

第 8 章 HPS (Hydraulic Power Supply) Function Test

- (A) 所有附屬裝備,均需在 S/B 情況下.
- (B) 在主機停車之情況下方可執行.
- (C) 機帶泵(液壓油泵)現場需有一名助手,用對講機與控制室連絡.
- (D) 在 MOP(Main Operation Panel)面板上,依照以下順序去觸碰面板:
- (E) 選擇 Maintenance→Function Test→HPS→Pump 1.(綠色外框)

一. Preparation (準備工作)

- (1) 按 **Start**, 下一格會顯示: **Start one HPS start-up pump in local control** (通知在機帶泵現場人員,用手動啟動一台電動液壓油泵),確認油壓建立後,按右下方的 **Done** 這時在 **Test Value** 會出現 **OK**.
- (2) 同時也自動往下跳一格, 顯示: **An assistant is standing by viewing swash plate change** 確認機帶泵現場有人監視, 按右下方的 **Done**,這時在 **Test Value** 位置會出現 **OK**.

右下方執行鈕,會自動視需要出現 **Done**、**Reboot**、**OK** 或 **Save**

The screenshot displays the 'Maintenance > Function Test' interface. The top bar shows the date and time '2012-10-10 07:24:34'. Below the bar, there are tabs for 'HCU', 'Tacho', and 'HPS' (highlighted with a green box). Under the 'HPS' tab, there are buttons for 'Pump: 1', '2', and '3' (with '1' highlighted in green). The main area is divided into three sections: 'Preparation', 'Test', and 'End test'. The 'Preparation' section contains two steps, both highlighted with a red box:

	Action/Message	Reference	Test Value
1	Start one HPS Start-up Pump in local control	-	OK
2	An assistant is standing by viewing Swash Plate changes	-	OK

The 'Test' section contains six steps:

	Action/Message	Reference	Test Value
1	Set ACU1 into test mode	Test	
2	Order Swash Plate to full ahead	Ahead	
3	Verify Swash Plate feedback (CH-34) and inspect Swash Plate angle visually	12.0-20.0 mA	
4	Order Swash Plate to full astern	Astern	
5	Verify Swash Plate feedback (CH-34) and inspect Swash Plate angle visually	4.0-12.0 mA	
6	Save calibration		

The 'End test' section contains one step:

	Action/Message	Reference	Test Value
1	Start ACU1 in normal mode	Normal	

At the bottom of the interface, there are two large buttons: 'Done' and 'Abort Test'. On the right side, there is a vertical menu with various options, including 'Maintenance' (highlighted with a green box), 'System View', 'I/O Test', 'Invalidated Inputs', 'Network Status', 'Function Test' (highlighted with a green box), 'Trouble-shooting', 'Admin...', 'Power Off', and 'Access' (with a 'Chief' button).

二. Test (開始測試)

- (1) 按 **Start**, 下一格會顯示: **1.Set ACU2 into test mode**,此時在 **Test Value** 上顯示 **Normal** 模式我們必需把它更改為 **Test** 模式.
- (2) 按右下方的 **Reboot**, 系統開始跑, 這時 **Test Value** 位置會變成 **Unknown**, 待系統跑完後, **Test Value** 位置就會變成 **Test**.
- (3) 又會自動往下一格跳, 顯示: **2.Order swash plate to full ahead(命令傾斜板至全速正俾)**,這時請在右下方按 **OK** **Test Value** 位置就會顯示 **OK**.
- (4) 這時會自動往下跳一格, 顯示: **Verify swash plate feedback(CH-34) & inspect swash plate angle visually**, 在 **Test Value** 位置會不斷改變.

同時, 可看另一台 MOP → Maintenance → System view I/O test, 按畫面上的 ACU-1, 就可以看到 34. Swash-plate position 一直會加到 100%, 如下: 到達 100% 後, **Test Value** 顯示 **16.6 mA**(正常)

31	A	1201-1	Hydraulic Pressure (bar)	225.4 -	53	D	2181-A	Turning gear disengaged	ON
32	A	1204-1	Lube oil pressure (bar)	2.7 -	60	D	2108-A	Start Blocked	OFF
33	D	9989	Not Used	OFF	61	D	1210-1	Startup Pump Start/Stop	OFF
34	A	1222-1	Swash-Plate Position	49.6 %	70	A	1240-11	Prop Valve SP	0.0 mA
35	D	9997	Not Used	OFF	71	A	1250	Hydraulic press. ECR (bar)	225.31 -

Maintenance ▶ Function Test2012-10-10 07:24:34

HCU

Tacho

HPS

Pump:

1

2

3

Preparation

Start

	Action/Message	Reference	Test Value
1	Start one HPS Start-up Pump in local control	-	OK
2	An assistant is standing by viewing Swash Plate changes	-	OK

Test

Start

	Action/Message	Reference	Test Value
1	Set ACU1 into test mode	Test	Test
2	Order Swash Plate to full ahead	Ahead	OK
3	Verify Swash Plate feedback (CH-34) and inspect Swash Plate angle visually	12.0-20.0 mA	16.6 mA
4	Order Swash Plate to full astern	Astern	
5	Verify Swash Plate feedback (CH-34) and inspect Swash Plate angle visually	4.0-12.0 mA	
6	Save calibration		

End test

Start

	Action/Message	Reference	Test Value
1	Start ACU1 in normal mode	Normal	

Done

Abort Test

Alarms...

Engine...

Auxiliaries...

Maintenance ▶

System View I/O Test

Invalidated Inputs

Network Status

Function Test

Trouble-shooting

Admin...

Power Off ①

Access

Chief

- (4) 此時會再自動往下走一格 **Order swash plate to full Astern**,按 **OK** **Test Value** 位置就會顯示 **OK**.
- (5) 會自動再往下走一格, **Verify Swash plate feedback(CH-34) & inspect swash plate angle visually**
- (6) 可在另一台 MOP 上,看 34. Swash-plate position 當走到-100%時, **Test Value** 位置顯示 **8.4 mA**(在 允許範圍內,正常).
- (8) 此時會再自動往下一格走,顯示: **Save calibration (儲存測試之數據)**
- (9) 請在右下方按下 **Save**, 又開始跑, 等跑完後, 在 **Test Value** 會顯示 **OK**.
- (10) **Function Test** 結束.
- (11) 這時需要把系統恢復到 **Normal**,必需再完成下一頁的 步驟,才算結束.

Maintenance ▶ Function Test
2012-10-10 07:24:34

HCU
Tacho
HPS

Pump: 1 2 3

Preparation

Start	Action/Message	Reference	Test Value
1	Start one HPS Start-up Pump in local control	-	OK
2	An assistant is standing by viewing Swash Plate changes	-	OK

Test

Start	Action/Message	Reference	Test Value
1	Set ACU1 into test mode	Test	Test
2	Order Swash Plate to full ahead	Ahead	OK
3	Verify Swash Plate feedback (CH-34) and inspect Swash Plate angle visually	12.0-20.0 mA	16.6 mA
4	Order Swash Plate to full astern	Astern	OK
5	Verify Swash Plate feedback (CH-34) and inspect Swash Plate angle visually	4.0-12.0 mA	8.4 mA
6	Save calibration		OK

End test

Start	Action/Message	Reference	Test Value
1	Start ACU1 in normal mode	Normal	

Save

Done

Abort Test

Alarms...

 Engine...

 Auxiliaries...

Maintenance ▶
 System View
 I/O Test

 Invalidated Inputs

 Network Status

Function Test
 Troubleshooting

 Admin...

 Power Off ⓘ

 Access
Chief

三. End Test

- (1) 按 **Start**, 螢幕顯示: **Start ACU1 in normal mode**, 在 **Test value** 位置顯示 **Test**, 必需更改回 **Normal**.
- (2) 按右下方之 **Reboot**, 系統開始跑.
- (3) 系統跑完後, **Test Value** 會出現 **Normal** 當按下 **Reboot** 時, 會發現另一台 MOP 的數據都不見了, 系統跑完後, 數據會再次出現, 34 Swash-plate position 大約在 10% 左右.
- (4) 再回到 **Auxiliaries** → **Hydraulic System** 畫面, 可見三台 HPS, Swatch plate 開度都在 10% 左右.
- (5) 全部測試完成, 系統回復正常.

Maintenance ▶ Function Test 2012-10-10 07:24:34

HCU Tacho **HPS**

Pump: **1** 2 3

Preparation

Start	Action/Message	Reference	Test Value
1	Start one HPS Start-up Pump in local control	-	OK
2	An assistant is standing by viewing Swash Plate changes	-	OK

Test

Start	Action/Message	Reference	Test Value
1	Set ACU1 into test mode	Test	Test
2	Order Swash Plate to full ahead	Ahead	OK
3	Verify Swash Plate feedback (CH-34) and inspect Swash Plate angle visually	12.0-20.0 mA	16.6 mA
4	Order Swash Plate to full astern	Astern	OK
5	Verify Swash Plate feedback (CH-34) and inspect Swash Plate angle visually	4.0-12.0 mA	8.4 mA
6	Save calibration		OK

End test

Start	Action/Message	Reference	Test Value
1	Start ACU1 in normal mode	Normal	Normal

Reboot **Abort Test**

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