

BB-4®/B2X™ DIESEL Dual Electric Throttle Control

Overview:

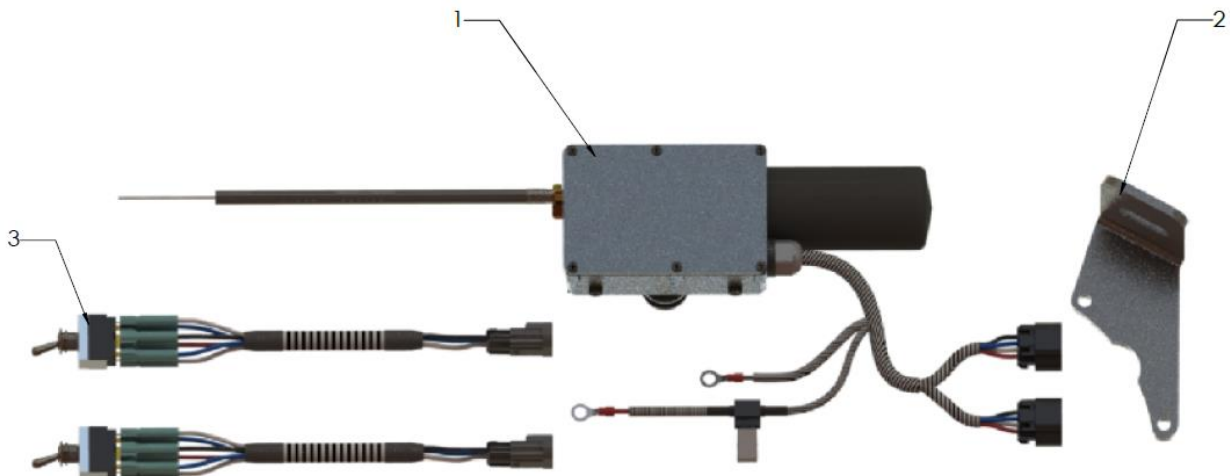
For those needing a throttle controlled at two locations, **WATERAX** offers the 600616 electric throttle actuator kit that includes two switches and the proper wiring logic to operate either switch at either location at any time to increase or decrease the engines throttle.

These instructions will provide the necessary information needed to complete the installation of the electric throttle actuator on the **WATERAX BB-4-D902** or the **B2X-D902** diesel series unit. This controller kit is typically used in conjunction with the Diesel Dual Control Panel Kit (part number 600609) offered by **WATERAX**.

The kit comes with a prewired electric actuator assembly, actuator mounting bracket, bracket mounting hardware, two pre-wired toggle switches and connector kits needed for completing the needed harness runs: from the electric actuator connectors to each switch connector. Extra wire seals and terminals are provided should a bad crimp occur at installation. One switch assembly should be installed in close proximity to each of the installed control panels and pumping unit control locations. The connector terminals and seals are installed on the harness wires using the Delphi Packard crimping tools.

Parts Breakdown:

| ID | ITEM NO | DESCRIPTION | QTY | ID | ITEM NO | DESCRIPTION | QTY |
|----|---------|--|-----|----|---------|--------------------------------------|-----|
| 1 | 701506 | ELECTRIC THROTTLE ACTUATOR ASSEMBLY 12VDC | 1 | - | 701502 | CONNECTOR MALE DELPHI GT150 4 PIN | 2 |
| 2 | 701505 | ELECTRIC THROTTLE ACTUATOR MOUNTING BRACKET | 1 | - | 701503 | CONNECTOR FEMALE DELPHI GT150 4 PIN | 2 |
| 3 | 600622 | HARNESS AND SWITCH FOR ELECTRIC THROTTLE CONTROL | 2 | - | 701504 | TPA DELPHI GT150 4 PIN | 4 |
| - | 801229 | SCREW M8X1.25X40 HEX CAP ZINC | 1 | - | 701416 | CABLE SEAL BLUE DELPHI MP280 | 20 |
| - | 800548 | R-119 LOCKWASHER M8 SPLIT ZINC | 1 | - | 701500 | TERMINAL MALE 18-16GA DELPHI GT150 | 12 |
| - | 800040 | R-120 HEX NUT M8 X 1.25 | 1 | - | 701501 | TERMINAL FEMALE 18-16GA DELPHI GT150 | 12 |



USER INSTRUCTIONS

Installation:

1. Attach the actuator mounting bracket to the engine adapter mounting screw locations as shown in Figure 1.
2. You will need to replace the adapter mounting screws with the longer screws found in the kit.
3. Because the adapter is threaded on the top bolt hole, the screw will need to be threaded through and then the nut and washer found in the kit added.
4. Then mount the actuator on the mounting bracket. Keeping the washer alignment, the same as it is found on the actuator, install the bracket between the two plastic washers and tighten.
5. Use the clamp and screw found on the throttle cable mounting bracket to secure the actuator cable jacket. Do not overtighten so that it crushes against the cable running through the jacket to operate the throttle linkage.
6. When installed, the installation should look like Figure 2.

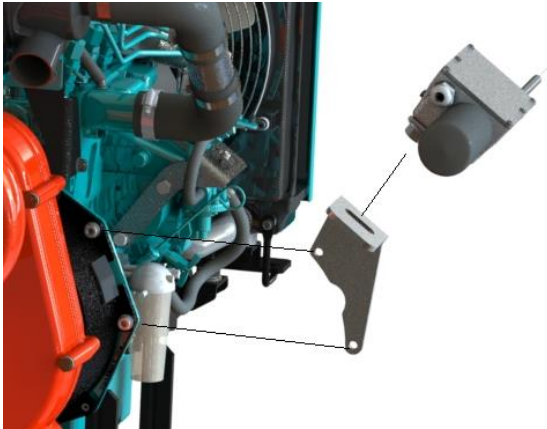


Figure 1

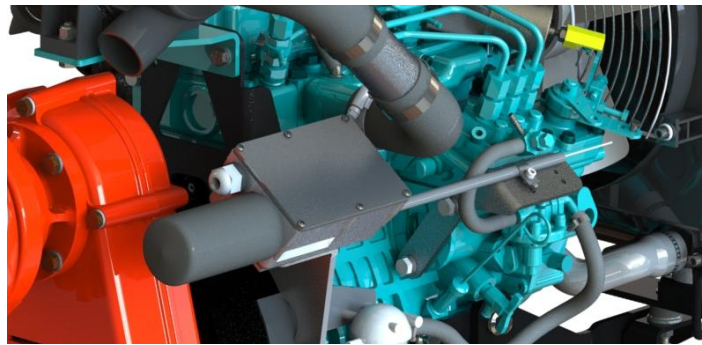


Figure 2

7. Next run the red wire along the engine harness over to the power stud on the engines starter solenoid – Figure 3.
8. Run the black wire to the grounding wires found grounded to the air cleaner bracket mounting bolt – Figure 4.

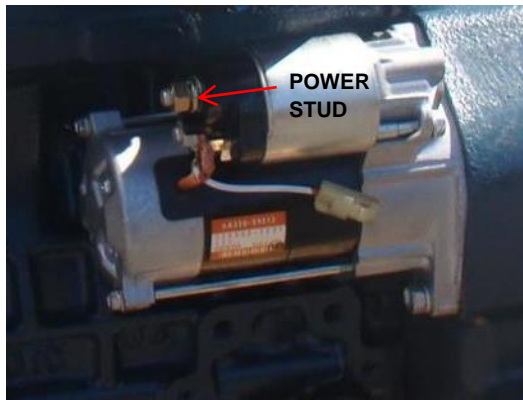


Figure 3



Figure 4

9. Connect one of the prewired switches to one of the connectors on the actuator harness.
10. With the battery connected, press the toggle switch until the throttle cable is fully extended from the jacket and stops.
11. Check that the fully extended cable lines up with the throttle linkage. If it does not, remove the cover from the actuator by removing the 6 cover screws, loosen the Allen screw shown in Figure 5 and adjust the stop and retighten the Allen screw.

USER INSTRUCTIONS

12. Press the toggle switch again to check its position.
13. Keep repeating steps 11 and 12 until the cable stops at the right point.
14. Mark where the cable lines up with the hole in the throttle linkage.
15. Pressing the toggle in the other direction retract the cable until it stops.
16. Pull the throttle lever all the way to the left and make sure the hole in the throttle cable aligns with the mark on the throttle cable as it did when it was fully extended.
17. If it doesn't, loosen the Allen screw and adjust the other limiting stud until the cable does.
18. When the adjustments are complete, make sure that the Allen screws locking the limiting studs are torqued to the recommended torque of 4.5 in-lbs.
19. Install the cover back on the actuator box.
20. Install the cable in the throttle cable lock and lock in place.
21. Install each toggle switch in the desired location and determine the needed connection harness lengths.
22. Cut needed wires to length and install the terminals, seals on the wires.
23. Install the terminals crimped to the wires into the proper connector housing and lock the wires in place in the back of the connector with the pink lock (follow the Delphi GT150 series connector installation instructions).
24. Connect the harnesses to the pre-wired switches and actuator connectors.
25. Recheck that everything works correctly and then secure harnesses away from sharp edges and hot surfaces.
26. Check that the toggles are installed in the right position so that the actuator increases the throttle and decreases the throttle when the toggle is moved in the desired position. Usually push the toggle up to increase the throttle and push the toggle switch down to decrease the throttle.
27. The installation is complete.

CAUTION: SET SCREW THREADS CAN BE STRIPPED IF OVER TIGHTENED. MAX TORQUE 4.5 IN-LBS

USE ALLEN WRENCH TO ADJUST SWITCH PINS IN OR OUT FOR SETTING ACTUATOR STROKE.

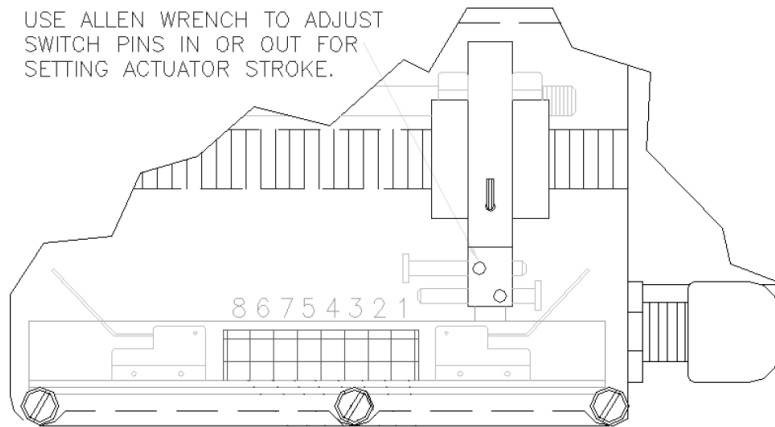


Figure 5