn the shaft (using the left side nut) while holding on the right side (between the chassis and the floor board bracket until tight) (75ft.lb.)
 - b. Starting at the top, and working from side-to-side, tighten all chassis and fender mounting bolts and nuts
 - c. Install the washer and nut on the right side pivot shaft/floorboard bracket and tighten
 - d. Tighten the lower Allen bolt
 - e. Repeat for the left side floorboard/bracket
 - f. If equipped with passenger floorboards, remove both floorboards from the brackets (2 bolts/nuts) and install them on the opposite sides (right-to-left, left-to-right)
14. Replace the rear master cylinder with the one provided (Pic #10)
 - a. Remove the brake line (save the banjo bolt and washers) from the master cylinder
 - b. Remove and save the Allen screw from under the floorboard
 - c. Slide the whole brake assembly to the rear of the bike to remove it (Pic #11)

IMPORTANT: Make absolutely sure that the master cylinder clevis is correctly adjusted. When it is, the pin will slide in with absolutely no wiggling or resistance. If it does not slide right in, adjust it by loosening , adjusting and re-tightening the clevis lock nuts. Failure to do this will result in dragging brakes and the possibility of poor or non-functioning rear brakes
15. Install the rear brake line onto the fitting on the trike chassis using the provided banjo bolt and washers (Pic #12)
 - a. Route and zip tie the brake line carefully ensuring there is, or will be no contact with hot or moving parts
16. Bleed the rear brakes. Use the top bleeder screws only. Make absolutely sure all air is removed from brake lines
17. Install the chassis cross bar through the loop in the brake lines as shown (Pic #13)
 - a. Install the bolts and nuts but do not tighten yet

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18. Install the swing arm assembly using blue loctite
 - a. Run the two front bolts all the way in but do not tighten yet (Pic #14)
 - b. Install and tighten the two differential support dogbones (Pic #15)
 - c. Tighten the four cross bar mounting bolts
 - d. Tighten the two front swing arm cross bar bolts
 - e. Loosen (1/2 turn) the (4) nuts under the front of the swing arm rails
 - f. Loosen (1/2 turn) the (2) adjuster cam lock bolts
 - g. Loosen (1/2 turn) the 9/16" bolt on the left end of the swingarm adjuster hex bar
 - h. Push the swing arm rail all the way forward, rotating the adjuster hex bar to allow movement

19. Install the reverse motor assembly if equipped. Be sure to put one wave washer on each end of the pivot shaft (Pic #16)

20. Install the differential.
 - a. The bearing caps and rails have a number stamped on them across the parting line. When re-assembling them, insure that the number on the bearing cap and the rail match up.
 - b. Insure that the outer edge of the bearings contact the outer shoulder of the swing arm rails and caps
 - c. Install and tighten the bearing caps
 - d. Slip the belt onto the rear sprocket (Pic #17)
 - e. Tighten the belt using a 1" wrench. Rotate the belt adjuster bar until there is approximately 3/8"-5/8" deflection with 10lb force (in the middle of the belt)
 - f. While holding pressure on the hex bar, tighten the four nuts under the front of the swing arm rails, the adjuster cam lock bolts, and the 9/16" bolt on left end of the adjuster hex bar
 - g. Re-check belt deflection

IMPORTANT: Rotate the differential (forward) and check the belt tracking on the front sprocket. It should be roughly centered on the front sprocket – make absolutely sure that it is not running off either side of the front sprocket. If it doesn't look right (way off to one side, etc), carefully repeat the adjustment procedure and check it again.

21. If equipped with the optional electric reverse
 - a. Remove the fuel tank
 - b. Remove the front valance and battery cover
 - c. Install the reverse wiring harness (Pics #18, 19, 20, and 21) & Diagram #1296-V
 - d. Route the harness carefully, ensuring adequate room and having no contact with hot or moving parts
 - i. When installing the front circuit breaker, make sure that the screws do not damage anything
 - ii. DO NOT decide to reuse existing breaker
 - e. Replace the fuel tank and the battery cover
 - f. Install the left and right trailer hitch and rear body mount support bars (Pic #22)
 - g. Line up the center of the reverse motor drive gear with center of the sprocket. Loosen the (2) 1/2" bolts on the hex shaft, align the sprocket, and tighten the two bolts
 - h. Replace the reverse lever assembly
 - i. Install the reverse lever cable through the left side trailer hitch support bar (Pic #23) and the cable anchor on the bearing cap. Tighten the nuts so that the cable housing is biased toward the rear of the trike. Leave maybe one thread showing in front of the forward nut
 - j. Install the locknut and the clevis onto the cable end. Thread the clevis onto the cable about 3/8" – 1/2", then tighten the lock nut. Install the clevis onto the pin. Make sure that the cable/clevis stays straight. If not, adjust this by threading the pin to the left or right until everything lines up on center, then tighten the (2) 3/4" lock nuts on the pin
 - k. Install the spring and spring anchor bolt (with the rear of the spring still connected to the reverse motor bracket) into the hole in the adjuster plate and tighten the nut

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- l. Carefully lift the reverse lever. Do not force it. If full extension can be achieved with no resistance, lower the lever and turn the knob on the end of the lever clockwise a few turns. Slowly lift the lever again; any resistance felt just before full extension? If so, you are just about done. If no resistance is felt, keep repeating the above until resistance is felt. When properly adjusted, the average guy should be able to operate the lever through its entire travel using firm pressure with one finger.
 - m. Once you are satisfied with this adjustment, final adjustment is done during the trikes' test drive. The trike must be able to back up an incline without the reverse gear "skipping". Loosen the knob until the gear actually does skip while traveling up the incline, then slowly tighten the knob until it no longer skips.
22. If the bike is equipped with ABS, install the ABS pickup into the provided bracket using the provided 1/4" x 3/4" bolt and nylock nut
 - a. Install the bracket/block/pick-up onto the left bearing cap (two 5/16" dowel pins, one 1/4" x 1-1/2" bolt/washer and one 1/4 x 3/4 bolt and washer) Use blue loctite
 - b. Set the air gap to .060" and securely tighten the bracket bolts. Route and zip tie the wiring (safely) up and into its mating plug
23. Install the CV axle assemblies
 - a. Start all bolts before tightening. 23-25ftlbs (Pic #24)
24. Install the sway bar. Loosely assemble all fasteners, bushings, etc. Tighten the end links first, then the bushing clamps
25. Install the trailer hitch/rear body mount assembly. Start the (2) front bolts first and tighten all associated trailer hitch/rear body mount hardware
26. Install the exhaust extension pipes, (4) clamps, (two from the bike and two supplied) and the mufflers (Pic #25)
27. Hang the mufflers from the rear hangers (Pic #26).
 - a. Replace the allen bolt on the left crossover pipe
 - b. Use the two brackets saved earlier and (4) 6mm x 20mm bolts and washers.
 - c. Tighten the four bolts while aligning the mufflers with the trailer hitch bars (looking down from top) and centering them front-to-rear
 - d. Tighten the (4) clamps. Recheck muffler alignment
 - e. Replace the trimmed left and right exhaust heat shields
 - f. Tighten the exhaust header to cylinder head nuts
28. If equipped with a tour pack, install the front bracket mounting bolts now. Start the two front bolts with washers from the inside
29. If equipped with a radio
 - a. Remove the headlight to install the antenna. Follow the manufacturer's wiring and mounting instructions
 - b. Replace the headlight
30. Pre-fit the taillights into unpainted body. Painted bodies are already fit for lights. Send body out for paint
31. Install the taillights and wiring (Diagram #982-D)
32. Reassemble the body with the door, latch, carpet, body-trim, etc
33. Set the body on the trike, plug in and check lighting. Secure light wiring
34. Bolt the body down: Always install a washer between the fastener and the fiberglass

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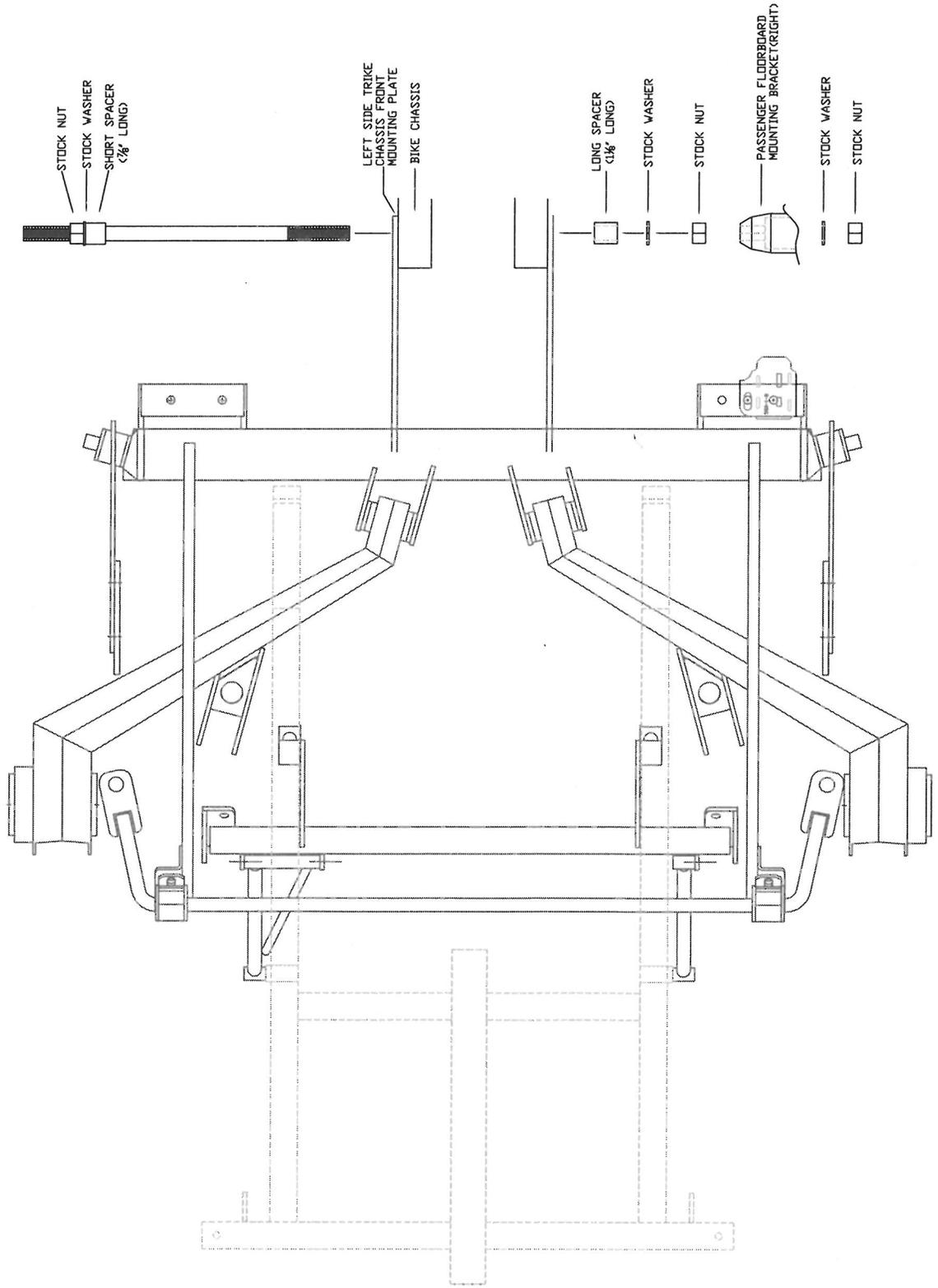
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- a. Left front: 1 bolt from the bottom up
 - b. Right front: 1 bolt from the bottom up
 - c. Left and right rear: 1 bolt each from the top down
35. If trike has a tour pack
- a. Install the tour pack mounting rack on the two front bolts
 - b. Lower the rack down, pivoting on the front bolts, to line up the two rear bolt holes
 - c. Install the two rear bolts from the outside in, install nyloc nuts on the two rear bolts and tighten all four mounting bolts
 - d. Install the tour pack
 - i. Use the (4) supplied 8mm x 1.25 x 20mm bolts with washers from the top down.
 - ii. Install the supplied 8mm nyloc nuts and tighten them
 - e. Plug the (3) rear holes with the Phillips screws saved earlier.
 - i. Put a supplied 3/8" flat washer on each screw, set them in the holes. Put the supplied 1/4" washers and 6mm nyloc nuts on them from the bottom and tighten them
 - f. Route, secure, and plug in the tour pack wiring
36. Install the seat
37. Install the trimmed side covers
38. Install and torque the wheels (75ft.lbs)
39. A break-in procedure is necessary for optimum brake function. Using the rear brakes only, perform several firm stops. Utilize cooling down periods to ensure that the pads do not overheat. Pads are seated once proper brake function is achieved.

977

VICTORY CROSS PIVOT SHAFT INSTALLATION



INSTALL THE LEFT SIDE ($\frac{1}{8}$ " LONG) SPACER, WASHER & NUT ONTO THE PIVOT SHAFT. INSTALL THE PIVOT SHAFT FROM THE LEFT, THROUGH THE FRONT FRAME MOUNT PLATES & THE BIKE CHASSIS. INSTALL THE RIGHT SIDE SPACER, WASHER AND NUT - SCREW THE RIGHT SIDE NUT ON UNTIL ABOUT $\frac{1}{2}$ " OF THREAD IS SHOWING. NOW SET THE RIGHT PASSENGER FLOORBOARD MOUNTING BRACKET ON THE PIVOT SHAFT AND CONTINUE SCREWING THE RIGHT SIDE NUT ONTO THE PIVOT SHAFT. DOING IT THIS WAY ALLOWS YOU TO LEAVE THE EXHAUST HEADER ALONE.

A-100-577-V

2012 & EARLIER VTR

DISCONNECT BATTERY REMOVE FUEL TANK

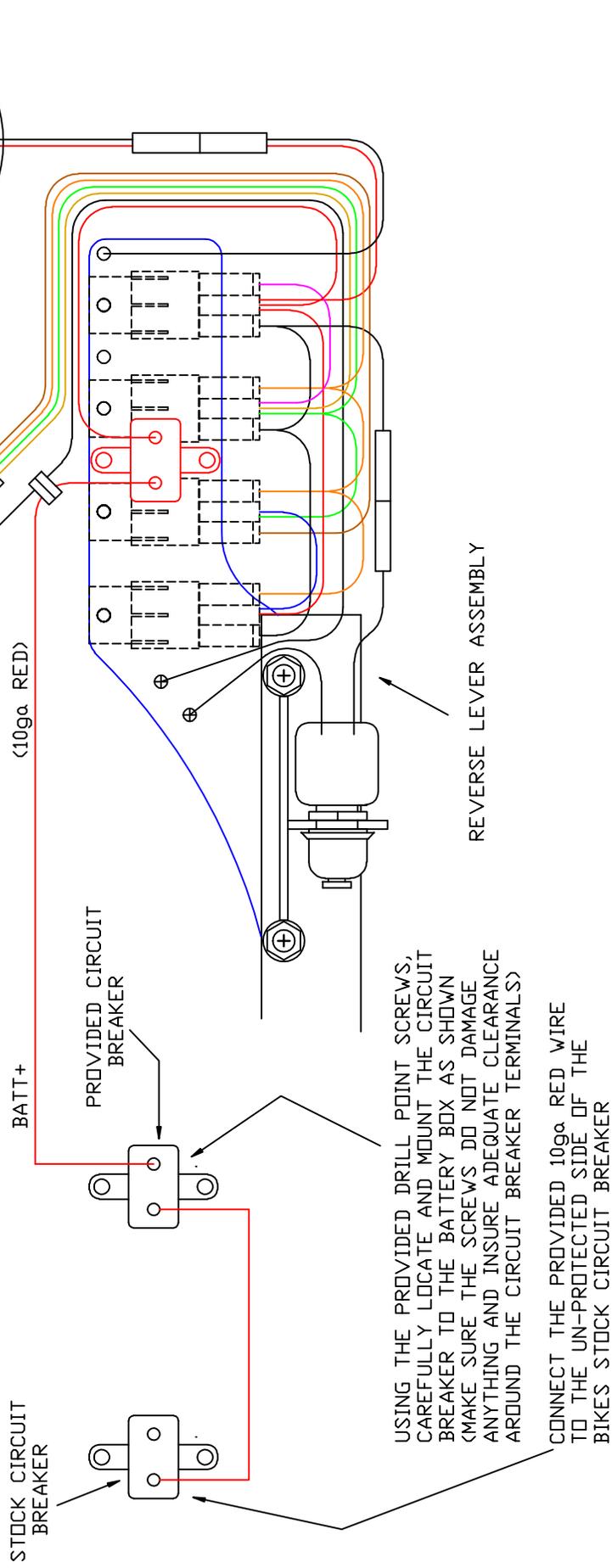
1/4" MALE SPADE T-TAP TO BLACK/PINK NEUTRAL SWITCH WIRE IN (BROWN)
WHITE TWO POSITION PLUG BEHIND REAR CYLINDER

4 PIN PLUG (TO MATING 4 PIN PLUG UNDER LEFT SIDE COVER) (ORANGE)

90° FEMALE SPADE CONNECT THIS GREEN WIRE TO THE
EXPOSED +TERMINAL ON THE HORN (GREEN)

MALE SPADE UNPLUG GRAY WIRE FROM HORN-
CONNECT IT TO THIS YELLOW WIRE (YELLOW)

5/16" RING TER. TO CHASSIS GROUND (12ga. BLACK)



A-100-1296-D 2013 & NEWER VTR REVERSE

DISCONNECT BATTERY REMOVE FUEL TANK

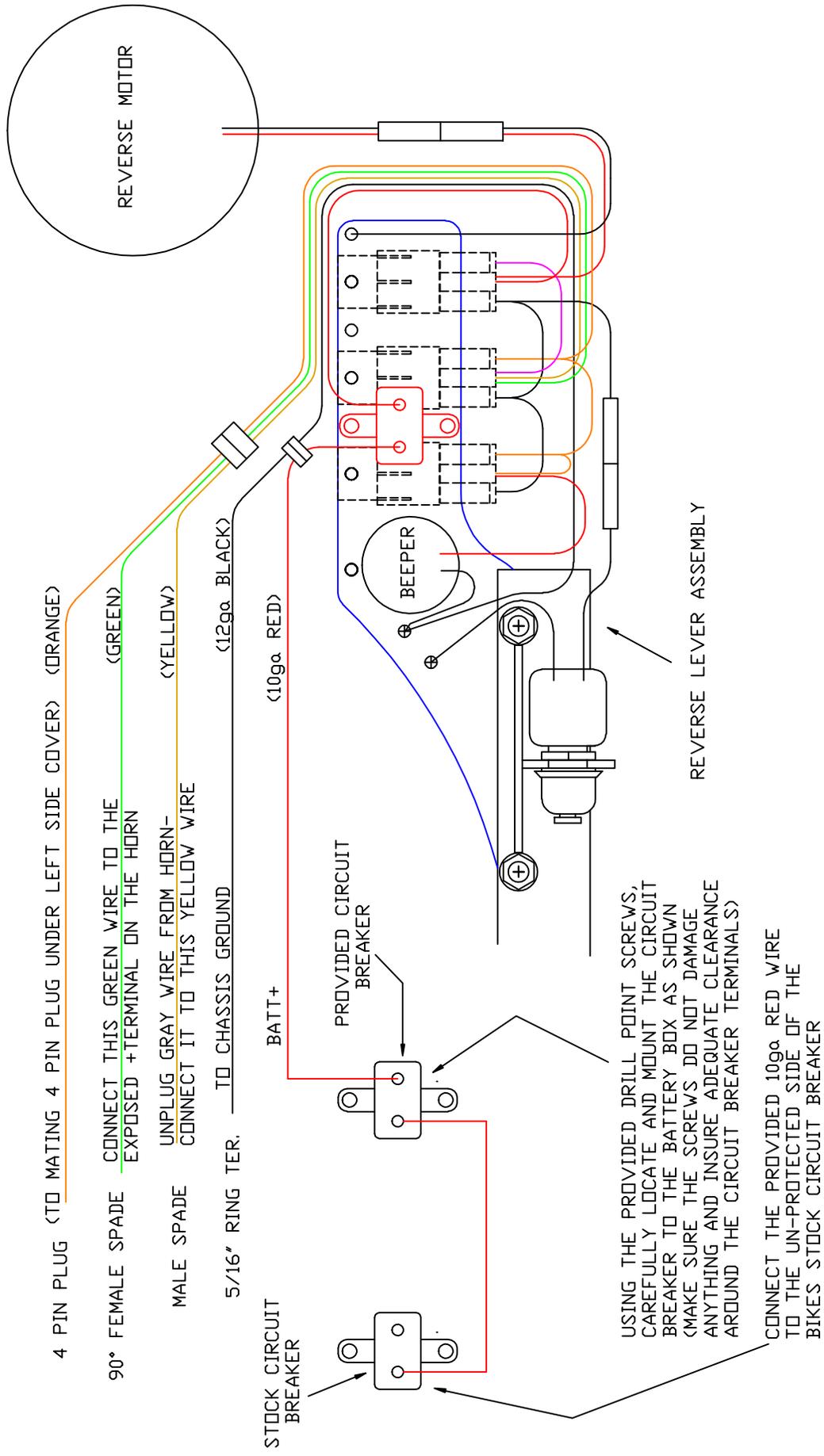
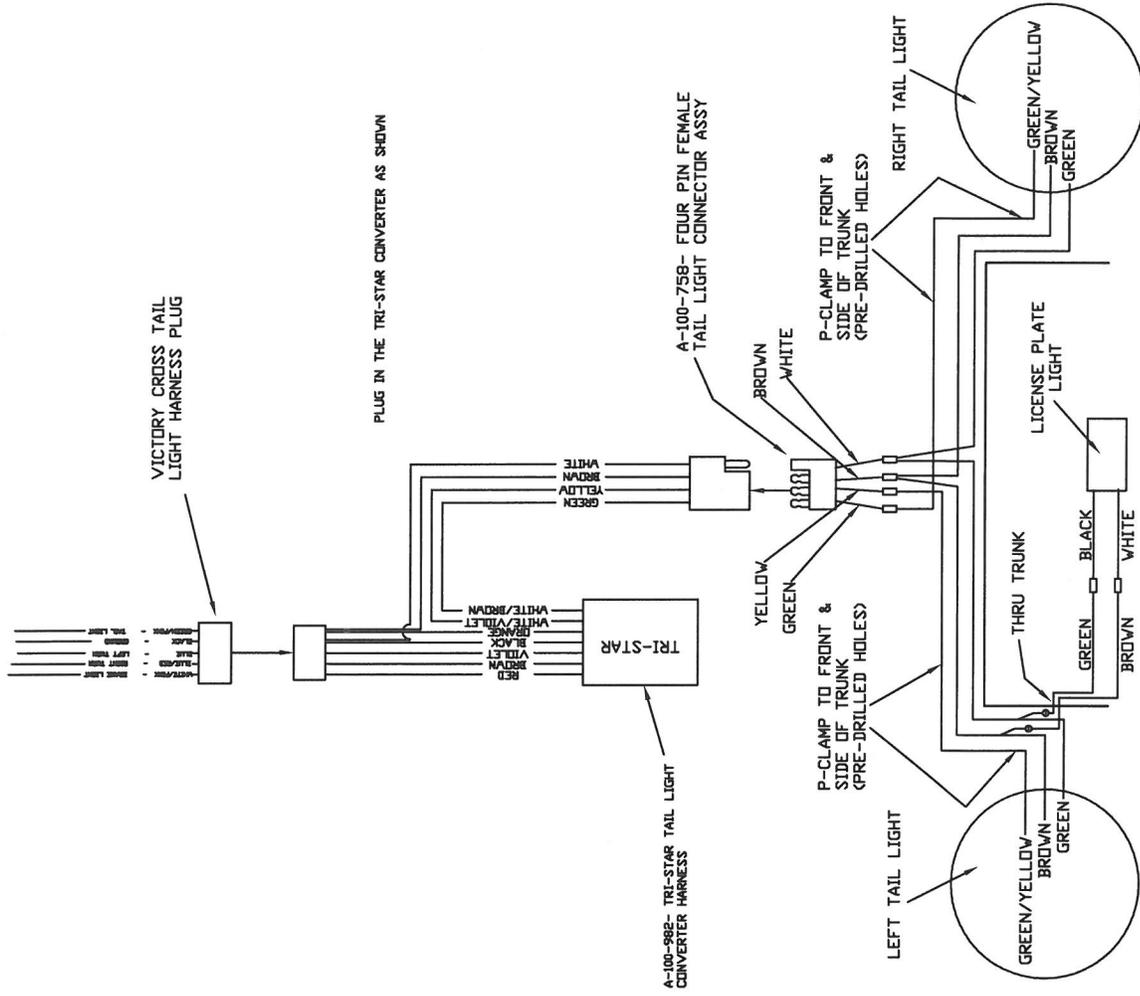


DIAGRAM #982-D VICTORY CROSS TAIL LIGHT WIRING DIAGRAM



- INSTALL TAIL LIGHTS & LIC PLATE LIGHT ON BODY
- ATTACH LEFT & RIGHT TAIL LIGHT HARNESS TO SIDES & FRONT OF TRUNK (USING PRE-DRILLED HOLES & SUPPLIED "P" CLAMPS & HARDWARE)
- PLUG IN LEFT & RIGHT TAIL LIGHT WIRES TO SUPPLIED FLAT FOUR PLUG AS SHOWN (IT MAY BE NECESSARY TO SLIGHTLY CLOSE UP THE FEMALE CONNECTORS FOR A TIGHT CONNECTION- AFTER PLUGGING THEM IN, ZIP TIE THE BUNDLE TO PREVENT UNPLUGGING)
- CONNECT SUPPLIED GREEN & BROWN WIRES TO LEFT SIDE TAIL LIGHT HARNESS PLUGS
- PUSH GREEN & BROWN WIRES THROUGH PRE-DRILLED HOLE IN LEFT SIDE OF TRUNK
- SPlice GREEN & BROWN WIRES TO LIC. PLATE LIGHT



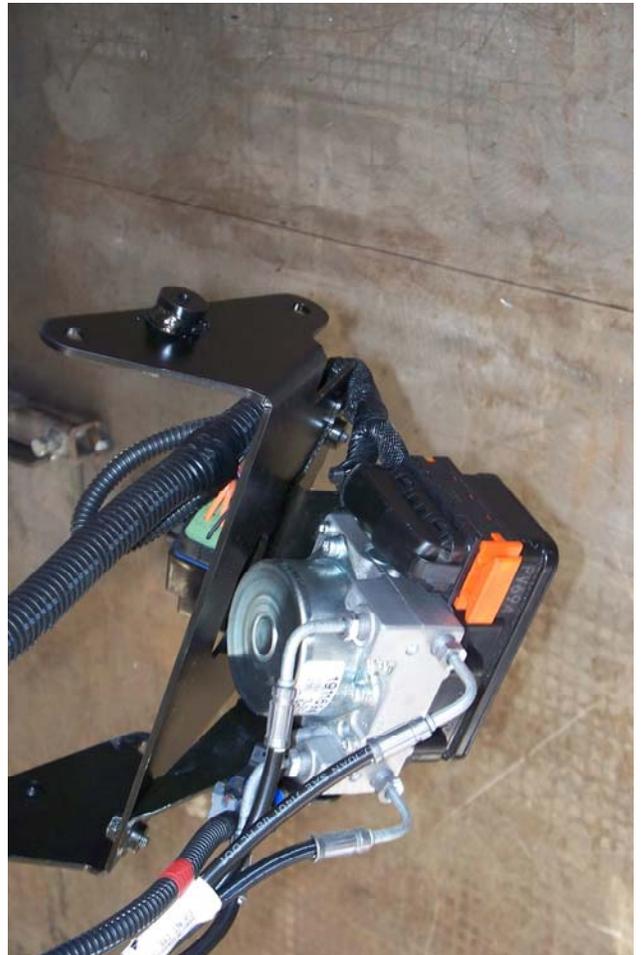
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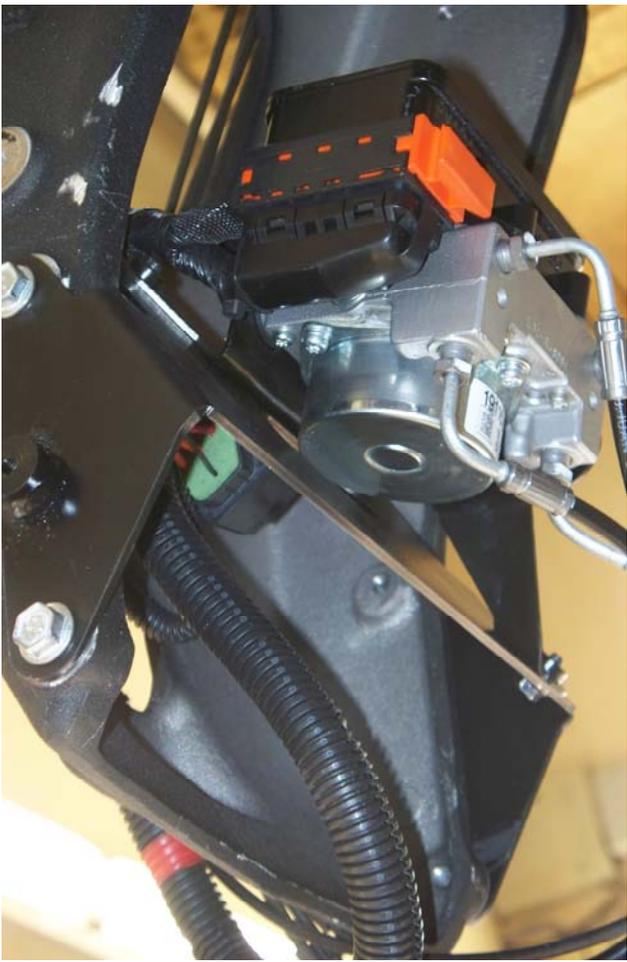
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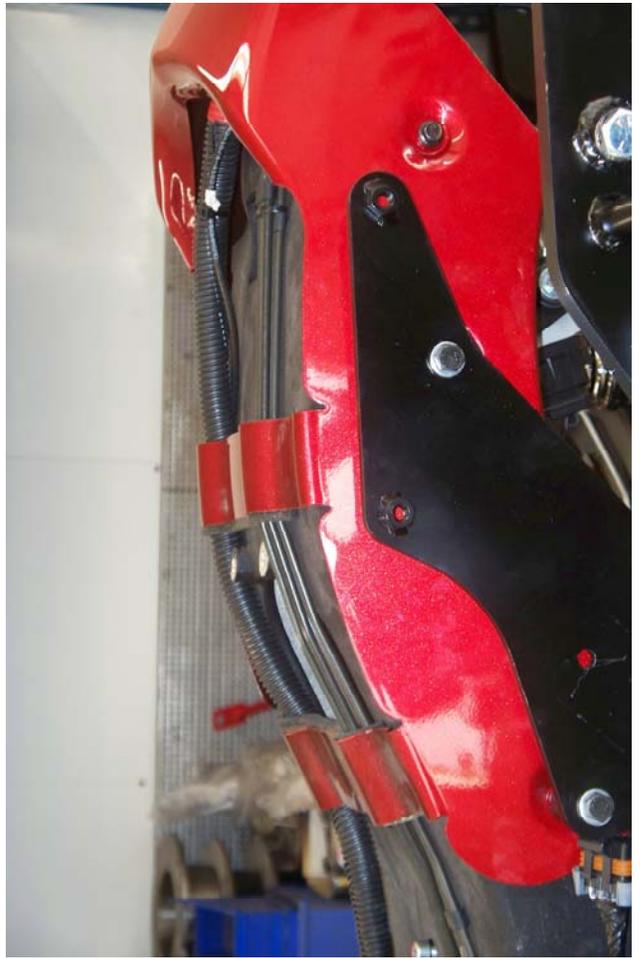
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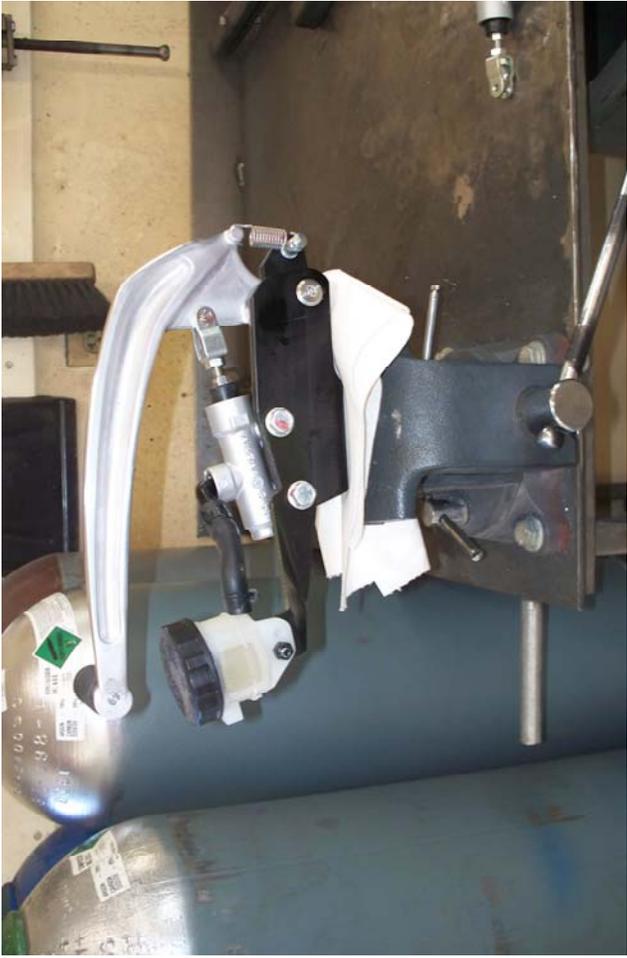
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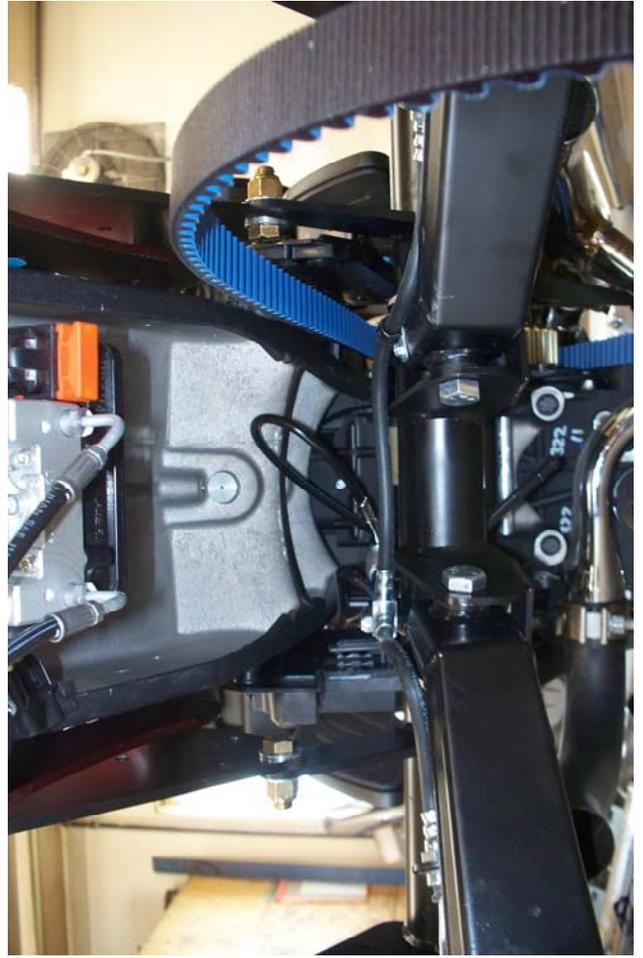
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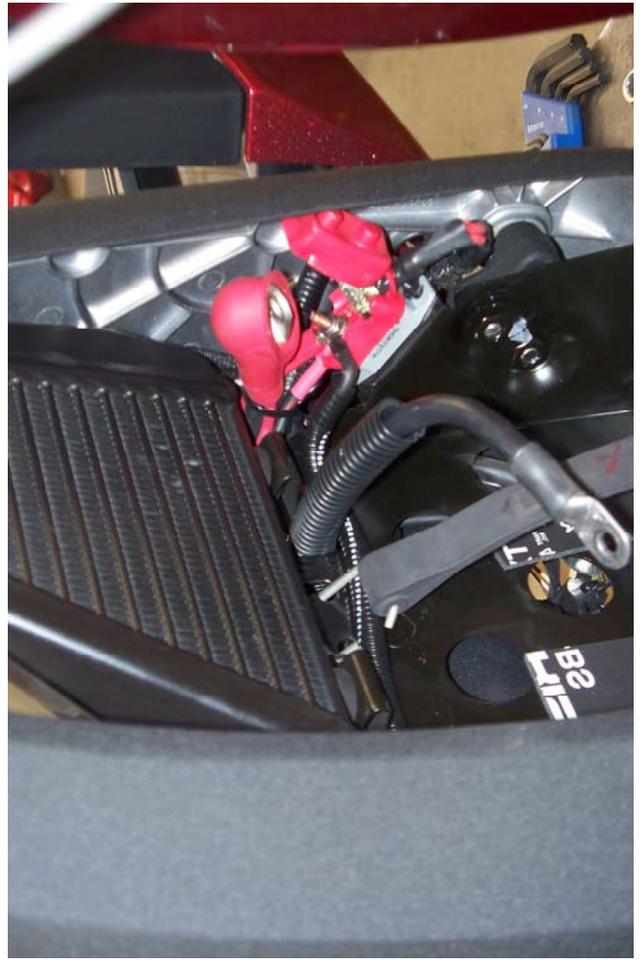
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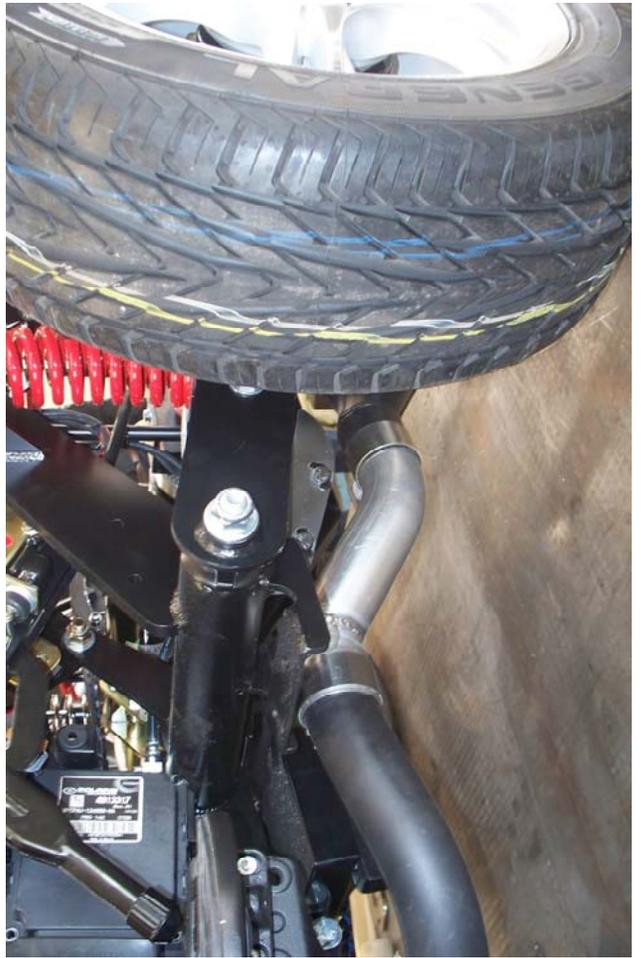
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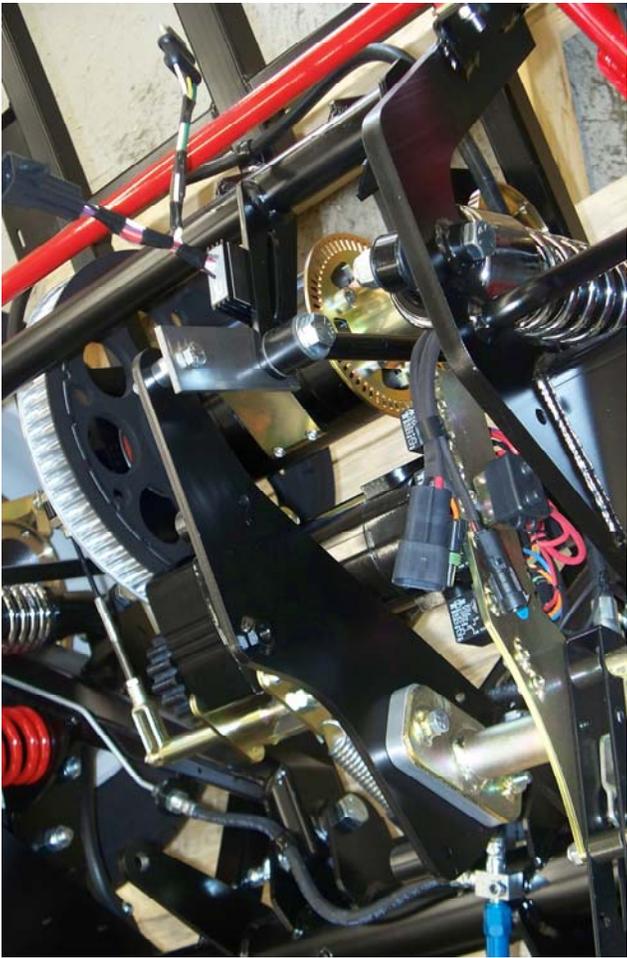
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18



8a



8b