

PM Paladin/FAASV Newsletter

<http://w4.pica.army.mil/paladin/>



PURPOSE:

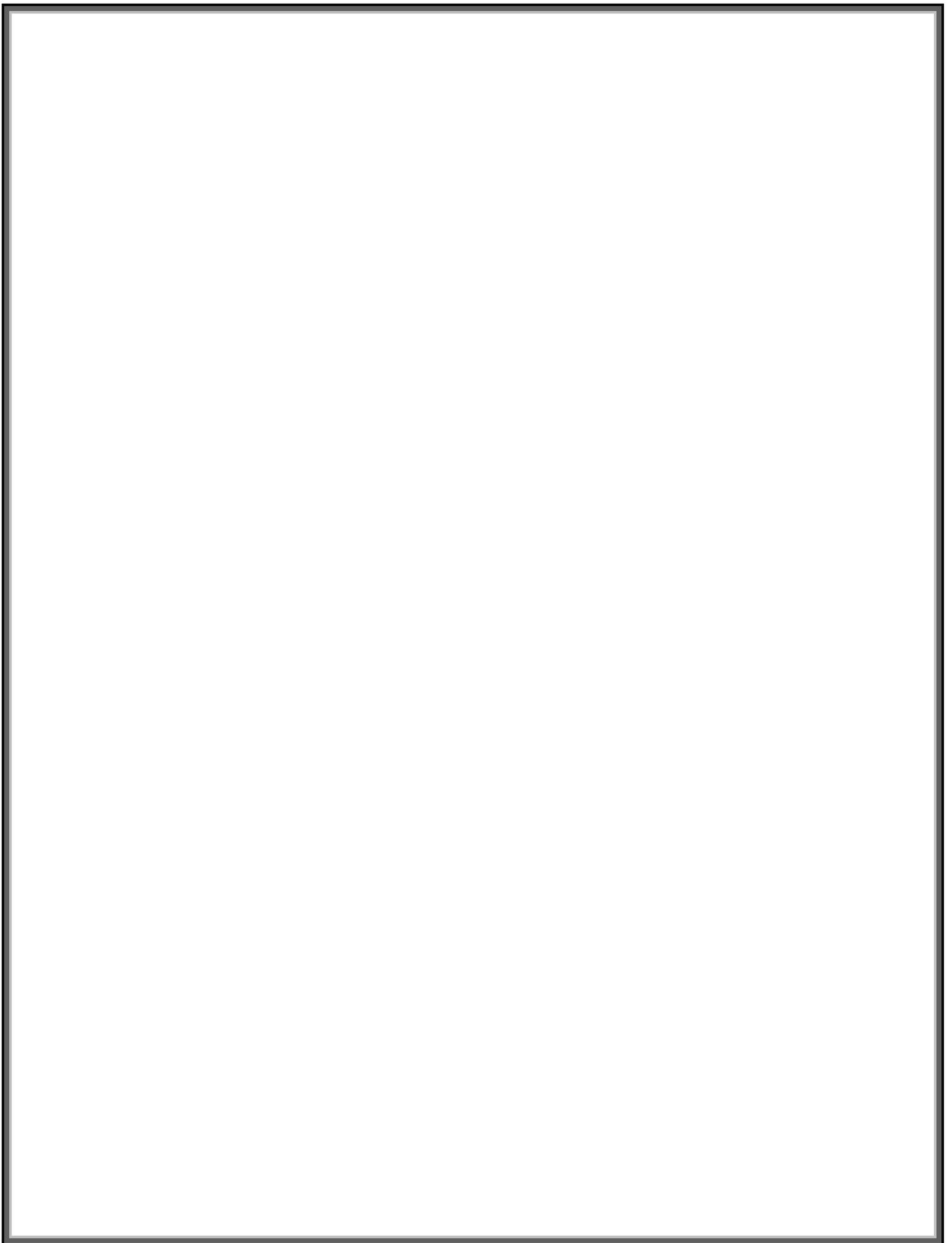
The purpose of this Newsletter is to keep the Paladin/FAASV using units and their maintenance support organizations apprised of technical information and/or lessons learned on the M109A6, Paladin and the M992A2, FAASV that may not otherwise be explained in Technical Manuals. Previous newsletters may be found at the Website indicated at the top of this page. You may also contact the Program Office by E-mail by sending a message to palsdc@pica.army.mil.

PROPONENT:

Product Manager, Paladin / FAASV
 Picatinny Arsenal, New Jersey 07806-5000
 DSN ***_****

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Paladin ACU Parts Now Repairable

The following components of the Paladin ACU are repairable at our contractor facility and are on the ARIL for return to AN5 (New Cumberland).

NOMENCLATURE	NSN	PT NO.
Discrete I/O CCA	5998-01-440-5944	6125300
Servo Controller (A7)	5998-01-440-5941	6125400
CCA (1553 Card)	5998-01-440-5943	6125500
Hard Drive	7025-01-440-3472	6125130
Microcircuit Memory (A1)	5962-01-440-5934	6125700
Power Supply*	6130-01-487-3093	6125900
Backplane Assy	5998-01-440-5942	6125200
Panel Indicator	1290-01-441-3111	6125600

* The power supply has had some design changes and is now under a new NSN identified in the table above.

2 Piece Driver's Seat

Paladin and FAASV driver seats are now available as two separate components .. cushion and pan. Either or both pieces may be ordered, and new cushions will fit old (molded cushion) pans, without scraping-off old cushion material (but scraping does help reduce friction and cushion wear).



Master Warning Lights (Paladin/FAASV)

(NOTE FROM THE COMMAND)

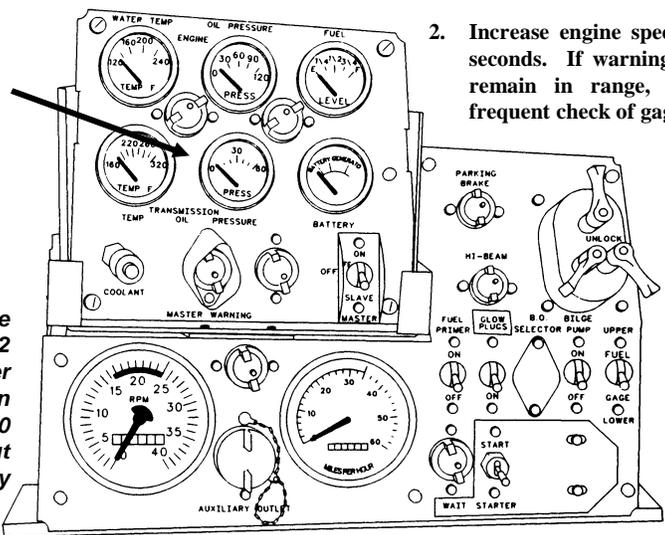
Paladin and FAASV master warning lights monitor four very important drive train functions...namely, transmission and engine temperature and pressure measurements. It's purpose is to provide an alert whenever potentially damaging conditions exist. However, at idle rpm (550-600) and while shifting in forward and reverse gear, the master warning lights may come on (steering column light not shown). This issue has been investigated. Due to transmission characteristics, very low transmission oil pressure is available at engine idle rpm. With increased engine rpm which results in higher pressure (10 psi at 1,000 rpm), the master warning lights go out. Due to safety

reason, it has been decided not to lower the current setting of the transmission pressure switch. When master warning lights come on under the pre-described conditions, increase the engine rpm to 1,000 for 3 – 5 seconds, and 1) Check engine and transmission pressure and temperature gages - if gages read in operating range IAW TM-10, 2) The master warning lights go out, a fault does not exist. Continue operation with frequent observation of gages and master warning lights. **Important:** *If, at any time during steps 1 & 2, the master warning lights come on or gages read out of TM-10 operating range, engine should be shut-down and maintenance personnel notified.*

DRIVER'S INSTRUMENT PANELS

Master Warning Lights may come on at idle rpm and/or while shifting gear. Follow steps 1 & 2 before notifying maintenance.

Note - If, at anytime during step 1 & 2 procedures, the master warning lights come on or gages fall out of TM-10 operating range ... shut engine down and notify maintenance



1. Check Engine and Transmission Pressure & Temp. If both are in TM-10 operating range, and Master Warning Lights are on at engine idle...
2. Increase engine speed to 1000 rpm for 3 - 5 seconds. If warning lights go out, and gages remain in range, continue operation with frequent check of gages.

Paladin PLGR Data Cable (PN 12967970)

(NOTE FROM THE COMMAND)

A number of PLGR data cables have been severely damaged when attempts were made to incorrectly disconnect the cable from its mount. Mistakes were driven by “appearance” because - “it looks like a connector”, and TM procedures (TM 9-2350-314-20-2-2, para 22-11a) that did not address specific data cable disconnect instructions. *Illustrations below are intended to illustrate damage and provide interim guidance while TM procedures are updated.* To disconnect PLGR Data Cable ... 1) Disconnect Computer Cable. 2) Remove 4 screws and Nut Plate (see Photo 1).

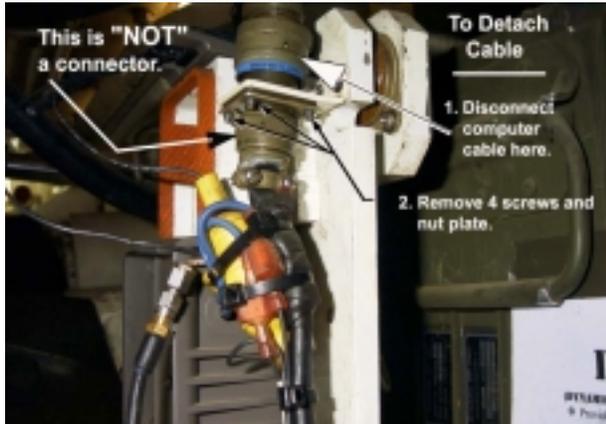


PHOTO 1. PLGR Data Cable Mounted

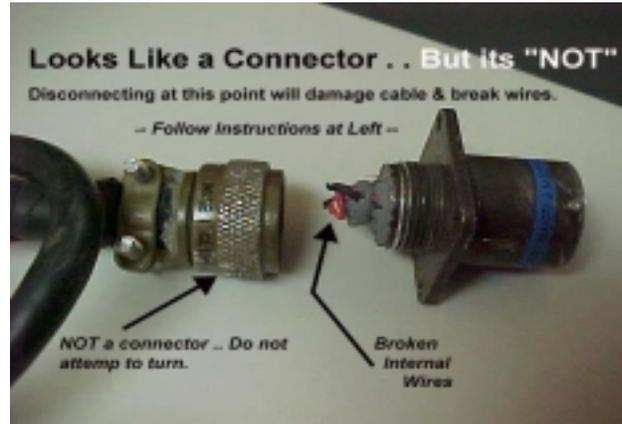


PHOTO 2. Damaged PLGR Cable Assembly when improperly disconnected

Intermittent Power Problems - Paladin PLGR Mount

The M109A6 Paladin/FAASV Paladin's Precision Lightweight GPS Receivers (PLGR) mount has experienced problems in the field. It has been reported that many of the PLGR mounts have been experiencing intermittent power problems. While mounted within the Paladin PLGR mount, NSN 5340-01-417-1874, the PLGR often loses power and has to be reseated within the mount, often several times, before the problem is solved.

Temporary, quick, “fixes” have been utilized by the field personnel to continually receive power to the PLGR. These actions include permanently depressing the mount’s switch with tape and electrically bypassing the switch by shorting the input wires together (see photo).

Various sites have reported these failures and the use of such bypass methods. While taping or short-circuiting the mount temporarily solves the problem, this practice can lead to far more severe problems/failures. Maintaining constant power to the mount when the PLGR is removed can lead to several equipment failures. This practice can lead to permanent, irreparable damage to the cables and DRUH. At a minimum this can cause the in-line fuse to be blown.

If a bypass method is to be used, the following guidelines should be followed. Rather than applying tape to the mount, apply something to the PLGR that will depress the switch when mounted. The switch should never be depressed when the PLGR is not mounted with the power cable attached. The problem is currently under investigation to determine more permanent corrective measures. Occurrence of intermittent power failures should be reported to Mr. ***** at (***) ***_****. It is important to emphasize that the PLGR will not be powered when removed from the mount. Loss of power when the PLGR is removed is not a failure.



PHOTO 1. Paladin modified PLGR mount with switch permanently depressed with tape, shown above.

Cooling Fan Impeller (Paladin/FAASV)

(UPDATE FROM 2QFY01 NEWSLETTER)

Checking cooling fan impeller fasteners is now included in Paladin's Semiannual PMCS. TM 9-2350-314-20-1-1, Feb 1999 w/C1, Table 2-1, Item 7, provides for checks of loose or missing impeller hardware and rates the vehicle "NOT FULLY MISSION CAPABLE" if either condition is found. A recent occurrence emphasizes the importance, not only of the inspection, but also correction of identified deficiencies. Photo 1 illustrates a damaged cooling fan impeller that detached from its fan drive with the engine running. *Note: FAASV's PMCS procedures are being updated.*



Prevent This From Happening To Your Paladin or FAASV

Follow the illustrated
procedures below

Avoid occurrence (1) Be sure keyed washer's outside tab is securely engaged into round nut slot. (2) Then, by hand, attempt to rotate the round nut left and right .. *there should be no movement (i.e., round nut/washer/shaft should move together)*. If any movement is found, keyed washer and round nut should be replaced (*never* reuse a keyed washer). (3) After installing a new keyed washer, *specific torque* must be applied to the round nut (65-75 lb-ft) using a torque wrench and spanner socket (PN 12268253, NSN 5120-01-2558-8232). **DO NOT USE A SCREWDRIVER AND HAMMER** to tighten the round nut. Torque cannot be measured using this method and the keyed washer's inside diameter tab could be damaged ... use a torque wrench and spanner socket.

Task instructions: Paladin - TM 9-2350-314-34-1, Para 6-1. FAASV - TM 9-2350-293-34, Para 5-5.



Bore Evacuator & Pre-reservoir (Paladin)

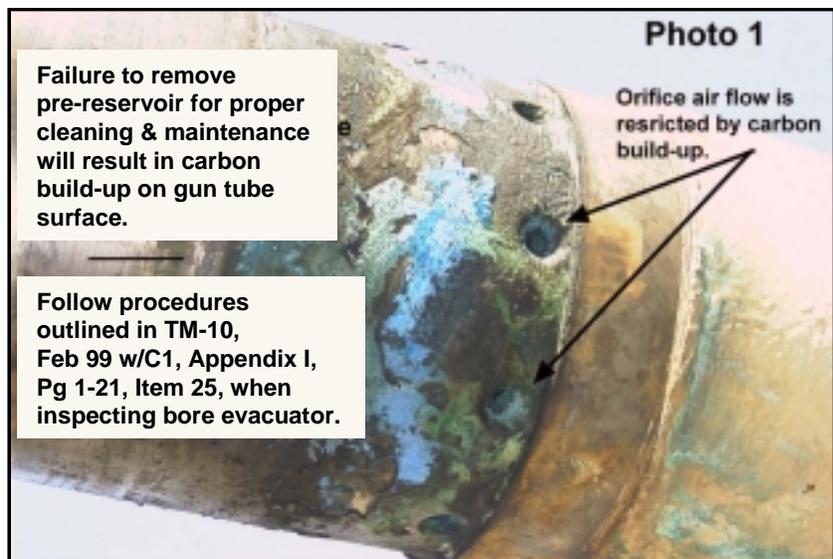
The following is a "PROBLEM DISCUSSION" excerpt from Safety Of Use Message (SOUM) TACOM-00-011*.

A. M109A5/A6 SELF-PROPELLED HOWITZER: RECENTLY THERE HAVE BEEN TWO CARBON MONOXIDE (CO) INCIDENTS DURING LIVE FIRINGS OF M109A6 SPH, RESULTING IN INJURIES TO CREW. EXPOSURE TO AIR CONTAMINATED WITH CARBON MONOXIDE MAY PRODUCE ONE OR MORE OF THESE SYMPTOMS: NAUSEA, HEADACHE, DIZZINESS, APPARENT DROWSINESS, LOSS OF MUSCULAR CONTROL, AND COMA. PERMANENT BRAIN DAMAGE AND DEATH CAN RESULT FROM SEVERE EXPOSURE.

B. INVESTIGATION HAS IDENTIFIED MISSING /DAMAGED BORE EVACUATOR O-RINGS, EVACUATOR BALLS, AND RING VALVES AS CONTRIBUTING FACTORS.

C. THIS ALLOWED EXCESSIVE SMOKE AND CO TO ENTER THE SPH TURRET AND OVER EXPOSE CREW.

Observations and data indicate that, typically, pre-reservoir maintenance is omitted when "after-firing" gun tube cleaning is performed (Photo 1). And, a significant amount of live fire is conducted with both bore evacuator and pre-reservoirs in less than serviceable condition ("O" rings missing, chipped, incorrectly installed, etc.). Based on SOUM information above, all gun tube cleaning should focus considerable attention on bore evacuator and pre-reservoir surfaces, orifices, and associated components. Instructions found in TM -10, Feb 99 w/C1, Appendix I, Item 25 are an excellent tool for this purpose. For convenience and illustration the instructions are reprinted below.

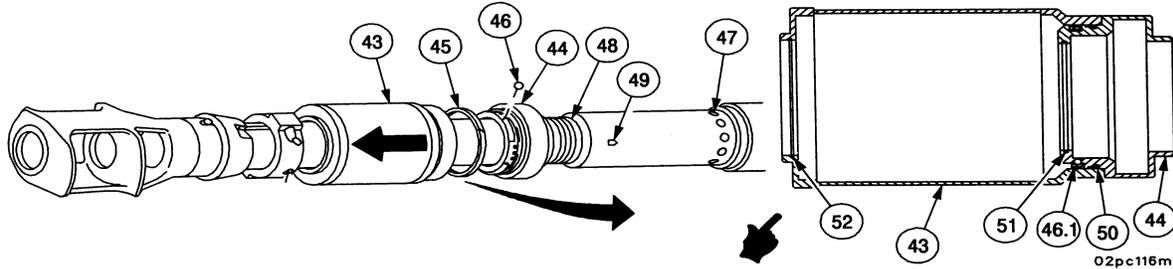


* The complete SOUM can be found at www.qrsdc.com, click on "INDEX", find & click on FY00-Q2 "Hot Stuff"

The following instructions are a reprint from TM 9-2350-314-10, Feb 1999 w/C1, Page I-25, Item 25.

25. BORE EVACUATOR ASSEMBLY BALL VALVES

After firing, separate main reservoir (43) and move preresevoir (44) forward toward muzzle. Refer to para 3-8.8. Slide valve ring (45) forward and remove nine evacuator ball valves (46). The balls should fall out. Thoroughly clean evacuator ball valves (46), nine preresevoir orifices (46.1), 10 evacuator orifices (47) and tube threads (48) with CLP, using brush (11686340). Clean three metering holes (49) with CLP, using brush (8432358). Apply light coat of GMD or GGP to balls, ring, and unpainted tube surfaces before assembling. Inspect O-rings (preformed packings) (50 and 51), on inner and outer grooves of preresevoir (44) and (52) on inside groove main reservoir (43) for damage or missing. Inspect for gas wash and soot past O-rings. If any of these conditions exist, notify unit maintenance for replacement of O-rings. Remove any accumulation of soot from inside main reservoir. For nonfiring periods, bore evacuator and evacuator balls are cleaned and lubricated monthly.



Road wheels, Paladin/FAASV

(Do Not Mix Steel & Aluminum)

A considerable number of Paladins and FAASVs have been observed with steel and aluminum road wheels mounted on the same hub. This practice should be discontinued and hubs that have “mixed” road wheels mounted should be brought into compliance. Steel or Aluminum wheels are permitted, *but not on the same hub*. To be compliant, both road wheels on the same hub must be of the same material. The single, most obvious, difference between steel and aluminum wheels are rivets in the aluminum wheel ... steel wheels have no rivets.

Note: Use this characteristic to also identify inner wheel type.



TM Corrections (Paladin/FAASV)

Each TM correction below, resulted from a submitted and approved DA Form 2028-2. They will be included in upcoming changes to applicable TMs. Until then, make corrections with pen and Ink.

System	TM	TM Date	Pg	Fig	Item	Change	From:	To:
FAASV	9-2350-293-10	Nov 94 w/C3	1-10	--	--	Capacities, Transmission	24 1/2 Gal (Dry)	20 Gal (Dry)
			1-10	--	--	Capacities, Transmission	14 Gal (Refill)	12 Gal (Refill)
	9-2350-293-24P	May 97 w/C1	Index L-46	95	1	NSN5930-01-143-6782		5930-01-143-6762
Paladin	9-2350-314-20-1-1	Feb 99 w/C1	1-5	--	--	Transmission Oil Capacity (dry)	21 Gal	20 Gal
	9-1200-215-34&P	Feb 99 w/C1	C1-1	C1	28	SMR for PN 6125130	PAFZZ	PAFDD
					29	SMR for PN 6125900	PAFZD	PAFDD
					36	SMR for PN 6125300	PAFZZ	PAFDD
					38	SMR for PN 6125200	PAFZZ	PAFDD

Useful Web Sites

The PM Paladin/FAASV office has found the sites below to be very useful in our day to day activities. We are providing these links as information and hope that you will also find them of benefit to your daily activities.

PM Paladin/FAASV Web Page

<http://w4.pica.army.mil>

PM Paladin/FAASV Sample Data Collection Web Page

<http://www.qrsdc.com>

Ft. Sill (Home of Field Artillery) Web Page

<http://sill-www.army.mil>

Army Electronic Product Support (AEPS) Web Page

<http://aeeps.ria.army.mil>

Army Knowledge Online (U.S. Army Portal)

<http://www.us.army.mil/portal>

OSMIS Relational Database

<http://www.sbcweb.calibresys.com/OSMISweb>

Logistics Support Activity (LOGSA)

<http://www.logsa.army.mil>

Technical Manual Information

In an effort to keep the field advised of the basic Paladin and FAASV TMs, with appropriate changes and dates, they are repeated in this issue.

REMINDER: MAKE SURE YOUR PIN POINT ACCOUNT IS IN ORDER TO ENSURE YOU ARE GETTING ALL THE REQUIRED PUBS AND CHANGES.

<u>M109A6, PALADIN</u>	<u>Basic</u>	<u>Change 1*</u>
TM 9-2350-314-10	8 Feb 99	1 Apr 01
TM 9-2350-314-20-1-1	8 Feb 99	1 May 01
TM 9-2350-314-20-1-2	8 Feb 99	1 May 01
TM 9-2350-314-20-2-1	8 Feb 99	1 Apr 01
TM 9-2350-314-20-2-2	8 Feb 99	1 Apr 01
TM 9-2350-314-24P-1	8 Feb 99	1 May 01
TM 9-2350-314-24P-2	8 Feb 99	1 Apr 01
TM 9-2350-314-34-1	8 Feb 99	1 May 01
TM 9-2350-314-34-2	8 Feb 99	1 Apr 01

* These manual changes will appear on CD-ROM EM 0041 with the 1 July 2001 release date.