

TEL OXIDE FURNACE WAFER TRANSFER CHECK 程序

TEL OXIDE FURNACE WAFER TRANSFER CHECK PROCEDURE

壹、目的

I. Purpose

貳、適用時機

II. Applicable Timing

參、使用工具

III. Use of Tools

肆、安全事項

IV. Safety Precautions

伍、使用設備

V. Use Equipment

陸、操作步驟

VI. Procedure

柒、生效與修訂

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	2
------	------------	----------	-----------	-------	---

VII. Effectivity and Amendments

捌、附件

VIII. Appendix

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	3
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TEL OXIDE FURNACE WAFER TRANSFER CHECK 程序

TEL OXIDE FURNACE WAFER TRANSFER CHECK PROCEDURE

壹、目的：

I. Purpose：

CHECK 機台使其正常運作，提高機台生產力、減少機台及產品的損壞。

CHECK the machine to make it operate normally, improve the productivity of the machine, and reduce the damage of the machine and products.

貳、適用時機：

II. Applicable Timing

1. OXIDE 機台每四個月(±一個月)選擇一時段，請 EA 將機台掛 PM 時 COMMENT 欄位掛 "QPM"，EQ 執行爐管 T-BAWL 承接傳送 CHECK，於 RELEASE 機台時並於系統 "QPM" 輸入解機台。
The OXIDE machine chooses a time period every four months (\pm one month). Please ask the EA to add "QPM" in the COMMENT column when the machine is linked to PM.
EQ executes the furnace tube T-BAWL to undertake the transmission of CHECK, when RELEASE the machine and enter the solution machine in the system "QPM".
2. 定期 PM 時執行。
Executed at regular PM time.

參、使用工具：

III. Use of Tools

無塵布、IPA、防銹潤滑劑、六角板手、活動板手、水平儀、標準晶舟及檔片、反射鏡。

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	4
------	------------	----------	-----------	-------	---

Dust-free cloth, IPA, anti-rust lubricant, hexagonal wrench, movable wrench, spirit level, standard crystal boat and bracket, reflector.

肆、安全事項：

IV. Safety Precautions：

每一步驟務必確實小心執行，使用化學品，應穿戴防護器具。

Every step must be carried out with real care, using chemicals, and protective equipment should be worn.

伍、使用設備：

V. Use Equipment：

TEL FURNACE。

陸、操作步驟：

VI. Procedure

一、VL - 800的操作介紹

Operation introduction of VL-800

● 面板說明：

Panel description：

F1 ~ F4：Screen 上 Menu 的選擇 (F1 ~ F4: Menu selection on the Screen)

IDLE：進入 IDLE 閒置 Screen (IDLE: Enter IDLE idle screen)

EXIT：退出當時的 Screen (EXIT: Exit the current Screen)

MORE：Show 出其他 Menu (MORE: Show other Menu)

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	5
------	------------	----------	-----------	-------	---

PAUSE : 暫停動作 (PAUSE: Pause action)

RESET : Alarm 時可按此鍵停止，排除後再按此鍵解除 Alarm

(RESET: Press this key to stop the alarm, and then press this key to release the alarm)

PAGE : 發生 Interlock 連鎖時可按此鍵 Set 或 Release Interlock

(PAGE: Press this key to Set or Release Interlock when Interlock chain occurs)

CCW / OFF : 逆轉 / 關 (CCW / OFF: reverse / off)

CW / ON : 正轉 / 開 (CW / ON: forward / open)

ENT : 確認鍵或修改後按此鍵 Confirm

(ENT: Confirm key or press this key after modification Confirm)

● M01 ~ M06 的代表動作：

Representative actions of M01~M06:

M01 : BE_UD_UP (Boat Elevator UP/DOWN)

5 個 Position 由下致上依序為：P01、P05、P02、P03、P04

The 5 positions from bottom to top are: P01, P05, P02, P03, P04

M02 : HA_ROT_CW (Handling Arm Rotate)

3 個 Position 順時間依序為：P01、P02、P03

The 3 positions in chronological order are: P01, P02, P03

M03 : DS_UP_DOWN (Door Shutter UP/DOWN)

2 個 Position 為：TOP、BTM

The 2 positions are: TOP, BTM

M04 : DS_SWG_OPEN (Door Shutter Swing OPEN/CLOSE)

2 個 Position 為：Close、Open

The 2 positions are: Close, Open

M05 : BC_LOK_FREE (Boat Clamp Lock/Unlock)

3 個 Position 為：Lock、Unlock

The 3 positions are: Lock, Unlock

M06 : BE_ROT_CW (Boat Elevator Rotate)

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	6
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- 移動 MOTOR 的位置

Move the position of MOTOR

按 IDLE → 選擇 MENU → 選擇 MTR → 選擇 M01 ~ M04 或按 MORE 鍵後選擇 M05、M06
→ 按 CCW 或 CW 控制 MOTOR 的移動。

Press IDLE → select MENU → select MTR → select M01~M04 or press MORE key and
select M05, M06 → press CCW or CW to control the movement of MOTOR.

- 更改 MOTOR 各點位置參數

Change the position parameters of each point of MOTOR

按 IDLE → 選擇 SET → 選擇 MTR → 選擇欲修改 MOTOR(M01~M06) → 按 POS → 按欲
修改之點 (P01~P05) → KEY 入欲修改之參數 → 按 ENT 作確認 → 按 IDLE 跳出

Press IDLE → select SET → select MTR → select MOTOR(M01~M06) to be modified →
press POS → press the point to be modified (P01~P05) → KEY to enter the parameter
to be modified → press ENT to confirm → press IDLE to exit

二、 前置檢查作業

Pre-check work

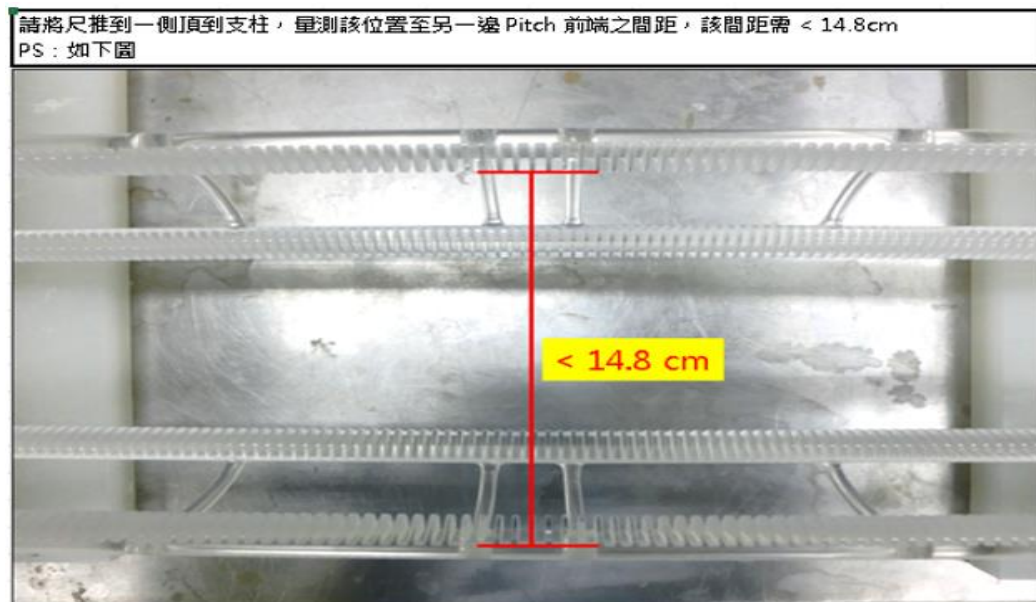
1. CHECK BOAT & PADESTAL & BASE 等 QUARTZ，有無變形或破裂，若有則更換之。(註)
CHECK BOAT & PADESTAL & BASE and other QUARTZs for deformation or cracks, and
replace them if any. (Note)
2. 將水平儀置於CAP上檢查是否水平、清潔，視狀況調整、clean。
Put the spirit level on the CAP to check whether it is level and clean, adjust and clean

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	7
------	------------	----------	-----------	-------	---

according to the situation.

註：CHECK BOAT 需以尺測試，以 BOAT 中間為量測目標，請將尺推到一側頂到支柱，量測該位置至另一邊 Pitch 前端之間距，該間距需 $< 14.8\text{cm}$ ，否則更換 BOAT。

Note: CHECK BOAT needs to be tested with a ruler. Take the middle of the BOAT as the measurement target. Please push the ruler to one side to push against the pillar, and measure the distance from this position to the front of the Pitch on the other side. The distance must be $< 14.8\text{cm}$, otherwise replace the BOAT.



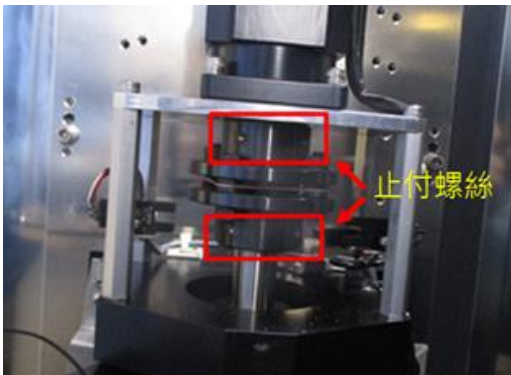
三、VL-800 BOAT 承接 CHECK

VL-800 BOAT undertakes CHECK

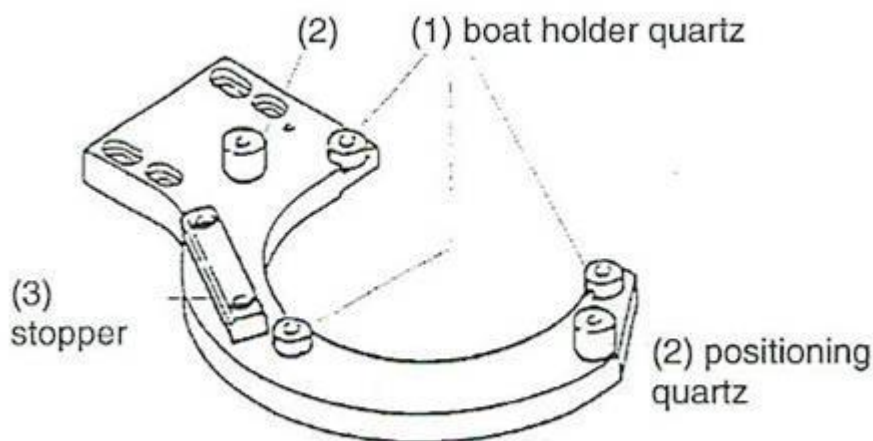
1. 檢查 ARM MOTOR 連接器止付螺絲是否鎖緊，並將止付螺絲鎖緊。

Check whether the stop screw of the ARM MOTOR connector is locked, and tighten the stop screw.

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	8
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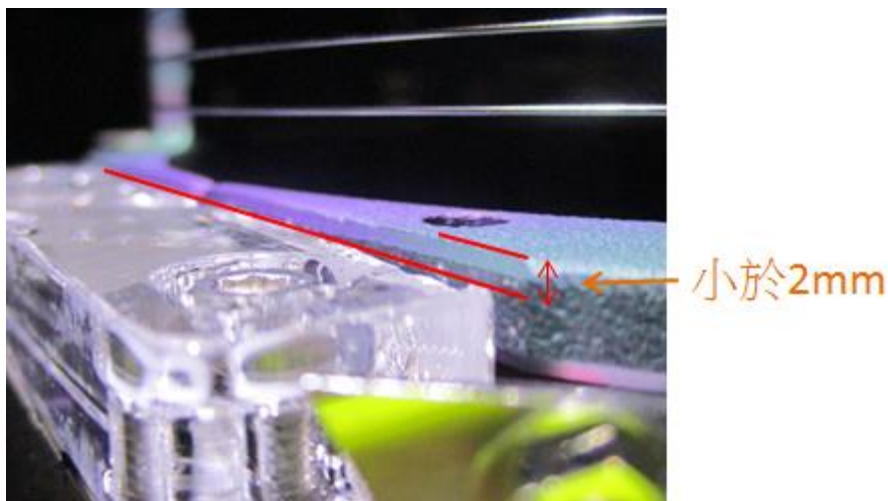
2. 使用 VL-800 將 M05 移至 P02(BOAT UNLOCK) 後使用 M02 將手臂移至 P02。
CHECK 並調整 BOAT 在 HAND ARM 上之位置，將 BOAT 調整在 stopper、positioning quartz 之間，約各距 1mm 左右。(注意 BOAT 與 stopper、positioning quartz 不可有接觸的狀況。)
Use VL-800 to move M05 to P02(BOAT UNLOCK) and then use M02 to move the arm to P02.
CHECK and adjust the position of BOAT on the HAND ARM, and adjust the BOAT between the stopper and positioning quartz, with a distance of about 1mm each. (Note that BOAT must not be in contact with stopper and positioning quartz.)



3. 將 M01 移至 P02 位置後再將 M02 由 P03 移至 P02 位置，check BOAT BTM platen 上緣距離 stopper 上緣應小於 2mm，若大於 2mm 則調整 M01 的 P02 位置。
Move M01 to P02, and then move M02 from P03 to P02. Check that the upper edge of the

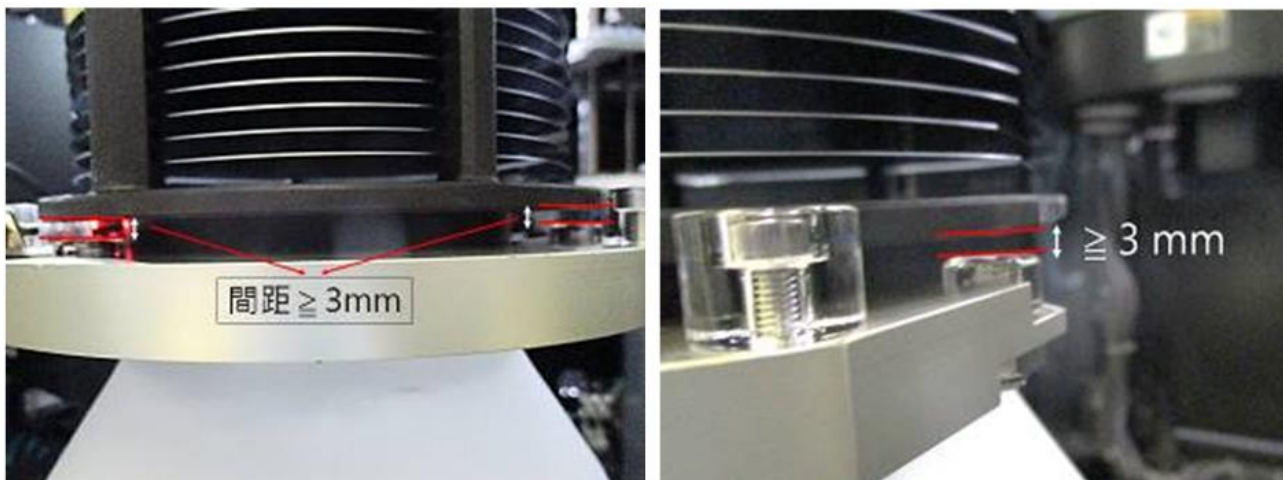
NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	9
------	------------	----------	-----------	-------	---

BOAT BTM platen is less than 2mm from the upper edge of the stopper. If it is greater than 2mm, adjust the P02 position of M01.



- 將 M01 移至 P02 位置 check Boat Platen 下緣 (BTM) 與 boat holder quartz 間距是否大於 3mm，否則調整 M01 的 P02 位置

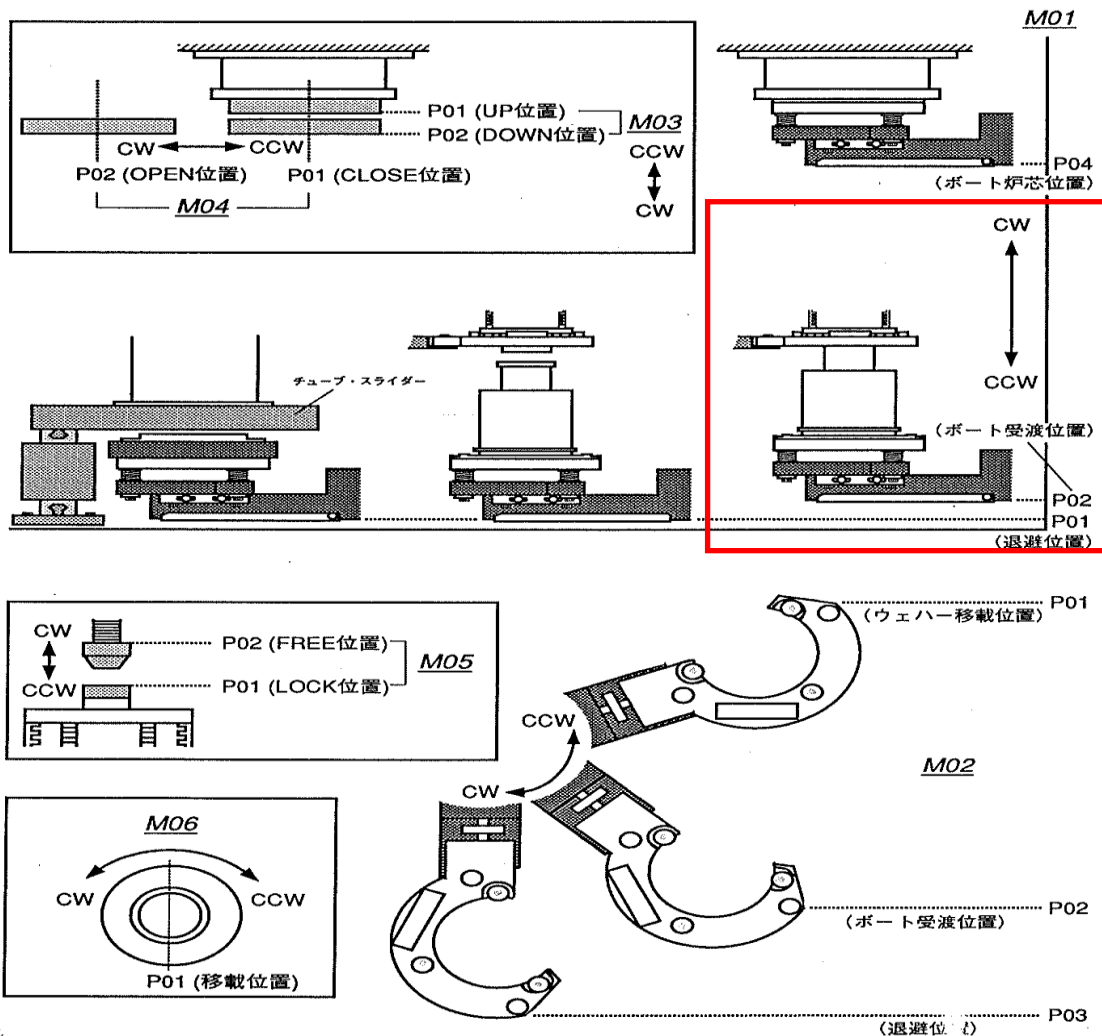
Move M01 to the P02 position to check whether the distance between the lower edge of the Boat Platen (BTM) and the boat holder quartz is greater than 3mm, otherwise adjust the P02 position of M01



- 此處補充說明 M01(Boat elevator)，移動至 P02 位置，是指保溫筒與 boat 承接時之位置，如下圖 (M01~M06位置說明) 紅色框框內所標示之狀態

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	10
------	------------	----------	-----------	-------	----

Here is a supplementary description of M01 (Boat elevator), moving to the P02 position refers to the position when the insulation cylinder is connected to the boat, as shown in the red frame in the figure below (M01~M06 position description)



- 使用 VL-800 利用將 M01(Boat elevator) 移至 P05 → P02 · 利用 2mm L-WRENCH 確認保溫筒在承接 BOAT 時有無摩擦聲、BOAT 底部外圍與保溫筒頂端之內緣間距是否大於 2mm (如附圖1)
Use VL-800 to move M01 (Boat elevator) to P05 → P02, and use 2mm L-WRENCH to confirm whether there is any friction sound when the insulation cylinder receives the BOAT,

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	11
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and whether the distance between the bottom periphery of the BOAT and the inner edge of the insulation cylinder top is greater than 2mm (As attached picture 1)

7. M01 至 P02 後將 M02 移至P03位置，check 並調整 Boat 承接於保溫筒之正中間。

After M01 to P02, move M02 to P03, check and adjust the Boat to connect to the middle of the insulation cylinder.

8. 將 M02 往 P02 移動，邊移動邊注意 Boat 與 stopper、positioning quartz 是否會有摩擦碰撞的情形，如果 Boat 與 stopper 會有碰撞的情形，可以調整 M02 的 P02 位置使 stopper 與 boat 保持在 1mm 左右。M02 至 P02 點後再 check boat 與 stopper、positioning quartz 的相對位置並視情況加以微調。

Move M02 to P02, and pay attention to whether there will be friction and collision between Boat and stopper and positioning quartz while moving. If there will be collision between Boat and stopper, you can adjust the position of P02 of M02 to keep the distance between stopper and boat at about 1mm . From M02 to P02, check the relative position of the boat, stopper and positioning quartz and fine-tune it according to the situation.

9. 將 M01 移至 P01 → P05 → P02、M02 移至 P03 再移至 P02，做再次 Boat 承接位置 check。

Move M01 to P01 → P05 → P02, M02 to P03 and then to P02, and check the position of the boat again.

10. Boat 承接位置完成後移動 M01 使其在 P02 與 P05 來回移動，觀看 boat 在承接時有無搖晃現象，HAND ARM上共有 3 顆 boat holder quartz，位於 stopper 旁的 boat holder quartz 為不可調整之基準點，如果 Boat 有晃動現象可調整 HAND ARM 上的另 2 顆 boat holder quartz 高低位置使 boat 能平穩的承接於保溫筒與 HAND ARM。

After completing the boat receiving position, move M01 to make it move back and forth between P02 and P05 to see if the boat shakes when receiving. There are 3 boat holder quartz on the HAND ARM, and the boat holder quartz next to the stopper is the non-adjustable reference point , if the Boat shakes, you can adjust the height of the other two boat holder quartz on the HAND ARM so that the boat can be smoothly connected to the insulation cylinder and the HAND ARM.

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	12
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(boat holder quartz 的高低調整方式為 M01 至 P02 與保溫筒承接時 boat 倒向的方向其 boat holder quartz 高度偏高 ; M01 至 P05 與 HAND ARM 承接時 boat 倒向的方向其 boat holder quartz 高度偏低)

(The height adjustment method of the boat holder quartz is that when M01 to P02 are connected with the insulation cylinder, the height of the boat holder quartz is higher in the direction where the boat is inverted; when M01 to P05 is connected with the HAND ARM, the height of the boat holder quartz is lower in the direction where the boat is inverted)

四、 BOAT LOCK 位置 CHECK

BOAT LOCK position CHECK

1. Boat 承接完成後將 M01 移至 P01 後將 M02 移至蓋住保溫筒的一半位置上。

After the boat is connected, move M01 to P01, and then move M02 to half of the insulation cylinder.

2. 將 boat lock 的外蓋拆下後將 M02 移至 P01 位置。

Remove the cover of the boat lock and move M02 to P01.

3. 先用手確認，M05 至 P01 點後 lock 與 Boat 的承接並不會相差過多。

Confirm with your hands first, the connection between the lock and the Boat after point M05 to P01 will not differ too much.

4. 若檢查結果 lock 與 Boat 的承接差距過大則先鬆開固定螺絲並將其位子先大概的移至相對位置上後再將螺絲鎖上，若檢查結果 lock 與 Boat 的承接並無差距過大且感覺可以很準確的 lock 住 boat 時則直接跳至下步驟。(boat lock 有 6 顆固定螺絲，左右各三顆，中間 2 顆為 lock 之左右位子固定螺絲，前後 4 顆為 lock 之前後位置固定螺絲)

If the inspection result shows that the gap between the lock and the Boat is too large, first loosen the fixing screw and move its seat roughly to the relative position before locking the screw. If the inspection result shows that the gap between the lock and the Boat is not too

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	13
------	------------	----------	-----------	-------	----

large and If you feel that you can accurately locate the boat, skip to the next step directly. (The boat lock has 6 fixing screws, three on the left and right, two in the middle are fixing screws on the left and right positions of the lock, and four on the front and rear are fixing screws on the front and rear positions of the lock)

5. 將 M05 移至 P01 位置，檢查 LOCK 位置是否完美，是否剛好與 boat 的 lock 凹槽完美承接無偏移，若有偏移則將 M05 移至 P02 位置，鬆開固定螺絲，調整 boat lock 位置後 M05 移至 P01 位置再作一次檢查，反覆進行調整及 CHECK 的動作直到 boat lock 剛好與 boat 的 lock 凹槽完美承接無偏移。(調整位置左右、前後位置請分開進行)

Move M05 to the P01 position, check whether the LOCK position is perfect, whether it is just perfectly connected with the lock groove of the boat without deviation, if there is any deviation, move M05 to the P02 position, loosen the fixing screw, and adjust the boat lock position Afterwards, move M05 to P01 for another check, and repeat the adjustment and CHECK actions until the boat lock just fits perfectly with the lock groove of the boat without any deviation. (Adjust the left, right and front and rear positions separately)

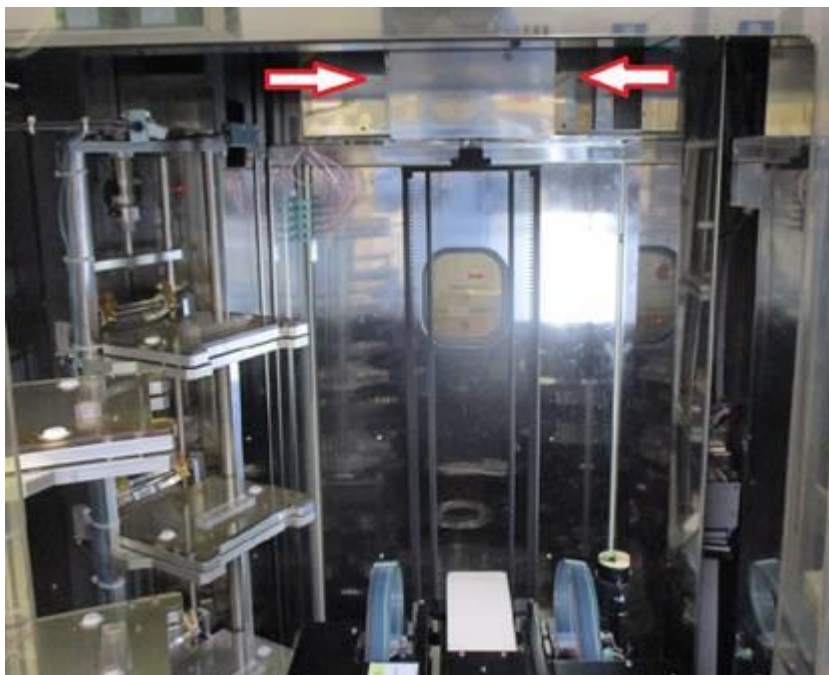
6. 調整完畢後將 M02 移回蓋住保溫筒的一半位子上，回裝 lock 外蓋後再將 M02 移至 P01、M05 至 P01。(boat lock固定住)

After the adjustment, move M02 back to half of the position that covers the insulation cylinder, put back the lock cover, and then move M02 to P01, M05 to P01. (boat lock fixed)

7. Boat Lock 外蓋裝回後，需至操作區正前方目視確認 Boat Lock 外蓋有裝好，扣環扣至定位。

After the Boat Lock cover is put back, you need to go to the front of the operating area to visually confirm that the Boat Lock cover is installed and the buckle is fastened to the position.

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	14
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- 將 VL-800 回歸至 REMOTE 狀態。

Return the VL-800 to REMOTE status.

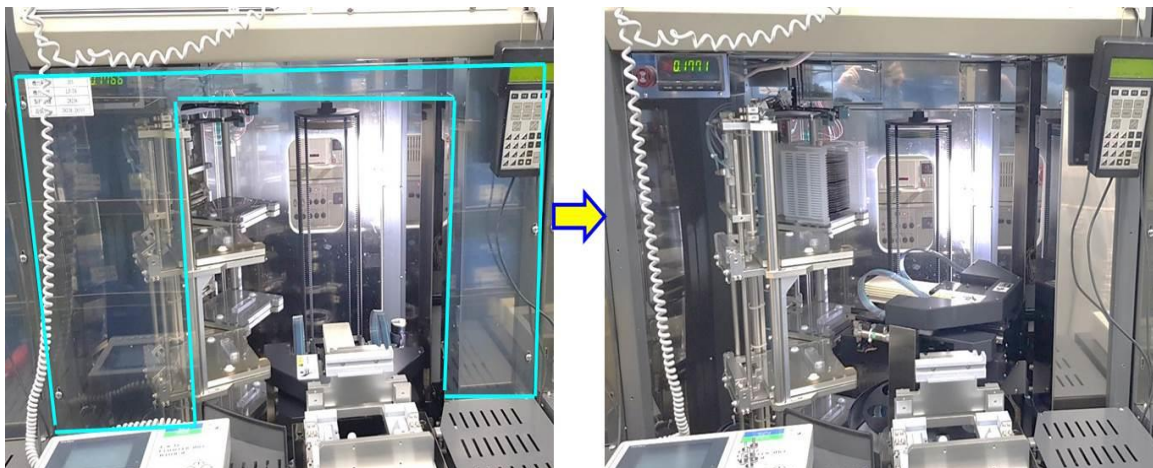
五、 T-BAWL CHECK 傳送操作

T-BAWL CHECK transfer operation

- T-BAWL POWER OFF 再 POWER ON 後 WARM 開機，拆下機台前方壓克力面板。

Turn T-BAWL POWER OFF and then POWER ON, turn on WARM, and remove the acrylic panel on the front of the machine.

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	15
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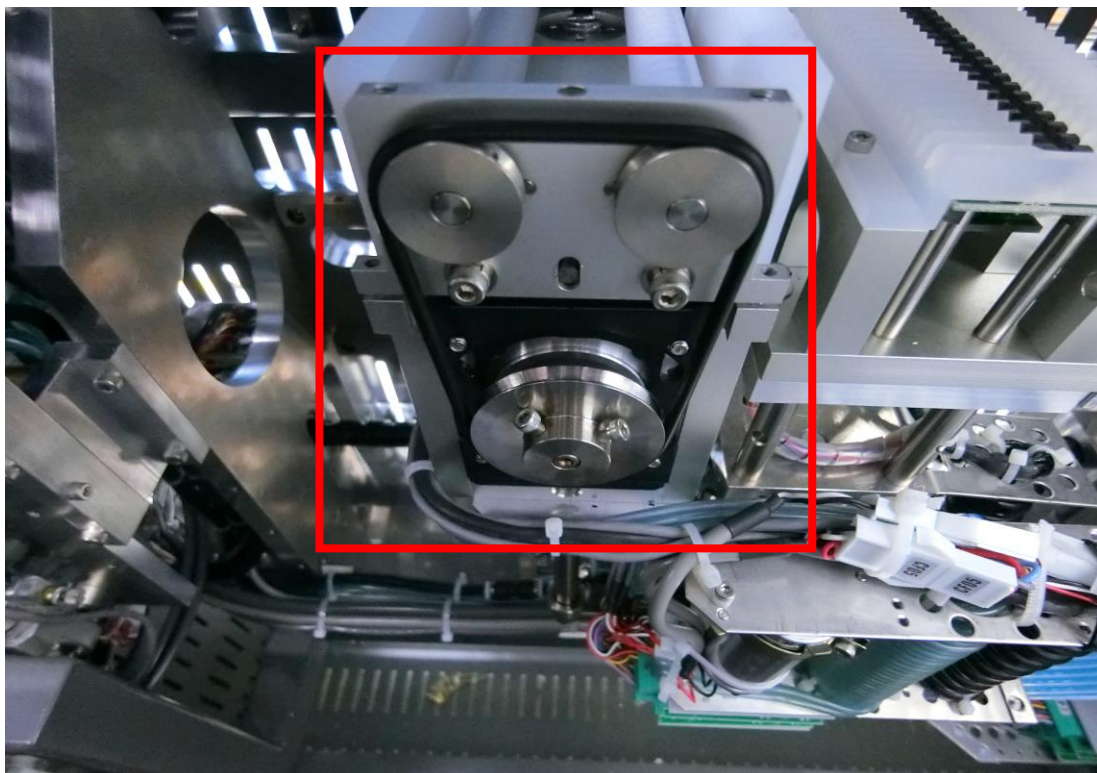


2. 按下 F1(INIT) 做 INITIAL。

Press F1(INIT) to do INITIAL.

3. 更換 ROLLER BELT O-RING，並於步驟 5~6 時，確認平邊是否有轉正。

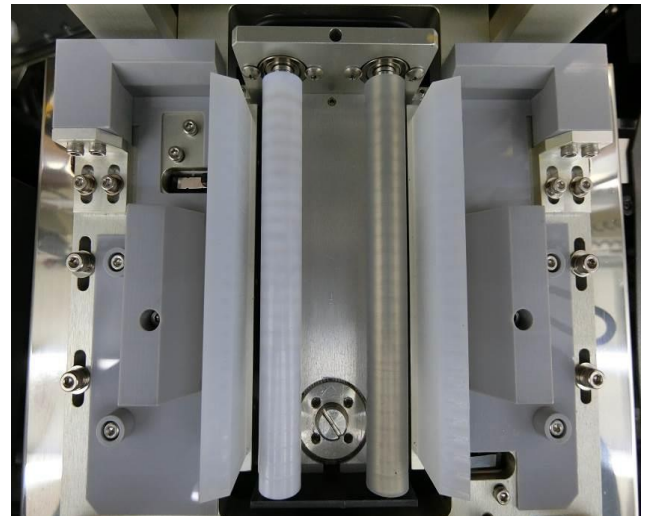
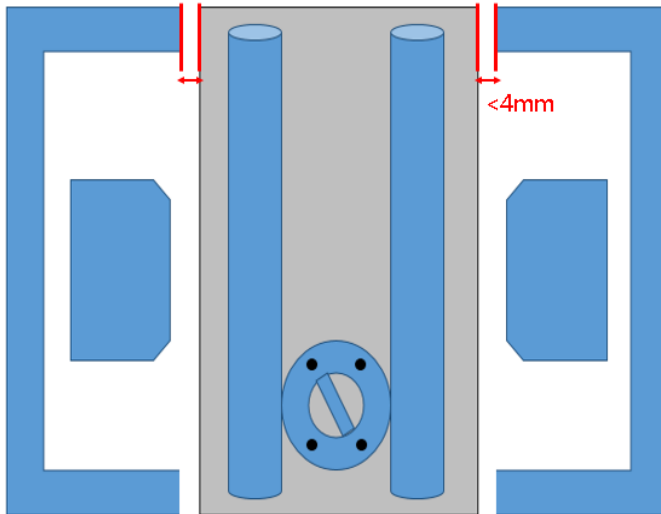
Replace the ROLLER BELT O-RING, and in steps 5~6, check whether the flat edge is turned straight.



NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	16
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4. 確認 Roller Assembly 左右位置是否置中，Roller Assembly 與左右 Carrier Port 間距需 $<4\text{mm}$ ，若否則須調整之。

Confirm that the left and right positions of the Roller Assembly are centered. The distance between the Roller Assembly and the left and right Carrier Ports must be $<4\text{mm}$. Otherwise, it must be adjusted.



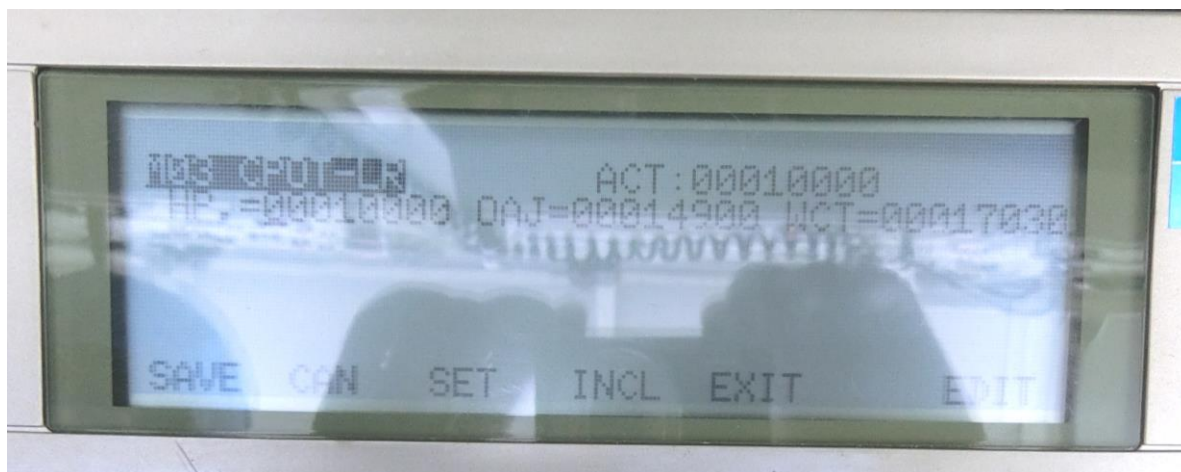
※調整方式：

於 T-BAWL 第二頁 → 按下 EDIT → 選擇第十項 POSITION OF MOTOR → 選擇第四項 CARRIER PORT → 選擇 PART=M03 CPOT_LR → 修改 OAJ 參數 (數值變大向右，數值變小相左)

※Adjustment method:

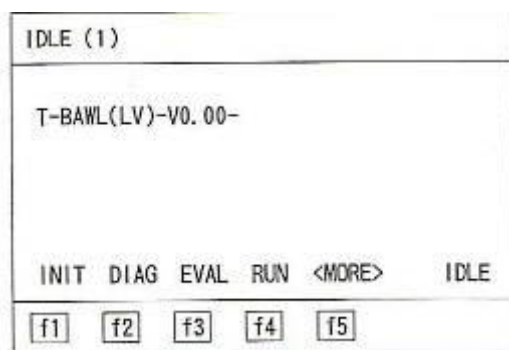
On the second page of T-BAWL → press EDIT → select the tenth item POSITION OF MOTOR → select the fourth item CARRIER PORT → select PART=M03 CPOT_LR → modify OAJ parameters (the larger the value, the right, the smaller the value is left)

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	17
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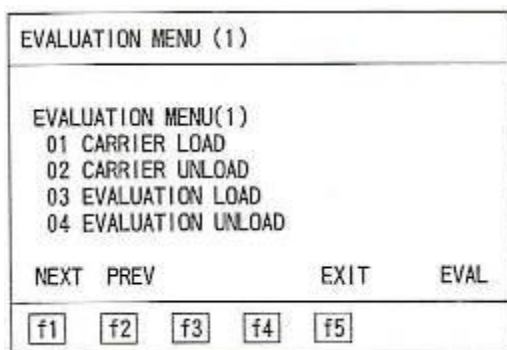
5. 取拿 7 盒傳送用標準晶舟檔片，將標有 C1 的晶舟至於 carrier port 上。

Take the 7-box transfer standard wafer carrier, and place the wafer marked C1 on the carrier port.



鍵入[F3](EVAL)

Key in [F3] (EVAL)



使用空白鍵選取" 01 CARRIER LOAD" 後ENTER

Use the space bar to select "01 CARRIER LOAD" and then ENTER

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	18
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01 CARRIER LOAD	
01 CARRIER LOAD	C2:YYY C1:YYY
CARRIER NO. =XX	C4:YYY C3:YYY
WAFER COUNT ZZ	C6:YYY C5:YYY
	C8:YYY C7:YYY
START	ABORT STATUS EXIT EVAL
[f1]	[f2] [f3] [f4] [f5]

使用空白鍵將 CARRIER NO. 選擇為 C1 後按[F1]START

Use the space bar to select CARRIER NO. as C1 and press [F1]START

此時機台會出現逼逼聲，按下 CASSETTE load/unload 確認鍵後 cassette C1 自動傳送到 STAGE1 位置上，CHECK cassette wafer 有無異常並調整。

At this time, there will be a pressing sound on the machine. After pressing the CASSETTE load/unload confirmation button, the cassette C1 will be automatically transferred to the STAGE1 position. CHECK if there is any abnormality in the cassette wafer and adjust it.

6. C2~C6、C8同上。

C2~C6, C8 are the same as above.

7. T-BAWL TRANSFER 時，使用 D/W 測試 C1~C6、C8 位置，於平邊未轉正時，需被 WAFER DETECT 偵測，若平邊不整時而未被偵測時，需調整 WAFER DETECT SENSOR，使其功能正常。

During T-BAWL TRANSFER, use D/W to test the positions of C1~C6 and C8. When the flat edge is not straightened, it needs to be detected by WAFER DETECT. SENSOR for proper function.

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	19
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8. 調整 WAFER DETECT SENSOR 或者 SENSOR 固定支架位置，使其功能正常。

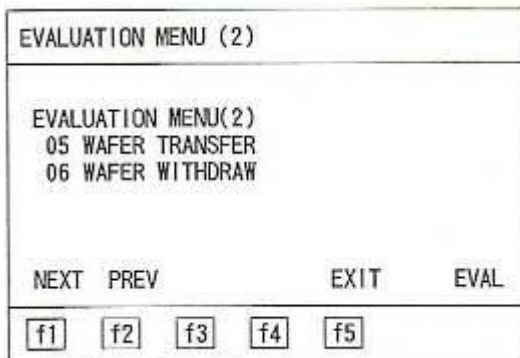
Adjust the position of WAFER DETECT SENSOR or SENSOR fixing bracket to make it function normally.



9. 從 T-BAWL 鍵入[F3](EVAL)→[F1](NEXT)

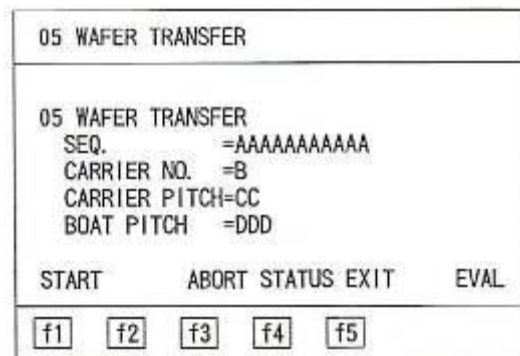
Key in [F3](EVAL)→[F1](NEXT) from T-BAWL

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	20
------	------------	----------	-----------	-------	----



使用空白鍵選取" 05 WAFER TRANSFER" 後ENTER

Use the space bar to select "05 WAFER TRANSFER" and then ENTER



SEQ=" 使用空白鍵選擇FORK-5 LOAD" ENTER確認→CARRIER NO.=" 使用空白鍵選擇C1(選取 cassette C1)" ENTER確認→CARRIER PITCH=" 使用空白鍵選擇01(抓carrier pitch 01~05))" ENTER確認→BOAT PITCH=" 使用空白鍵選擇21(boat 第21個位置)" ENTER確認→按 [F1](START)

SEQ="Use the blank key to select FORK-5 LOAD"ENTER to confirm→CARRIER NO.="Use the blank key to select C1 (select cassette C1)"ENTER to confirm→CARRIER PITCH="Use the blank key to select 01 (carrier pitch 01~05))"ENTER to confirm→BOAT PITCH="Use the blank key to select 21 (the 21st position of the boat)"ENTER to confirm→press [F1](START)

10. FORK-5移至cassette前時按暫停check FORK-5是否會撞到wafer，確定不會碰撞時解除暫停。
FORK完全伸入cassette而未抓起wafer時按暫停鈕，使用反射鏡並調整反射角度。

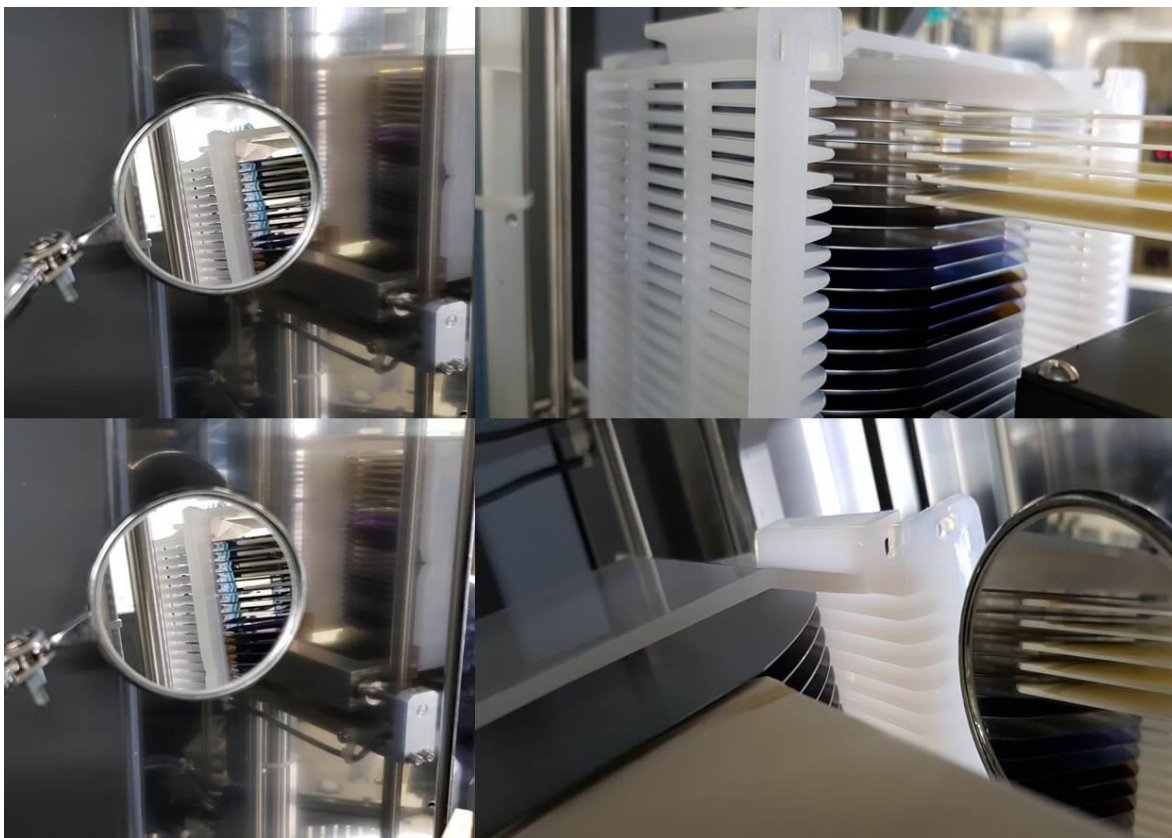
利用反射檢視 Fork-5 進入 cassette 後端時，check Fork-5 與 wafer 相對位置是否置中。

When FORK-5 moves to the front of the cassette, press Pause to check whether FORK-5 will

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	21
------	------------	----------	-----------	-------	----

hit the wafer, and release the pause when it is confirmed that it will not collide. Press the pause button when the FORK is fully inserted into the cassette without grabbing the wafer, use the reflector and adjust the reflection angle.

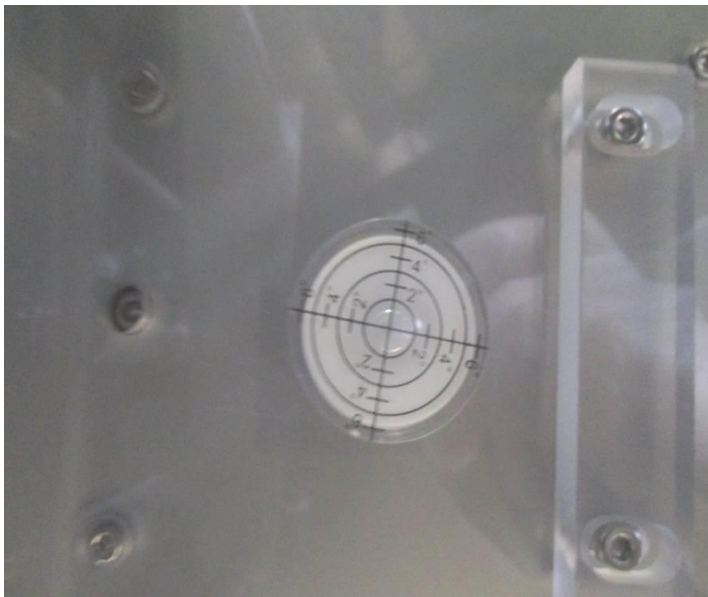
Use reflection to check whether Fork-5 enters the back end of the cassette, and check whether the relative position of Fork-5 and wafer is centered.



若 Fork 與 wafer 相對水平不佳，需以水平儀確認 Stage 水平並調整至水平。

If the relative level of fork and wafer is not good, it is necessary to confirm the level of the stage with a spirit level and adjust it to the level.

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	22
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確認 Stage 調整至水平後，以 Stage 水平為基準值不可再調動，cassette 上、下皆須確認相對位置是否置中。

After confirming that the stage is adjusted to the level, it cannot be adjusted based on the level of the stage, and the relative position of the cassette must be confirmed whether it is in the middle or not.

11. check FORK 位置是否在 wafer 和 wafer 中間。

Check whether the FORK position is between the wafer and the wafer.

12. 如果 FORK 位置 OK 則取消暫停繼續動作；如果位置偏低或偏高則按[F3] (ABORT) 。

If the FORK position is OK, cancel the pause and continue the action; if the position is low or high, press [F3] (ABORT).

13. 位置偏低或偏高有拖片疑慮時則按 [F1](EDIT)→[F1](NEXT)→[F1](NEXT)

Press [F1](EDIT)→[F1](NEXT)→[F1](NEXT) if the position is too low or too high and you have doubts about dragging

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	23
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```

EDIT MENU (3)

EDIT MENU(3)
09 SPEED OF MOTOR
10 POSITION OF MOTOR
11 ORG. POSITION
12 OAJ TIME

NEXT  PREV          EXIT  EDIT
[f1] [f2] [f3] [f4] [f5]
    
```

使用空白鍵選取" 10 Position of motor" ENTER確認

Use the space bar to select "10 Position of motor" ENTER to confirm

```

10 POSITION OF MOTOR (1)

10 POSITION OF MOTOR
01 CARRIER TRANSFER
02 WAFER TRANSFER FORK-5
03 WAFER TRANSFER FORK-1
04 CARRIER PORT

EXIT  EDIT
[f1] [f2] [f3] [f4] [f5]
    
```

使用空白鍵選取" FORK-5" ENTER確認

Use the space bar to select "FORK-5" ENTER to confirm

```

10 POSITION OF MOTOR (4)

02 WAFER TRANSFER FORK-5

PART=XXXXXXXX

EXIT  EDIT
[f1] [f2] [f3] [f4] [f5]
    
```

使用空白鍵選取" PART=carrier-1" 後ENTER確認

Use the space bar to select "PART=carrier-1" and then ENTER to confirm

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	24
------	------------	----------	-----------	-------	----

10 POSITION OF MOTOR ⑦					
CARRIER-1 (FORK-5) ACT:XXXXXXXX ZZZZ					
M18 WEL1-UP CR1=YYYYYYYY					
M19 WAFR-RT CR1=YYYYYYYY					
M21 WAF1-FB CRL=YYYYYYYY					
SAVE	CAN	SET	INCL	EXIT	EDIT
[f1]	[f2]	[f3]	[f4]	[f5]	

更改 UD 的位置後按 ENTER 確認 (FORK進入C1的高低位置) 按[F1](SAVE) → 如果覺得 FORK 左右或前後也需要修改時修改其 RT、FB 數字。

After changing the position of UD, press ENTER to confirm (fork enters the high and low position of C1) press [F1](SAVE) → if you feel that the left and right or front and back of FORK also need to be modified, modify its RT and FB numbers.

14. UD 更改可以 50 或 100 為一單位，RT、FB 則以 5 或 10 為一單位去做修改。RT 越大 wafer 越往 FORK 右邊，FB 越大 wafer 越往 FORK 內部偏移。

UD can be modified in units of 50 or 100, while RT and FB can be modified in units of 5 or 10. The larger the RT, the more the wafer is to the right of the FORK, and the larger the FB, the more the wafer is offset to the inside of the FORK.

15. 回到第 5 步驟重新傳送，直至位置調整 OK。

Go back to step 5 and retransmit until the position adjustment is OK.

16. FORK-5 抓起 wafer 並移出後按下暫停 check wafer 在 fork 上的位置是否置中且完全置於 FORK 凹槽內，若有偏移則同第 8 步驟更改 RT、FB 位置。

FORK-5 grabs the wafer and moves it out, then press Pause to check whether the position of the wafer on the fork is centered and completely placed in the groove of the FORK. If there is any deviation, change the positions of RT and FB as in step 8.

17. FORK-5 抓起 wafer 至 boat 前時按暫停鈕 FORK 確認 FORK 不會撞擊到 boat，如果會則同樣 abort 重傳並手動將 FORK 上的 wafer 取下。

FORK-5 grabs the wafer and presses the pause button FORK to confirm that the FORK will

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	25
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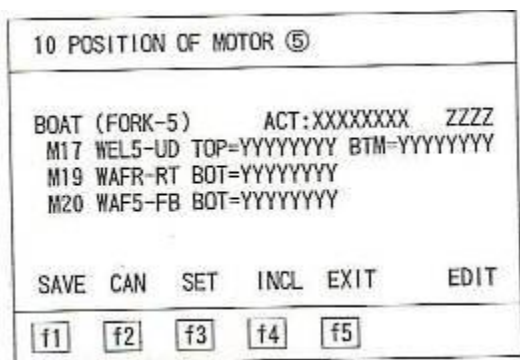
not hit the boat. If so, abort and retransmit and manually remove the wafer from the FORK.

18. Wafer 入 boat 而未置於 boat 上時按下暫停 check wafer 與 boat 的高低位置，解除暫停後 wafer 置於 boat 上而 fork 未移出時再次按下暫停 check 高低位置。

When the wafer is in the boat but not on the boat, press the pause button to check the high and low positions of the wafer and the boat. After releasing the pause, press the pause button again to check the high and low positions when the wafer is placed on the boat but the fork has not been moved out.

19. 位置偏低或偏高有拖片疑慮時則參考第 8 步驟按 [F1](EDIT)→[F1](NEXT)→[F1](NEXT) → 使用空白鍵選取" 10 Position of motor" ENTER 確認→使用空白鍵選取" FORK-5" ENTER 確認→使用空白鍵選取" PART=boat" ENTER 確認。

If the position is too low or too high and you have doubts about dragging, please refer to step 8 and press [F1](EDIT)→[F1](NEXT)→[F1](NEXT) → use the space bar to select "10 Position of motor" ENTER to confirm → use the space bar to select "FORK-5" ENTER to confirm → use the space bar to select "PART=boat" ENTER to confirm.



- 同時更改 UD 的 TOP(C1~C3)、BTM(C4~C6) 位置後按 ENTER 確認 (FORK-5 進入 boat 的高低位置)，按[F1](SAVE)。

At the same time change the TOP(C1~C3) and BTM(C4~C6) positions of UD and press ENTER to confirm (fork-5 enters the boat's high and low position), press [F1](SAVE).

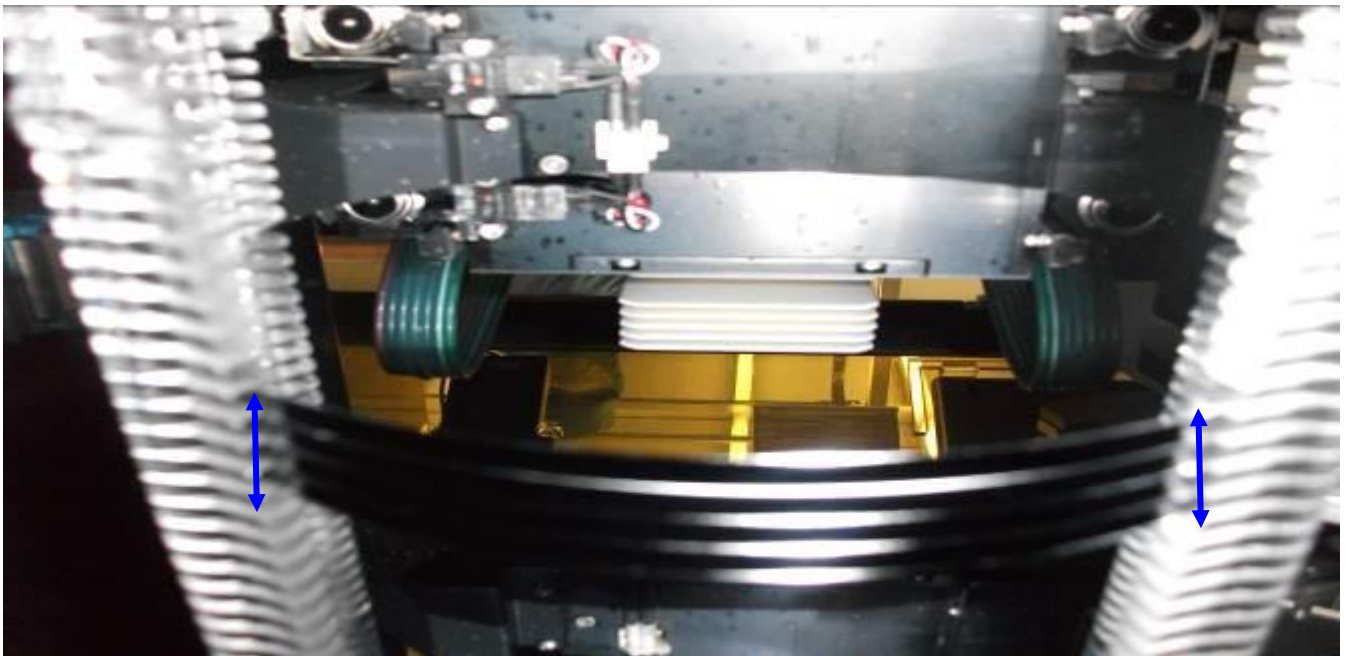
20. 同傳送 C1 的方法傳送 C2~C6 至 boat 第 46、71、96、121、146 的位置上，邊傳邊調整 UD 的 TOP、BTM 位置至最佳狀態。

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	26
------	------------	----------	-----------	-------	----

Send C2~C6 to the 46th, 71st, 96th, 121st, and 146th positions of the boat in the same way as C1, and adjust the TOP and BTM positions of UD to the best state while transferring.

21. C1~C6 傳送完畢後 check C1~C6 之 wafer 置於 boat 的左右位置是否置中，前後位置是否距 boat 約 >1mm 以上的空隙(如圖示)。如果有同時偏移則同第 12 步驟更改 fork-5 之 boat 的 RT 和 FB。(面對機台正面來說，RT 越大 wafer 越往 boat 右邊，FB 越大 wafer 越往 boat 裡面偏移)；如果有個別特別偏移則同第 8 步驟方式調整 fork-5 之 carrier-1~carrier-6 的 RT、FB。(面對機台正面來說，更改 carrier 各別前後左右位置其 RT 越大 wafer 越往 boat 左邊，FB 越大 wafer 越往 boat 外面偏移。)

After the transmission of C1~C6 is completed, check whether the wafers of C1~C6 are placed in the center of the left and right positions of the boat, and whether the front and rear positions are more than 1mm away from the boat (as shown in the figure). If there is a simultaneous offset, change the RT and FB of the boat of fork-5 as in step 12. (Facing the front of the machine, the larger the RT, the more the wafer will move to the right of the boat, and the larger the FB, the more the wafer will shift to the inside of the boat); if there is any special deviation, adjust the carrier-1 of fork-5 in the same way as step 8 RT, FB for ~carrier-6. (Facing the front of the machine, change the front, rear, left, and right positions of the carrier. The larger the RT, the more the wafer will move to the left of the boat, and the larger the FB, the more the wafer will deviate from the boat.)



22. 調整位置以調整 boat 為先，如果 boat 一同修改後仍有特別偏移則再予以個別調整。

To adjust the position, adjust the boat first. If there is still a special offset after the boat is modified together, then adjust it individually.

23. 調整完畢後重傳一遍再次 check 修正後之位置。

After the adjustment is completed, retransmit and check the corrected position again.

24. FORK-5 傳送 CHECK OK 後用 check FORK-5 傳送方式由步驟 5 開始將 FORK-5 換成 FORK-1 check FORK-1 的傳送。

FORK-5 transmission CHECK OK, use the check FORK-5 transmission method to start from step 5 to change FORK-5 to FORK-1 check FORK-1 transmission.

25. 傳送 check 完畢後將 wafer 傳回。(參考第 5 步驟將 SEQ.= 從 FORK-5 load/FORK-1 load 改為 FORK-5/FORK-1 unload)

Send the wafer back after sending the check. (refer to step 5 to change SEQ.= from FORK-5 load/FORK-1 load to FORK-5/FORK-1 unload)

26. 參考第 3 步驟選取 02 CARRIER UNLOAD 將 7 盒 CASSETTE 傳回。

Refer to step 3 and choose 02 CARRIER UNLOAD to return 7 boxes of CASSETTE.

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	28
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六、 傳送後機台 CHECK

Machine CHECK after transfer

- 每次 BPM or YPM need Clean counter sensor with air gun 。

Every time BPM or YPM need Clean counter sensor with air gun.

AP 管：每四個月(±1個月) (T-BAWL check) 或 (YPM clean) 。

AP tube: Every four months (±1 month) (T-BAWL check) or (YPM clean).

LP 管：每次 BPM clean 一次。

LP tube: Every BPM clean one time.
- CHECK T-BAWL & VL-800 各傳動軸，視情況加潤滑劑。

CHECK each transmission shaft of T-BAWL & VL-800, and add lubricant according to the situation.
- 將機台內部用 LOW AVCUUM 或 IPA 及無塵布擦拭乾淨。

Wipe the inside of the machine with LOW AVCUUM or IPA and a dust-free cloth.
- 檢查 CAP 是否有鐵銹或 POWDER，若有請立即清除並以無塵布擦拭直至白布無污漬為止。

Check whether there is rust or POWDER on the CAP. If there is any, please remove it immediately and wipe it with a dust-free cloth until the white cloth is free of stains.
- Check torch 及 piping 接合面有無破裂，同時將 cover 拆除 check 與 tube 接合面有無破損。

Check whether the joint surface of torch and piping is broken, and remove the cover at the same time to check whether the joint surface of torch and tube is damaged.
- 填寫 transfer check 紀錄並紀錄有何異常。

Key in the transfer check record and record any abnormalities.
- 確定已完成上述所有步驟後，則將機台 release 給生產線。

After confirming that all the above steps have been completed, release the machine to the production line.

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	29
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註：(Note：)

1. T-BAWL 部份，每四個月(±1個月)檢查一次。

T-BAWL part, check every four months (±1 month).

2. GATE OXIDE 需特別注意，若有異常現象須提前降溫 PM。

Special attention should be paid to GATE OXIDE, if there is an abnormal phenomenon, the PM must be cooled in advance.

3. VL-800 POWER RESET 後，MOTOR INITIAL 時人員需至維修區確認各機件 MOTION 相關位置。

After VL-800 POWER RESET, the MOTOR INITIAL personnel need to go to the maintenance area to confirm the relative position of each machine MOTION.

七、生效與修訂

VII. Effectivity and Amendments

本規範之公佈實施及其修訂核准層級皆依會簽/核決/分發依循範例為之。

The publication, implementation and revision approval levels of this specification are all based on countersignature/approval/distribution and follow the example.

八、附件

VIII. Appendix

TEL FURNACE WAFER TRANSFER CHECKLIST 表格，列入 PM TABLE 填寫。

TEL FURNACE WAFER TRANSFER CHECKLIST FORM, INCLUDED PM TABLE FILL.
(表單編號 G3363-1010-01-XX)

(Form number G3363-1010-01-XX)

註1：標準晶舟需以3個月(±1個月)為一期定期檢測是否變形，而晶片則需每3個月進行清洗。
(依據 G3212-2300)

Note 1: The standard boat needs to be inspected regularly for deformation every 3

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	30
------	------------	----------	-----------	-------	----

months (± 1 month), while the wafer needs to be cleaned every 3 months.

(according to G3212-2300)

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	31
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附件一 (Appendix 1)

TEL FURNACE WAFER TRANSFER CHECKLIST

項次	項 目	註記	說 明
0	日期		請填寫執行日期
1	T-BAWL CHECK		T-BAWL CHECK 完成後請填寫"OK"
2	CAP LEVELING CHECK		檢查或調整完畢，請填"OK"
3	CARRIER PORT CHECK		檢查或調整完畢，請填"OK"
4	CLEAN WAFER COUNT		CLEAN 完畢後，請填 "C"
5	CHECK BOAT 底部外圍與保溫筒之頂端內緣間距		Boat 底部外圍與保溫筒頂端之內緣間距是否 \geq 2mm，檢查或調整至 2mm L-WRENCH 可放入，請填" OK"
6	CHECK TEFLON N2/H2 PIPING		檢查或調整完畢，請填"OK"
7	CHECK TORCH PIPING		檢查或調整完畢，請填"OK"
8	CHECK BOAT/PEDESTAL COVER承接		檢查或調整完畢，請填"OK"
9	CHECK ARM SENSOR POSITION		檢查或調整完畢，請填"OK"
10	CHECK M01 之 P02 POSITION		Boat BTM platen 上緣距離 stopper上緣應 $< 2\text{mm}$ ，Boat BTM platen 下緣與 boat holder quartz 間距 $> 3\text{mm}$ ，檢查或調整完畢，請填" OK"
11	TEST平邊不整時WAFER DETECT		檢查或調整完畢，請填"OK"
12	REPLACE ROLLER BELT O-RING		每次請更換新品，請填" *"
13	記錄QUARTZ BOAT間距		QUARTZ BOAT 間距需 $< 14.8\text{cm}$ ，若為 SIC BOAT 請填" /"
14	確認 Roller Assembly 左右位置置中		Roller 與左右 Carrier Port 間距需 $< 4\text{mm}$ ，檢查或調整完畢，請填寫間距
15	確認 Boat Lock 外蓋有裝好		至操作區確認 Boat Lock 外蓋扣環需扣至定位，檢查或調整完畢，" 請填" OK"

表單編號：G3363-1010-02-F

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	32
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附件一～一 (Appendix1~1)

TEL FURNACE WAFER TRANSFER CHECKLIST

項次	項 目	註記	說 明
0	日期	A	請填寫執行日期
1	T-BAWL CHECK	B	T-BAWL CHECK 完成後請填寫"OK"
2	CAP LEVELING CHECK	C	檢查或調整完畢，請填"OK"
3	CARRIER PORT CHECK	D	檢查或調整完畢，請填"OK"
4	CLEAN WAFER COUNT	E	CLEAN 完畢後，請填 "C"。
5	CHECK BOAT 底部外圍與保溫筒之頂端內緣間距	F	Boat 底部外圍與保溫筒頂端之內緣間距是否 \geq 2mm，檢查或調整至 2mm L-WRENCH 可放入，請填" OK"
6	CHECK TEFLON N2/H2 PIPING	G	檢查或調整完畢，請填"OK"
7	CHECK TORCH PIPING	H	檢查或調整完畢，請填"OK"
8	CHECK BOAT/PEDESTAL COVER承接	I	檢查或調整完畢，請填"OK"
9	CHECK ARM SENSOR POSITION	J	檢查或調整完畢，請填"OK"
10	CHECK M01 之 P02 POSITION	K	Boat BTM platen 上緣距離 stopper上緣應 $< 2\text{mm}$ ，Boat BTM platen 下緣與 boat holder quartz 間距 $> 3\text{mm}$ ，檢查或調整完畢，請填" OK"
11	TEST平邊不整時WAFER DETECT	L	檢查或調整完畢，請填"OK"
12	REPLACE ROLLER BELT O-RING	M	每次請更換新品，請填" *"
13	記錄QUARTZ BOAT間距	N	QUARTZ BOAT 間距需 $< 14.8\text{cm}$ ，若為 SIC BOAT 請填" /"
14	確認 Roller Assembly 左右位置置中	O	Roller 與左右 Carrier Port 間距需 $< 4\text{mm}$ ，檢查或調整完畢，請填寫間距
15	確認 Boat Lock 外蓋有裝好		至操作區確認 Boat Lock 外蓋扣環需扣至定位，檢查或調整完畢，" 請填" OK"

表單編號：G3363-1010-02-F

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	33
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附件一~二 (Appendix 1~2)

表格填寫說明

表格名稱：TEL FURNACE WAFER TRANSFER CHECKLIST

項次	欄位名稱	填寫方式及內容描述
A	日期	填寫檢查日期。
B	T-BAWL CHECK	T-BAWL CHECK 完成後請填寫 "OK"。
C	CAP LEVELING CHECK	檢查或調整完畢，請填"OK"。
D	CARRIER PORT CHECK	檢查或調整完畢，請填"OK"。
E	CLEAN WAFER COUNT	CLEAN 完畢後，請填 "C"。
F	CHECK BOAT 底部外圍與保溫筒之頂端內緣間距	Boat 底部外圍與保溫筒頂端之內緣間距是否 $\geq 2\text{mm}$ ，檢查或調整至 2mm L-WRENCH 可放入，請填 "OK"
G	CHECK TEFLON N2/H2 PIPING	檢查或調整完畢，請填"OK"。
H	CHECK TORCH PIPING	檢查或調整完畢，請填"OK"。
I	CHECK BOAT/PEDESTAL COVER承接	檢查或調整完畢，請填"OK"
J	CHECK ARM SENSOR POSITION	檢查或調整完畢，請填"OK"。
K	CHECK M01 之 P02 POSITION	Boat BTM platen 上緣距離 stopper上緣應 $< 2\text{mm}$ ，Boat BTM platen 下緣與 boat holder quartz 間距應 $> 3\text{mm}$ ，檢查或調整完畢，請填 "OK"
L	TEST 平邊不整時 WAFER DETECT	檢查或調整完畢，請填 "OK"
M	REPLACE ROLLER BELT O-RING	每次請更換新品，請填 " *"
N	記錄QUARTZ BOAT間距	QUARTZ BOAT 間距需 $< 14.8\text{cm}$ ，若為 SIC BOAT 請填 "/"
O	確認 Roller Assembly 左右位置置中	Roller 與左右 Carrier Port 間距需 $< 4\text{mm}$ ，檢查或調整完畢，請填寫間距
P	確認 Boat Lock 外蓋有裝好	至操作區確認 Boat Lock 外蓋扣環需扣至定位，檢查或調整完畢，" 請填 " OK"

NO.:	G3363-1010	VERSION:	<u>AD</u>	PAGE:	34
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附圖1 (Fig1)

