



the wrench

Honda Technician Newsletter

The Wrench Special Edition: TRX500FA/FGA Hondamatic Electrical Troubleshooting Procedures

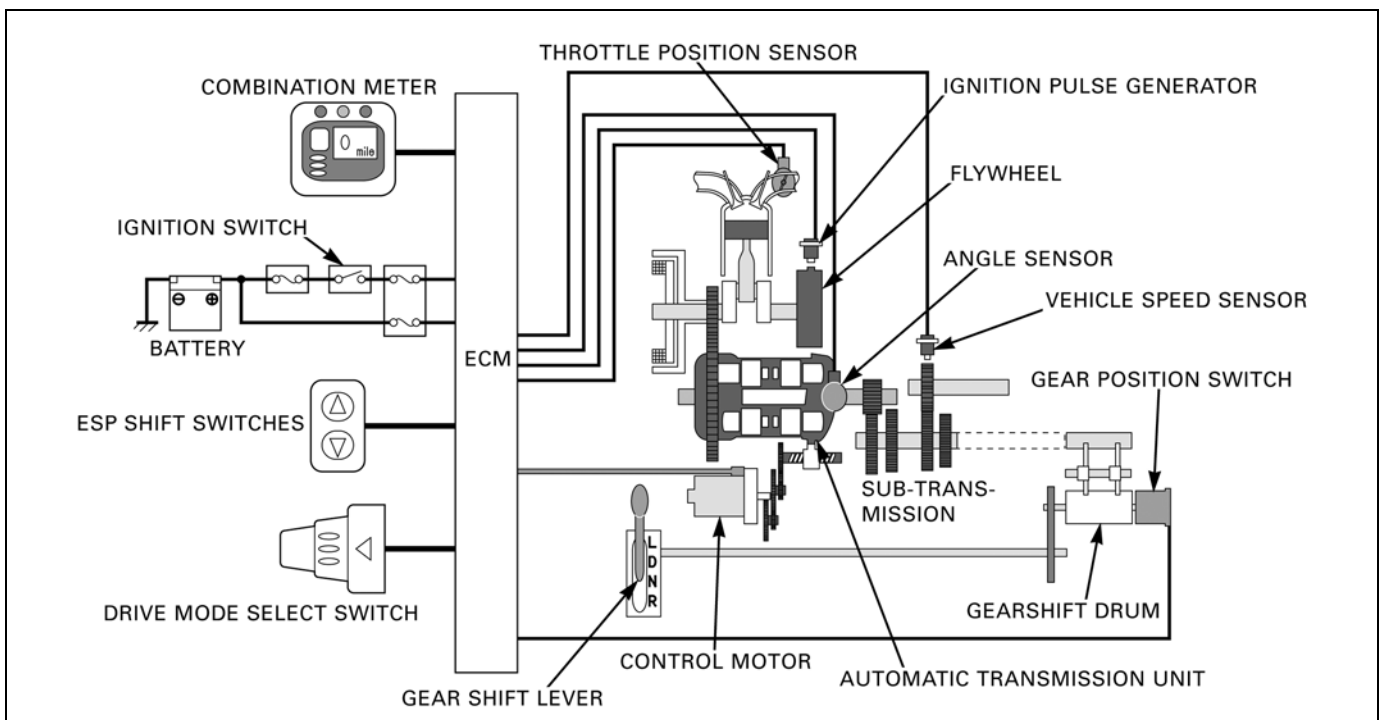
To assist technicians in troubleshooting the Hondamatic system, we've compiled the following troubleshooting procedures and tips from numerous sources, including *The Wrench* articles, the TechLine knowledge base, and model specialists. Use this resource often to become proficient in Hondamatic service, saving your customers and your dealership time and money.

Hondamatic System Overview

The following is an outline of the Hondamatic electrical system construction.

The output speed (reduction ratio) is controlled by the angle of the hydraulic motor side swash plate. The position of this swash plate is determined by the ECM, which uses various pieces of information to send commands to the control motor that moves the swash plate arm. The signals used to determine optimal automatic transmission output are:

- Throttle opening (throttle position sensor)
- Vehicle speed (vehicle speed sensor)
- Engine speed (rpm) (ignition pulse generator)
- Automatic transmission control motor swash plate angle (angle sensor)
- Sub-transmission gear position (gear position switch – R, N, D, L)
- Control mode and map (drive mode select switch – D1, D2, ESP)
- Manual shift range (ESP shift switch – 1, 2, 3, 4, 5)



See section 25, Features, of the 2001-2004 TRX500FA/FGA Service Manual for a technical explanation of the operating principles, design, construction, and operation of the Hondamatic.

Before Troubleshooting

Make sure you have followed all of the steps below **before** you start:

1. Understand and verify the conditions under which the problem occurs:
 - ESP or Auto – Does the problem occur **only** in ESP or Auto mode, or in **both** modes?
 - Function or noise problem – Is the problem functional or simply a noise issue?
 - Fill out a **TRX500FA/FGA Troubleshooting Questionnaire** (see page 4 of this issue) – Make sure you interview the customer to get a complete picture of the problem/occurrence (make copies of the attached Questionnaire).
2. You must start any troubleshooting procedures with a **fully charged battery**.
3. Check all fuses, including the 30A shift motor fuse.

Troubleshooting Procedures

Begin your troubleshooting by determining if the problem is electrical or mechanical.

Electrical Troubleshooting

True electrical problems typically display flashing trouble bars (on the TRX500FA/FGA, the gear position indicator on the meter blinks). For non-electrical problems, see **Mechanical Troubleshooting** below, or refer to the Service Manual section “Problems Not Detected by ECM,” page 23-23.

Electrical Pin Fit:

A crucial first step before you begin electrical troubleshooting is to check all electrical connections for “loose contact.” In order to check for proper connector pin fit, order the following Special Tool:

Terminal Inspection Feeler Set
P/N: 07XMJ-001000A
H/C: 7198518

Tool Technique – When you’re checking pin fit with the above tool, a slight drag on the feeler means the pin fit is correct.

Retrieve Problem Codes:

Start your electrical troubleshooting by retrieving problem codes. Most calls to TechLine are made *before* the technician has checked for codes. You should always check for codes first.

- Problem Code Retrieval Procedure: see Service Manual page 23-4.
- For all possible problem codes, refer to the problem code list on Service Manual page 23-8.
- To erase problem codes, see Service Manual page 23-5.

Common Problem Code Decoder:

Use the following problem code explanations to assist your diagnosis.

Code 2 – Speed Sensor Circuit

- Often causes an inaccurate speedometer.
- Usually due to water intrusion of the speed sensor.
- Perform troubleshooting procedures for Problem Code 2, Service Manual page 23-10.

Code 3 – Gear Position Circuit

- Perform troubleshooting procedures for Problem Code 3, Service Manual page 23-11.
- To properly check the gear position switch, there are a total of 16 resistance checks. To see the procedure, refer to the December 2000 issue of *The Wrench*: 2001 TRX500FA Rubicon, 16 Tests!

Code 5 – Angle Sensor Circuit

- Can be caused by a mechanical lock of the swash plate.
- Can be caused by improper initialization.
- Can be caused by a bad sensor – bad voltage output due to poor connection or water intrusion.
- Perform troubleshooting procedures for Problem Code 5, Service Manual page 23-14.
- NOTE: If you replace the angle sensor, **pre-load the sensor**, then perform the initialization procedure.

Code 6 – Angle sensor voltage

- Can be caused by a bad sensor – bad voltage output due to poor connection or water intrusion.
- Perform troubleshooting procedures for Problem Code 6, Service Manual page 23-17.
- Temporary failure – erase the problem code and re-test the unit.

Code 11 – Motor driver circuit

- Can be caused by a shift motor short – water intrusion.
- Perform troubleshooting procedures for Problem Code 11, Service Manual page 23-21.
- NOTE: If you install a new ECM on a unit with a failed shift motor, you may damage the new ECM.

Initialization Procedure:

It is extremely important to perform the steps in the initialization procedure on Service Manual page 23-6 as quickly as possible.

Mechanical Troubleshooting

Low Oil Pressure:

Low oil pressure is often caused by a stuck pressure relief valve in the oil pump assembly.

Look for the following symptoms of a **stuck pressure relief valve**:

- Grinding noise
- Ratcheting noise
- Freewheeling (no compression braking)

Must perform a pressure check:

- Bench check the oil pressure. If the oil pressure is OK on the bench, you need to perform a pressure check when the unit is exhibiting the problem.
- NOTE: If the pressure relief valve was sticking, **it does not necessarily mean the Hondamatic is damaged**. Most Hondamatics received through Warranty are not damaged. Replace the oil pump – replace the Hondamatic only if it is truly damaged (see **Hondamatic Malfunction** below).

Hondamatic Malfunction:

The following are common causes of mechanical Hondamatic failure.

Swash plate lock:

- This is a temporary failure and can be fixed by following the unlocking procedure on Service Manual page 23-15.
- Note that problem codes 5 and 6 may be triggered as a result of a swash plate lock condition.
- Improper initialization or no initialization after replacing the angle sensor can also cause this condition.

Bearing Damage:

Will cause the Hondamatic to “bind.” When riding the unit it may feel like the brakes are applied.

NOTE: If there is a mechanical failure of the Hondamatic transmission, you must replace the unit as an assembly. The transmission is not repairable.



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TRX500FA/FGA Troubleshooting Questionnaire

Complete this questionnaire with the customer **before** you begin troubleshooting Hondamatic transmissions.

In which gear position did the problem occur in? If ESP, what mode?

In which mode did the problem occur in? ESP or AUTO, D1, D2, LOW, or DRIVE?

What type of conditions were you riding? Mud/water, trails, asphalt, pulling a trailer, climbing hills, other?

Was anything being carried on the racks?

Have any accessories or modifications been made to the ATV? Winch? Large wheels/tires? Lift kit?

Have any repairs been performed recently?

What was the vehicle speed when the problem occurred?

Does the speedometer work correctly? Is it accurate?

Did you try to turn the ignition key OFF and then ON again to see if the problem cleared?

How long before the failure repeated?

RO#: _____

Technician's Name: _____

Date: _____

