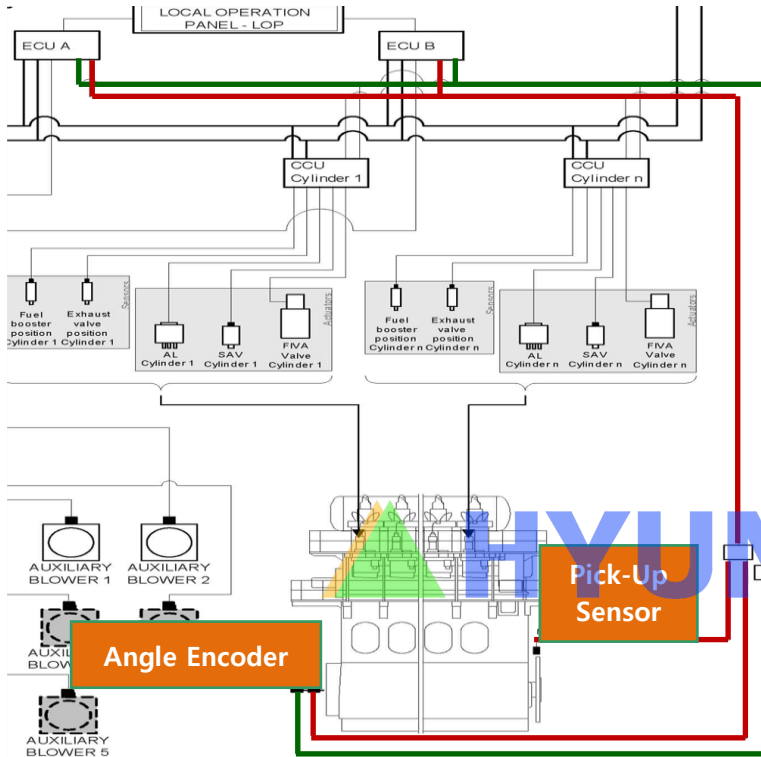# ECS Alarm "Tacho Set A Failure"

1) Diagram of Tacho System

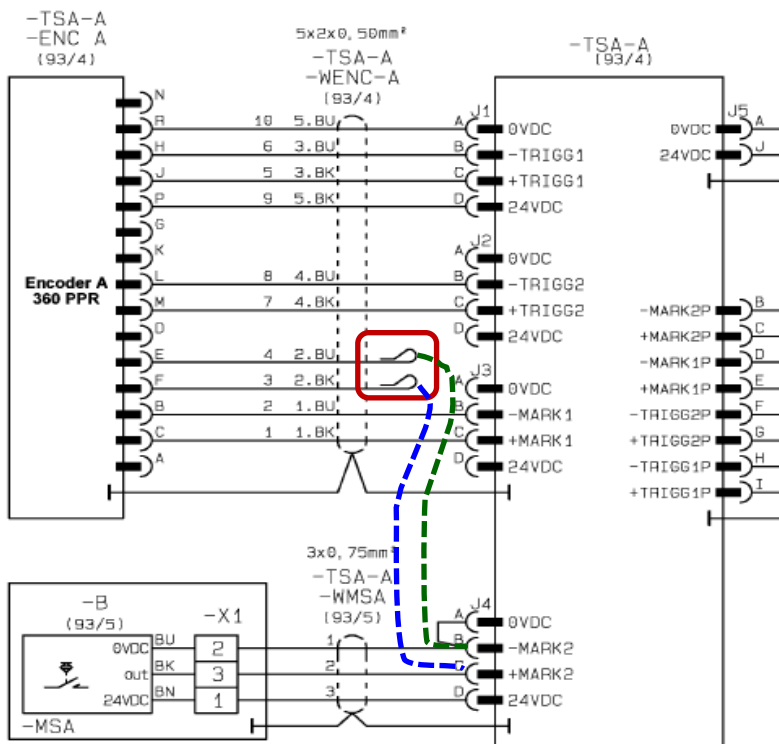

· Tacho A system ▬▬
· Tacho B system ▬▬

"Tacho A system" is connected with pick-up sensor on flywheel

⬇

"Tacho Set A Failure" is mostly caused by failure of pick-up sensor signal.

2) Verification of Pick-Up Sensor Defect

Exchange of Cable from Pick-up Sensor & Encoder A in TSA-A J/Box

⬇

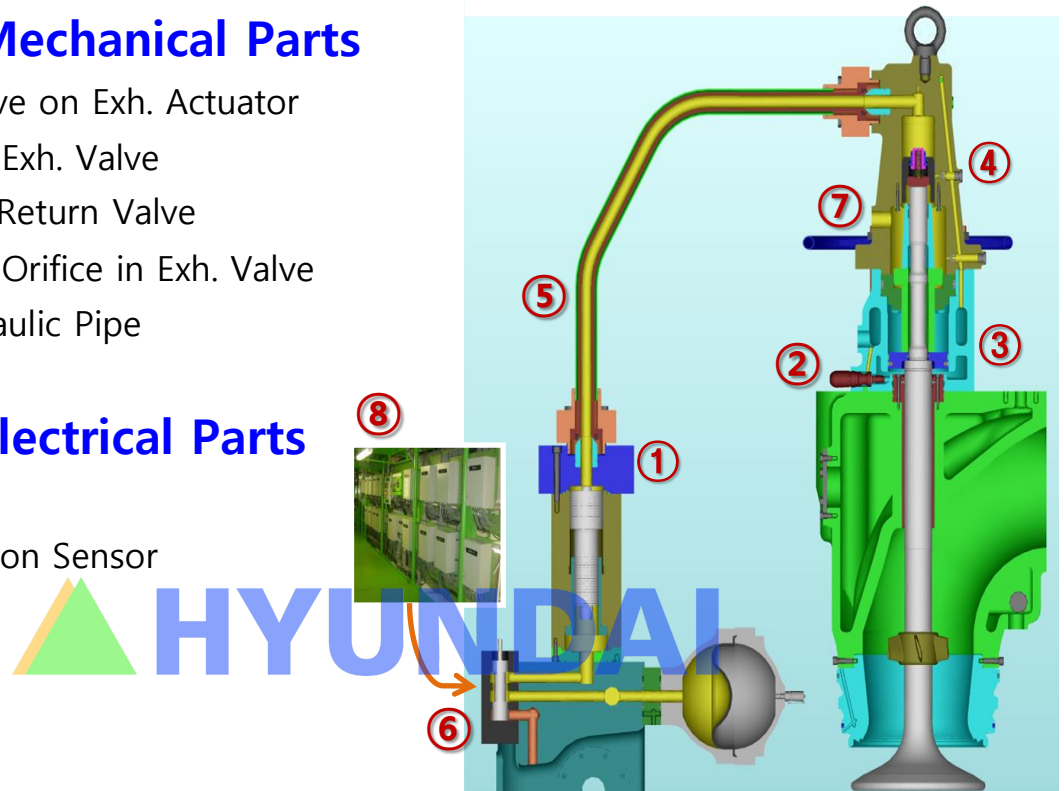No Alarm : Pick-Up Sensor
Alarm : MPC or Encoder

ECS Alarm "Exh. Valve Open Stroke Low"

1) Check for Mechanical Parts

① Non-Return Valve on Exh. Actuator

② Safety Valve on Exh. Valve

③ Spring Air Non-Return Valve

④ Throttle Valve / Orifice in Exh. Valve

⑤ Exh. Valve Hydraulic Pipe

2) Check for Electrical Parts

⑥ FIVA Valve

⑦ Exh. Valve Position Sensor

⑧ MPC

Step 1. Exh. Valve Position Sensor Reset on MOP

☞ "Maintenance" → "System View I/O Test" → Click "CCU XX" and "Process Value"
→ Click "Invaild" and "Valid" again

Step 2. HCU Function Test with Engine Stop

☞ If only Ch.34 value is abnormal → Item ⑦, ⑧

☞ If not only Ch.34 value but also Ch.30 / Ch.31 are abnormal → Item ⑥, ⑧

Step 3. Mechanical Parts Inspection

☞ If exh. valve opening is not completed → Item ①, ②, ⑤

☞ If exh. valve closing is not completed → Item ③, ④

Step 4. Emergency Operation, if need to increase rpm

☞ Exh. valve position sensor Reset on MOP

☞ Before coming the alarm again,

☞ Remove Ch.34 plug from CCU → "Supervision" alarm appeared (No Slow Down)
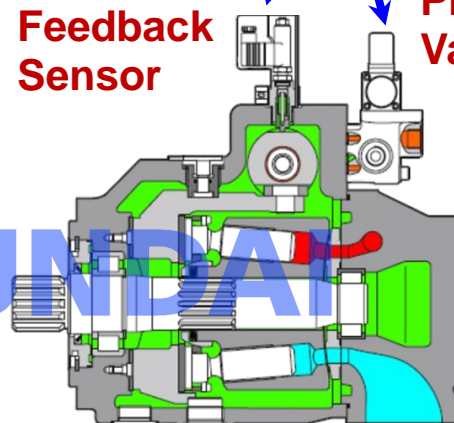
ECS Alarm "Large Deviation from Model Curve"

Hydraulic Power Supply
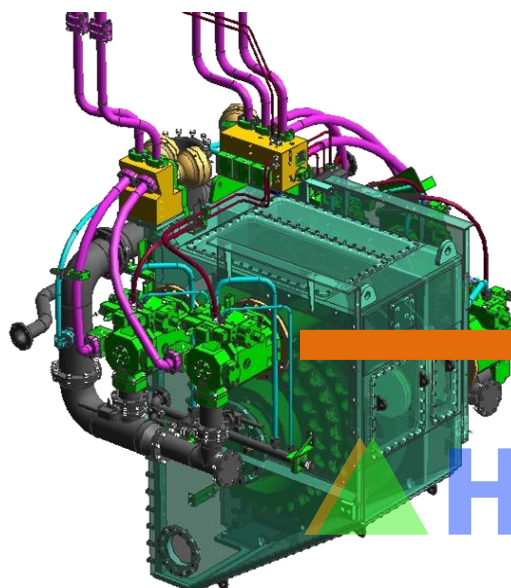
MPC

Feedback Sensor

Proportional Valve

HYUNDAI

1) Possible Cause

① MPC   ② Proportional Valve   ③ Feedback Sensor

2) Trouble Shooting (HPS Function Test)

☞ If only feedback (mA) is abnormal → Item ①, ③

☞ If feedback (mA) and local movement are abnormal → Item ①, ②

3) Emergency Operation

☞ Remove Ch.70 plug from relevant ACU.

☞ As a safety function at pump control (ch.70) failure, the swash plate will be moved to Full Ahead Position (100%).

☞ Finally, the hyd. oil pressure will be sufficient and stable.

ECS Alarm "Tacho Alignment Error"
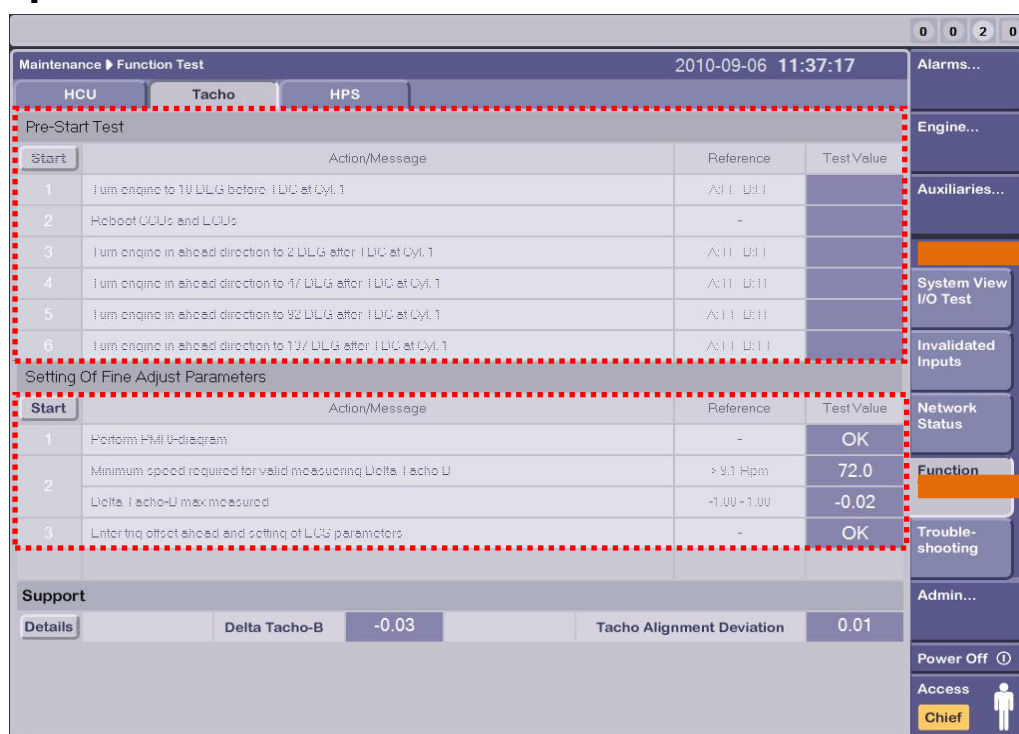
< Notification >

Even though "Tacho Alignment Error" is occurred, engine can be run without problem because control master (normally Encoder A) is still available. However, it is recommended that ship staff adjusts tacho system at first coming port.

< Tacho System Adjustment >

Step 1. Encoder Setting

☞ Encoder A : LED "On" on TSA A junction box at 0 degree

☞ Encoder B : LED "On" on TSA B junction box at 45 degrees

Step 2. Tacho Function Test

Maintenance ▶ Function Test	2010-09-06 11:37:17

| HCU | Tacho | HPS |

Pre-Start Test

Start	Action/Message	Reference	Test Value
1	Turn engine to 10 DLG before TDC at Cyl. 1	A:H B:H	
2	Reboot CCUs and LCUs	-	
3	Turn engine in ahead direction to 2 DLG after TDC at Cyl. 1	A:H B:H	
4	Turn engine in ahead direction to 47 DLG after TDC at Cyl. 1	A:H B:H	
5	Turn engine in ahead direction to 92 DLG after TDC at Cyl. 1	A:H B:H	
6	Turn engine in ahead direction to 137 DLG after TDC at Cyl. 1	A:H B:H	

→ **At Stop**

Setting Of Fine Adjust Parameters

Start	Action/Message	Reference	Test Value
1	Perform PMI U-diagram	-	OK
2	Minimum speed required for valid measuring Delta Tacho U	> 9.1 Rpm	72.0
	Delta Tacho-U max measured	-1.00 ~ 1.00	-0.02
3	Enter trig offset ahead and setting of LCS parameters	-	OK

→ **At Running**

Support

| Details | Delta Tacho-B | -0.03 | Tacho Alignment Deviation | 0.01 |

Alarms...
Engine...
Auxiliaries...
System View I/O Test
Invalidated Inputs
Network Status
Function
Trouble-shooting
Admin...
Power Off ⓘ
Access Chief

※ **After function test, tacho alignment deviation will be "0.00".**

MPC REPLACEMENT PROCEDURE

Dismantling of MPC board

1) Disconnect the power connector.
2) Disconnect the ID-Key.
3) Check placement of connectors according to the table shown metal plate on the MPC board. If necessary, note down placement.
4) Disconnect all connectors on the MPC board.
5) Disconnect the screws retaining the MPC board and remove it

ID-Key

Placement of connector
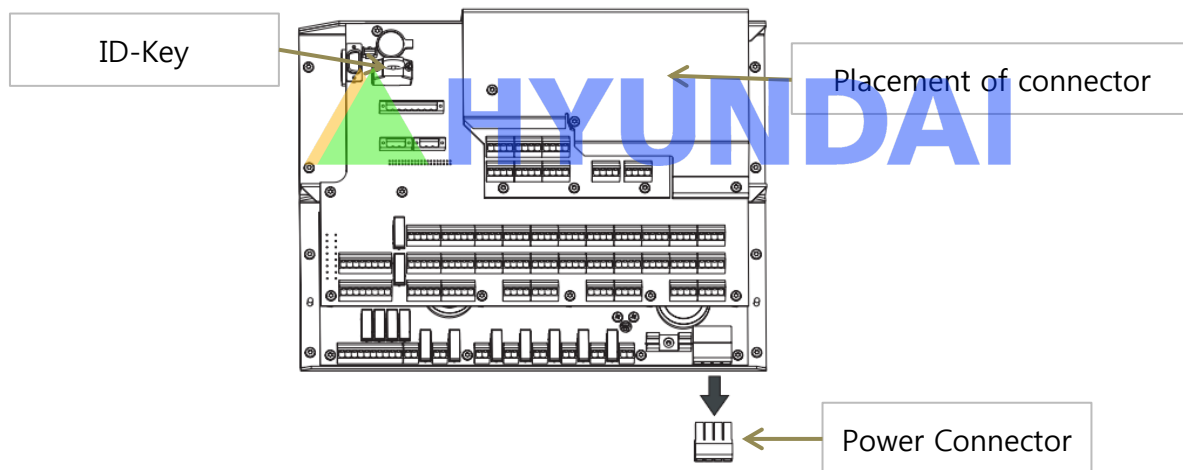
Power Connector

Mounting of MPC board

1) Mount the MPC board in the panel
2) Mount the connectors according to the table shown on the plate on the MPC board.
3) Mount the ID-Key.
4) Mount the power connector.
5) During the start up process, the LED will flash and the MPC will reboot several times.

The program completes the ID-key verification and is now ready continue the boot sequence. Any deviations will send an error message via the LED. The start up time of a new MPC board may but will take about 15 minutes.

Troubleshooting Quick Guidance

# ID KEY REPLACEMENT PROCEDURE

1) Pull out electric power supply connector (J1) of MPC/MPC-10
2) Set DIP switch S1 by referring the below table.

| MPC	DIP switch number	1	2	3	4	5	6	7	8
	Network Addess								
EICUA	192	Off	Off	Off	Off	Off	Off	On	On
EICUB	193	On	Off	Off	Off	Off	Off	On	On
MOPA	202	Off	On	Off	On	Off	Off	On	On
MOPB	203	On	On	Off	On	Off	Off	On	On
ECUA	208	Off	Off	Off	Off	On	Off	On	On
ECUB	209	On	Off	Off	Off	On	Off	On	On
ACU1	224	Off	Off	Off	Off	Off	On	On	On
ACU2	225	On	Off	Off	Off	Off	On	On	On
ACU3	226	Off	On	Off	Off	Off	On	On	On
SCU1	239	On	On	On	On	Off	On	On	On
CCU1	240	Off	Off	Off	Off	On	On	On	On
CCU2	241	On	Off	Off	Off	On	On	On	On
CCU3	242	Off	On	Off	Off	On	On	On	On
CCU4	243	On	On	Off	Off	On	On	On	On
CCU5	244	Off	Off	On	Off	On	On	On	On
CCU6	245	On	Off	On	Off	On	On	On	On
CCU7	246	Off	On	On	Off	On	On	On	On
CCU8	247	On	On	On	Off	On	On	On	On
CCU9	248	Off	Off	Off	On	On	On	On	On
CCU10	249	On	Off	Off	On	On	On	On	On
CCU11	250	Off	On	Off	On	On	On	On	On
CCU12	251	On	On	Off	On	On	On	On	On
CCU13	252	Off	Off	On	On	On	On	On	On
CCU14	253	On	Off	On	On	On	On	On	On
CCU15	254	Off	On	On	On	On	On	On	On
CCU16	255	On	On	On	On	On	On	On	On

[DIP switch "S1"
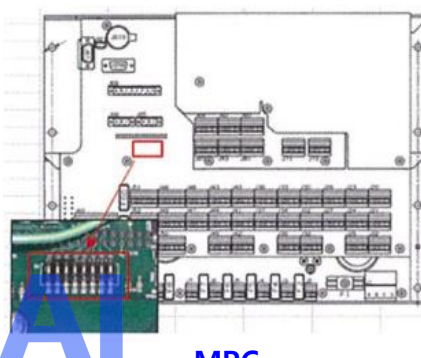
MPC
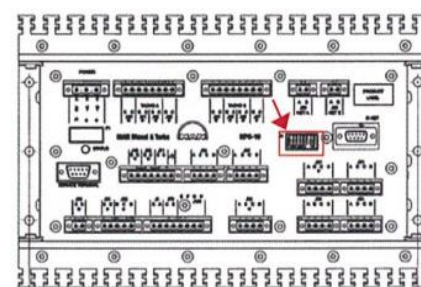
MPC-10

3) Remove Old ID Key and fit electric power supply connector (J1)
4) Check the LED Color, RED : 4 times, Green : 2 times.
5) Fit New ID Key
6) Check the LED Color, RED : 4 times, Green : 3 times.
7) Turn OFF all DIP switch S1
8) Check the LED Color, RED : 4 times, Green : 4 times.
9) After confirming the above color change, turn ON once only "1" of DIP switch S1 for more than 2 seconds, and OFF.
10) Setting is completed when LED continuous turning on in Green is confirmed
11) After setting completion, confirm no alarm on MOP

ECS Alarm "FIVA alarm controlling"

1. FIVA valve -> Position Feedback Signal Failure

1) Check the wiring from CCU to FIVA inductive sensor.

2) If the wiring is OK, Replace the FIVA.

3) Still alarm is remained, Replace the amplifier.

4) Carry out the FUNCTION TEST for replaced cylinder on MOP.

Postion Sensor

FIVA Valve

4/3 way Proportional Valve
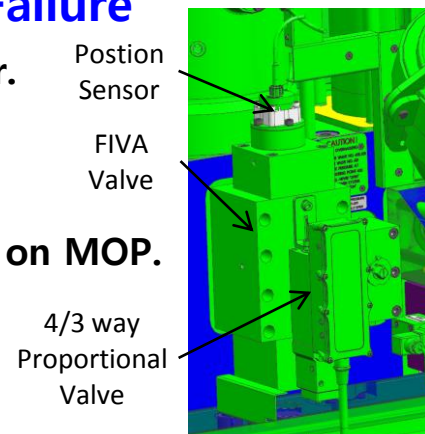
2. Illegal FIVA Position

1) Check the wiring from CCU and FIVA spool.

2) Reactive HCU by MOP, 'Engine -> Chief Limiters -> HCU Status and Reset'

▷ Do not Reactivate fuel injection until cylinder unit is considered to be OK.

4) Still alarm is remained, replace CCU and FIVA valve comp., on part at a time

3. Illegal FIVA Setpoint

1) Replace CCU

※ How to carry out the FUNCTION TEST

▷ Incase of FIVA replacement, FUNCTION TEST is required
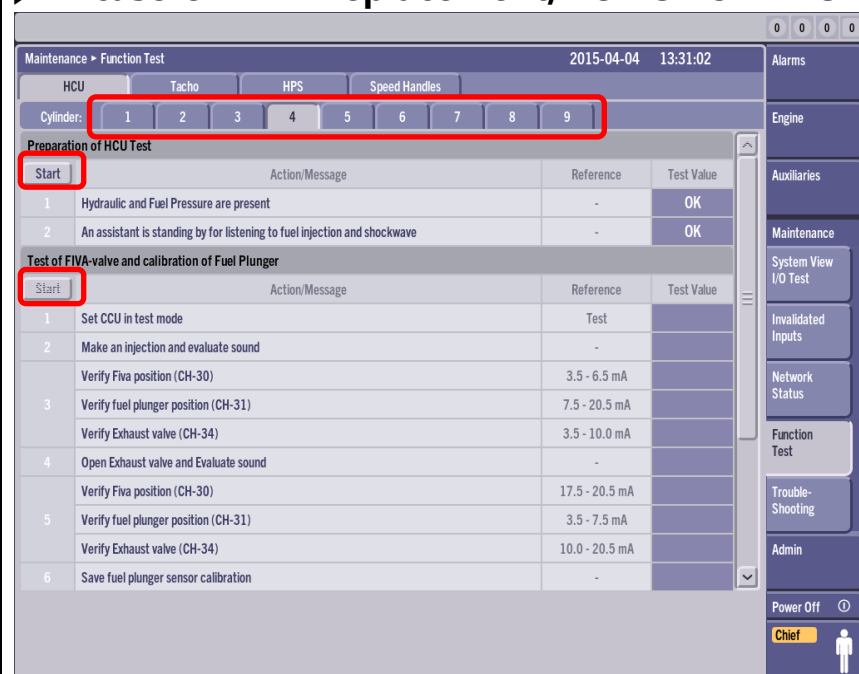
1. **Location on MOP**

   Maintenance ≫ Function test ≫ HCU ≫ Choose cylinder no.

2. **Sequence**

   1) Choose the relavant Cyl. No.

   2) Start the preparation test

   3) Start the FIVA test and calib.

   4) Start the FIVA test and calib. of Fuel Plunger

   5) Start the test operation for fuel injection & valve actuation

ECS Alarm "FO Booster alarm controlling"

1. Fuel Injection -> Fuel Plunger Not Returned

1) Check the fuel oil inlet pressure (6~8 bar)

2) Stop engine, check a suction v/v soundness and any stucking on plunger.

3) Go to "Maintenance ≫ Troubleshooting ≫ HCU ≫ Choose cylinder No.

4) Activate 'Fuel Plunger' and 'Exh. Valve'

5) If FIVA movement is OK, perform one manual fuel injection.

6) If manual injection failed, replace FIVA valve

2. Fuel Injection -> Fuel Plunger Stroke Too High

1) Check the fuel oil inlet pressure (6~8 bar)

2) Stop engine, check a suction v/v and fuel v/v soundness.

3) Go to "Maintenance ≫ Troubleshooting ≫ HCU ≫ Choose cylin

4) Activate 'Fuel Plunger' and 'Exh. Valve'

5) If FIVA movement is OK, perform one manual fuel injection.

6) If manual injection failed, replace FIVA valve

Suction Valve

Plunge

Position Sensor

FO Booster Pump
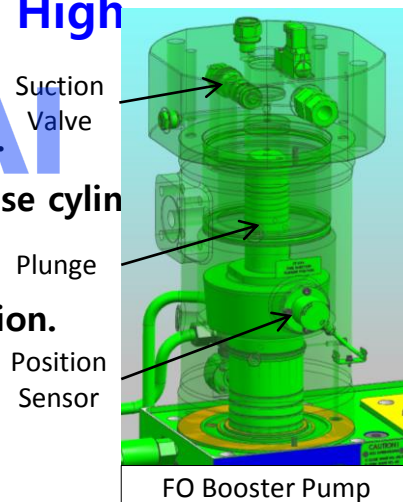
※ How to carry out the Troubleshooting

▷ Incase of malfunction on hydraulics, Troubleshooting is required
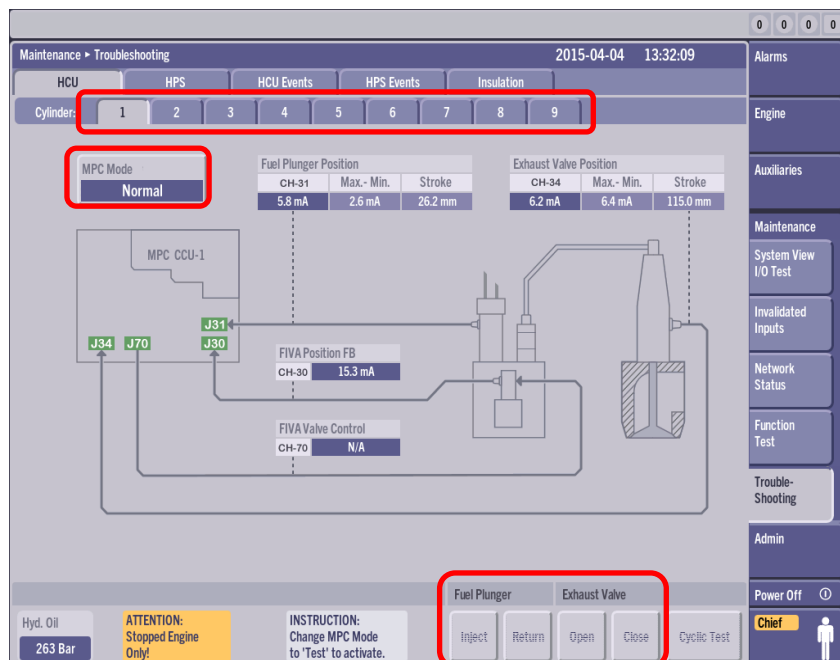
1. Location on MOP
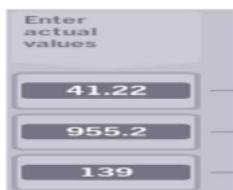
Maintenance ≫ Troubleshooting ≫ HCU ≫ Choose cylinder no.

2. Sequence

1) Change MPC mode Normal to Test mode

2) Start-up pump in operation to build up Hyd' press. 225bar

3) 'Fuel Plunger' and 'Exh valve' are allowed to test once or cylclic.
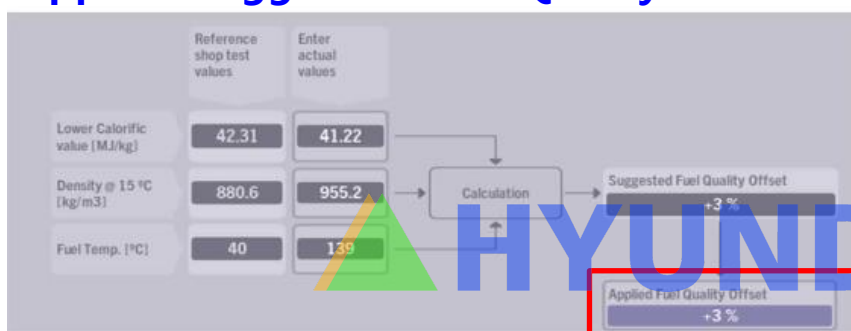
FQA Adjustment Procedure

1) Enter Actual Value

2) Applied Suggested Fuel Quality Offset

3) Compare ECS Load Estimate with Load Measurement

4) Adjust Applied Fuel Quality Offset (Repeat until satisfactory)

* Offset value Increase: Estimated Power Decrease
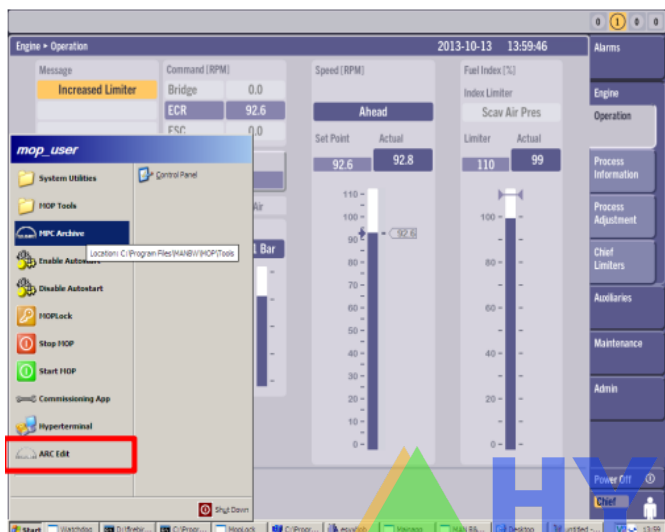* Offset valuve Decrease: Estimated Power increase

5) Other Points to Remember

* Suggested FQA is only the starting point
* A deviation of 2~3% should be possible
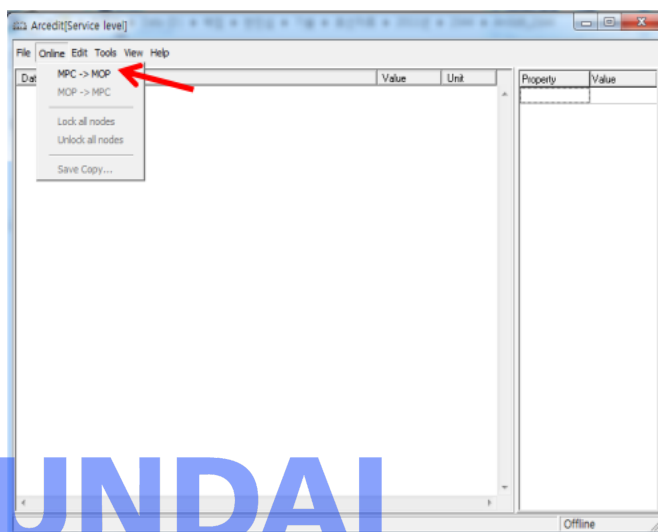* Applied FQA adjustment affects all load levels

Parameter Uploading/Downloading

1) Push 'Ctrl' + 'ECS' on Keyboard of MOP and Select 'ARC Edit'
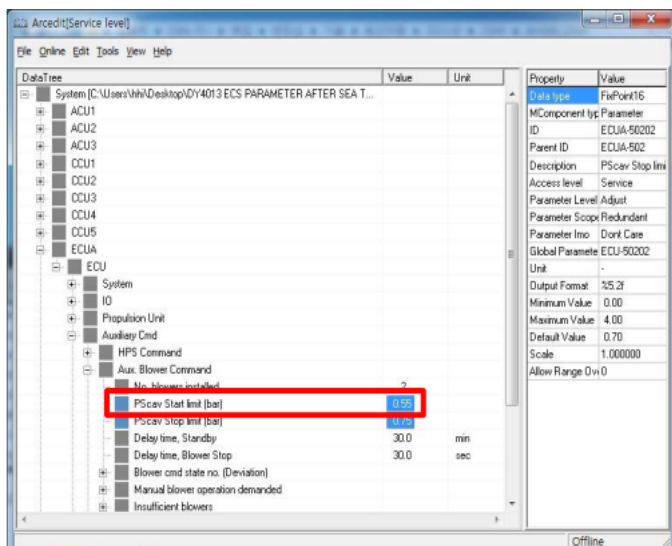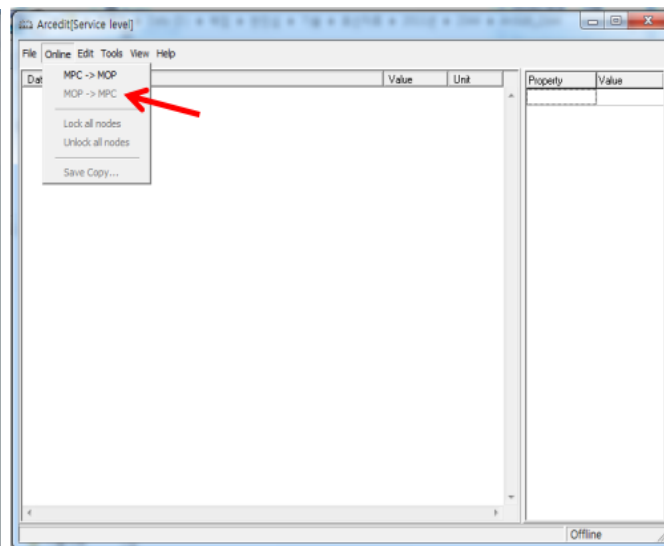## 2) Select 'Online' and Push 'MPC → MOP'

[1]

[2]

3) Change 'Paramter' from the Present to the New and Save

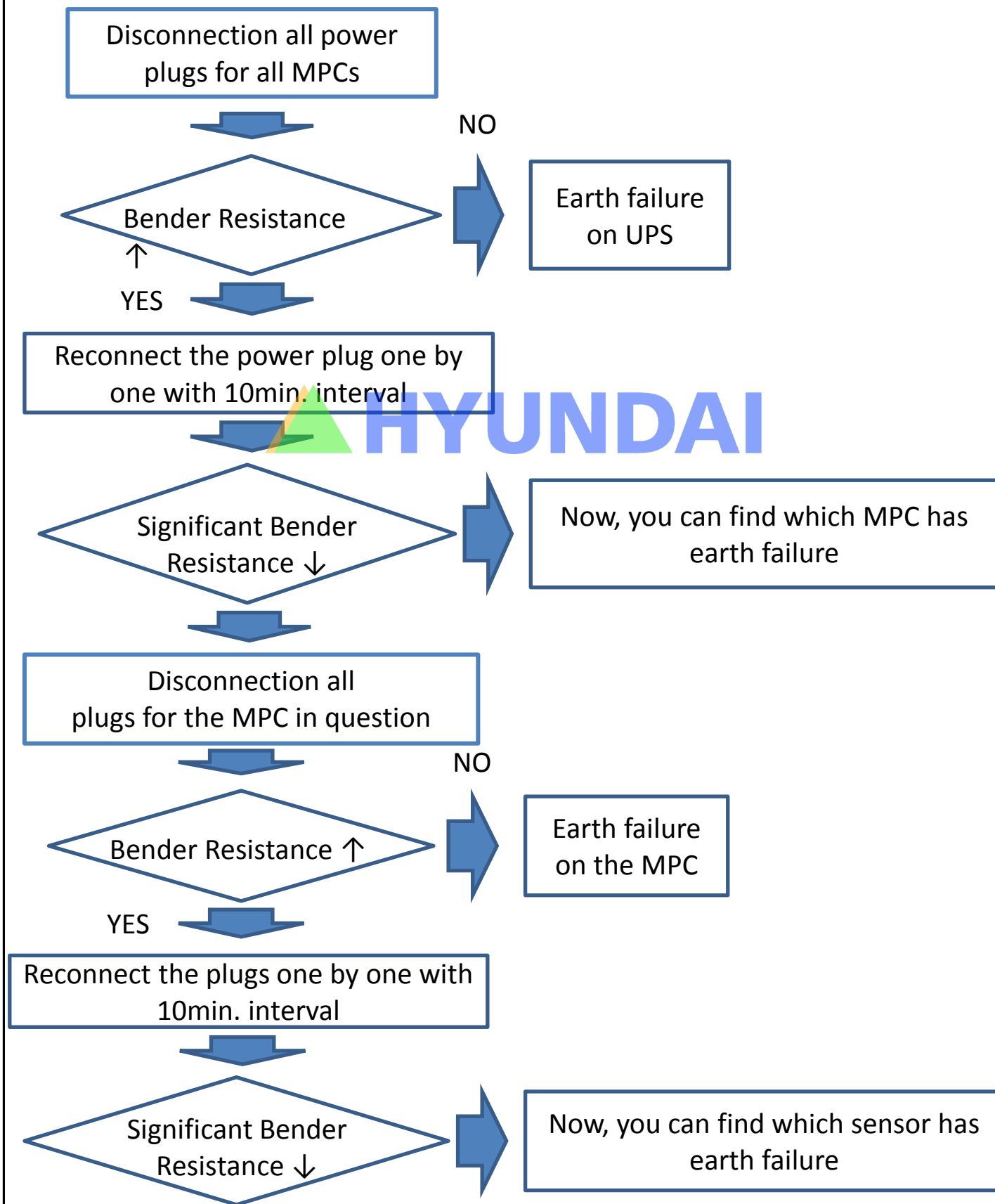## 4) After Changing the Value, Select 'Online' and Push 'MOP → MPC'

[3]

[4]

Low Insulation Alarm

1) How to find the source of earth failure

Disconnection all power plugs for all MPCs

↓

Bender Resistance ↑ — NO → Earth failure on UPS

YES ↓

Reconnect the power plug one by one with 10min. interval

↓

Significant Bender Resistance ↓ → Now, you can find which MPC has earth failure

↓

Disconnection all plugs for the MPC in question

↓

Bender Resistance ↑ — NO → Earth failure on the MPC

YES ↓

Reconnect the plugs one by one with 10min. interval

↓

Significant Bender Resistance ↓ → Now, you can find which sensor has earth failure

EMERGENCY BACKUP MK2 LUBRICATOR PROCEDULE

Deffective of MPC (CCU's) board
In case of CCU failure (and the CCU can not be changed immediately), activation of the ME Lubricator can be achieved as follows : In case of CCU failure, the engine is running in "Slow Down" mode

Temporary backup cable

1) Connect the temporary backup cable between the defective CCU and an working CCU as follows:

   C: From defective CCU
   D: From working CCU

2) Remove J08/J71 on the defective CCU

   J08: Lubricator power output
   J71: Lubricator position setpoint

3) Connect temporary backup cable to J08/J71 on the defective CCU

4) Connect temporary backup to J07 (working CCU) (from J08 to J07)

5) Remove J71 on working CCU and connect temporary backup cable