

齒輪箱油壓缸更換作業

Gearbox hydraulic cylinder replacement procedure

注意事項: Notice:

1. 請先將刀塔油壓停止，以免拆卸油管後液壓油噴出。

Switch off turret hydraulic system to prevent hydraulic oil from spraying out when doing disassemble.

2. 油壓缸固定座上之 SENSOR 可不用拆除，但更換過程中需注意避免撞擊到 SENSOR。

Not necessarily to remove proximity switch S11 on hydraulic cylinder, but need to pay attention not to damage the sensor.

- 步驟 1. 請先拆除耦合齒背蓋，共 4 顆螺絲。

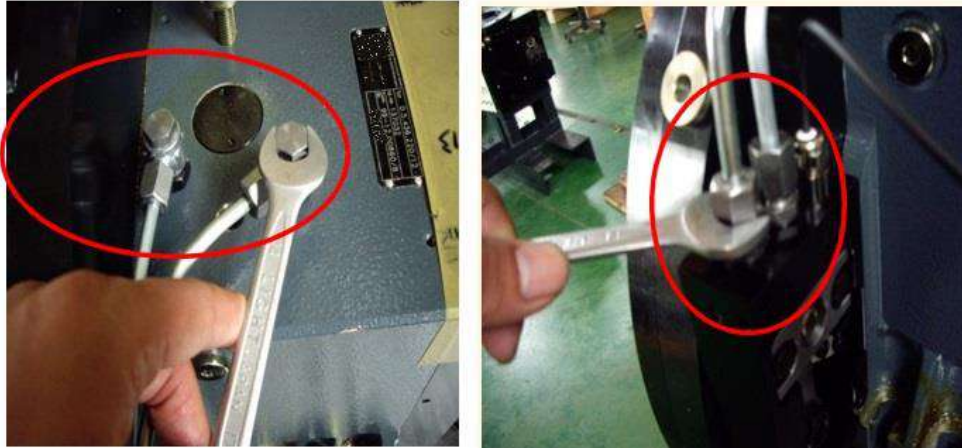
STEP 1. Remove 4 bolts on the rear cover of coupling.



步驟 2. 將本體上方及油壓缸油管拆除，請務必停止油壓系統以免液壓油外洩

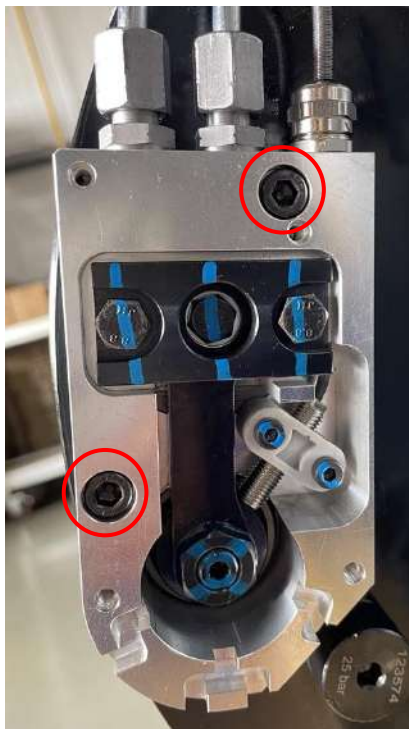
STEP 2. Disassemble hydraulic cylinder tube on top of turret housing;

Ensure to switch off hydraulic system to prevent spraying of hydraulic oil.



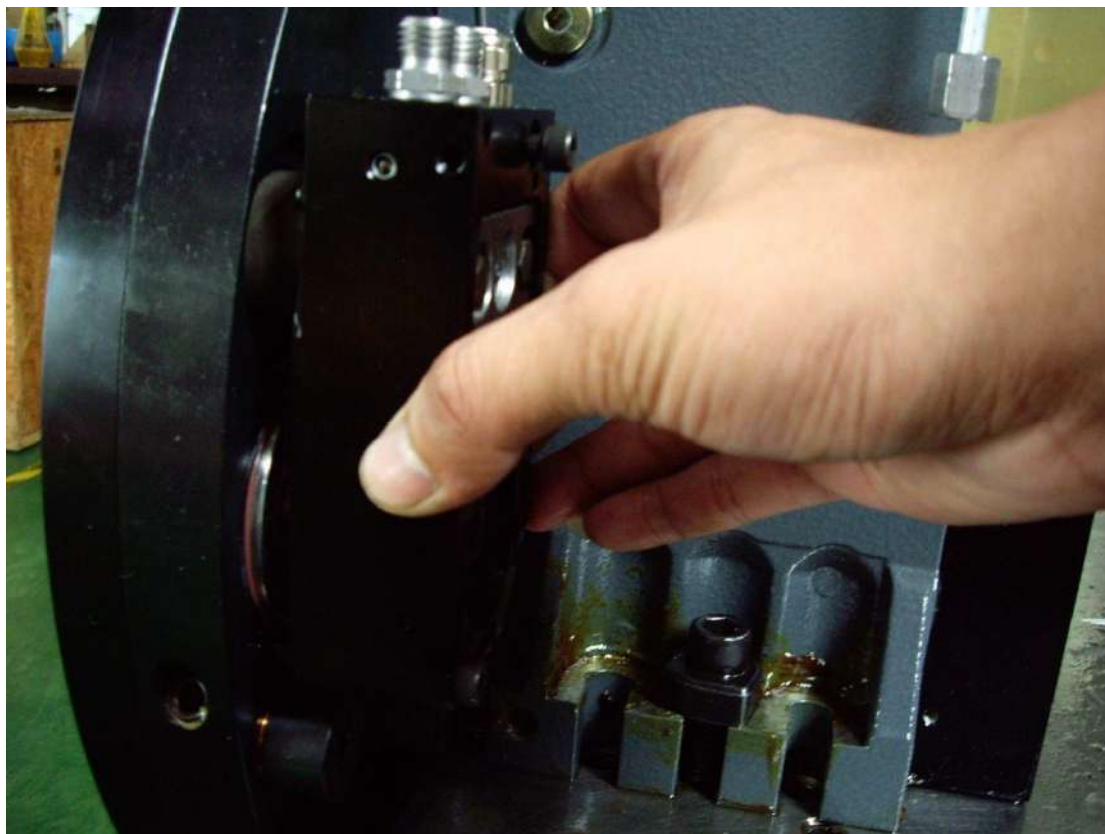
步驟 3. 將油壓缸固定座螺絲拆除

STEP 3. Remove hydraulic cylinder fixing bolts.



步驟 4. 將油壓缸固定座拿出。

STEP 4. Take out the hydraulic cylinder fixing seat.



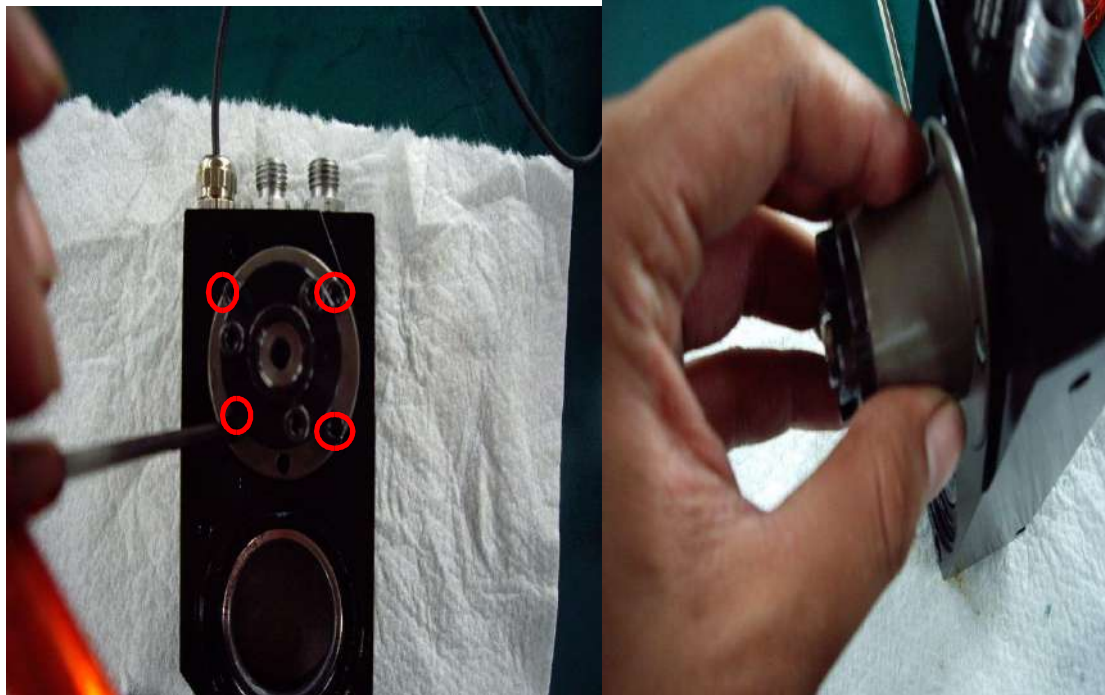
步驟 5. 拆卸擋板及油壓缸螺絲，並取出耦合齒。

Step5. Remove plate and hydraulic cylinder bolts to take out the coupling.



步驟 6. 拆卸油壓缸固定螺絲(4 支)，並取出油壓缸。

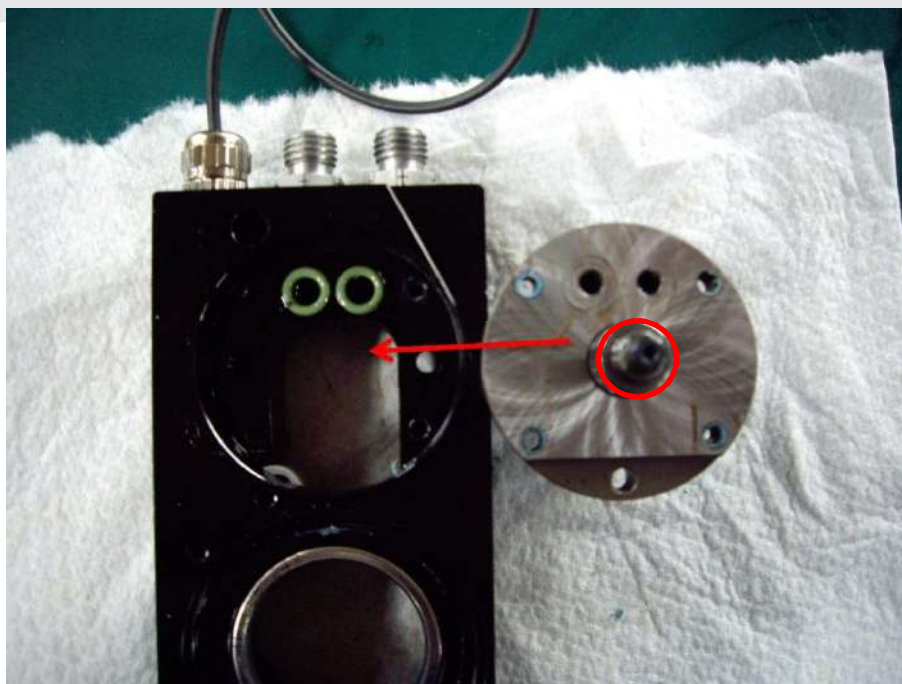
STEP 6. Remove 4 bolts and take out the hydraulic cylinder.



步驟 7 取出油壓缸後，請注意兩條 O-RING 不要遺失，並將新油壓缸兩個入油孔對準固定座上的兩條 O-RING 裝回並鎖上固定螺絲。

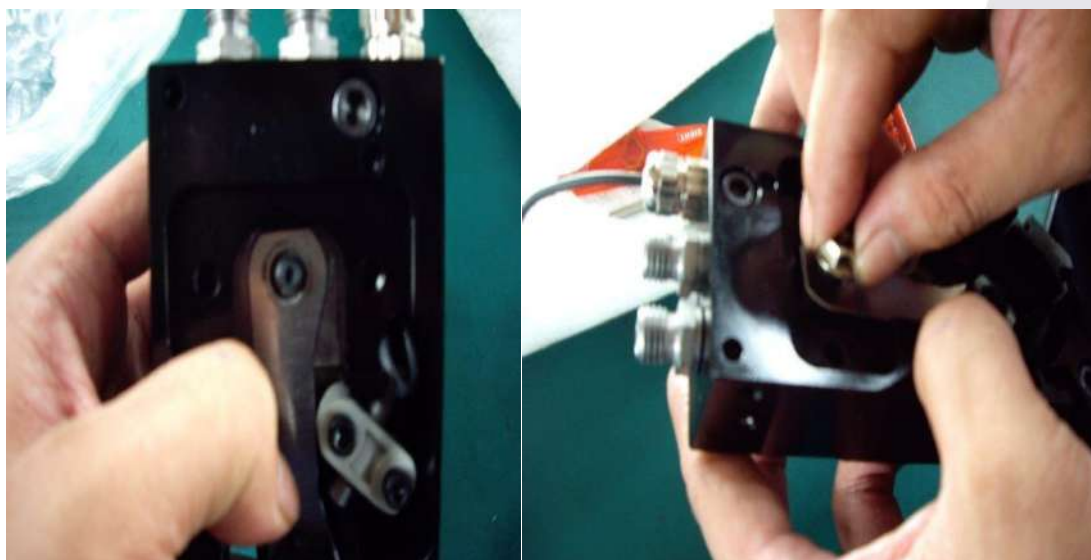
STEP 7. Do not loose O-rings *2pcs after taking out the hydraulic cylinder;
Align two(2) oil inlet holes with two(2) O-rings on the fixing seat, install
and fasten with fixing bolts.





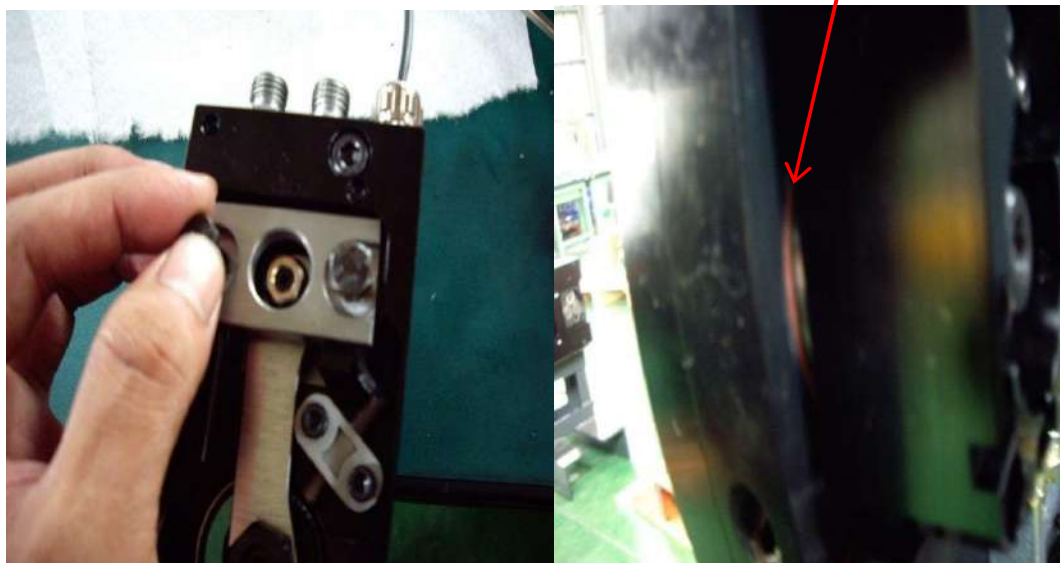
步驟 8.油壓缸鎖緊後，裝回耦合齒並用油壓缸螺絲先固定。

STEP 8. After tighten the hydraulic cylinder, reinstall the coupling and tighten bolts.



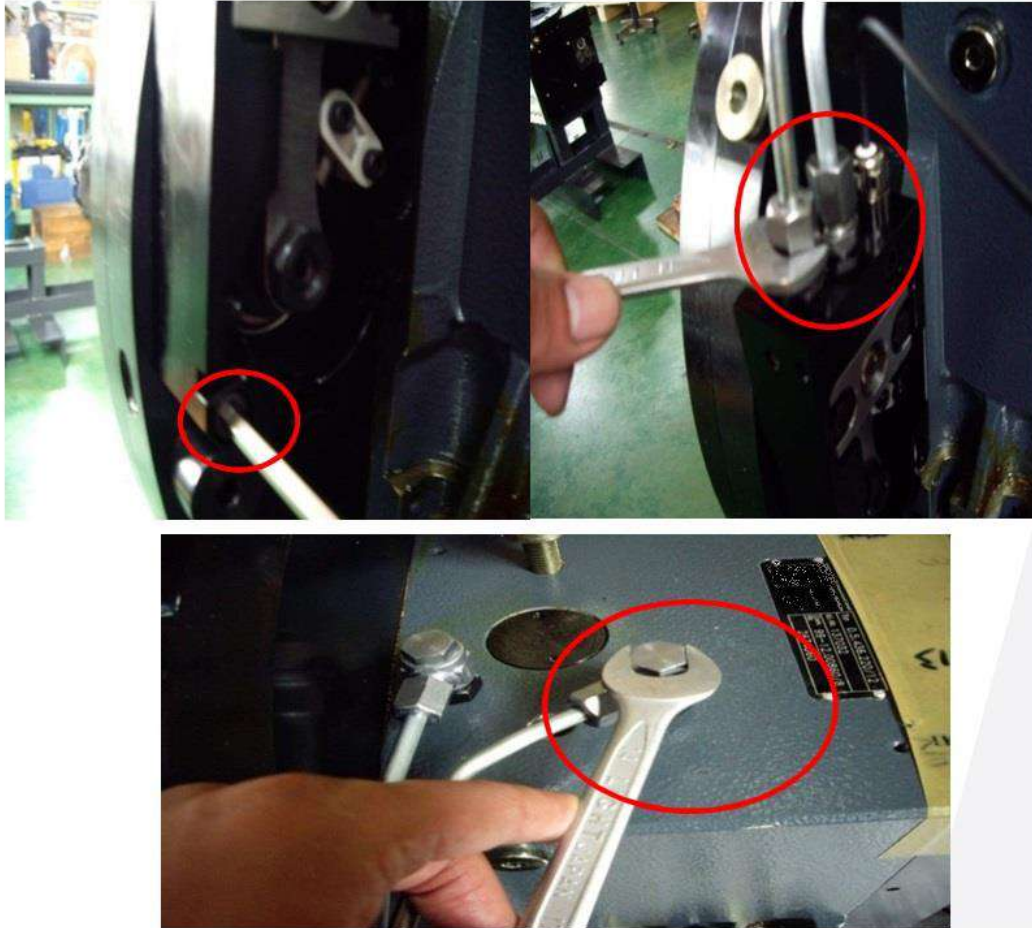
步驟 9.鎖回檔板，並將油壓缸固定座裝回齒輪箱，需小心固定座上的 O-RING
不可切斷。

STEP 9. Reinstall the plate, mount the hydraulic cylinder fixing seat back to
gearbox. Be careful and not damage the O-ring.



步驟 10. 將油壓缸固定螺絲鎖緊後，裝回油管並鎖緊。

STEP 10. Fasten fixing bolts of hydraulic cylinder, and install oil pipes tightly.



步驟 11. 油管裝回後，請將油壓系統打開，並強制鬆刀及 S11 信號為 1 狀態下，將油壓缸螺母以去漬油洗淨，使用 242 螺絲固定膠在螺母上鎖緊。

STEP 11. After installation of oil tubes, switch on hydraulic system.

Unclamping by force, and make S11 signal at 1 status. Clean hydraulic cylinder nut by stain removal oil, and applies 242 thread locking glue on nuts and fasten tightly.





步驟 12. 請測試換刀，確認油管部分是否沒鎖緊導致漏油，也順便將油壓管線
中空氣排除，測試若無問題即完成。

STEP 12. Please exhaust air inside the oil tube and perform indexing.

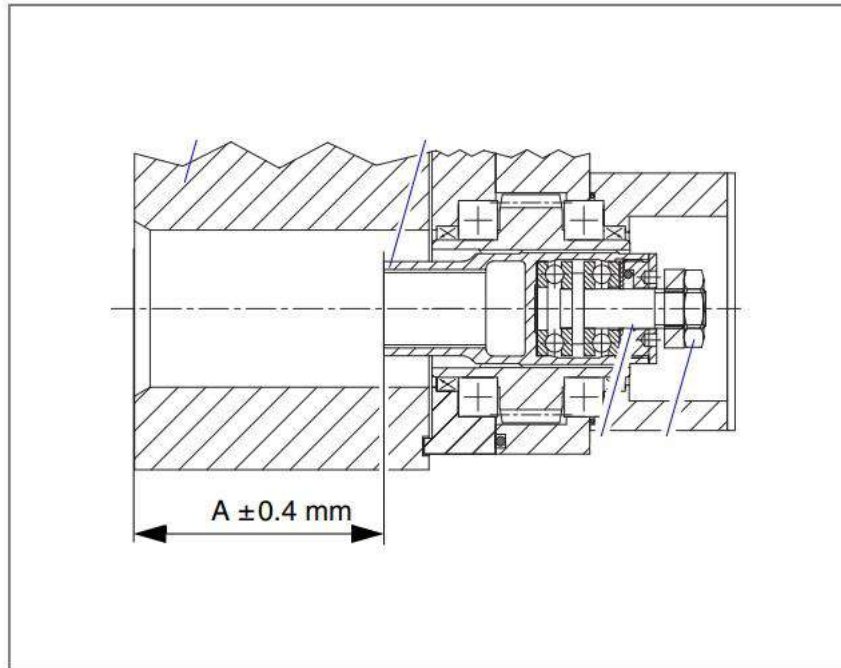
Also confirm oil tube is firmly tightened and no oil leakage.

If testing is okay, then the job is completed.



步驟 13. 確認耦合齒伸縮距離是否正確

STEP 13. Confirm whether the coupling expansion distance is correct.



Coupling profile	耦合齒距離	clearance $A \pm 0.4$ [mm]
11×0.8	DIN 5480	41
14×0.8	DIN 5480	49.5 VDI25
16×0.8	DIN 5480	58.5 VDI30
20×0.8	DIN 5480	65 VDI40
24×1.25	DIN 5480	83 VDI50
30×1.25	DIN 5480	95 VDI60

上圖耦合齒前端與 VDI 刀盤表面距離，量測時注意要以刀塔鎖緊時去量測

Do the measurement when turret is at clamping status.

The above table shows the distance between coupling front and the VDI tool disc surface.



步驟 14. 確認 C 軸定位角度需將齒輪記號設定在三點鐘方向。

下圖表示記號位置

STEP14. Confirm C-axis positioning angle is set at 3 o'clock same as gear wheel mark as per below picture.

