YANMAR

TROUBLESHOOTING MANUAL

INDUSTRIAL ENGINES

ELECTRONIC CONTROL

3TNV82A
3TNV82A-B
3TNV84
3TNV84T
3TNV84T-B
3TNV88
3TNV88-B
3TNV88-U

4TNV84
4TNV84T
4TNV84T-Z
4TNV88
4TNV88-B
4TNV88-U
4TNV94L
4TNV98
4TNV98-Z
4TNV98-E
4TNV98T
4TNV98T-Z
4TNV106
4TNV106T

FIXTHIS.COM

Section 1

FAILURE DIAGNOSIS

Page

DTCs (Diagnostic Trouble Codes) General Description 1-3
- DTC Code List 1-3
- Description Items 1-7
- Analog Input Related Failures 1-8
- Pulse Sensor Related Failures 1-60
- Contact Output Related Failures 1-66
- Contact Input Related Failures 1-100
- Actuators etc. 1-114
- E-ECU Internal and Communication Errors 1-122

Method and Procedure of Failure Diagnosis 1-133
- Description Items 1-133
- Analog Input Related Failures 1-136
- Pulse Sensor Related Failures 1-164
- Contact Output Related Failures 1-170
- Contact Input Related Failures 1-187
- Actuator Related Failures 1-193
- ECU Internal and Communication Errors 1-197
- FAILURE INDICATOR LAMP FLASHING PATTERN 1-207

Using the Failure Indicator for Failure Diagnosis 1-208
- Flashing Patterns of the Failure Indicator 1-208

Factor Analysis 1-210
- 2G-Type Eco-Governor Speed-Fluctuation Factor Analysis . 1-210
- 2G-Type Eco-Governor Engine Stalling/Start-Up Inability Factor Analysis 1-213
- 2G-Type Eco-Governor Black Smoke Factor Analysis 1-216

Special Service Tools 1-218

Troubleshooting By Measuring Compression Pressure 1-219
- Compression Pressure Measurement Method 1-219

Quick Reference Table For Troubleshooting 1-222

PREVIEW - YOUFIXTHIS.COM

DTCS (DIAGNOSTIC TROUBLE CODES) GENERAL DESCRIPTION

DTC Code List

Classification	DTC	Lamp Flashing Patterns	Error Item		Referenced page number	
			Area	Status	Overview	Failure Diagnosis
Analog Input Related Failures	P1202/4	7	Rack position sensor	Error (low voltage)	P.1-8	P.1-136
	P1203/3			Error (high voltage)	P.1-10	
	P0122/4	5	Accelerator sensor	Error (low voltage)	P.1-12	P.1-140
	P1203/3			Error (high voltage)	P.1-14	
	P0124/2			Intermittent failure	P.1-16	
	P1125/1			Error (foot pedal-close position)	P.1-18	P.1-144
	P1126/0			Error (foot pedal-open position)	P.1-20	
	P0222/4	1-8	Spare accelerator sensor	Error (low voltage)	P.1-22	P.1-148
	P0223/3			Error (high voltage)	P.1-24	
	P0224/2			Intermittent failure	P.1-26	
	P1225/1			Error (foot pedal-close position)	P.1-28	P.1-144
	P1226/0			Error (foot pedal-open position)	P.1-30	
	P1227/8			Error (pulse communication)	P.1-32	P.1-152
	P0222/4	1-9	Atmospheric pressure sensor	Error (low voltage)	P.1-34	P.1-148
	P0223/3			Error (high voltage)	P.1-36	
	P0224/2			Intermittent failure	P.1-38	
	P0668/4	4-1	ECU Temperature Sensor	Error (low voltage)	P.1-40	P.1-154
	P0669/3			Error (high voltage)	P.1-41	
	P1644/2			Intermittent failure	P.1-42	
	P0634/0	2-5	ECU Temperature Rise Alarm		P.1-43	P.1-154
	P0117/4	4	Cooling water temperature sensor	Error (Low Voltage)	P.1-45	P.1-156
	P0118/3			Error (High Voltage)	P.1-47	
	P0119/2			Intermittent failure	P.1-49	
	P0217/0	3-6	Cooling Water Temperature Rise Alarm		P.1-51	P.1-156
	P0642/4	2-4	SENSOR 5V	Error (low voltage)	P.1-53	P.1-160
	P0643/3			Error (High Voltage)	P.1-54	
	P1644/2			Intermittent failure	P.1-55	
	P0562/1	2-3	Power supply Voltage	Error (Low Voltage)	P.1-56	P.1-56
	P0563/0			Error (High Voltage)	P.1-58	P.1-58

PREVIEW - YOURPATHS.COM

Analog Input Related Failures

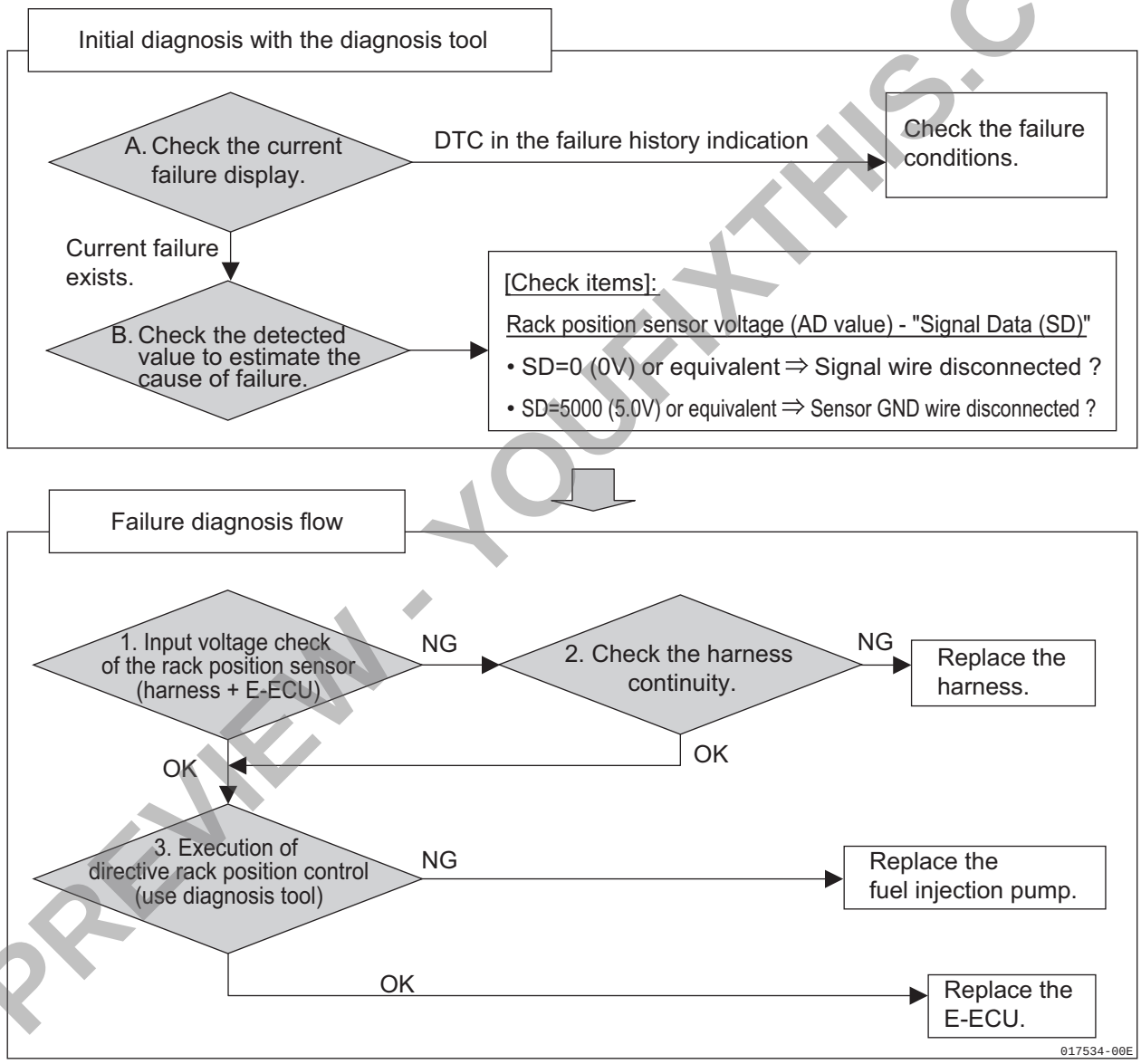
Rack position sensor

Related DTC

DTC	P1202/4	Rack Position Sensor Error (Low Voltage)
	P1203/3	Rack Position Sensor Error (High Voltage)

Work flow

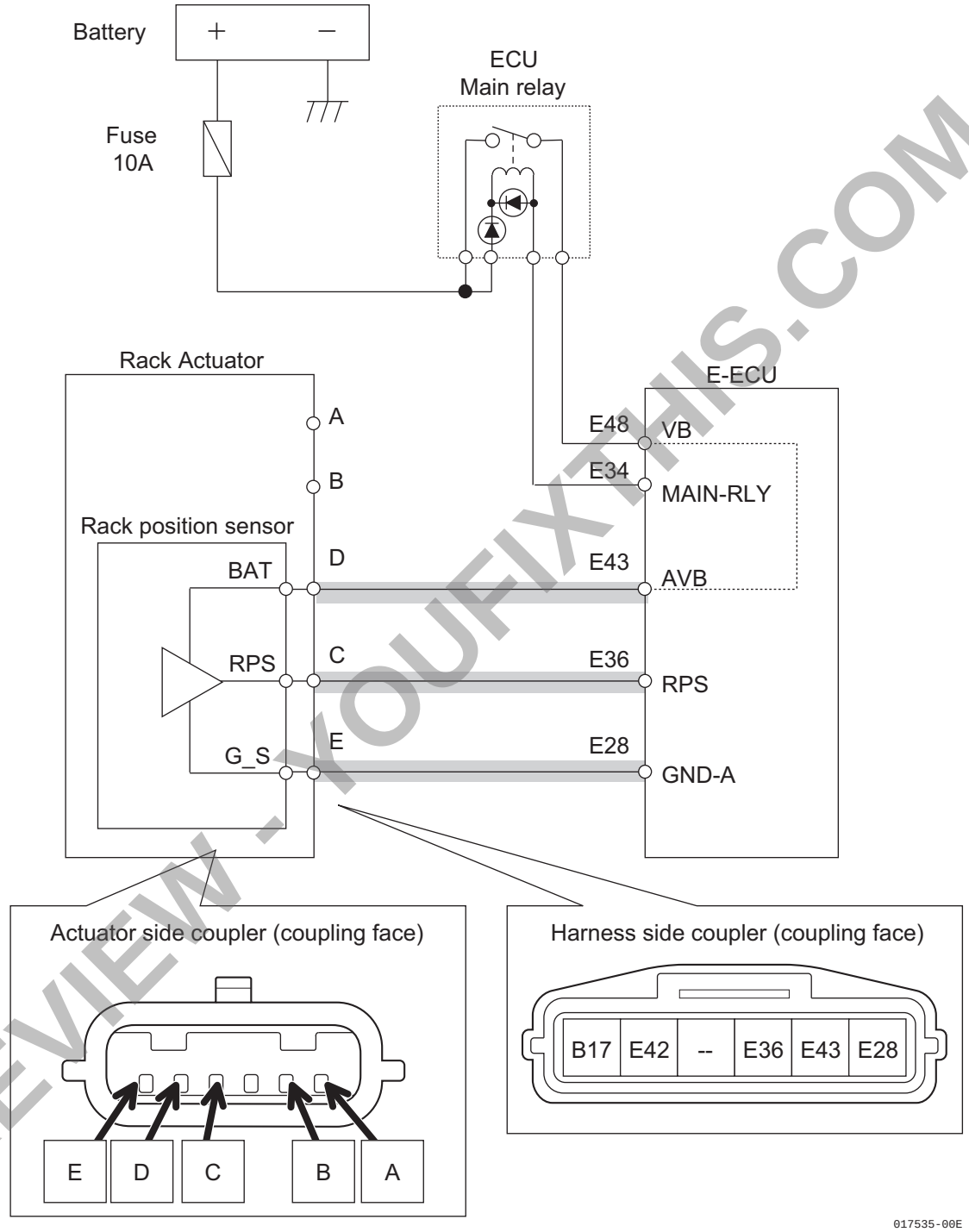
***For details of the work, see after-mentioned "<Diagnosis Description>."For the operation of the diagnosis tool, see “Diagnosis tool Operation Manual” separately.**



PREVIEW - YOUFIXTHIS.COM

Wiring Diagram

	: Check points



*For the E-ECU Pin Layout, see *[E-ECU Pin Layout Diagram] (P.1-134)*.

PREVIEW - YOUFIXTHIS.COM

Diagnosis Description

1. Check of the input voltage of the rack position sensor (harness + E-ECU)
   - Turn the key switch off, and remove the rack actuator connector from the fuel injection pump. At this time, keep the E-ECU connector being connected to E-ECU.
   - Turn the key switch on to turn on the E-ECU power.
   - Measure the voltage between sensor terminal E43 and E28 using a circuit tester.

Terminal	Normal value
Sensor connector E43 - E28	Equivalent to the battery voltage

NG	Check the harness for correct continuity. → Go to [2. Check of harness continuity:]
OK	Check if the “Directive rack position control” is executable using the diagnosis tool “Diagnosis Test: Active control”. → Go to [3. Execution check of the directive rack position control:]

2. Check of harness continuity:
   - Remove the rack actuator connector and E-ECU from the harness.
   - Check the harness continuity using a circuit tester.

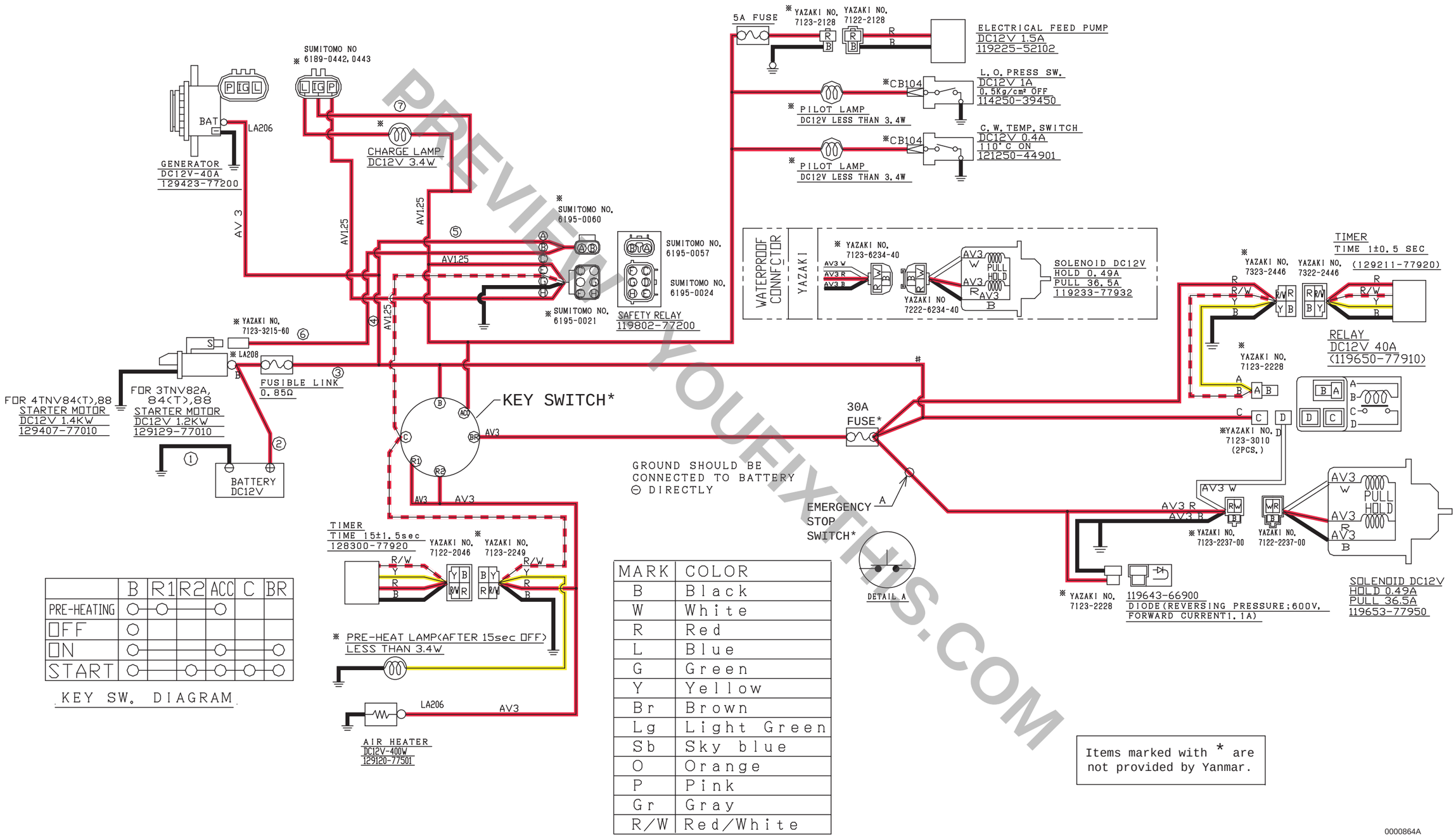
Terminal	Continuity	Status
Sensor signal wire E36 [Between E-ECU and sensor connector]	Available	OK: normal
	Unavailable	NG: harness disconnection
Sensor GND wire E28 [Between E-ECU and sensor connector]	Available	OK: normal
	Unavailable	NG: harness disconnection
Sensor 12V wire E43 [Between E-ECU and sensor connector]	Available	OK: normal
	Unavailable	NG: harness disconnection
Between E36 and other terminal/GND and between E43 and other terminal/GND	Unavailable	OK: normal
	Available	NG: harness short-circuited with GND
Between E28 and GND/E45/E47	Available	OK: normal
	Unavailable	NG: harness disconnection
Between E28 and other terminals	Unavailable	OK: normal
	Available	NG: harness short-circuited with another wiring

NG	• Check if the harness is damaged, or if the wiring is correct. • Replace the harness.
OK	Check if the “Directive rack position control” is executable using the diagnosis tool “Diagnosis Test: Active control”. → Go to [3. Execution check of the directive rack position control:]

PREVIEW - YOUFIXTHIS.COM

ELECTRICAL WIRING

Note: The following wiring diagram is “representative” of a common installation using a Yanmar engine. The actual installation may be equipped with a variety of electrical components and wiring harnesses. Contact the machine manufacturer for specific information.



	B	R1	R2	ACC	C	BR
PRE-HEATING	○	○		○		
OFF	○					
ON	○			○		○
START	○		○	○	○	○

KEY SW. DIAGRAM

MARK	COLOR
B	Black
W	White
R	Red
L	Blue
G	Green
Y	Yellow
Br	Brown
Lg	Light Green
Sb	Sky blue
O	Orange
P	Pink
Gr	Gray
R/W	Red/White

Items marked with * are not provided by Yanmar.

0000864A

PREVIEW ONLY
YOUFIXTHIS.COM

This Page Intentionally Left Blank

PREVIEW - YOUFIXTHIS.COM

(2) P0118/3: Failure with Cooling Water Temperature Sensor (High Voltage)

DTC	P0118/3	Failure with Cooling Water Temperature Sensor (High Voltage)

DTC Detecting Conditions

1 - Precondition; 2 - Detecting condition(s); 3 - Flashing pattern of failure indicator	Check points
1. Key switch ON. 2. Sensor voltage 4.8 [V] or higher. 3. Four flashes.	Connector Harness Cooling water temperature sensor E-ECU

Movement at Error occurrence

	In the case of a system with EGR	In the case of a system without EGR
Error Mode	[Run Under Restrictions]: The engine continues to run under restrictions.	[Run As Is]:
	The engine continues to run with the cooling water temperature set to the default of 30 [°C].	
Run restricted?	Yes: The system restricts the High idle speed or engine power.	No.
Recovery Conditions	No.	Yes: This error will be automatically reset when a normal sensor voltage (0.2 to 4.8[V]) is kept.
Remarks	The restriction similar to one applied against EGR errors is applied.	

Estimation of Failure cause/Error condition

- The connector may not be properly connected.
- Wiring defect of the harness
  - The cooling water temperature sensor's signal wires may be disconnected or short-circuited with POWER SUPPLY.
  - The cooling water temperature GND wire may be disconnected.
- The cooling water temperature sensor may be faulty.
  - Output defect of the cooling water temperature signal by the inner wiring disconnection
- The E-ECU internal circuitry may be faulty.

PREVIEW - YOUFIXTHIS.COM

(5) P1422/4: Failure A with EGR valve (Step Motor C-phase)

DTC	P1422/4	Failure A with EGR valve (Step Motor C-Phase)

DTC Detecting Conditions

1 - Precondition; 2 - Detecting condition(s); 3 - Flashing pattern of failure indicator	Check points
1. Key switch ON. 2. Make an assessment logically as to followings.E-ECU detects the EGR step motor C-phase turning ON during the command to turn OFF the EGR step motor C-phase. 3. One flash followed by three flashes.	Connector Harness EGR valve (step motor) E-ECU

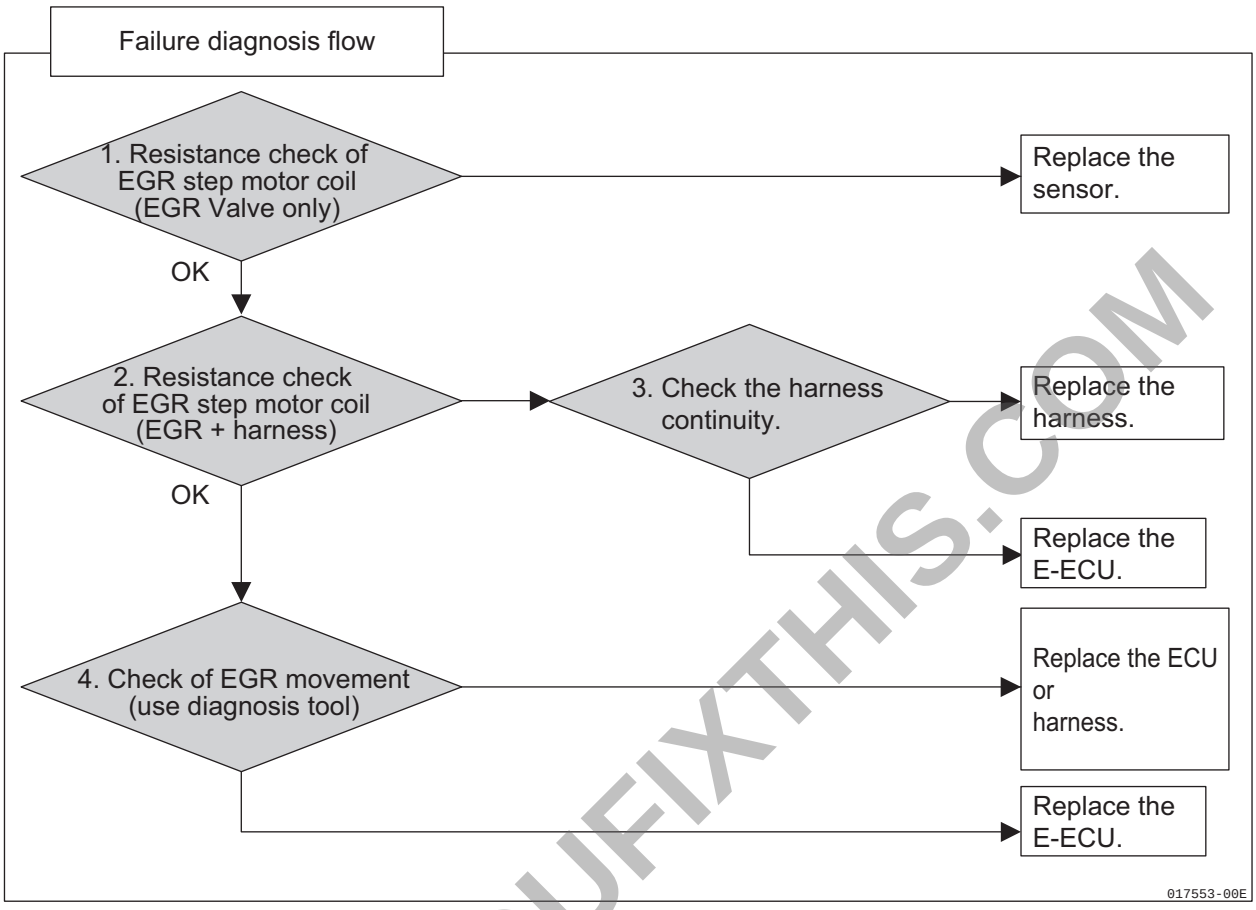
Movement at Error occurrence

	Movement setting at the EGR step motor error	
	Unavailable	Available
Error Mode	[Run As Is]: After detecting the error, the system lets the engine continue to run without any restrictions.	[Run Under Restrictions]: The engine continues to run under restrictions.
Run restricted?	No.	Yes: The system restricts the High idle speed or engine power.
Recovery Conditions	No.	No.
Remarks		

Estimation of Failure cause/Error condition

- The connector may not be properly connected.
- Wiring defect of the harness
  - The EGR step motor C-phase wiring may be disconnected or short-circuited with GND.
  - The EGR step motor power supply line may be disconnected.
- The EGR step motor may be faulty.
  - Inner wiring of the EGR step motor C-phase may be disconnected or short-circuited with GND.
  - Power supply line in the EGR step motor may be disconnected.
- The E-ECU internal circuitry may be faulty.

PREVIEW - YOUFIXTHIS.COM



PREVIEW - YOUFIXTHIS.COM

PREVIEW ONLY

You're viewing 11 of 234 pages

The full manual includes:

- All 234 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

Yanmar 3TNV82A, 3TNV82A-B, 3TNV84, 3TNV84T, 3TNV84T-B, 3TNV88, 3TNV88-B, 3TNV88-U, 4TNV84, 4TNV84T, 4TNV84T-Z, 4TNV88, 4TNV88-B, 4TNV88-U, 4TNV94L, 4TNV98, 4TNV98-Z, 4TNV98-E, 4TNV98T, 4TNV98T-Z, 4TNV106, 4TNV106T Troubleshooting Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual