

GENERAL

The following process allows you to rotate engine down, pivoting on rear isolator mount, in order to service components in the top end.

NOTE

The engine does not need to be removed from chassis in order to perform top end repairs.

DISASSEMBLY

NOTES

- Before vehicle is placed on the lift it is necessary to remove the chin fairing.
 - Vehicle should be placed onto the lift with front tire placed in the wheel vise in order to successfully perform this procedure.
1. Disconnect fuel pump and run vehicle until it is out of fuel. See [4.39 FUEL PUMP](#).

NOTES

- This step is always performed in order to purge fuel lines.

- The connection for fuel pump is just above the pump located at the rear of the fuel tank on the left side of the vehicle.

⚠ WARNING

To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect negative (-) battery cable before proceeding. (00048a)

2. Remove seat and disconnect battery.
3. Remove intake cover. See [2.37 INTAKE COVER ASSEMBLY](#).
4. Remove air filter. See [1.14 AIR CLEANER FILTER](#).
5. Remove air filter base plate. See [4.44 AIR CLEANER ASSEMBLY](#).

NOTE

The velocity stack has a clamp ring around the throttle body.

6. Remove throttle body velocity stack.
7. Cover induction module to prevent objects from falling into the intake.
8. See [Figure 3-1](#). Disconnect fuel line.
9. Disconnect the throttle position sensor (2) [88].
10. Disconnect the fuel injector leads (3) [84 & 85].

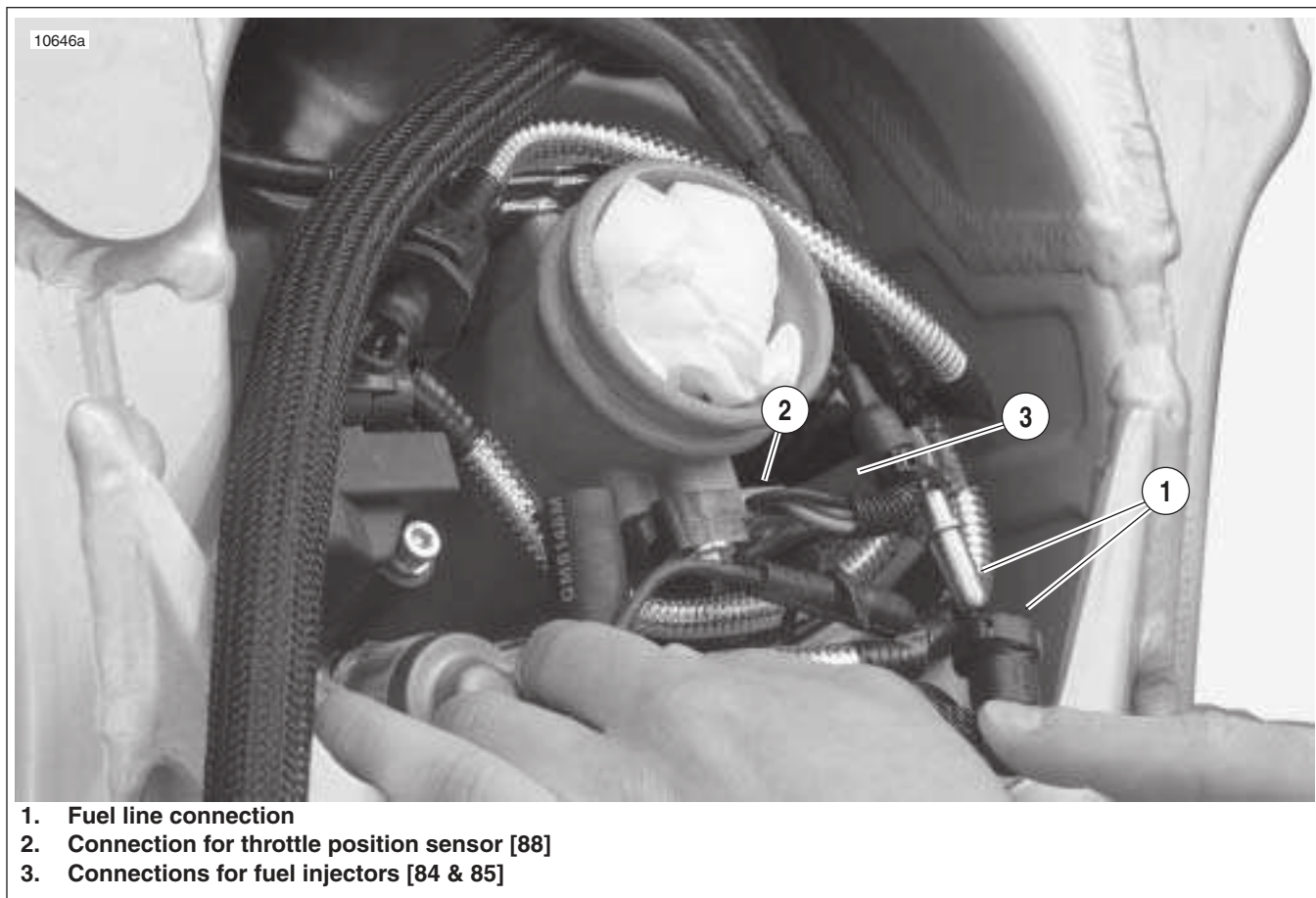


Figure 3-1. Fuel Line and DDFI Electrical Connections (Typical)

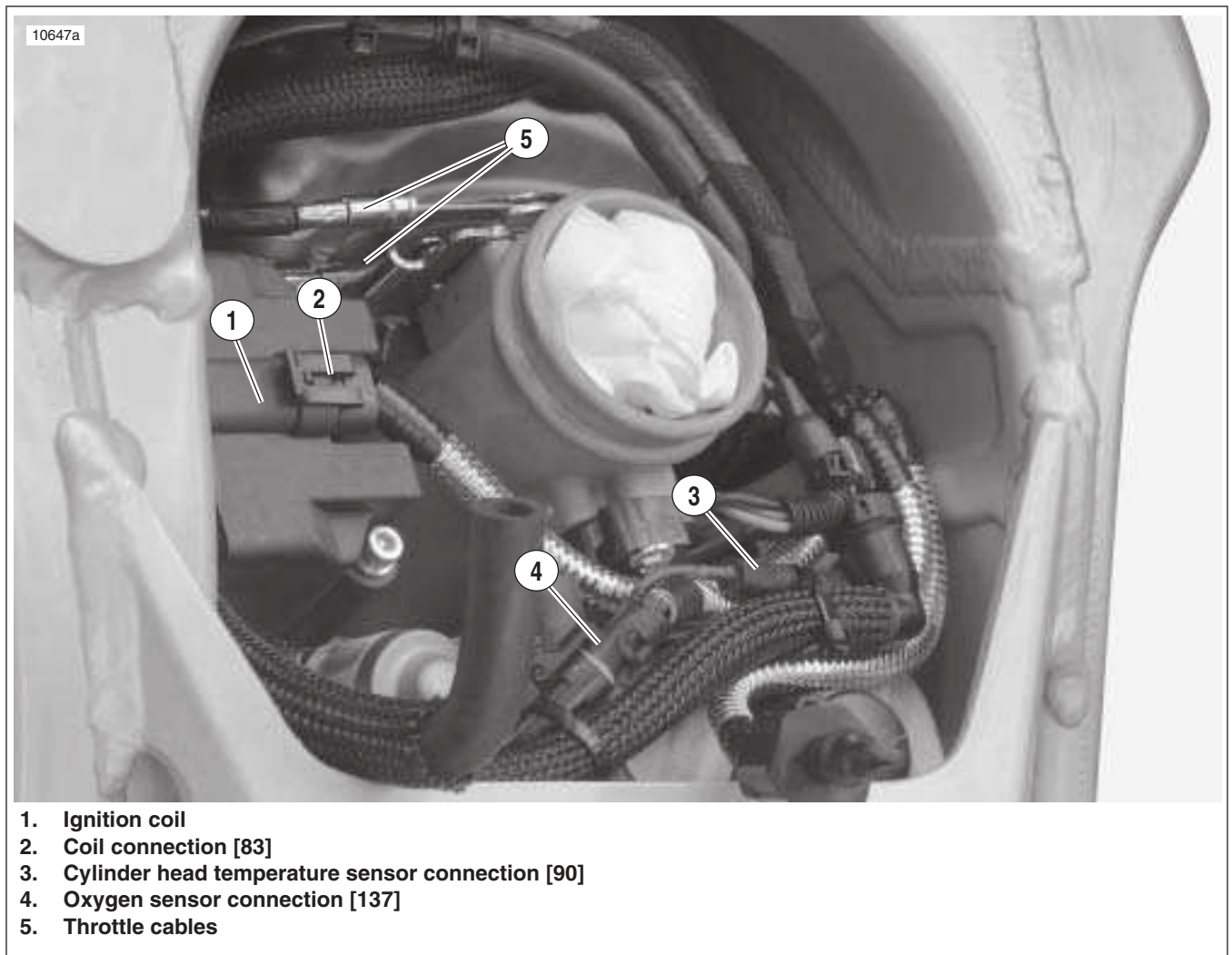
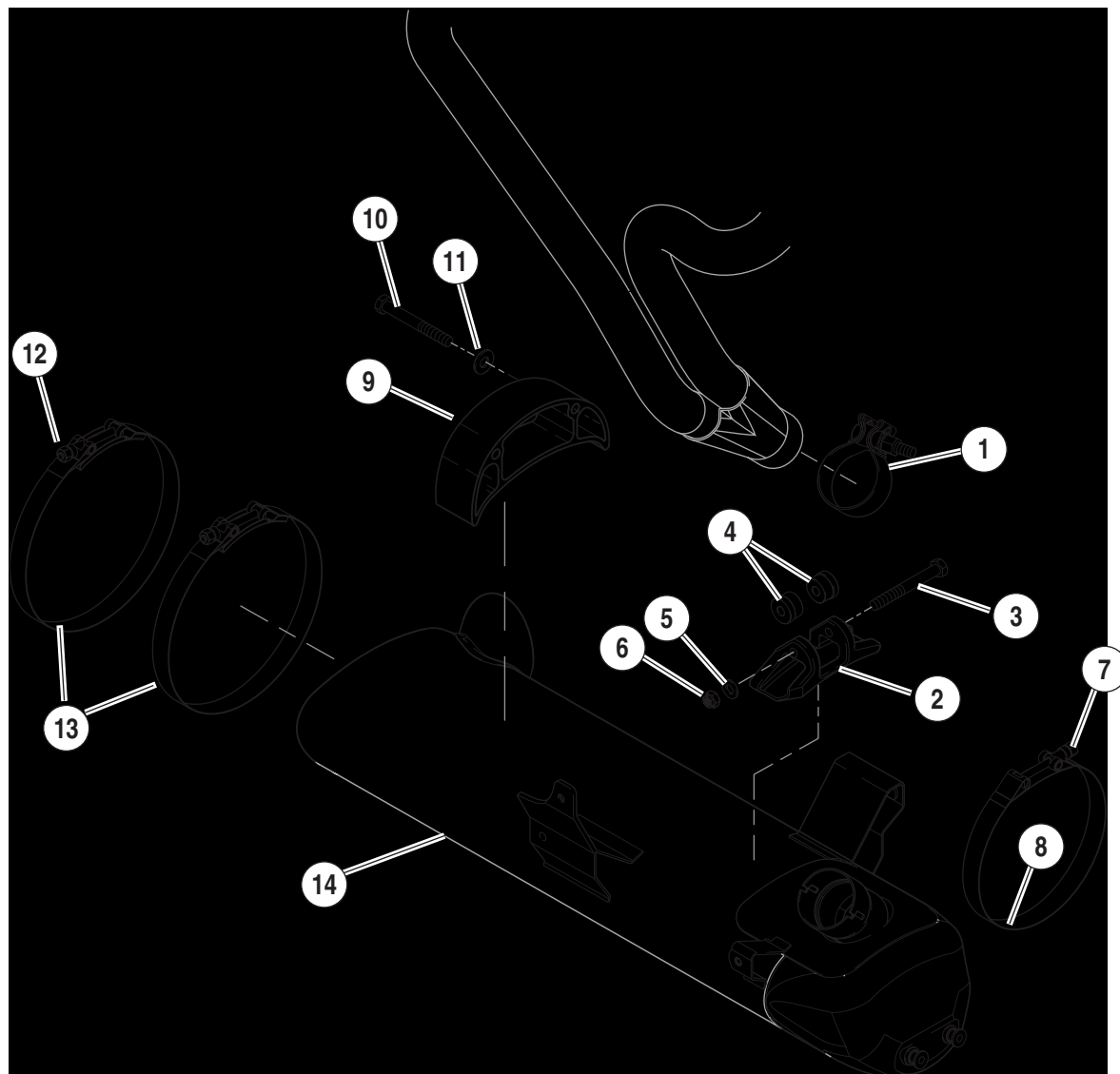


Figure 3-2. Electrical Connections and Throttle Cables (Typical)

11. See [Figure 3-2](#). Disconnect the ignition coil (2) [83] and remove.
12. Disconnect the following sensors:
 - a. Temperature sensor (3) [90].
 - b. Oxygen sensor (4) [137].

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- | | |
|-------------------------------------|------------------------------------|
| 1. Torca clamp | 8. Front muffler strap |
| 2. Front muffler mount | 9. Rear muffler bracket |
| 3. Front muffler mount fastener (1) | 10. Rear muffler bracket screw (2) |
| 4. Front muffler mount bushings (2) | 11. Flat washer (2) |
| 5. Front muffler mount washer (1) | 12. Rear muffler strap fastener |
| 6. Front muffler mount nut (1) | 13. Rear Muffler strap, rear (2) |
| 7. Front muffler strap fastener | 14. Muffler |

Figure 3-3. Muffler and Mounting System (XB9SX Model)

13. Disconnect and remove air scoops, right and left sides.
14. Remove transmission sprocket side cover.
15. Remove rear belt and idler pulley. See [6.6 DRIVE BELT SYSTEM](#).

NOTE

For 1200 models with interactive exhaust systems see [7.6 INTERACTIVE EXHAUST SYSTEM \(XB12 MODELS\)](#) for specific details on removal of interactive components.

16. See [Figure 3-3](#). Remove muffler: see [2.31 EXHAUST SYSTEM](#).
 - a. Remove front muffler strap (8).
 - b. Remove rear muffler straps (13).
 - c. Loosen Torca clamp (1) and remove muffler (14).
 - d. Loosen front muffler mount (2).

17. Remove left side rider footrest and support plate.
18. See [Figure 3-4](#). Disconnect clutch cable.
 - a. Remove wire form (1) from front isolator.
 - b. Slide clutch cable adjuster boot (2) up to access clutch adjuster.
 - c. Loosen clutch adjuster to release tension from hand lever.
 - d. Remove clutch cable ferrule from hand lever.

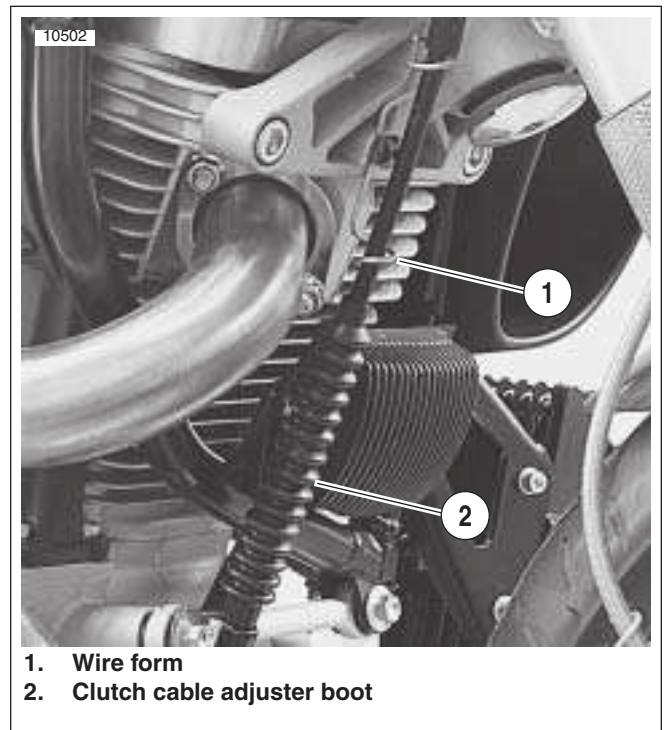
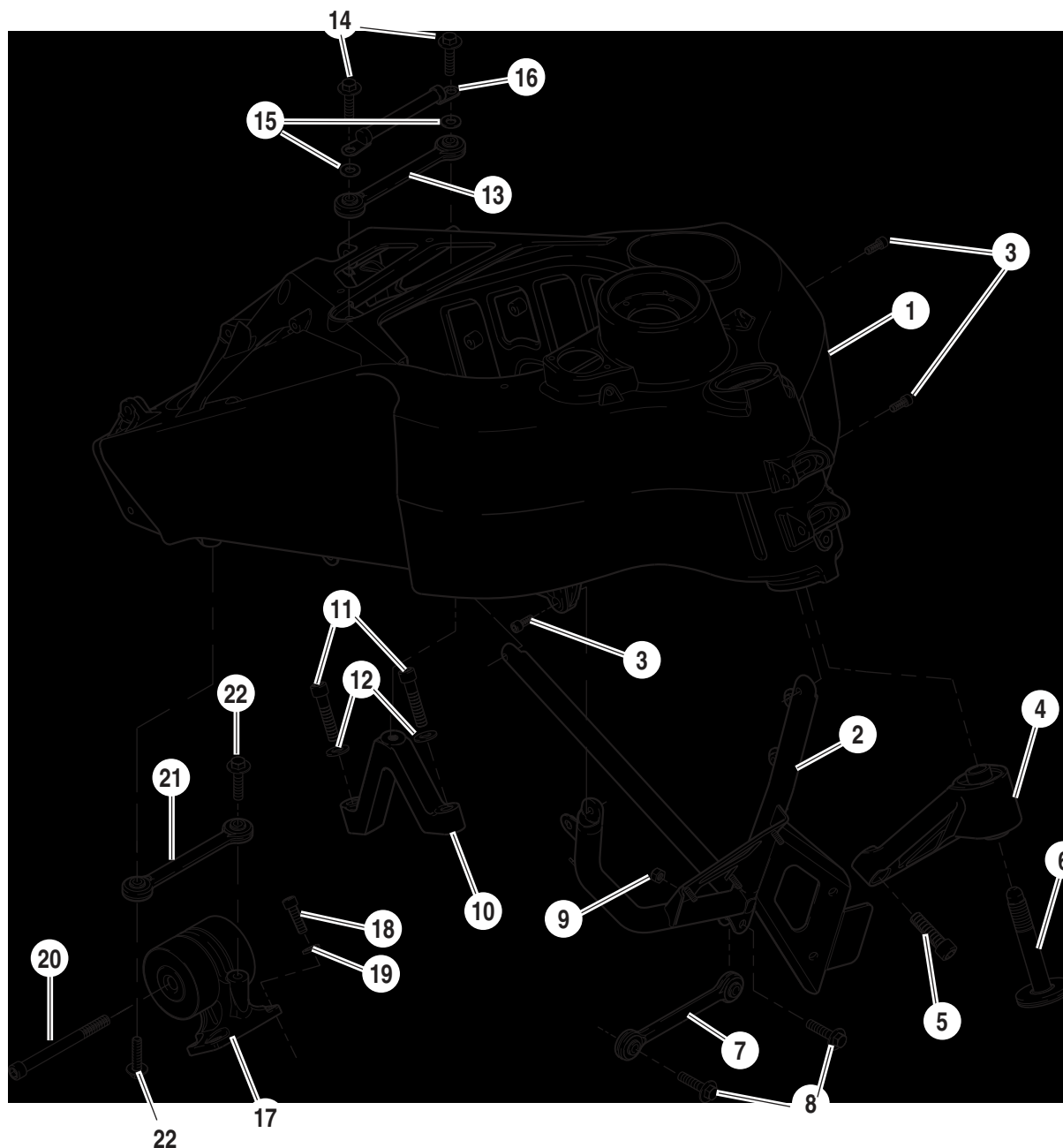


Figure 3-4. Clutch Cable Wire form and Adjuster Boot

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- | | |
|--|---|
| 1. Frame assembly | 12. Washers for center tie bar mount (2) |
| 2. "V" bracket | 13. Center tie bar assembly |
| 3. Fasteners for "V" bracket (3) | 14. Fasteners for center tie bar assembly (2) |
| 4. Front isolator assembly | 15. Washers for center tie bar assembly (2) |
| 5. Fasteners (2) | 16. Ground strap |
| 6. Bolt | 17. Rear isolator assembly |
| 7. Front tie bar assembly | 18. Fasteners for rear isolator assembly (4) |
| 8. Fasteners for front tie bar assembly (2) | 19. Washers for rear isolator assembly (4) |
| 9. Nut for one fastener for front tie bar assembly | 20. Bolt |
| 10. Center tie bar mount | 21. Rear tie bar assembly |
| 11. Fasteners for center tie bar mount (2) | 22. Fasteners for rear tie bar assembly (2) |

Figure 3-5. Engine Mounting System

19. Support engine with wide scissors jack.
20. Unbolt "V" bracket from main frame.
21. Remove center tie bar from engine.

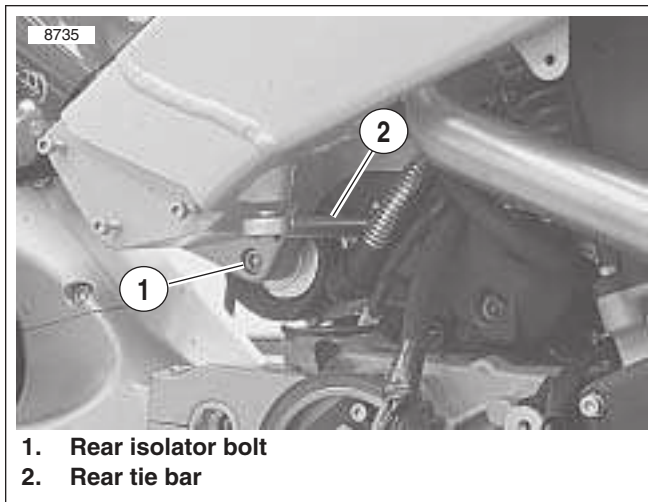


Figure 3-6. Rear Isolator Bolt and Rear Tie Bar (Typical)

22. See [Figure 3-6](#). Remove rear tie bar from frame only.
23. Loosen rear isolator bolt. DO NOT REMOVE.

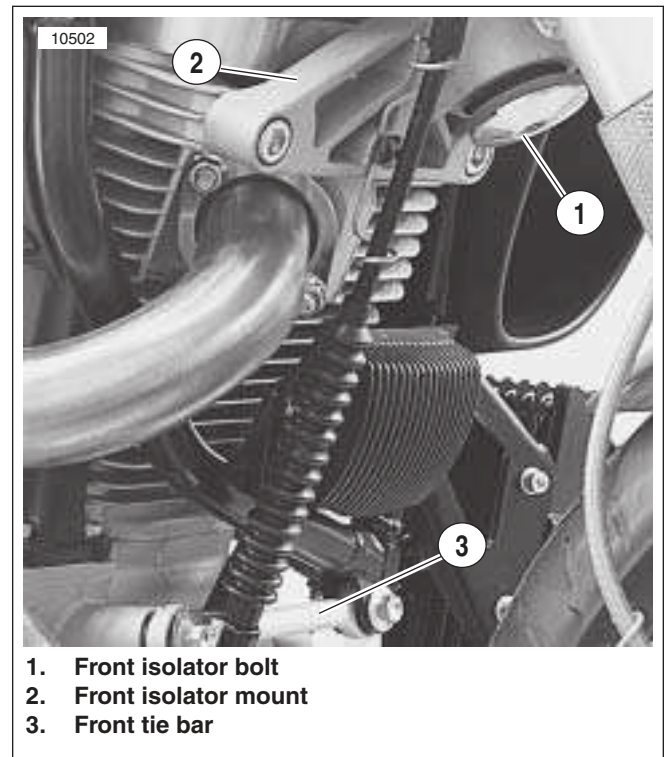


Figure 3-7. Front Isolator and Tie Bar Assemblies

24. See [Figure 3-7](#). Remove front isolator bolt (1).
25. Remove front isolator mount (2) from engine.
26. Rotate engine down.

ASSEMBLY

NOTES

- If exhaust header was removed during service it must be torqued with the engine rotated in the down position. It is not possible to reach fasteners on the rear exhaust at the head with engine rotated in the up position.
 - Tighten header nuts gradually, alternating between studs to insure that exhaust rings are flush with engine. Tighten fasteners to 72-96 **in-lbs** (8.1-10.8 Nm).
1. When repairs have been completed, rotate engine back up into frame.

NOTE

When installing and tightening front isolator bolt it is important to keep load off of isolator bolt for installation purposes. Alternate between tightening front isolator bolt and raising engine with scissors jack.

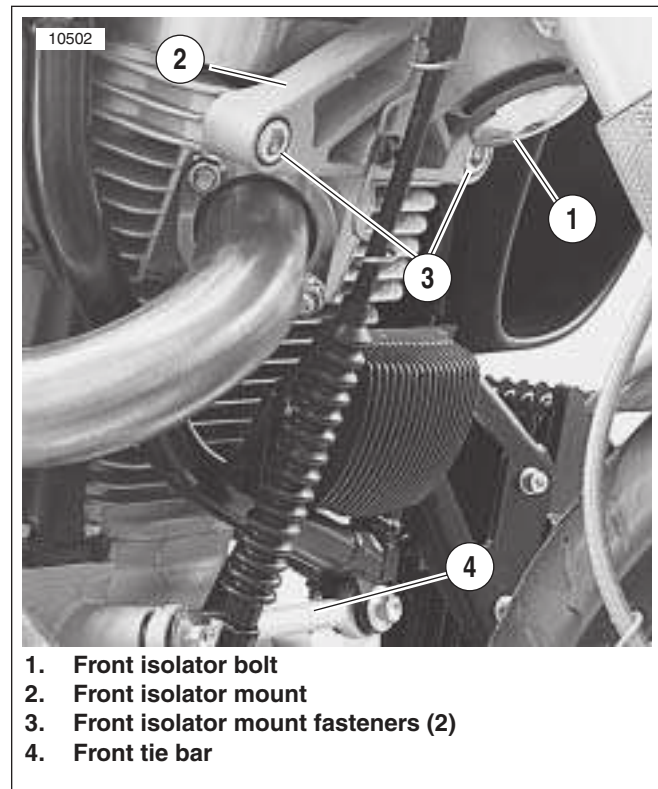


Figure 3-8. Front Isolator and Tie Bar Assemblies

2. See [Figure 3-8](#). Insert front isolator bolt (1) through front isolator (2) and loosely thread into frame. Do not tighten at this point.
3. See [Figure 3-8](#). Install isolator mounting fasteners (3) and tighten to 49-51 ft-lbs (66.4-69.1 Nm).
4. Tighten front isolator bolt to 49-51 ft-lbs (66.4-69.1 Nm).
5. Torque rear isolator bolt to 25-27 ft-lbs (33.9-36.6 Nm).
6. Install rear tie bar to frame and tighten to 25-27 ft-lbs (33.9-36.6 Nm).
7. Install center tie bar to engine and tighten to 25-27 ft-lbs (33.9-36.6 Nm).
8. Install front "V" bracket with oil cooler to main frame.
 - a. Install "V" bracket to main frame from the left side of the vehicle and tighten to 120-144 **in-lbs** (13.6-16.3 Nm).
 - b. See [Figure 3-8](#). Install front tie-bar (4) to "V" bracket and tighten to 25-27 ft-lbs (33.9-36.6 Nm).
 - c. Attach regulator wiring harness to bracket nylon cable straps.
9. Remove scissors jack.

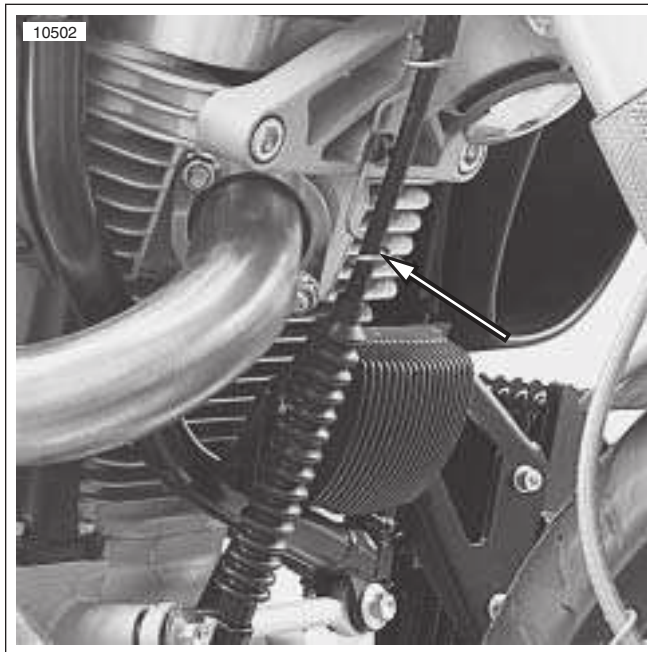


Figure 3-9. Clutch Cable Wire form

10. See [Figure 3-9](#). Pull clutch cable back up into the proper position.
 - a. Connect clutch cable to handlebars and adjust to specifications. See [1.8 CLUTCH](#).
 - b. Install wire form and tighten fastener to 84-92 **in-lbs** (9.5-10.4 Nm).

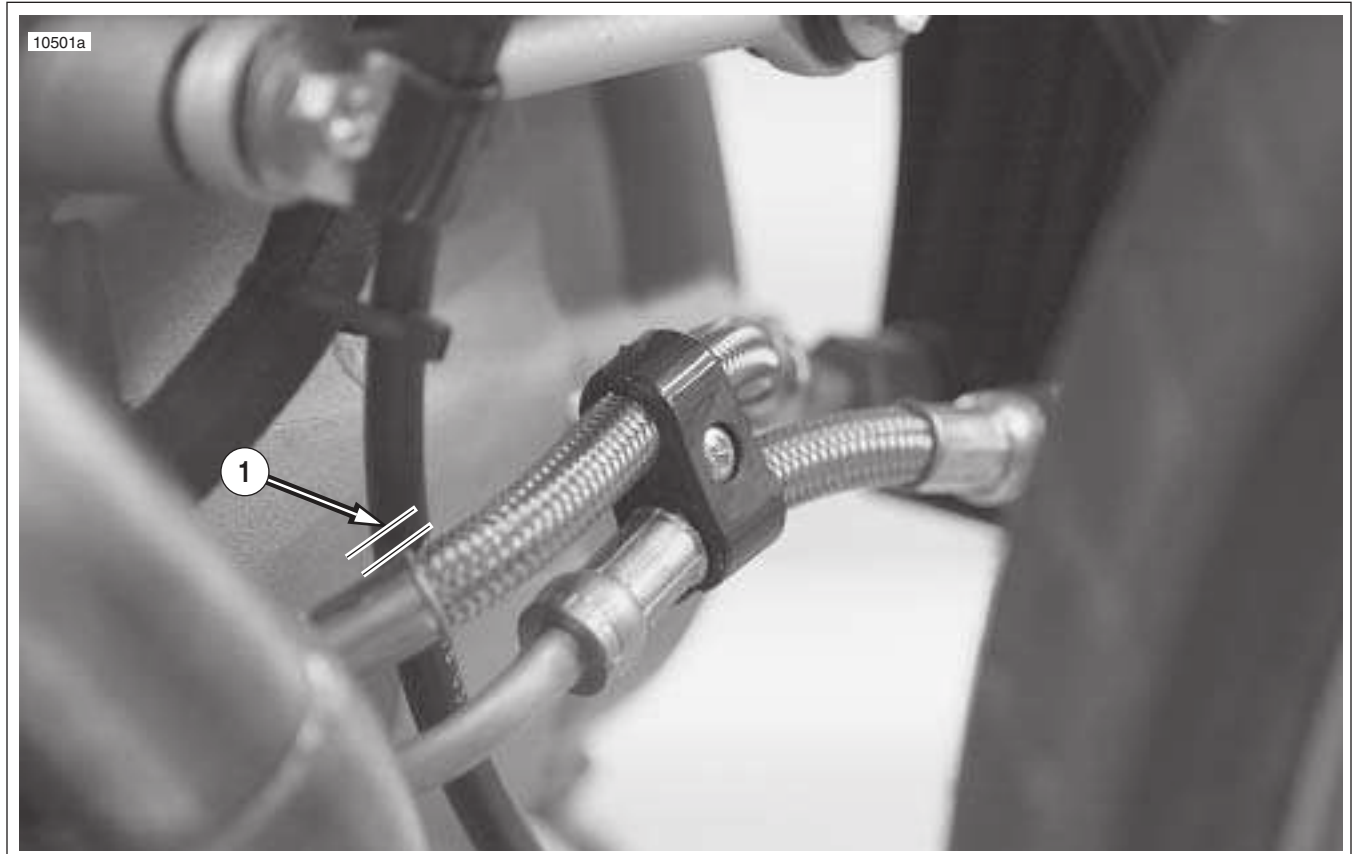


Figure 3-10. Oil Cooler Feed and Return Oil Line 1/8-1/4 in. (3.175-6.35 mm) Clearance

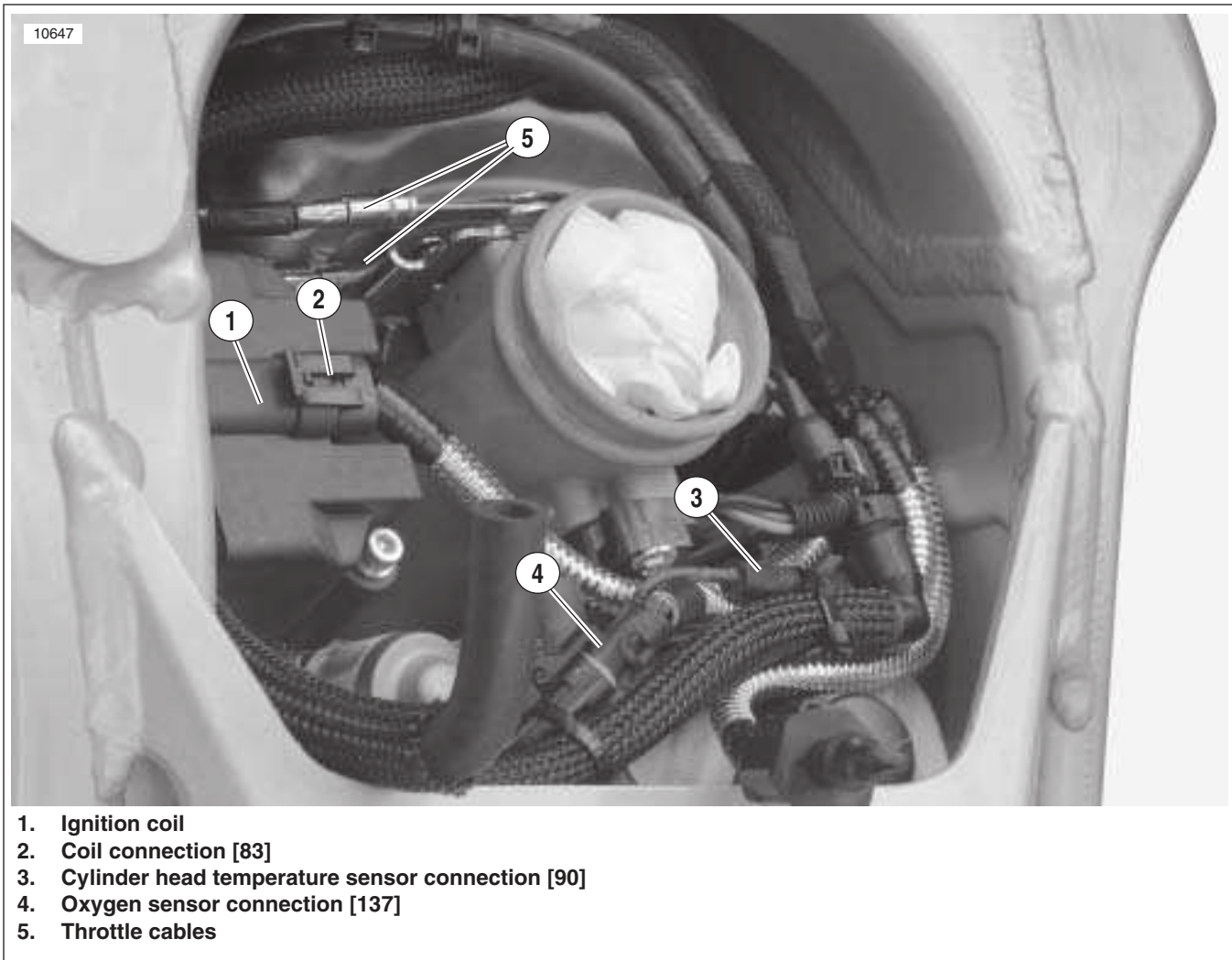
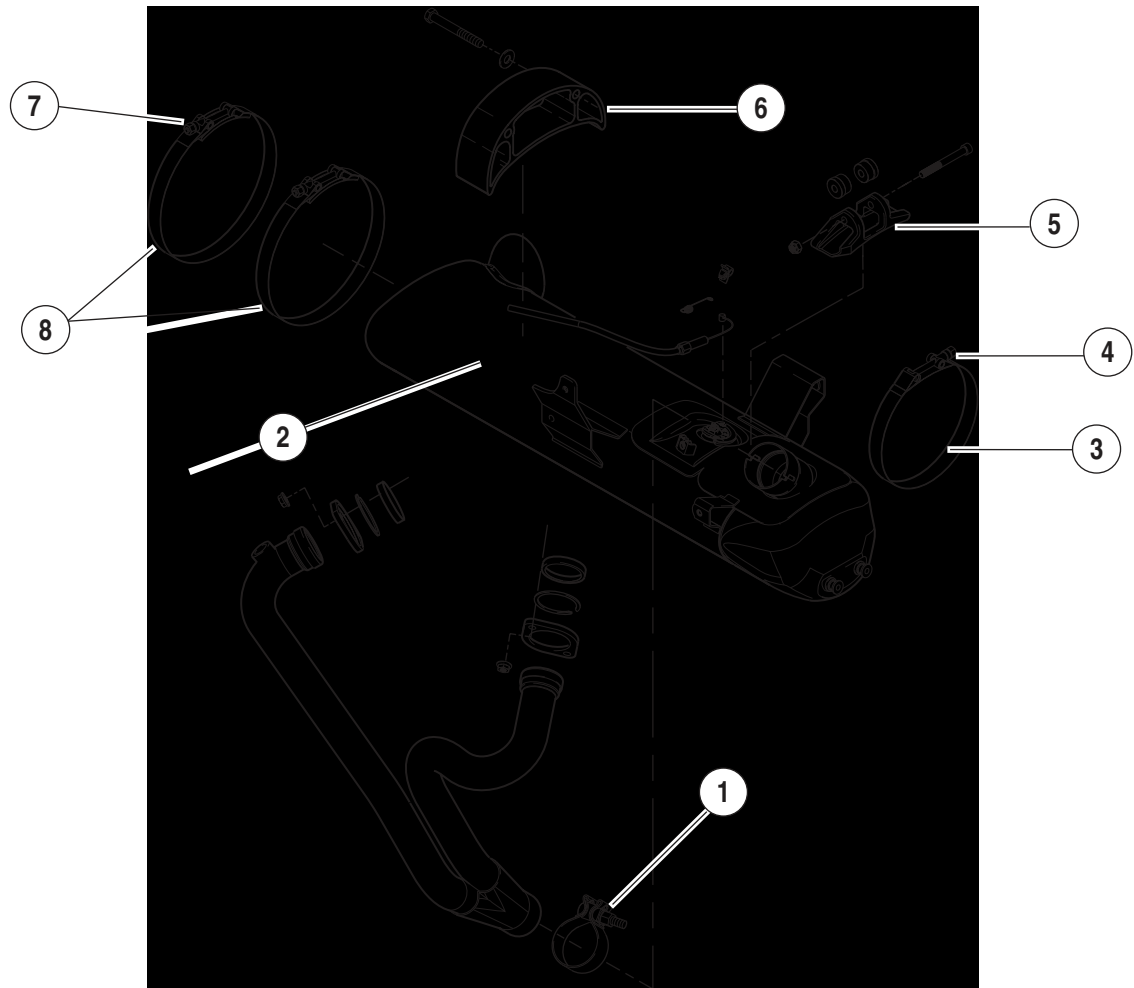


Figure 3-11. Electrical Connections and Throttle Cables (Typical)

11. Connect the following sensors:
 - a. Temperature sensor (3) [90].
 - b. Oxygen sensor (4) [137].
12. See [Figure 3-11](#). Install the ignition coil and connect (2) [83] and tighten fasteners to 120-144 **in-lbs** (13.6-16.3 Nm).

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1. Clamp, Torca
2. Muffler
3. Muffler strap, front
4. Front muffler strap fastener
5. Front muffler mount
6. Rear muffler bracket
7. Rear muffler strap fastener
8. Muffler strap, rear (2)

Figure 3-12. Muffler and Mounting System (XB12 Models)

NOTES

- *Never re-use front muffler strap. Always replace front muffler strap with a new strap when removed from system.*
- *It is important that the front muffler mount is tightened last in order to ensure proper alignment of the exhaust system.*
- *When rear muffler straps have been installed, it is important that strap fasteners do not contact idler pulley bracket.*

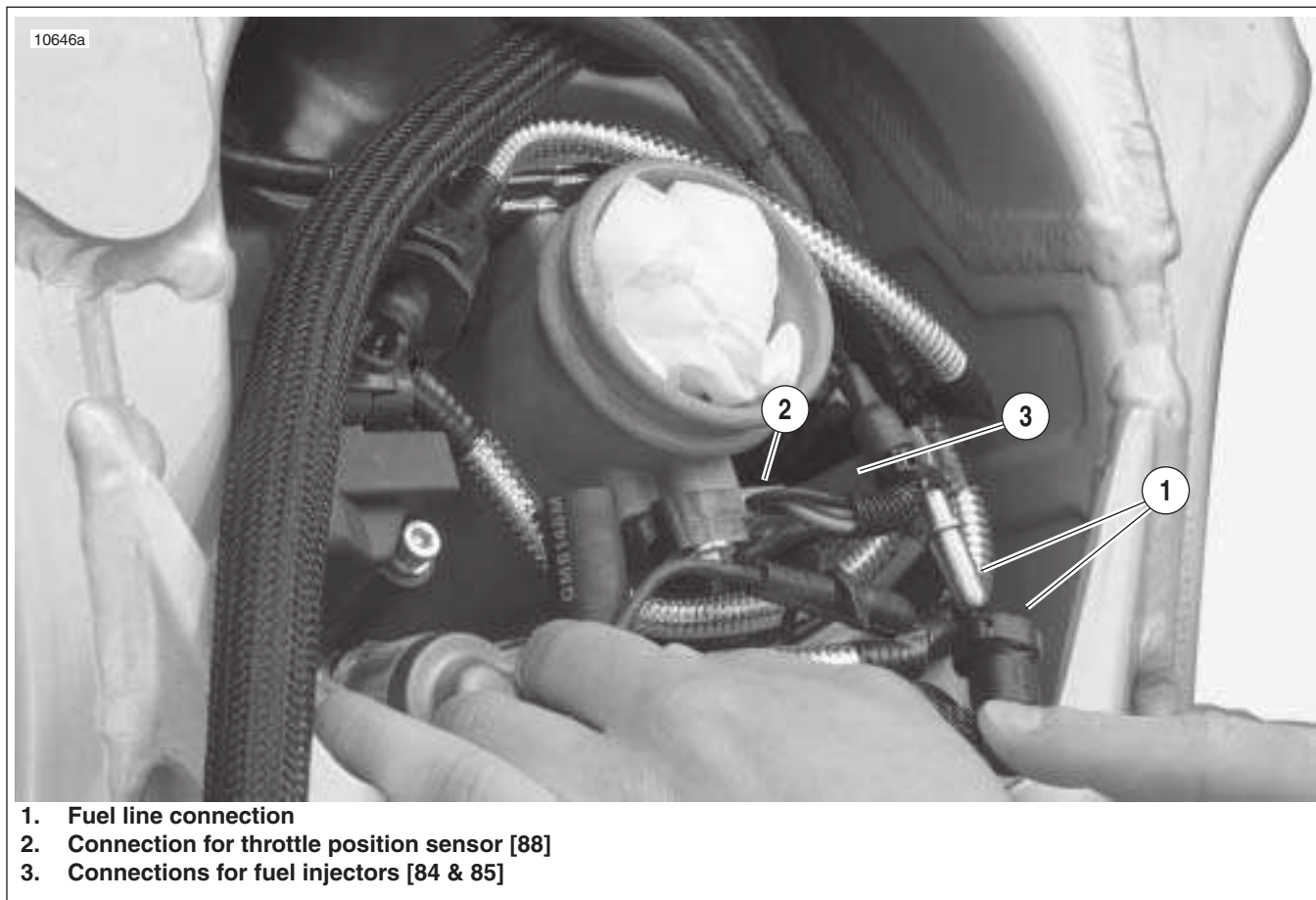


Figure 3-13. Fuel Line and DDFI Electrical Connections (Typical)

NOTE

Remove shop towel from entrance of throttle body to ensure proper operation of induction module.

13. See [Figure 3-13](#). Connect throttle position sensor (2) [88].
14. Connect fuel injector leads (3) [84 & 85].
15. Connect fuel line.
16. Install throttle body velocity stack and replace the snap ring around the throttle body securing the velocity stack..
17. Install air filter base plate. See [4.44 AIR CLEANER ASSEMBLY](#).
18. Install muffler. See [2.31 EXHAUST SYSTEM](#).

NOTE

For 1200 model motorcycles with interactive exhaust systems see [7.6 INTERACTIVE EXHAUST SYSTEM \(XB12 MODELS\)](#).

19. Install air cleaner assembly and intake cover and tighten fasteners to 12-36 **in-lbs** (1.3-4 Nm).
20. Install rear belt and idler pulley. See [6.6 DRIVE BELT SYSTEM](#).
21. Install left side rider footrest and support plate and tighten fasteners to 108-132 **in-lbs** (12.2-14.9 Nm).
22. Install sprocket cover and tighten fasteners and washers to 12-36 **in-lbs** (1-4 Nm).
23. Install chin fairing. See [2.36 CHIN FAIRING](#).
24. Install air scoops, right and left sides. See [2.38 AIR SCOOPS](#).

25. Connect fuel pump.

NOTE

The connection for fuel pump is just above the pump located at the rear of the fuel tank on the left side of the vehicle.

⚠ WARNING

Connect positive (+) battery cable first. If positive (+) cable should contact ground with negative (-) cable connected, the resulting sparks can cause a battery explosion, which could result in death or serious injury. (00068a)

26. Connect negative ground cable to battery and install seat (tighten).

⚠ WARNING

After installing seat, pull upward on front of seat to be sure it is in locked position. While riding, a loose seat can shift causing loss of control, which could result in death or serious injury. (00070a)

27. Install seat. See [2.43 SEAT](#).