NOTE: DO NOT DISCARD the Parts List from the Instruction Bulletin. Place the Parts List in the appropriate place in the machine manual for future reference. Retaining the Parts List will make it easier to reorder individual parts and will save the cost of ordering an entire kit.

NOTE:Numbers in parenthesis ( ) are reference numbers for parts listed in Bill of Materials.

Installation instructions for **kit number 374199**

SYNOPSIS:

This kit contains the parts needed to install the start assist timer onto 8410 machines equipped with Ford 2.5 LPG engines.
Please follow step-by-step instructions.

SPECIAL TOOLS / CONSIDERATIONS: NONE

(Estimated time to complete: 2 hours)

PREPARATION:

1. Park the machine on a clean level surface.

2. Turn off the machine, remove the key, and set the parking brake.

FOR SAFETY: Before leaving or servicing machine, stop on level surface, set parking brake, turn off machine, and remove key.

3. Disconnect the battery cables from the batteries.

⚠️ **WARNING: Always disconnect battery cables from machine before working on electrical components.**

INSTALLATION:

1. Open the engine compartment cover and side door.

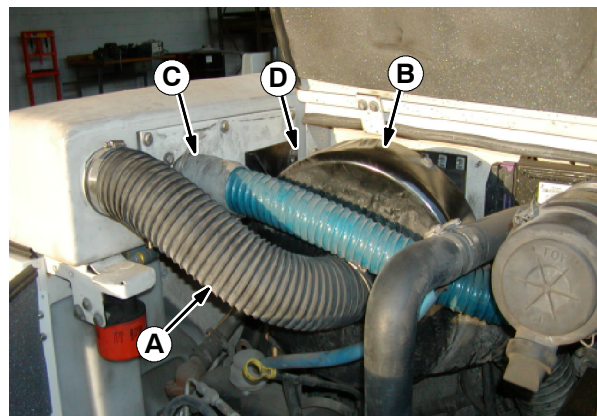2. Remove the hose (A) from the fan (B). Refer to Fig. 1.

FIG. 1

3. Disconnect the end of hose (C) attached to the machine from the machine and move loose end of hose out of the way. Refer to Fig. 1.

4. Cut cable ties holding hydraulic hoses from fan (B) to other hoses. Refer to Fig. 1.

5. Remove the hardware (D) holding the fan (B) onto the machine and carefully set the fan on top of the engine. **Do not** break or remove any hydraulic hose connections to the fan. Refer to Fig. 1.

6. Drill a 19/64" hole into the operator shroud weldment (E), midway between the relay (F) and the engine governor controller (G). Refer to Fig. 4.

7. Use a hex screw (4), hex nut (5), and washer (6) to mount the timer (2) where the hole was drilled into the operator shroud weldment (E) in the previous step. Refer to Fig. 4. Do not over tighten hardware since doing so could damage the timer.

Note: *Refer to the schematic in Fig. 5 and the cable diagram in Fig. 6 for additional wiring information.*

8. Cut the 3/orange, 15A/blue, and 16A/green wires approximately half way between the M2 relay (H) and the engine governor controller (G).

9. Strip approximately 3/8" insulation from the loose ends of each wire cut in the previous step.

Note: *Heat shrink tubes, the diode connector, and crimp splice connectors are included with the Harness, Start, Timer, LPG, [8410]–374234.*

10. Slide a heat shrink tube onto the 15A/blue wire extending from the relay.

11. Crimp the 15A/blue wire extending from the relay and the 15AA/BLU wire from the wire harness (1) into a crimp splice connector. It should not be possible to pull the crimped wires from the splice connector after they are crimped.

12. Slide the heat shrink tube over the crimped splice and apply enough heat to shrink the tubing over the splice connection.

13. Slide a heat shrink tube onto the 15A/blue wire extending from the engine governor controller (G).

14. Crimp the 15A/blue wire from the previous step and the 15AB/BLU wire from the diode connector into a crimp splice connector.

15. Slide the heat shrink tube over the crimped splice and apply enough heat to shrink the tubing over the splice connection.

16. Slide a heat shrink tube onto the 3A/ORA wire from the engine governor controller (G).

17. Splice the 3A/ORA wire from the wire harness (1) and the 3/orange wire extending from the M2 relay (H) and the engine governor controller (G) into a crimp splice connector. It should not be possible to pull the crimped wires from the splice connector after they are crimped.

Note: *Follow the polarity for the diode plug wires as indicated on the wire labels.*

18. Slide the heat shrink tube over the crimped splice and apply enough heat to shrink the tubing over the splice connection.

19. Slide a heat shrink tube onto 16A/green wire extending from the M2 relay (H).

20. Splice the 16AA/GRN wire from the wire harness (1) and the 16A/green wires extending from the M2 relay (H) and the engine governor controller (G) into a crimp splice connector.

21. Slide the heat shrink tube over the crimped splice and apply enough heat to shrink the tubing over the splice connection.

22. Cut the 13AX/black wire approximately half way between the M2 relay (H) and the engine governor controller (G).

23. Slide a heat shrink tube onto 13AX/black wire extending from the engine governor controller (C).

24. Splice the 13BX/BLK wire from the wire harness (1) and the 13AX/black wires extending from the M2 relay (H) and the engine governor controller (G) into a crimp splice connector.

25. Slide the heat shrink tube over the crimped splice and apply enough heat to shrink the tubing over the splice connection.

26. Connect the wires labeled 1, 2, 3, and 6 on the wire harness (1) to the corresponding terminals on the timer (2). Refer to Fig. 2, Location A in Fig 5, and Fig. 6.
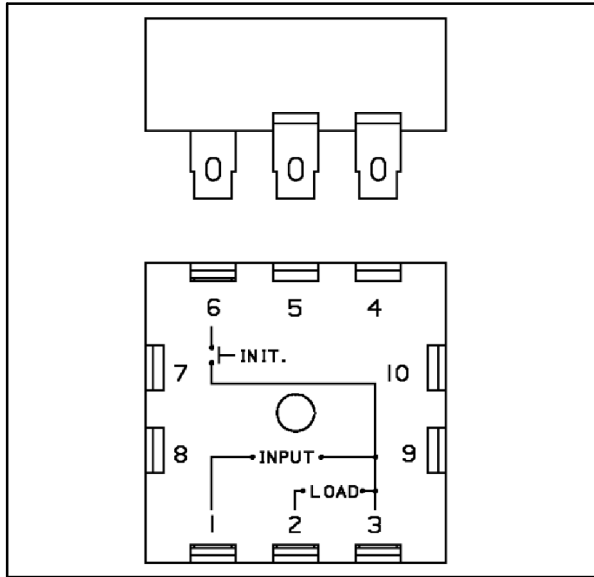

FIG. 2

27. Plug the diode plug (3) into the diode connector attached to the timer start harness (1) if diode plug is not already attached to the connector. Refer to Fig. 3.
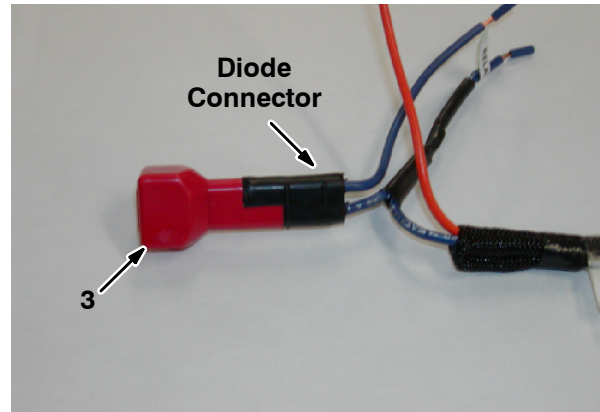

FIG. 3

28. Neatly bundle and secure the wires together with the provided wire ties.

29. Reinstall items removed in Step 2 through Step 5. Refer to Fig. 1.

30. Reconnect the battery cables to the batteries.

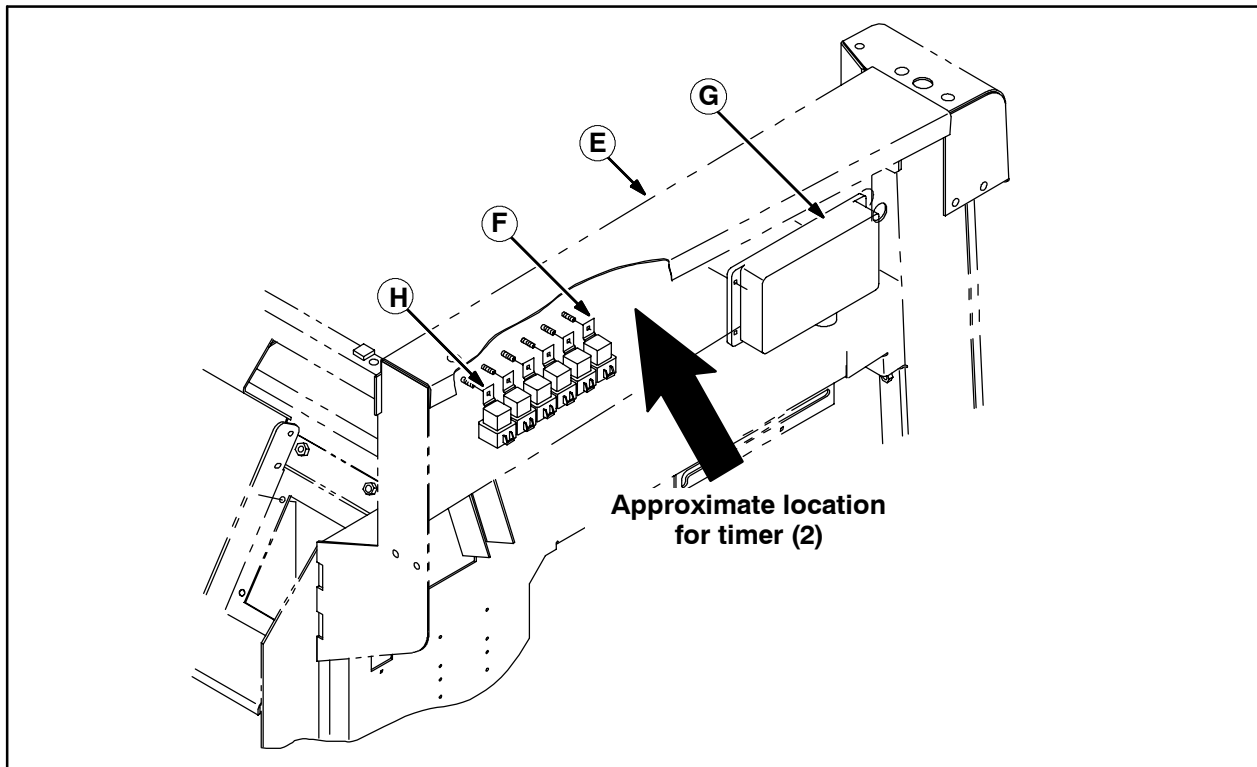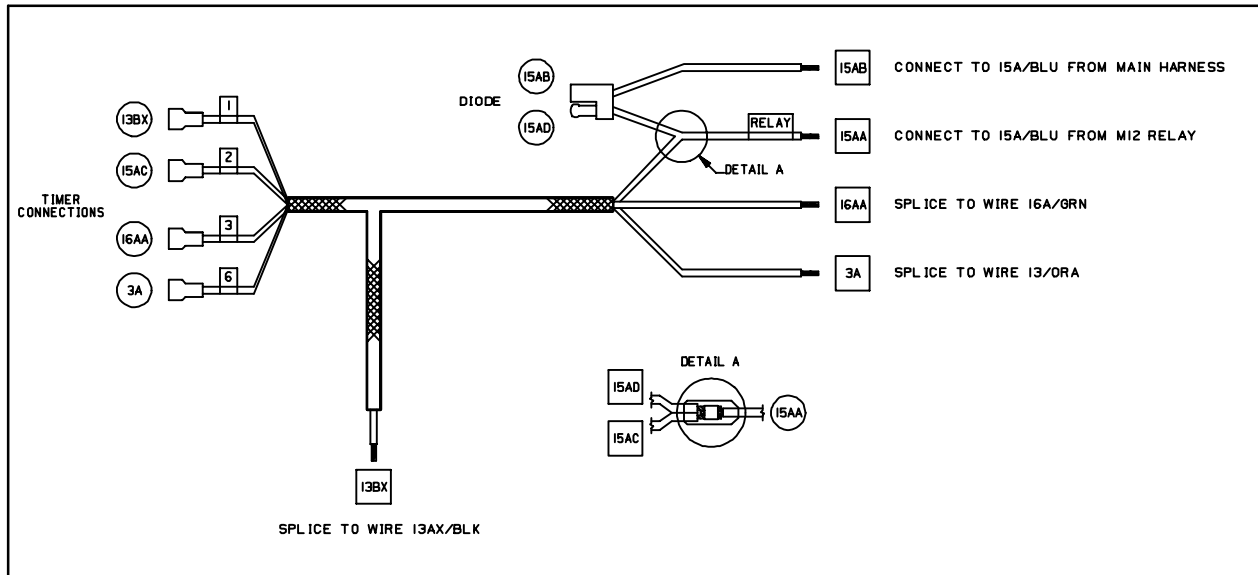31. Start and stop the engine several times to test the system.

FIG. 4

FIG. 5

FIG. 6

Bill of Materials for Timer Kit, Start, LPG, CI [8410] 374199

	Ref.	Tennant Part No.	Description	Qty.
▽		374199	Timer Kit, Start, LPG, CI [8410]	1
▲▽	1	374234	Harness, Start, Timer, LPG, [8410]	1
▲▲		370156	Harness, Switch, Key, Diode, [515]	1
▲▲		78266	Tube, Heatshrink, .25ID 01.0L	6
▲▲		60455	Connector, Splice [12GA]	7
▲▲		49263	Tie, Cable, Nyl, 11.4L .19W 3.0 Max D	4
▲	2	379656	Timer, 12VDC, 10 Sec	1
▲	3	222290	Diode, Ele, Plug	1
▲	4	07805	Screw, Hex, M6 X 1.0 X 35, SS (not shown)	1
▲	5	08708	Nut, Hex, Lock, M6 X 1.0, NL (not shown)	1
▲	6	19066	Washer, Flat, #10 (not shown)	1

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