

Installation of Governor Kit 541-1352

GENERAL INFORMATION

The purpose of this kit is to replace the TQ-125 governor with an L-Series Speed Controller.

⚠ CAUTION *Improper service or replacement of parts can lead to severe personal injury or death and to damage to equipment and property. Service personnel must be trained and experienced to perform electrical and mechanical service.*

Read these instructions completely and become familiar with safety warnings, cautions and procedures before starting the installation.

⚠ WARNING *Ignition of explosive battery gases can cause severe personal injury or death. Arcing at battery terminals, light switch or other equipment, flame, pilot lights and sparks can ignite battery gas. Do not smoke, or switch trouble light ON or OFF near battery. Discharge static electricity from body before touching batteries by first touching a grounded metal surface.*

Ventilate battery area before working on or near battery—Wear goggles—Stop genset and disconnect charger before disconnecting battery cables—Disconnect negative (-) cable first and reconnect last.

⚠ CAUTION *Disconnect battery charger from AC source before disconnecting battery cables. Otherwise, disconnecting cables can result in voltage spikes damaging to DC control circuits of the set.*

⚠ WARNING *Accidental starting of the generator set can cause severe personal injury or death. Prevent accidental starting by disconnecting the negative (-) cable from the battery terminal.*

⚠ CAUTION *Discharge body static before handling any control components.*

PRELIMINARY

1. Place the genset control switch in the O (Off) position and allow set to cool thoroughly (to the touch).
2. Make sure that the genset main circuit protector/disconnect device is in the "OFF" or down position.
3. If applicable, remove any other sources of power (e.g. utility power or power from other gensets).
4. Turn off and disconnect battery charger (if equipped).
5. Disconnect the negative (-) cable from the battery to prevent accidental starting.

REMOVING TQ-125 GOVERNOR

1. Mark and disconnect electrical connections.
2. Note the distance from the center of linkage mounting screw to the center of governor shaft.
3. Disconnect one end of the linkage from the governor lever. Save hardware.
4. Note the position (angle) of governor lever.
5. Remove governor lever from governor. Save hardware.
6. Remove governor from bracket. Save hardware.

MECHANICAL AND ELECTRICAL INSTALLATION

1. Install adapter plate and governor (see Figure 1), using old governor mounting hardware and hardware supplied with kit.
2. Install new governor lever in the same position as the old one, as noted above. This is very important. The governing characteristics will change if this step is not followed.
3. Connect the governor linkage to the lever using the distance from the governor shaft noted above.
4. Connect the communication adapter harness to the governor and TLL adapter to governor as shown on page 55 of Woodward manual 26250C.
5. Connect adapter harness to communication harness.
6. Connect black lead to generator set harness at A12-. Page 17.
7. Connect brown lead to mag pickup negative, (black lead). Page 17.
8. Connect green lead to mag pickup positive, (red lead). Page 17.
9. Temporally connect red lead to B+ at the battery. This will allow you to program the governor. Page 17.
10. Leave yellow wire as is. The yellow lead will be used if the voltage regulator needs be replaced or the UFRO needs to be set at later date. All other leads will not be used.

GOVERNOR PROGRAMMING

1. Open L-Series service tool.
 - a. You will be asked to select the com port. (Usually com 1).
 - b. Go to (File) at top screen and select (Open control configuration).
2. Overview Tab, select.
 - a. MPU.
 - b. 4 stroke.
 - c. Number of cylinders: (1).
 - d. Number of teeth: (As needed.) Refer to Table 1 for some of the genset models.

TABLE 1.

GENSET MODEL	FLYWHEEL TOOTH COUNT
EK-EM, ENA-B	184
GEAD/E/F	105
ES, GGDB	93
GGFB/FC/FD/FE, GGHB/HC/HD/HE/HF	133

- e. Minimum position and fail directions: (Min pos and fail pos CW).
 - f. Friction: (0).
 - g. Proportional gain: (18).
 - h. Integral gain: (14).
 - i. Derivative gain. (39.2).
3. Setpoint Tab, select.
 - a. Runtime Select Rated 1/2.
 - b. Rated 1 set point: (1800) rpm.
 - c. Rated 2 set point: (1770) rpm.
 - d. Acceleration ramp rate: (750) rpm.
 - e. Deceleration ramp rate: (1000) rpm.

4. Control Tab, select.

- a. Start fuel 1: (Select).
- b. Start speed threshold 1: (64) rpm.
- c. Start speed hysteresis: (32) rpm.
- d. Start fuel 1: (100) %.
- e. Max starting time: (30) sec.
- f. Run speed threshold: (1000) rpm.
- g. Stopping speed threshold: (900) rpm.
- h. Stop delay: (5) sec.
- i. Stop state holding current: (100) %.
- j. Governor error high range: (30) rpm.
- k. Governor error low range: (30) rpm.
- l. Over speed threshold: (2500) rpm.
- m. Governor error low time: (5) sec.
- n. Governor error high time: (5) sec.

5. Modifiers Tab.

- a. No changes.

6. Fuel Limiting Tab.

- a. Minimum fuel limiting: (Not used).
- b. Maximum fuel limiting: (Run fuel limiting).
- c. Maximum fuel limit: (100) %.

7. Dynamic Tab.

- a. Single: (select).
- b. Dynamics 1 (Rated).
- c. Integral: (3.8).
- d. Derivative: (0.20).
- e. Gain window: (15).
- f. Gain ratio: (1.5).
- g. Rated gain: (.101).

8. Discrete I/O

- a. Raise: (Always off).
- b. Lower: (Always off).
- c. Duel Dynamics: (Always off).
- d. Idle rated: (Always off).
- e. Rated 2: (Aux 2 (Active closed))
- f. Droop: (Always off).
- g. Run Enable: (Always on).

9. Alarm/Shutdown.

- a. Default Settings.

10. Security

- a. Not used.

11. Remove wire from B+ and connect to A12+.

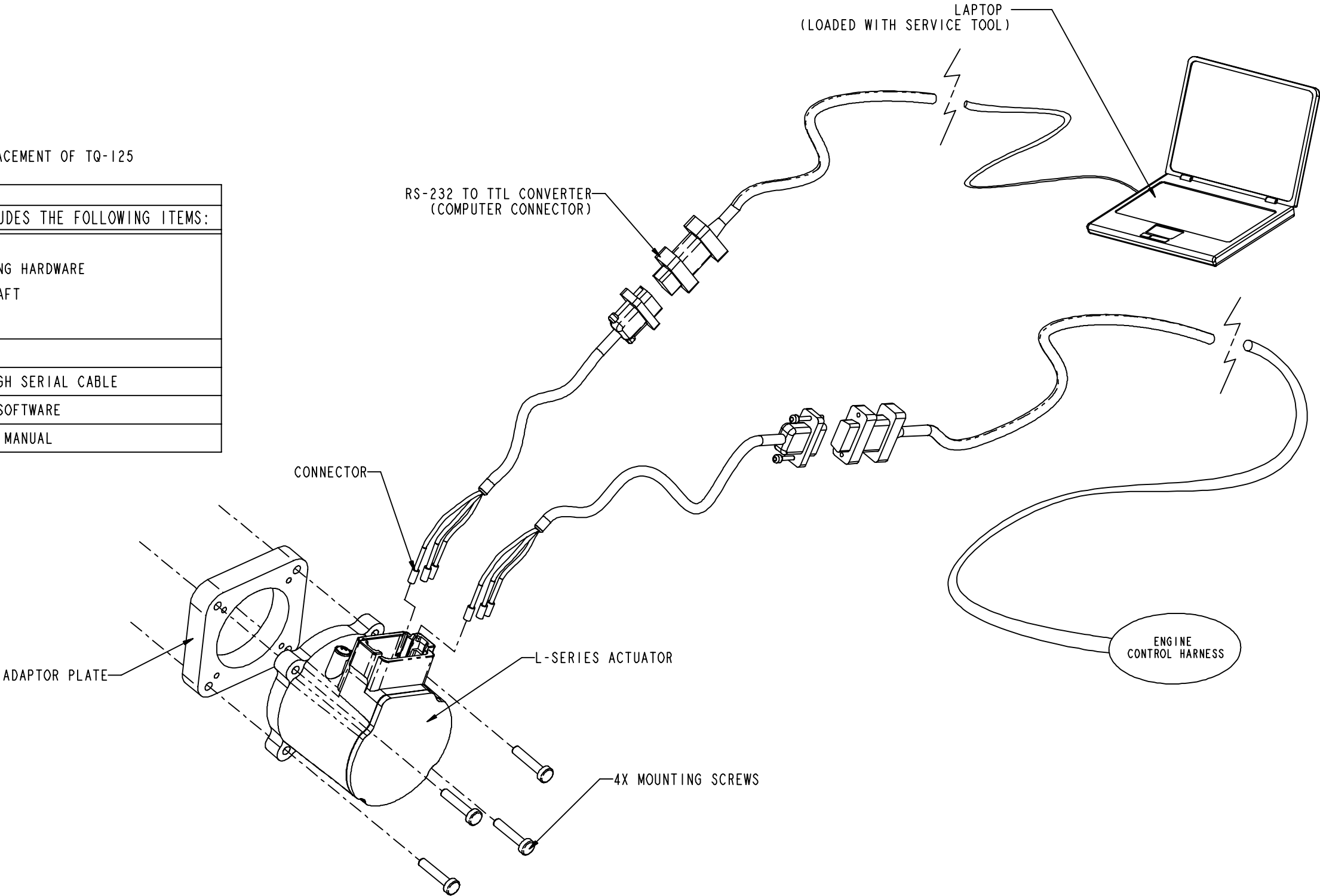
12. You are now ready to start generator set.

13. Refer to Woodward manual 26250 for details on governor operation, tuning, and troubleshooting.

REQUIRED ITEMS NEEDED TO COMPLETE REPLACEMENT OF TQ-125

WOODWARD PART #	ITEM
8923-1163	INSTALLATION KIT INCLUDES THE FOLLOWING ITEMS:
8404-1004	L-SERIES SPEED CONTROL
3600-1274	ADAPTER PLATE & MOUNTING HARDWARE
02-004-171	LEVER FOR 0.25-INCH SHAFT
5404-1049	ELECTRICAL HARNESS
8923-1061	PROGRAMMING HARNESS
(NOT PROVIDED)	9-PIN STRAIGHT - THROUGH SERIAL CABLE
*9927-1222	L-SERIES SERVICE TOOL SOFTWARE
*26250	L-SERIES SPEED CONTROL MANUAL

* FREE DOWNLOAD FROM WWW.WOODWARD.COM



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FIGURE 1. GOVERNOR INSTALLATION