

M1A2 SEP 戰車操作手冊 (第十三章-預防性維護檢查與保養-底盤使用前、中、後檢查)(譯文)

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HEADQUARTERS, DEPARTMENT OF THE ARMY.

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提要

- 一、本篇譯文-美陸軍司令部2009年2月版M1A2 SEP 120公厘火炮全履帶戰車操作手冊，本書籍區分三冊十七個章節，為美陸軍配賦M1A2戰車之部隊所用之單位技術書刊，然其內容包含裝備諸元性能、操作機件名稱及功用、正常及非正常之操作程序、單位保養項目及規範、簡易故障排除要領等，實可供我未來部屬該型裝備之單位運用。
- 二、本篇譯文針對第三卷第十三章(預防性維護檢查與保養之底盤使用前、中檢查)等項目加以說明，闡明該裝備保養之時機、律定保養執行人員職責、檢查程序、及標準；另亦就危安防處及裝備停用之評估標準予以明確說明。

關鍵詞：預防性維護檢查與保養、液壓駐車制動系統、駕駛用夜視器材、核生化防護系統(NBC)、駕駛綜合顯示器(DID)系統

壹、前言

鑑於裝甲部隊為地面防衛作戰決定性兵種，我軍近期已積極展開戰車的汰舊換新將攸關防衛作戰任務之成敗，近期美方正式同意向我軍出售M1A2戰車，使得我裝甲部隊為期多年缺乏新式戰車之困境畫下的句點，此次新式戰車的獲得將使我裝甲部隊戰力大幅提升，在新戰車獲得的同時應先對於該項裝備之特殊設計、系統特性、操作、保養等項目有初步之了解，俾利未來接裝訓練時可加速接裝人員對裝備了解及提升對裝備之熟悉度。

本篇譯文-美陸軍司令部2009年2月版M1A2 SEP 120公厘火炮全履帶戰車操作手冊，本書籍區分三冊十七個章節，美陸軍配賦M1A2戰車之部隊所用之單位技術書刊，故實屬為我陸軍配屬M1A2戰車之裝甲部隊重要運用之書籍之一；囿於全書篇幅過大及筆者任職單位屬性，且預防保養的落實攸關裝備的良劣與否，故先行譯文第三冊第十三章「預防性維護檢查與保養-底盤操作前、中檢查」等項目，俾供讀者參酌運用。



貳、譯文

第十三章 預防性維護檢查與保養/ PREVENTIVE MAINTENANCE CHECKS AND SERVICES

於每日操作時，預防性維護檢查與保養程序圖，將協助您執行操作前、中、後，預防性維護檢查與保養項目。各項需執行之保養及檢查項目均以編號及箭頭顯示在戰車中之相對位置。如圖 1.2.3

These routing diagrams will help you perform your B, D, and A PMCS. They show the locations where you will perform various PMCS items. The PMCS item numbers are shown with arrows to locations on or in vehicle.

每日預防保養檢查流程

操作前

檢查點於圖面 1~46 項

DAILY "WALK AROUND" PMCS PROCEDURES - continued

BEFORE

Numbers used : 1 through 46

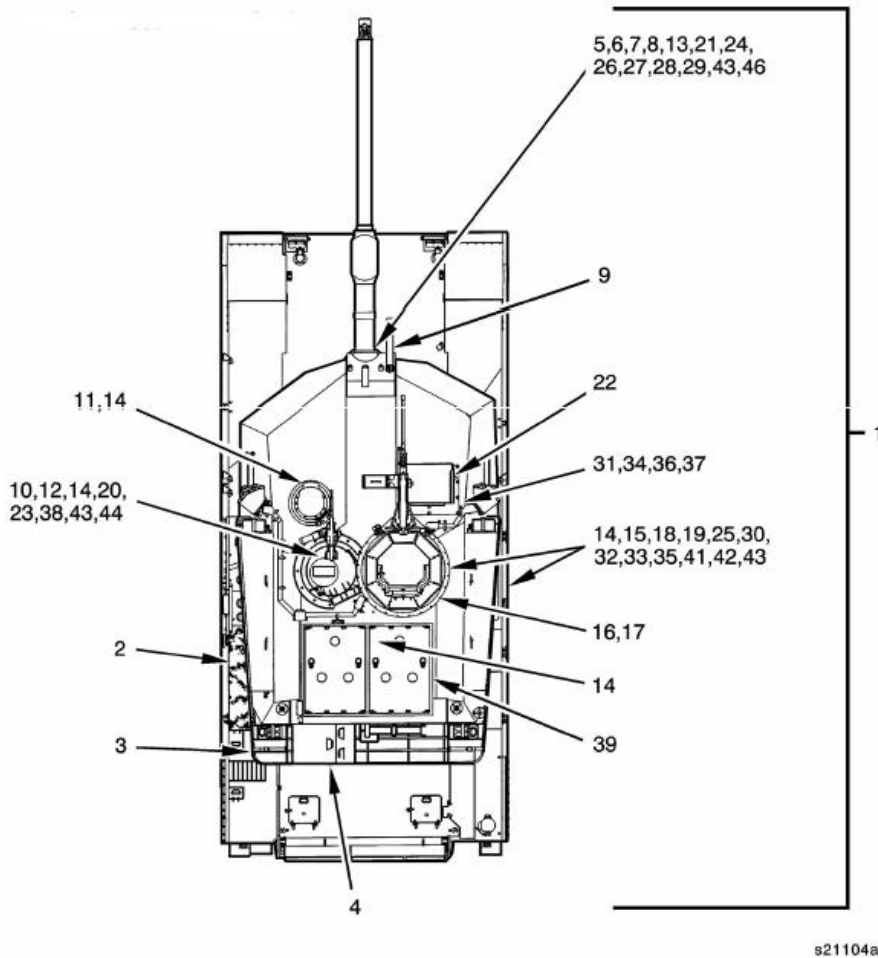


圖 1. 預防性維護檢查與保養-每日預防保養檢查流程-操作前/

每日預防保養檢查流程(續)

行駛中

檢查點於圖面 47~48 項

* 為二側檢查點

DAILY "WALK AROUND" PMCS PROCEDURES - continued

DURING

Numbers used : 47 through 48

* Check both sides

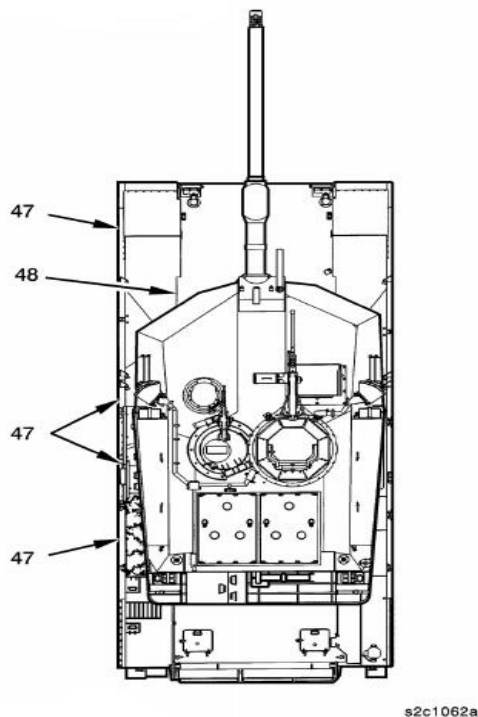


圖 2. 預防性維護檢查與保養-每日預防保養檢查流程-操作中

一、每日預防保養檢查流程項目-操作前/ **PREVENTIVE MAINTENANCE CHECKS AND SERVICES- DAILY "WALK AROUND" PMCS PROCEDURES- BEFORE**

(一)項次1-車輛外觀/ **Item No.1- Vehicle Exterior**

1.負責乘員/**Crewmember**

駕駛/**DRIVER**

2.檢查流程/**Procedure :**

(1)警告/ **WARNING**

搖砲前，警戒人員須淨空砲塔運動範圍不可有障礙物及人員。

Before elevating gun or traversing turret, alert crew and make sure area is clear of obstacles to prevent main gun or turret from hitting personnel.

(2)注意/ **CAUTION**

如聽到巨響及尖銳聲，或油壓突然低於 500PSI，或大量液壓油滲漏時，應立即回報車長及停止搖砲動作。

If loud, high pitched, squealing noise is heard, or hydraulic pressure drops suddenly to 500 psi, or less, large hydraulic leak is present. Inform tank commander that turret powershould be shut off immediately.



(3) 註記/ NOTE

確保排水活門開啟。
Ensure drain valve is open

3. 以下狀況停用/Not Fully Mission Capable if:
無/NON

(二) 項次2-引擎緊急滅火器拉柄/ Item No.2- Engine Emergency Fire Extinguisher Handle (圖3)

1. 負責乘員/Crewmember :

乘員/CREWMEMBER

2. 檢查流程/Procedure :

檢查拉柄未被拉出。
Check that handle has not been pulled out

3. 以下狀況停用/Not Fully Mission Capable if:

(1) 拉柄被拉出
Handle pulled out.

(2) 拉柄或電纜遺失
Handle or cable missing.

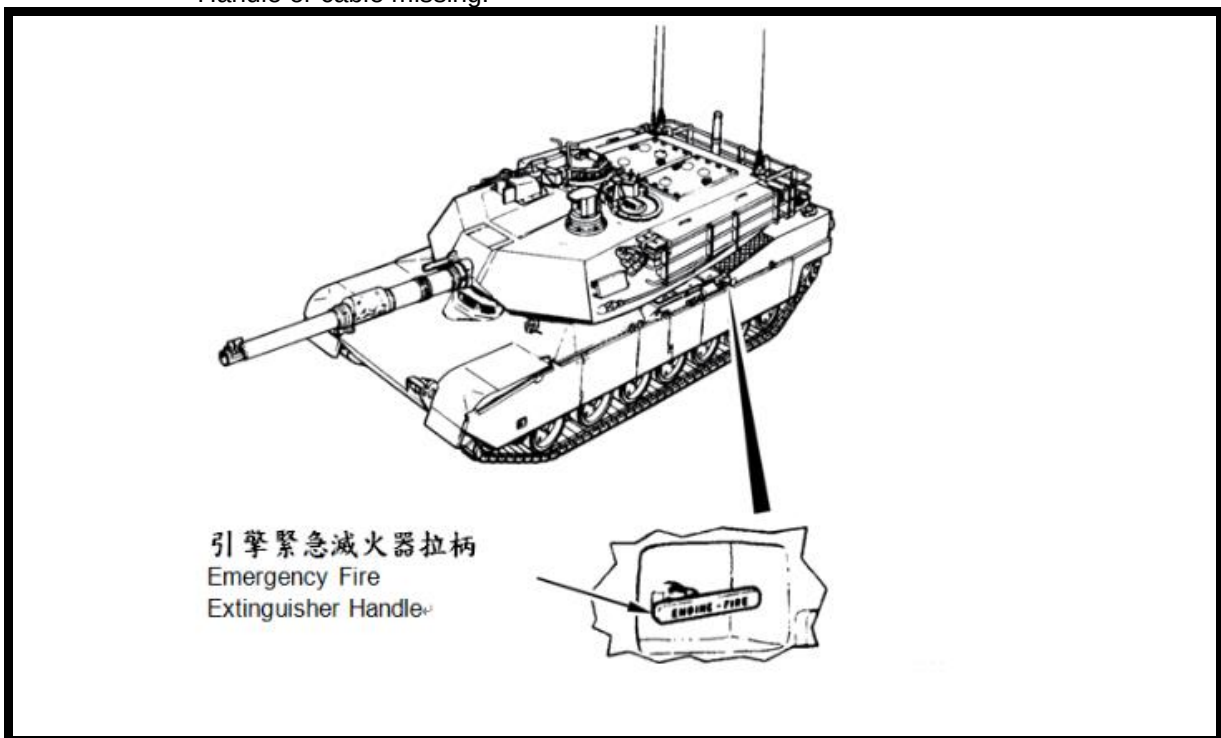


圖 3 引擎緊急滅火器拉柄

(三)項次3-快速釋放銷/ Item No.3- Quick Release Pins (圖4)

1.負責乘員/Crewmember

駕駛及乘員/ DRIVER AND CREWMEMBER

2.檢查流程/Procedure

使用按下釋放按鈕，檢查快速釋放銷，確保它們於固定位置且無損壞。
Check quick-release pins without depressing release button to make sure they do not come out, are locked in place or not damaged on:

(1)轉向連桿。

Steering linkage

(2)後部制動連動裝置。

Rear service brake linkage

(3)左、右停車制動連桿。

Left and right parking brake linkages

3.以下狀況停用/Not Fully Mission Capable if:

任何快速釋放銷缺損或無法鎖定

Any quick-release pin is missing or damaged or will not lock in place. °

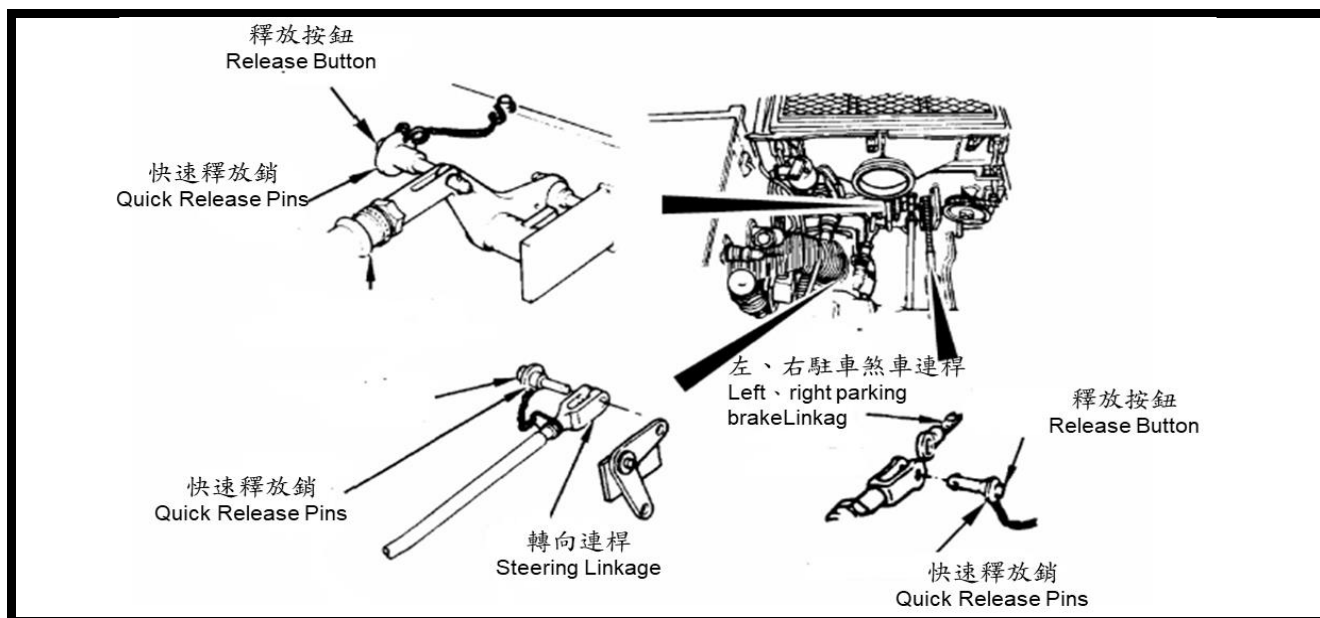


圖 4 快速釋放銷

(四)項次4-蒸氣壓縮系統單元/ Item No.4- Vapor Compression System Unit (圖5)

1.負責乘員/Crewmember

乘員/ CREWMEMBER

2.檢查流程/Procedure

(1)注意/ CAUTION

不要阻擋蒸氣壓縮系統進氣格柵，若蒸氣壓縮系統進氣格柵堵塞，熱管理系統可能無法正常運行

Do not block the VCSU intake grille. (TMS) may not operate correctly if VCSU intake grille is blocked*(TMS) : THERMAL MANAGEMENT SYSTEM



(2)清潔蒸氣壓縮系統格柵板外的污垢、樹葉和其他物質。

Clean dirt, leaves, and other material out of VCSU louvers.

(3)檢查蒸氣壓縮系統底部是否有液壓或冷卻液洩漏。如發現滲漏，請通知即刻維護。

Check underside of VCSU for hydraulic or coolant leaks. If leaks are found, notify field maintenance.

(4)拆下銷，墊圈、較低的防彈罩。檢查是否洩漏。重新安裝蓋子，墊圈和銷釘。

Remove pin, washer. Lower ballistic cover. Inspect for leaks. Reinstall cover, washer, and pin.

3.以下狀況停用/Not Fully Mission Capable if

任何液體滲漏。

Any class hydraulic leak

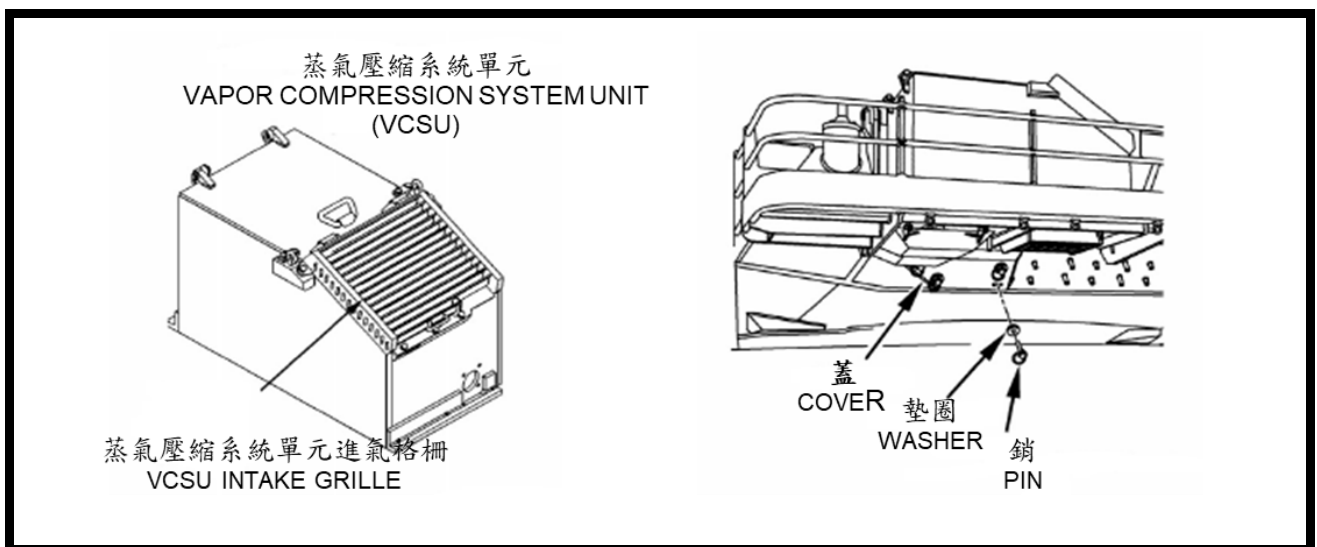


圖 5 蒸氣壓縮系統單元

(五)項次5-滅火器系統 / Item No.5- Fire Extinguisher System (圖6)

1.負責乘員/Crewmember

駕駛/DRIVE

2.檢查流程/Procedure

清潔駕駛室滅火器系統的傳感器鏡頭。

Clean sensor lenses in driver's compartment

3.以下狀況停用/Not Fully Mission Capable if

駕駛室滅火器系統的傳感器系統鏡頭損壞、遺失或上漆。

Sensor broken, missing or painted over.

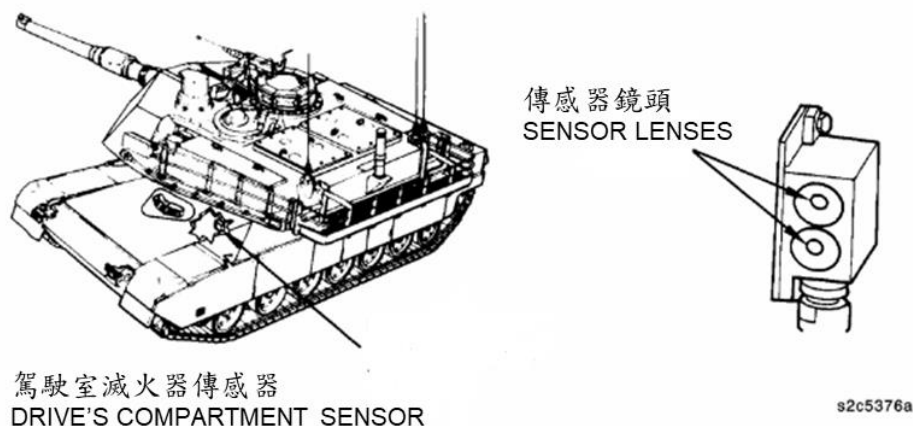


圖 6 滅火器系統

(六)項次6-駕駛艙口蓋 / Item No.6- Driver's Hatch (圖7)

1. 負責乘員/Crewmember

駕駛/DRIVE

2. 檢查流程/Procedure

- (1) 檢查艙口是否正常開啟及閉鎖。
Check hatch for ease of operation and for positive open and close locking.
- (2) 檢查艙口密封程度，是否有分離及裂口。
Check hatch seal for rips or separation from hatch.
- (3) 確保潛望鏡均清晰乾淨。
Make sure unity periscopes are clear and clean.
- (4) 檢查艙門連動鎖操作是否正常，請參照(Vol 1,WP 0093)。
Check operation of driver's hatch interlock. See (Vol 1,WP 0093).
- (5) 若配備快速釋放固定器，請檢查操作的簡便性及強制鎖定性。
If equipped with quick release retainers, check for ease of operation and positive locking.

3. 以下狀況停用/Not Fully Mission Capable if:

- (1) 艙門遺失或無法作用。
Hatch missing or inoperative.
- (2) 中心潛望鏡遺失或清晰度低於50%
Center periscope missing or over 50% of vision obscured.
- (3) 零附件缺損保持器粘黏或無法作用。
Parts missing or damaged. Retainer sticking, binding, or inoperative

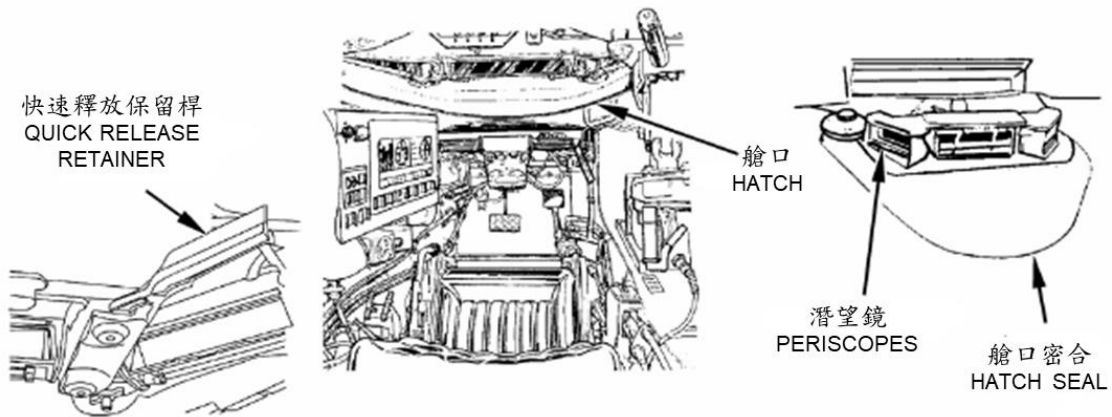


圖 7 滅火器系統

(七)項次7-駕駛座椅/ Item No.7- Driver's Seat (圖8)

1. 負責乘員/Crewmember

駕駛/DRIVE

2. 檢查流程/Procedure

- (1) 確保駕駛座椅可以調整。
Make sure that driver's seat can be adjusted.
- (2) 檢查椅墊有無撕裂及破損。
Check seat cushions for rips and tears
- (3) 檢查頭枕是否固定良好。
Move headrest and check lock.

3. 以下狀況停用/Not Fully Mission Capable if

座椅遺失或無法作用。
Seat missing or inoperative

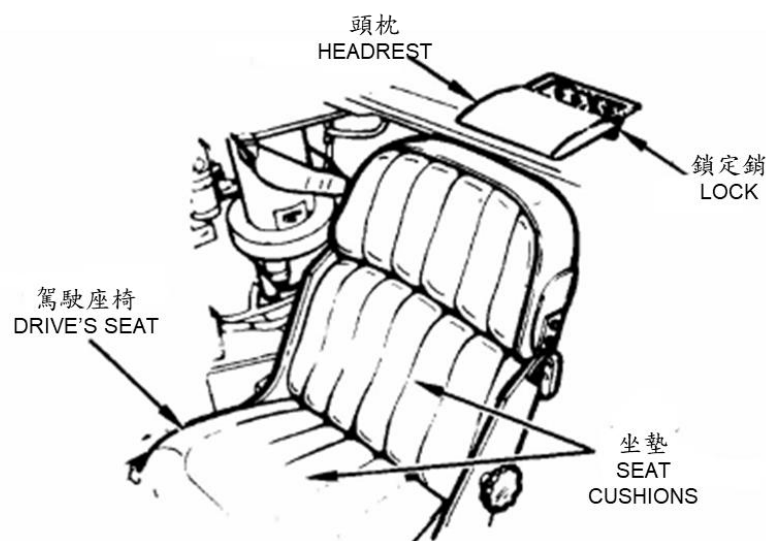


圖 8 駕駛座椅

(八)項次8-駕駛控制器/ Item No.8- Driver's Controls (圖9)

1.負責乘員/Crewmember :

駕駛/DRIVE

2.檢查流程/Procedure :

- (1)檢查轉向油門線束是否磨損、扭結或有損壞跡象及線束接頭是否緊定。

Check steer-throttle harness for chafing, kinks or signs of damage and that connectors are tight.

- (2)檢查轉向油門控制器是否作動流暢。

Check steer-throttle control for freedom-of-movement.

- (3)檢查油門把手是否作動流暢。

Check throttle grips for freedom-of-movement

3.以下狀況停用/Not Fully Mission Capable if:

- (1)線束磨損或損壞。

Harness is chafed, kinked or damaged.

- (2)轉向油門控制器不能自動返回中心點。

Steering throttle control binds or does not return to center.

- (3)油門把手不能自動返回中心點。

Throttle grips do not return to center.

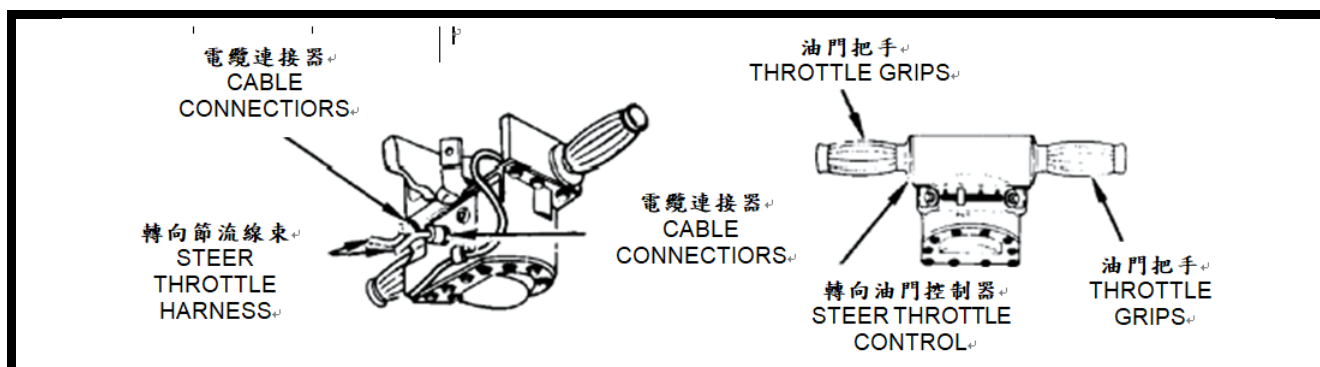


圖 9 駕駛控制器
9. Driver's Controls

(九)項次13-乘員艙滅火器/ Item No.13- Crew Compartment Fire Extinguisher Bottles (圖10.11)

1.負責乘員/Crewmember :

裝填及乘員/LOADER AND CREWMEMBER

2.檢查流程/Procedure :

(1)註記/ NOTE

- A.環境溫度對滅火器鋼瓶壓力僅有微量之影響。(相關規定至於瓶身)
Bottle pressure should be minimum for ambient temperature at bottle. (See chart on bottle).

- B.若戰車滅火器系統有配備電磁閥(Marotta valve)則該系統壓力於0

磅~1500磅之範圍內，須以每75磅分段調整壓力，。

If tank is equipped with Marotta valve, gage will be graduated in 75 lb increments, from 0 lbs.to 1500 lbs.



(2)檢查3支滅火器壓力是否充足。

Check three fire bottle pressure gages.

(3)滅火器固定托架是否損壞，固定夾箍及襯墊是否損壞或遺失。

Make sure bottles are secure in mounts by inspecting for damaged support brackets, loose or damaged bottle straps, or missing, loose, chipped, or torn pads.

(4)確保安全插銷沒有安裝在滅火器瓶上。

Make sure safety pins are not installed in fire extinguisher bottles.

3.以下狀況停用/Not Fully Mission Capable if:

(1)任何滅火器不得失效

Any fire extinguisher bottle depleted.

(2)若任何瓶子的支架或托架損壞，夾箍鬆動或損壞，襯墊遺失、鬆動、破損，而導致其安裝不良。

If any bottle is unsecure in its mount due to a damaged support bracket, loose or damaged bottle strap, or missing, loose, chipped, or torn pad.

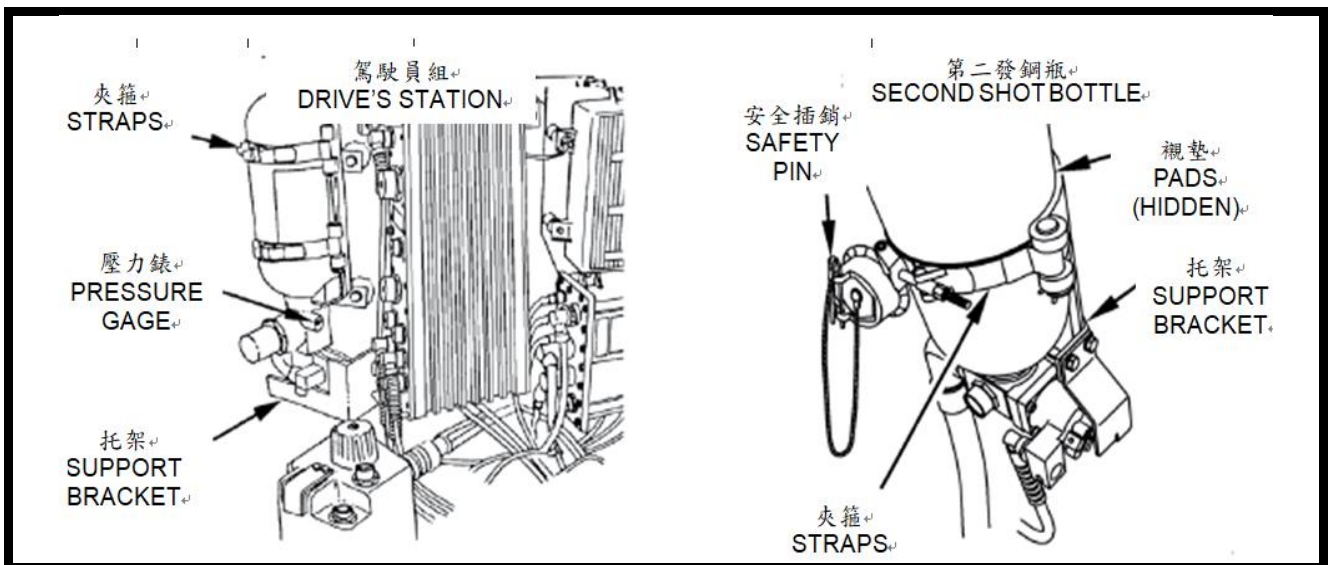


圖 10 駕駛員組及第二發滅火器

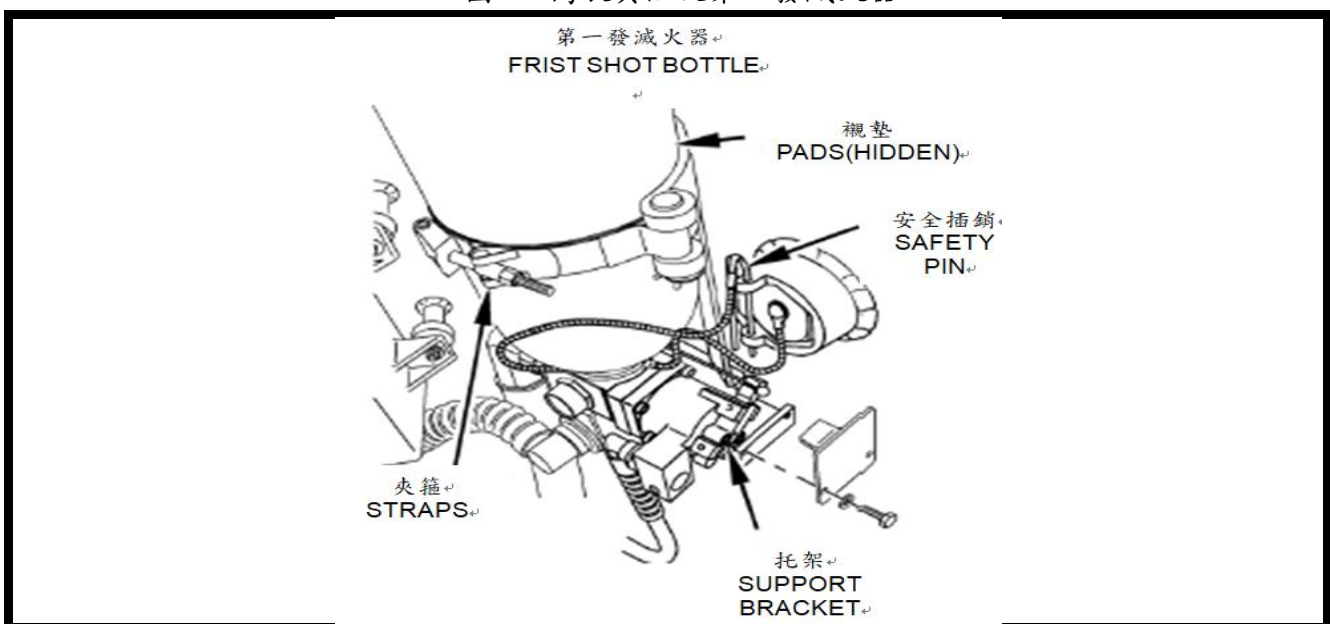


圖 11 第一發滅火器

(十)項次14-乘員艙火災感知器 / Item No.14-Crew Compartment Fire Sensors (圖12)

1.負責乘員/Crewmember :

裝填及乘員/LOADER AND CREWMEMBER

2.檢查流程/Procedure :

(1)警告/ WARNING

A.若安全銷安裝在滅火器瓶中，則不能手動啟動消防系統，可能會導致設備損壞或人員受傷/死亡。

If safety pin is installed in fire extinguisher bottle, fire system cannot be activated manually and damage to equipment or injury/death to personnel may occur.

B.清潔砲塔中的三個感知器鏡頭，若鏡頭遭油漆覆蓋，請通知即刻維護。

Clean three sensor lenses in turret. If lenses are painted over, notify field maintenance.

3.以下狀況停用/Not Fully Mission Capable if:

鏡頭破損、遺失或遭油漆覆蓋。

Sensors broken, missing or painted over.

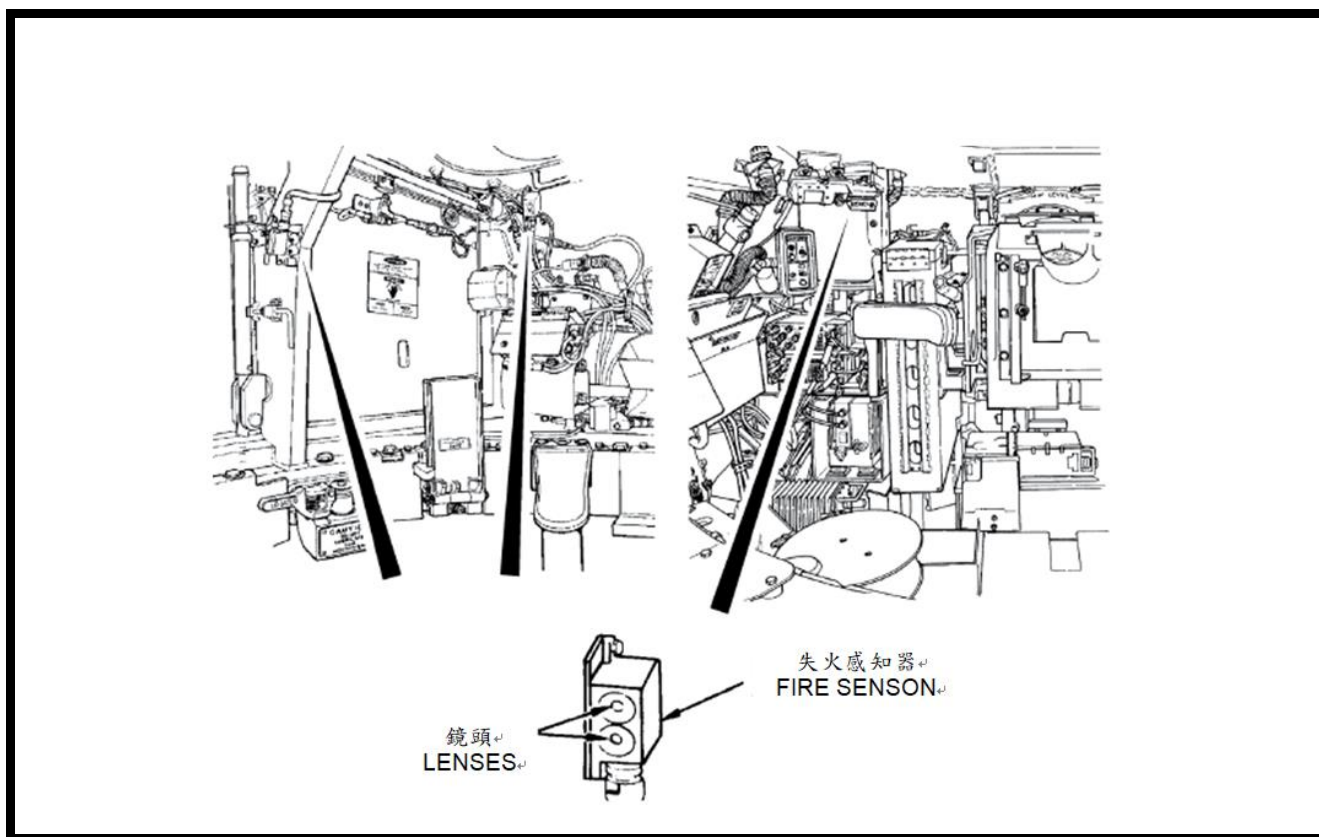


圖 12 乘員艙火災感知器



(十一)項次18-車長用手提式滅火器 / Item No.18-Commander's Station Portable Fire Extinguisher (圖 13)

1. 負責乘員/Crewmember :

車長及乘員/ **COMMANDER AND CREWMEMBER**

2. 檢查流程/Procedure :

(1) 檢查安全插銷確實安裝於手提式滅火器。

Inspect portable fire extinguisher and make sure safety pin is installed.

(2) 檢查鉛封完整。

Check for lacing wire breaks.

(3) 若是P/N12994283型式滅火器請檢查壓力表，請確保壓力於綠色位置
介於(345~510psi) 間。

If equipped with fire extinguisher part number 12994283 check pressure gage to make sure it reads in green zone (between 345 psi and 510 psi).

3. 以下狀況停用/Not Fully Mission Capable if:

(1) 滅火器插銷遺失或鉛封斷裂

Fire extinguisher missing Pin, wire or mount is missing or broken.

(2) 壓力表壓力顯示於紅色位置(低於345psi或高於510psi)

Gage shows in red zone(below 345 psi or above 510 psi).

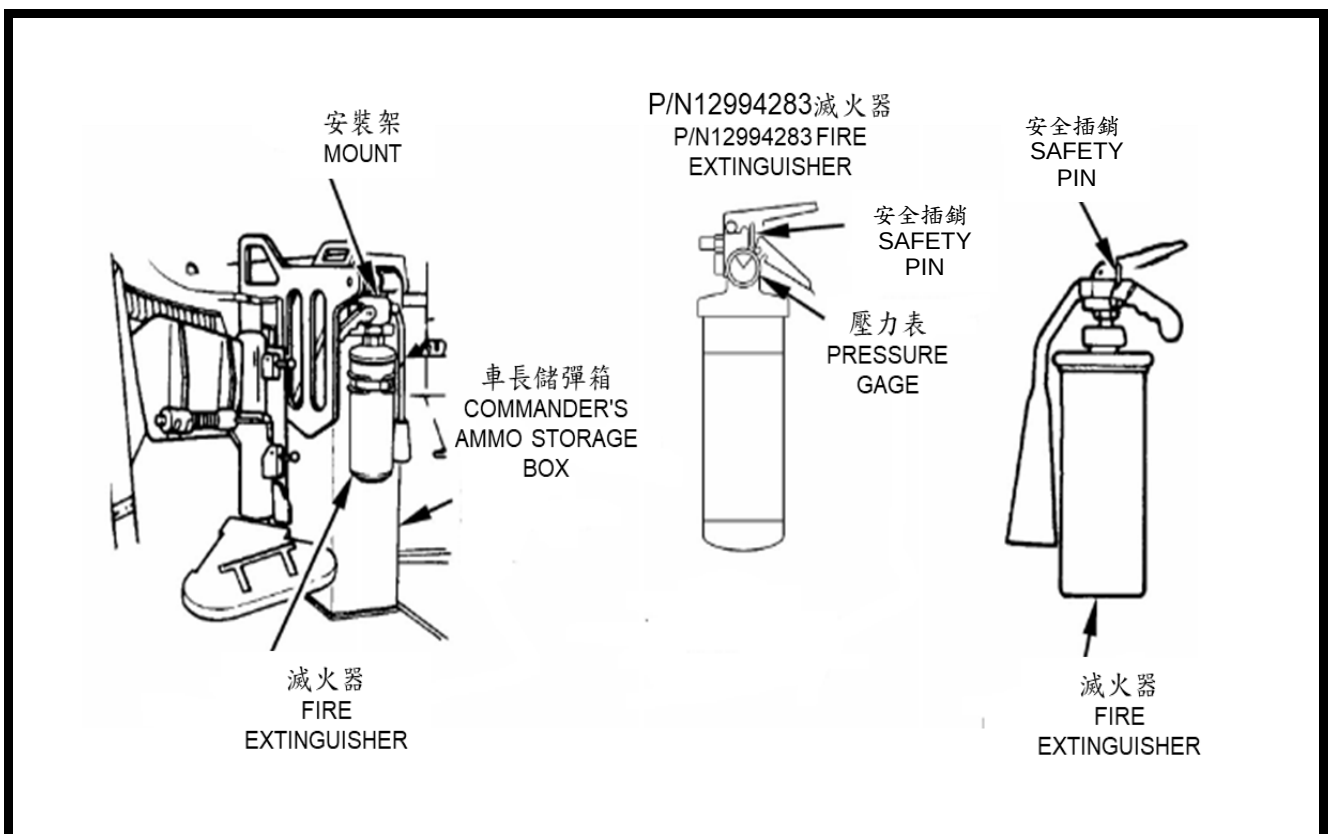


圖 13 車長用手提式滅火器

(十二)項次19-砲塔用手提式滅火器 / Item No.19-Turret Stowage Box
Portable Fire Extinguisher (圖14)

1.負責乘員/Crewmember：

乘員/CREWMEMBER

2.檢查流程/Procedure：

(1)檢查安全插銷確實安裝於手提式滅火器。

Inspect portable fire extinguisher and make sure safety pin is installed.

(2)檢查鉛封完整。

Check for lacing wire breaks.

(3)若是P/N12994283型式滅火器請檢查壓力表，請確保壓力於綠色位置
介於(345~510psi) 間。

If equipped with fire extinguisher part number 12994283 check pressure gage to make sure it reads in green zone (between 345 psi and 510 psi).

3.以下狀況停用/Not Fully Mission Capable if:

(1)滅火器銷遺失或鉛封斷裂

Fire extinguisher missing Pin, wire or mount is missing or broken.

(2)壓力表壓力顯示於紅色位置(低於345psi或高於510psi)

Gage shows in red zone(below 345 psi or above 510 psi).

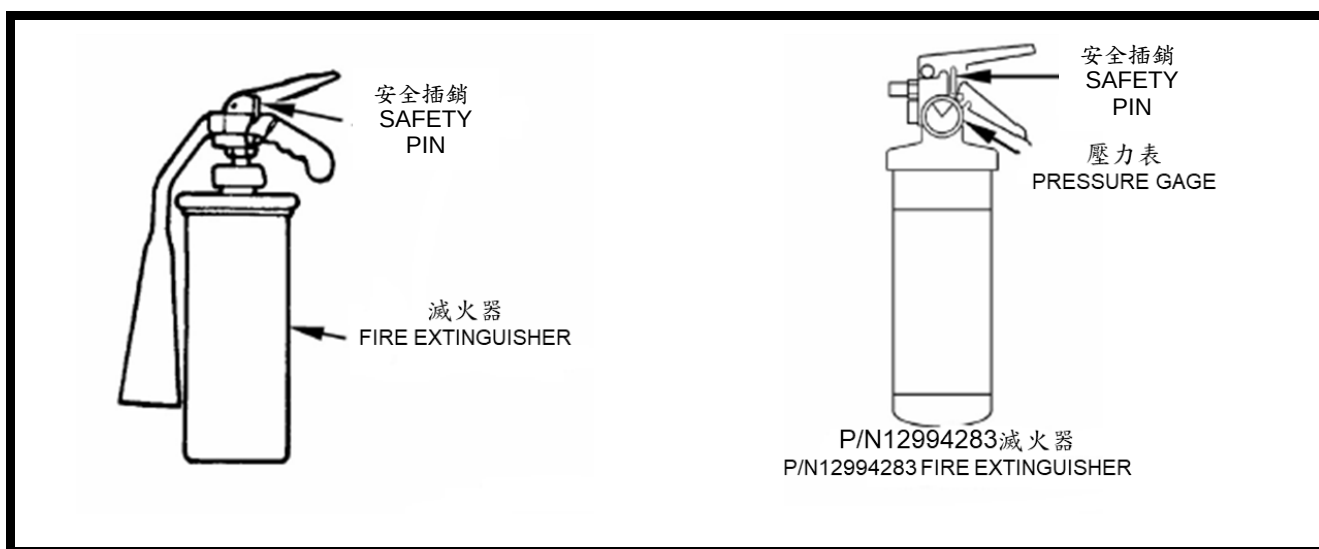


圖 14 砲塔用手提式滅火器



(十三)項次21-液壓停車制動系統/ Item No.21- Parking Brake System Hydraulic Pressure (圖15)

1.負責乘員/Crewmember：

駕駛/ **DRIVER**

2.檢查流程/Procedure：

(1)警告/WARNING

若戰車停於斜坡上，則必須阻擋兩條履帶的下坡端，若液壓系統壓力於0時會使車輛滑動，可能會導致人員傷亡與裝備損壞。

If tank is parked on an incline, down-slope end of both tracks must be blocked. Personnel may be killed or injured or equipment may be damaged if tank rolls when hydraulic pressure reaches zero.

(2)註記/NOTE

制動系統壓力應介於 1400~1800psi

Parking brake engages between 1400-1800 psi.

A.檢查壓力表之制動壓力超過1400psi

Check pressure gage to make sure it reads more than 1400 psi.

B.若表上壓力介於800~1400psi或超過1800psi，出發前調整煞車，並通知即刻維護。

If gage reads 800-1400 psi or more than 1800 psi, set brake and notify field maintenance

C.必須關閉引擎與車輛主電源。

Engine and vehicle master power must be off.

3.以下狀況停用/Not Fully Mission Capable if:

錶壓力低於 1400psi

Gage shows less than 1400 psi.

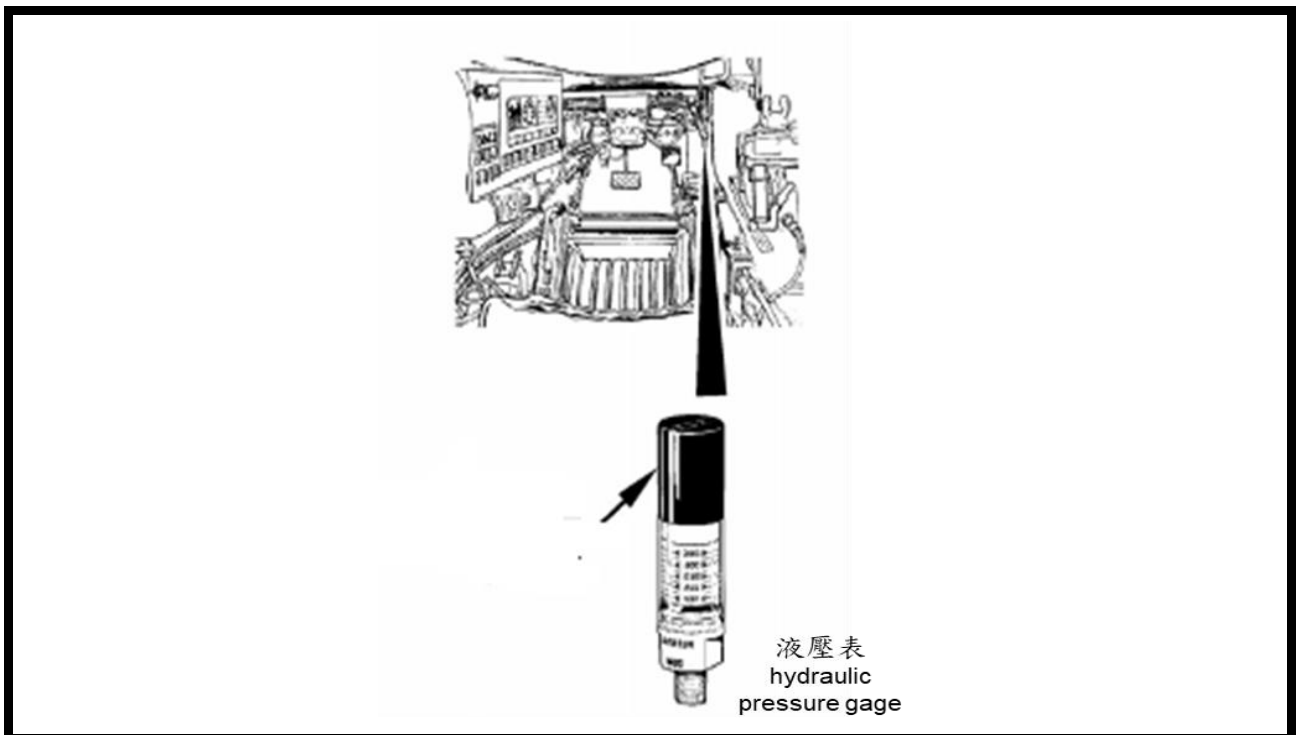


圖 15 液壓駐車制動系統-液壓表

(十四)項次26-引擎啟動/ Item No.26- Engine Start

1. 負責乘員/Crewmember :

駕駛/ DRIVER

2. 檢查流程/Procedure :

(1) 警告/WARNING

A. 除非車長可以清楚的看到戰車週圍，否則不要啟動引擎，車長必須警示人員遠離戰車後方及左側的核生化防護系統(NBC)排氣區域，在未淨空下操作，人員將可能被引擎及核生化防護系統(NBC)系統之排氣灼傷。

Do not start engine unless tank commander has clear view of area around tank. Tank commander must warn personnel to stay away from rear of tank and NBC system exhaust area on left side of tank. Personnel can be burned by engine and NBC system exhaust.

B. 在引擎啟動前，須確保轉向及油門控制器處於置中位置，若轉向桿轉置左或右邊時，貿然按下啟動鈕致使戰車轉向，易產生人員傷損。

Make sure steer-throttle control is centered before starting engine. If steer throttle control is turned left or right, tank will pivot when PUSH TO START button is pressed and might injure someone.

C. 引擎發動後駕駛不要離開駕駛座，此舉易產生人員及裝備之傷損。

Do not leave driver's station after engine is started. Damage to equipment or injury to personnel may occur.

D. 若駕駛綜合顯示器(DID)系統上出現駐車停車擋「PARKING BRAKE SET」之外訊號，應立即熄火。

Stop engine if warning other than PARKING BRAKE SET message appears on DID.

E. 若在引擎啟動後，啟動馬達無法停止運作，則按下戰車配電單元

(HPDU)¹上的備用動力關閉(BACKUP POWER OFF)按鈕關閉戰車

If starter fails to disengage after engine is started, power down tank by pressing BACKUP POWER OFF pushbutton on HPDU

F. 若發現系統之以下狀況停用(Not Fully mission capable)列中出現的任何故障顯示，此時請勿嘗試啟動引擎。

Do not attempt further starts if any faults in the Not Fully Mission Capable If column are found.

G. 若發現部隊作戰指揮通信平台(FBCB2)正在運行，請勿使輔助電源發動引擎以免造成損害，在啟動前車長應關閉作戰指揮通信平台(FBCB2)。

If FBCB2 is running, do not start engine using auxiliary batteries. Damage may result. Have commander shut down FBCB2 prior to starting engine.

(2) 註記/NOTE

在引擎啟動前，確定變速箱排檔至於空檔，轉向油門控制器置於居中，砲塔電源關閉下，始可啟動引擎。

Make sure transmission shift control is in N position, steer-throttle control is centered and turret power is off. Start engine.

¹ HPUD 為 Hull Power Distribution Unit 戰車配電單元



3.以下狀況停用/Not Fully Mission Capable if:

引擎無法啟動或啟動失敗，啟動馬達於啟動後啟動齒輪無法與引擎分離，油門無反應。

Engine will not start. Engine aborts start. Starter will not disengage. No throttle response.

(十四)項次27-引擎燈光與儀表/ Item No.27- Engine Lights and Instruments

1.負責乘員/Crewmember：

駕駛/ DRIVER

2.檢查流程/Procedure：

(1)檢查駕駛綜合顯示器(DID)系統上，所有引擎、變速箱失火警示信號是否熄滅。

Check that all engine, transmission and fire warning messages on DID caution/warning menu are off.

(2)檢查駕駛綜合顯示器(DID)系統上，所有警示信號是否已關閉，若沒有，請實施故障排除。

Check that all caution messages on DID caution/ warning menu are off. If not, do troubleshooting.

(3)檢查轉速錶(平時引擎怠速為每分鐘850~950轉，戰時引擎怠速為每分鐘1200~1400轉)。

Check RPM indicator (normal 850-950 RPM, tac idle 1200/1400 RPM).

(4)檢查電器系統電壓表正常於直流電壓26.0~29.0伏特(26.0~29.0V DC)，若低於26.0V或高於29.0V請執行故障排除。

Check electrical system gage (26.0 - 29.0 V dc). If gage reads less than 26.0 V dc or more than 29.0 V dc, go to troubleshooting procedures

(5)檢查第二次安全開關上安全蓋是否位於關斷。

Check that safety cover on second shot switch is in closed position.

(6)啟動後檢查。

Make after start checks

(7)提升引擎至每分鐘1550轉並持續運轉2分鐘，於空氣濾清器入口處收聽空氣脈衝聲，來檢查噴射脈衝系統(PJS)系統的運行狀況。

Obtain 1550 RPM and hold. After 2 minutes, have loader check for operation of the PJS system by listening at the air cleaner inlet for air pulses.

3.以下狀況停用/Not Fully Mission Capable if:

(1)任何的引擎、變速箱失火警示信號在駕駛綜合顯示器(DID)系統上顯示。

Any engine, transmission or fire warning message displayed on DID caution/warning menu

(2)轉速表在引擎怠速時需介於每分鐘850轉至每分鐘950轉之間，在戰時引擎怠速需介於每分鐘1200至1400轉之間。

RPM indicator reads less than 850 RPM or more than 950 RPM at normal idle or less than 1200 RPM or more than 1400 RPM at tac idle.

(3)缺安全蓋

Safety cover is missing.

(4)沒有聽到空氣脈衝，須實施故障排除。參考(第2冊WP0422)

Air pulses not heard, do troubleshooting (Vol 2, WP 0422).

(十五)項次28-駕駛用夜視器材/ Item No.28- Driver's Night Vision Viewer

1.負責乘員/Crewmember：

駕駛/ DRIVER

2.檢查流程/Procedure：

(1)警告/WARNING

駕駛夜視儀中所有熱光學器材上的防反射塗層都塗有氟化鈦(ThF4)，它具有輕微的放射性，唯一的潛在警告包括攝入或吸入這種塗層材料或丟失鏡片 IAW PAM 385-24。

在對該項目進行維護之前，(請聯繫當地輻射防護官(LRPO)取得美國通信司令部 (CECOM)所核發(NRC)的許可證(29-01022-14)後)(相關權責單位許可)，才可用於射手主要視線上使用的鈦塗層。美國原子能委員會(LRPO)將通知 ACALA NICP 處理指示。

The anti-reflective coating on all thermal optics in the driver's night vision viewer are coated with thorium fluoride (ThF4) which is slightly radioactive. The only potential hazard involves ingestion or inhalation of this coating material. Dispose of broken lenses IAW PAM 385-24. Contact your LRPO for further information prior to performing maintenance on subject items. CECOM holds the NRC license (29-01022-14) for the thorium coating used on the gunner's primary sight. The LRPO will notify ACALA NICP for disposition instructions.

(2)註記/NOTE

若您有任務須在夜間操作，請執行以下檢查。

Only perform the following checks if your mission requires nighttime operation.

(3)檢查駕駛夜視鏡對電池及車用電源之運作。

Check operation of driver's night vision viewer on battery power and vehicle power.

(4)檢查鏡片是否有刮痕、缺口、破損或破裂，如有上述情形，請通知即刻維護。

Check for scratched, chipped, broken, or cracked lenses. If lenses are damaged or broken, notify field maintenance.

(5)清潔髒汙的鏡頭。

Clean dirty lenses

3.以下狀況停用/Not Fully Mission Capable if:

無/NON

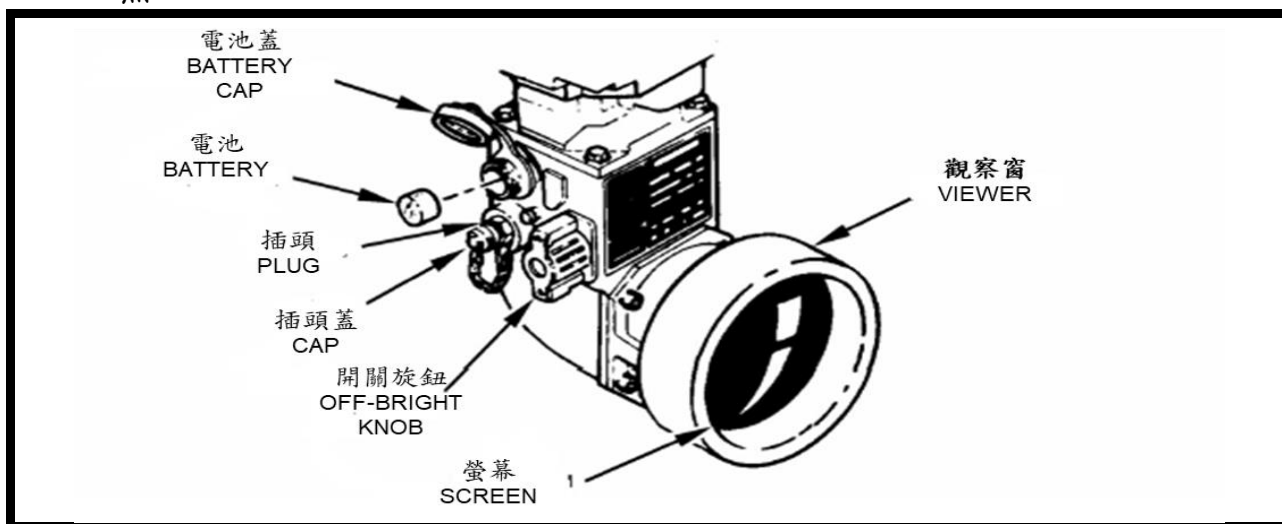


圖 15 駕駛用夜視器材



(十六)項次40-乘員艙核生化防護系統(NBC)設備/ Item No.40- Crew Station NBC Equipment (圖16)

1.負責乘員/Crewmember：

乘員/CREWMEMBER

2.檢查流程/Procedure：

(1)警告/WARNING

若護罩警示燈發出過熱警示信號，請立即關閉核生化防護系統(NBC)系統。繼續使用核生化防護系統(NBC)系統將導致核生化防護系統(NBC)過濾器起火。

If sponson overheat warning messages come on, immediately shut down main NBC system. Continued use of main NBC system will result in an NBC filter fire.

A.當引擎在戰術空轉和主核生化防護系統(NBC)系統運作時，檢查中央顯示器(CDU)上的核生化防護系統(NBC)主指示燈是否亮起。

With engine running in tactical idle and main NBC system on, check that NBC MAIN light is lit on CDU.

B.感覺核生化防護系統(NBC)軟管接頭有空氣流動。

Feel for air flow at NBC hose sockets.

C.檢查M42A1面罩微型無線電話之運作

Check M42A1 mask microphone operation (TM 3-4240-340-10).

3.以下狀況停用/Not Fully Mission Capable if:

(1)微弱或無空氣自核生化防護系統(NBC)軟管接頭流出。

Low or no air flow at any NBC hose socket.

(2)無法完成指揮官與駕駛通聯。

No communication between commander and driver.

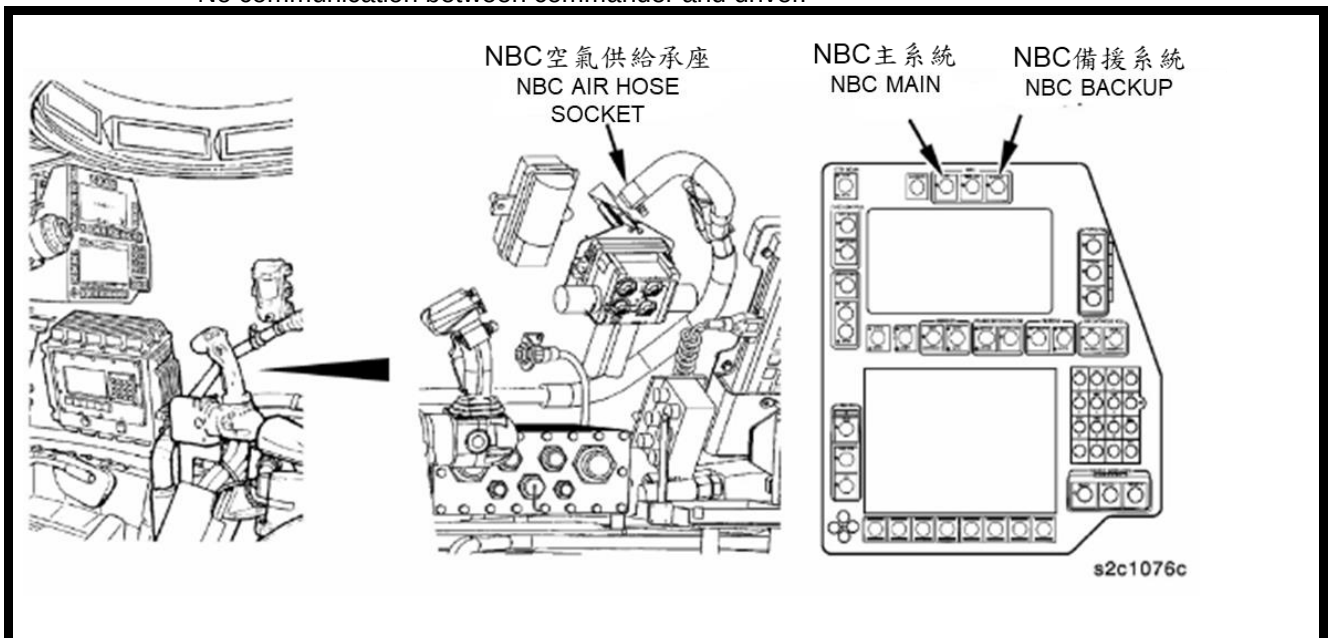


圖 16 乘員艙核生化防護系統(NBC)設備

(十七)項次42- 核生化防護系統(NBC)備援系統/ Item No.42- NBC Backup System (圖17)

1.負責乘員/Crewmember :

乘員/ CREWMEMBER

2.檢查流程/Procedure :

(1)操作核生化防護系統(NBC)備援系統，請參考(vol2.wp0339)。

Operate NBC Backup System (Vol 2, WP 0339).

(2)感覺核生化防護系統(NBC)軟管接頭有空氣流動。

Feel for air at NBC hose sockets

(3)註記/NOTE

A.在某些操作條件下，核生化防護系統(NBC)系統打開時可能會出現氨氣味，這種氣味是正常無毒，並且會隨著使用時間消散。

Under certain conditions of operation, an ammonia odor can be present when NBC system is turned on. This odor is normal, non-toxic and will dissipate with use.

B.若任何管線都沒有感覺到氣流流出或氣流不足，請通知即刻維護。

If no airflow is felt or if airflow is low at any station, notify field maintenance.

3.以下狀況停用/Not Fully Mission Capable if:

微弱或無空氣自核生化防護系統(NBC)軟管接頭流出。

Low or no air flow at any NBC hose socket.

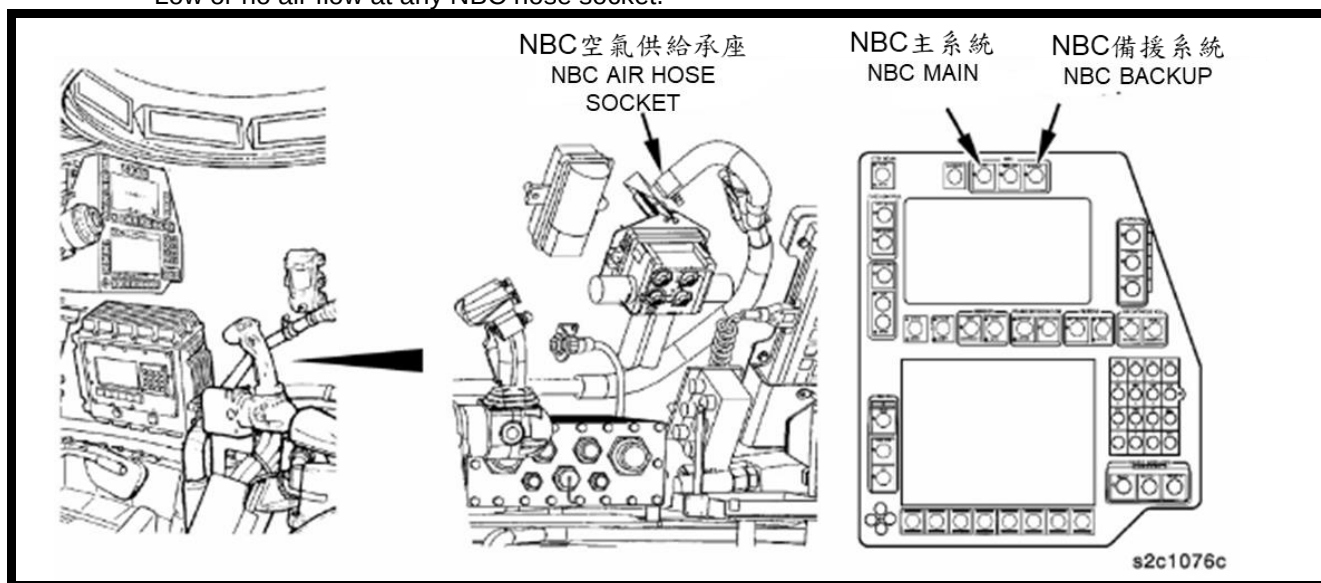


圖 17 核生化防護系統(NBC)備援設備

(十八)項次43-車內通話系統/ Item No.43- Communications System

1.負責乘員/Crewmember :

乘員/ CREWMEMBER

2.檢查流程/Procedure :

(1).確保車內各工作站對講機可互相通聯。

Make sure that all crew stations can be heard over intercom.

(2)確保遙控開關及無線電之作用。

Make sure remote switches and radios work.

(3)執行語音測試請參照(vol 1 wp0181)

Perform speech system test (Vol 1, WP 0181).



3.以下狀況停用/Not Fully Mission Capable if:

- (1)無線電傳輸或無接收作用，指揮官與駕駛間無法對話。
Radio transmission or reception is inoperative. no intercom between commander and driver
- (2)任何對講機都無法聽到警示音或語音測試訊息。
Warning tone or voice test message cannot be heard over intercom at any crew station.

(十九)項次45-停車制動器/ Item No.45- Parking Brake (圖18)

1.負責乘員/Crewmember：

駕駛/ DRIVER

2.檢查流程/Procedure：

(1)注意/ CAUTION

A.在執行停車制動前須將引擎預熱至少2分鐘，以防止引擎及變速箱損壞。

Warm up engine at least 2 minutes prior to performing parking brake check to prevent engine/ transmission damage

B.在停車制動器作用時，且引擎入檔的情況下以每分鐘1100轉且超過1分鐘，將可能損壞變速箱。

Transmission may be damaged if engine is allowed to run more than 1 minute at 1100 rpm, shift control is in drive and parking brake is applied.

C.在停車制動器作動下，將檔位至於D檔，並使引擎每分鐘轉速提高到(1000~1100)戰車需處於停止狀態。

Apply parking brake, move shift control to D and run engine slightly above idle (1000-1100 rpm). Tank should not move.

3.以下狀況停用/Not Fully Mission Capable if:

- (1)停車制動器無法使車輛保持停止
Parking brake will not hold tank.
- (2)停車制動器失效及調整不當。
Parking brake defective, inoperative, or out of adjustment.

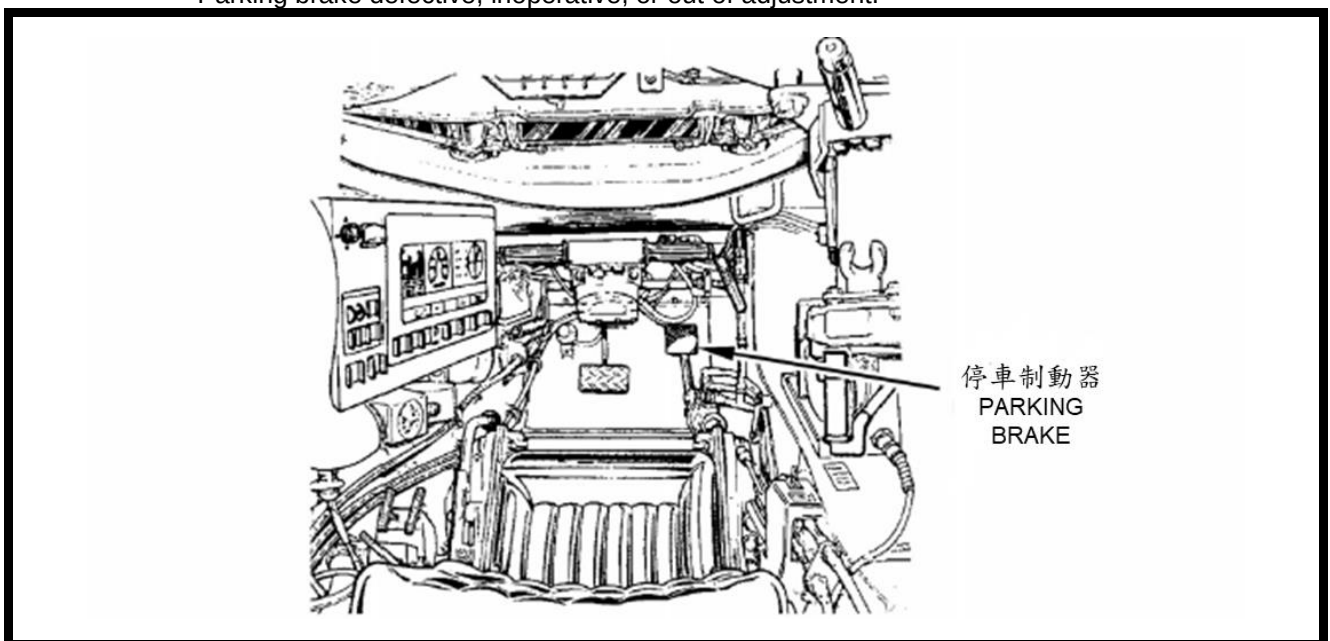


圖 18 停車制動器

(二十)項次46-停車制動器/ Item No.46- Parking Brake (圖19)

1.負責乘員/Crewmember :

駕駛/ DRIVER

2.檢查流程/Procedure :

(1)註記/ NOTE

如引擎轉速錶失效下，可將檔位至於 R 檔以獲得每分鐘 850~950 轉的引擎轉速，在停車制動器作用正常的狀況下此轉速無法駛車輛移動。

If RPM indicator is not working, this check can be performed by placing shift control in R with engine at normal idle 850-950 rpm. With parking brake applied, tank should not move.

A.在引擎和車輛主要電源關閉的情況下，停車制動器液壓錶上壓力需緩降至850~600psi後迅速下降至0psi。

With engine and vehicle master power off, pump parking brake while watching hydraulic pressure gage. Pressure should decrease slowly to 600850 psi and then drop rapidly to zero pressure.

B.若不是上述A.之狀況下降，請通知即刻維護。

If it does not operate this way, notify field maintenance

3.以下狀況停用/Not Fully Mission Capable if:

無/NON

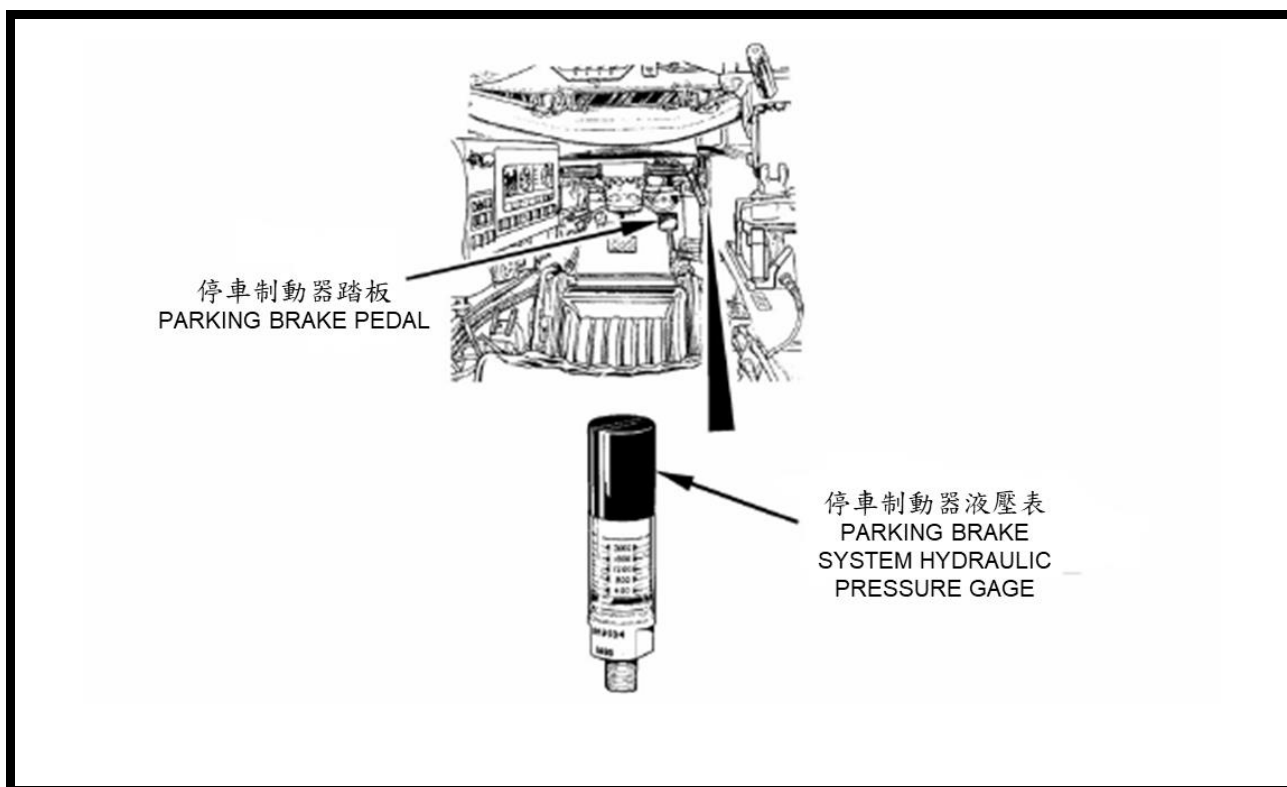


圖 19 停車制動器



二、每日預防保養檢查流程項目-操作中/ **PREVENTIVE MAINTENANCE CHECKS AND SERVICES- DAILY "WALK AROUND" PMCS PROCEDURES- DURING**

(一)項次47-履帶總成，左及右側#1, #4, #5, or #6履帶側裙/Item No.47- **Track Assembly, Left and Right #1, #4, #5, or #6 Skirts**

1.負責乘員/Crewmember：

駕駛/ **DRIVER**

2.檢查流程/Procedure：

(1)註記/ **NOTE**

若發現終端連結器及中央導尺鬆動時，須立即對其旋緊正確之扭力，請參考(WP0504)

If end connectors or center guides are found to be loose at halts, tighten them. Apply proper torque as soon as possible (WP 0504)..

3.以下狀況停用/Not Fully Mission Capable if:

無/**NON**

(二)項次48-人員加熱器/Item No.48- Personnel Heater (圖20)

1.負責乘員/Crewmember：

駕駛/ **DRIVER**

2.檢查流程/Procedure：

(1)警告/ **WARNING**

A.爆炸性及易燃材料易至火災，人員加熱器管線表面及週邊有溶劑時必須清潔乾淨，並不得存放霧態罐體於管線週邊及任何戰車內部，僅授權時可放置彈藥。

Explosive/flammable materials are a fire hazard. Do not store aerosol cans, cleaning solvent, fuel, etc. on or near personnel heater and ducts or anywhere inside tank. Stow ammunition in authorized stowage only

B.如發現燃油洩漏，請勿使用加熱器，並通知即刻維護。

If fuel leaks are found, do not use heater. Notify field maintenance.

(2)註記/**NOTE**

A.如溫度超過華氏90時加熱器無法操作。

Heater will not start if air temperature is over 90F.

B.如氣候條件需要下，使用人員加熱器，請執行下列檢查。

If climatic conditions require the use of a personnel heater perform the following check:

(A)操作人員加熱器。

Operate personnel heater.

(B)檢查所有管道和軟管是否有空氣及洩漏，若有該現象，請通知即刻維護。Check all tubes and hoses for air and fuel leaks. If leaks are found, notify field

maintenance

3.以下狀況停用/Not Fully Mission Capable if:

任何油料洩漏

Any fuel leak found

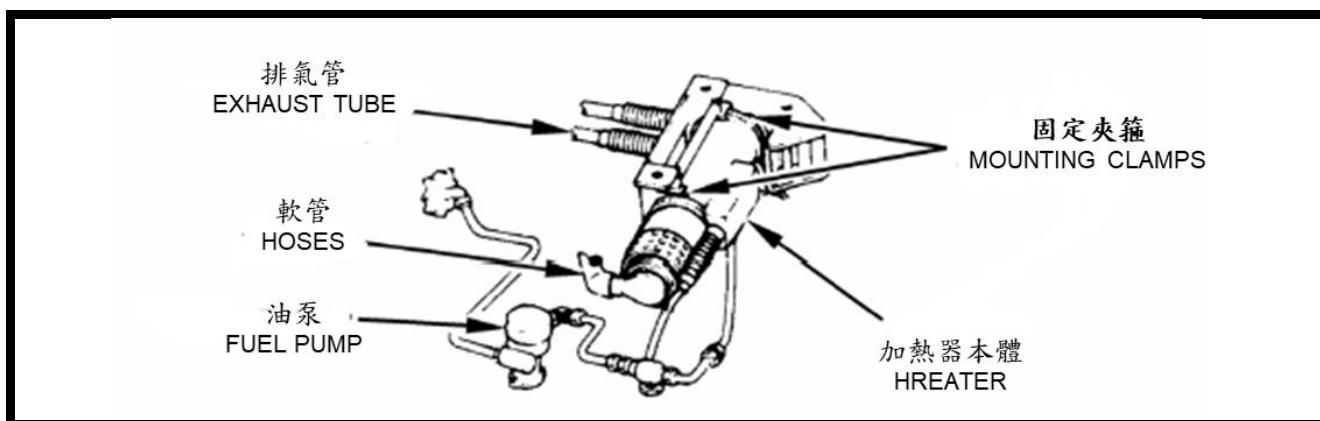


圖 20 人員加熱器

伍、結論

裝備妥善是發揮戰力之憑藉，隨著裝備日新月異且各項系統也越趨複雜化，由其每日預防保養檢查是各項保養中最基礎但也最重要的；在此次翻譯新式裝備M1A2戰車之操作手冊發現，雖然該裝備不論在底盤操控系統、動力系統、武器系統等皆比現有之M60A3戰車更為先進，但唯一不變的是新式裝備未因擁有更精密的自我診斷系統而放棄保養中最基礎的每日檢查保養，反而更加精確分工讓全車乘員都有自己需要檢查的項目、並逐項逐動的落實檢查，以發揮裝備最大戰力及減少因裝備損壞肇生之人員傷亡，希望藉由此篇譯文可讓裝配M1A2戰車之部隊成員於獲得裝備前可先行了解新式裝備所需保養之項目及要領，期能達到「保養重於保修、保修重於購置」之最終目標。

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