



HAWKER®

Headlines

Fall 2020 edition

Quick Tips!



So, I heard that **Hawker®** offers other sizes of batteries besides the ARMASAFE™ Plus 6TAGM.

Where can I get **technical info** or **NSNs** for those?

It's easy, just go here...

www.hawkerbattery.com/hawker-mil-pc



Answer to question from last issue:

Can batteries self-discharge when they're not in use...even when they're disconnected?

Yes, all lead-acid **batteries self-discharge**. It's a naturally occurring phenomenon in batteries in which chemical reactions within the battery reduce its charge. You see, batteries are **electrochemistry**.

Most **flooded-cell** (a.k.a., wet) batteries self-discharge about 3% of their capacity per month at 77° F, while **Hawker® AGM batteries lose just a fraction** of that at about 1%! Furthermore, **the hotter the battery...the faster the self-discharge rate**. In fact, **anytime the temperature of a battery is increased by 15° F, the self-discharge rate doubles!** So, at 92° F, a flooded-cell is losing about 6%, whereas a Hawker® AGM about 2%. Go up another 15° F to 107° F, and a flooded-cell is losing about 12%, and a Hawker® AGM about 4%.

Now, think of those **sweltering-hot Conex boxes** used overseas during combat to store batteries. If the temperature in there was 122° F, those flooded-cells were losing a whopping 24% capacity per month, whereas Hawker® AGM batteries were losing 8%.

Therefore, if you have batteries in storage, you can **drastically improve shelf-life and slow the death spiral** by keeping those batteries in a **climate-controlled environment**. Better yet, **keep them connected to a float-charger!**



Did you know:



that the term "**load**" refers to the amount of **current** being drawn from the battery, measured in **amps** (e.g., a 25-amp load). While **engine start** is typically the **greatest single load** placed a battery...headlights, instrumentation, comms, BFTs, CROWS, etc., all place **additional loads** on the battery...especially when the engine is off (as the alternator is no longer providing power).

Training:

How often are you replacing bumpers, seats, or doors on your tactical vehicles? Like **NEVER**? Why, cuz they aren't really consumables. Now, how often are you **replacing batteries**? Probably, **TOO OFTEN!** Wanna fix that? Yeah, but how? Contact your Hawker® FSR today for **free Battery Maintenance and Recovery Training (BMRT)** in your own motor-pool!



Next Issue:
Is it necessary to coat my Hawker® battery terminals with grease or silicone to prevent corrosion?

Questions?

Visit our website at: www.hawkerbattery.com
Call us at 877-485-1472



NSN: 6140-01-485-1472
Part No: 9750N7025
CAGE Code: 0WY95

This newsletter brought to you by the EnerSys® Hawker® Battery Field Support Team and is NOT an official publication of the US Government.



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Summer 2020 edition

Quick Tips!



Need details on the **Hawker® ARMASAFE™ Plus 6TAGM** battery?

Easy fix. In fact, the **new & improved data sheet** and **2D technical drawings** brochures are hot off the press!

Want your copy? Simply download here...

www.hawkerbattery.com/resources



Answer to question from last issue:

Can multiple short-duration vehicle run-times have an effect my battery?

Yes! You see...for the vehicle's starter to crank the engine, it requires energy...lots of energy. That **burst of energy** comes from the vehicle's battery (or batteries). In fact, engine start requires so much energy, typically, it's the **biggest load** placed on a battery (or battery pack).

For example, a light tactical vehicle may require **500 Cold Cranking Amps (CCAs)** to start the engine, whereas a **heavy combat vehicle** may require **2000 CCAs!** Now that's a whole lotta juice.

Each time the engine is started, the battery is drained a bit. No problem, it's the job of the vehicle's alternator or generator (& voltage regulator) to safely put that energy back into the battery.

But, if the engine is constantly **started, then immediately stopped**, the alternator won't have enough time to fully recharge the battery. **So, how long should you let the vehicle run to replenish the energy?** Here's a guide:



Recommended minimum run-time after engine start

Temp	Time
≥ 32° F	20 minutes
0-31° F	40 minutes
< 0° F	60 minutes

Did you know:



for a single battery, **Closed Circuit Voltage (CCV)**, commonly known as "**load**" voltage, is the measurement of voltage between its positive and negative terminals when there **is a load** on the battery (in other words, the battery is **providing power**). For battery-powered systems (direct current), measurement is usually conducted using either a DC voltmeter or multimeter with a DC voltmeter setting. A battery's CCV measurement is typically lower than it's OCV.

Training:

Though the world is still coping with COVID-19, our free on-site **Battery Maintenance and Recovery Training** **is back!** And, to assist in maintaining a safe working environment, our **trainers comply with all state & local safety protocols.** Want to get your unit scheduled? Just **contact your Hawker® FSR** today...either on the web or by phone!



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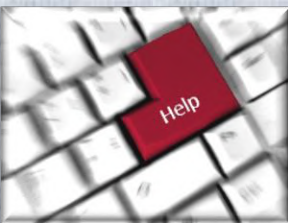


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Spring 2020 edition

Quick Tips!



Hawker® understands that no matter the environment
your mission carries on...and so do we!

Call us at **877.485.1472** or visit www.hawkerbattery.com for help:

- Live technical support
- Hawker Headlines
- FAQs
- Online training videos
- Product tech sheets
- SDS



Answer to question from last issue:

How do I choose the correct battery for my application (vehicle, GenSet, etc.)?

Of course, the first place to check is the vehicle's or equipment's **Technical Manual (TM)**. Soldiers can also contact their unit's Tank-Automotive Armaments Command Logistics Assistance Representative ...or simply **TACOM LAR**. Ultimately, the appropriate platform's Program Manager (PM) or Product Manager (PdM) office will know.

However, for most military ground tactical wheeled- and tracked-vehicles, the **Hawker® ARMASAFE™ Plus** 6TAGM battery (NSN: 6140-01-485-1472) is a direct drop-in replacement where the **NATO 6T-size** 12-volt flooded-cell battery was previously installed (e.g., 6TMF, 6TL, 6TN, etc.).

Now, if the vehicle or equipment requires a different size 12-volt battery, please see our **Hawker® MIL PC** battery page to find the appropriate battery based on either the BCI group size or your current battery's **dimensions and battery terminal type**, or simply contact us...either on the web or on our hotline...so we may suggest a replacement battery.

Did you know:



for a single battery, **Open Circuit Voltage (OCV)** is the measurement of voltage between its positive and negative terminals when there is no load on the battery. In other words, the battery is at a **state of rest**, neither providing power nor receiving a charge. Measurement is usually conducted with either a DC voltmeter or multimeter with a **DC voltmeter setting**. Fully-charged **Hawker's** are normally **12.9 OCV**, flooded-cell batteries are normally 12.6 OCV.

Training:



Due to Shelter-in-Place orders as a result of COVID-19, our free on-site **Battery Maintenance and Recovery Training** has been temporarily suspended. However, we'll resume unit training visits once the risk has been minimized. But, **now is the time** to contact us to get your shop scheduled for later in the year. Contact your Hawker® FSR today!

Next Issue:
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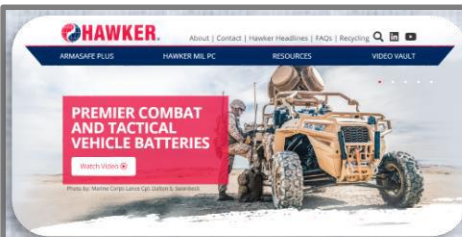


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Quick Tips!



Hawker® has a new look and a new location!

Check us out at www.hawkerbattery.com
Say goodbye to zoom, the site features **device scaling**.
So, the information you need just got easier to find
whether using a **computer, tablet, or smartphone!**



Answer to question from last issue:

My Hawker® battery passed testing, so can it be mixed with other Hawker® batteries that are the same model? That depends. As batteries age, they develop significantly different capabilities (usually, the result of plate sulfation). So...when mixing batteries in parallel, series, or series-parallel configuration...

1. **Open Circuit Voltage (OCV) Test:** insure all fully-charged batteries are within a **0.15 volt OCV range** of each other (e.g., if the highest battery measures 12.9 volts OCV (no load), then the lowest battery should measure no less than 12.75 volts OCV.), **and**
2. **Conductance Analyzer Test:** insure all fully-charged batteries are within a **10% CCA range** of each other (e.g., if the highest battery measures 1225 CCAs, then the lowest battery should measure no less than 1102.5 CCAs), **or**
3. **Mechanic's Load Test:** insure all fully-charged batteries are within a **0.4 volt CCV range** of each other (e.g., if the highest battery measures 11.2 volts CCV (load voltage), then the lowest battery should measure no less than 10.8 volts CCV), **or**
4. **Capacity Test:** insure all fully-charged batteries are within a **10% Ah range** of each other when discharged at a specified C-rate (e.g., if the highest Capacity battery measures 120 Ah (C20), then all batteries should be within 12 Ah range of each other, so the lowest Capacity battery should measure no less than 108 Ah (C20). Note: This test is normally only conducted by design engineers.

Did you know:



With the migration to www.hawkerbattery.com,
that the free **Hawker® Helpdesk** video training series
is now located in the **Video Vault** section.
Oh, and the videos are still available on [YouTube.com](https://www.youtube.com)



Training: "OK, so I can watch training videos on www.hawkerbattery.com

but I want more in-depth knowledge...can you help with that?"

We sure can...military units can schedule *free on-site*
Battery Maintenance and Recovery Training at their motor-pool.
Just contact your Hawker® FSR today!



Next Issue:
How do I choose the
correct battery for my
application (vehicle,
GenSet, etc.)?

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Quick Tips!



Want to know how to **properly store** Hawker® batteries?
Find out...**Watch the training video** at
www.hawkeraplus.com
under the **Hawker® Helpdesk** tab.



Answer to question from last issue:

When should I replace my Hawker® battery? A Hawker® battery is considered to be at the end of its “expected operational life” when...at least **one** of the following is true:

1. **Open Circuit Voltage (OCV) Test:** when a fully-charged battery measures **less than 12.65 volts.**
2. **Conductance Analyzer Test:** when a fully-charged battery fails to provide at least 80% of the battery's rated CCAs (e.g., if a **Hawker® ARMASAFE™ Plus 6TAGM battery measures less than 980 CCAs.**)
3. **Mechanic's Load Test:** when a fully-charged battery **fails to remain above 9.9 volts Closed Circuit Voltage (CCV; a.k.a., load voltage)** during the load test. The specified load should be equal to 1/2 of the battery's rated CCAs and be applied for 15 seconds (e.g., for a Hawker® ARMASAFE™ Plus 6TAGM battery, apply a 612.5 amp load for 15 seconds, during which the battery's load voltage must remain at 10.0 volts CCV or higher. Note: Per **TB 9-6140-252-13**, military personnel need only apply a 550-amp load on the Hawker® ARMASAFE™ Plus 6TAGM battery, since MIL-PRF-32143C only requires a new 6TAGM battery to be at least 1100 CCA).
4. **Capacity Test:** when a fully-charged battery fails to provide at least 80% of the battery's rated Capacity when discharged at a specified C-rate (e.g., for a **Hawker® ARMASAFE™ Plus 6TAGM battery**, when discharged at the C20 rate, if the battery measures **less than 96 Ah**). Note: This test is normally only conducted by design engineers.

Did you know:



Typical vehicle batteries are called 12-volt batteries, but that's just a generic term. Actually, different types of lead-acid batteries have different “**top-off**” voltages. In fact, new 12-volt flooded-cell batteries typically measure 12.6 volts Open Circuit Voltage (OCV) and AGM batteries typically measure 12.9 volts (OCV) when the batteries are fully charged.

Training:

The rumor on the street is....

“Military units can schedule **free on-site Battery Maintenance and Recovery Training** at their motor-pool.” Uhm, is that TRUE?
It sure is! Just contact your Hawker® FSR today...
and we'll make BMRT happen for you.



Next Issue:
My Hawker® battery passed testing, so can it be mixed with other Hawker® batteries that are the same model?

Questions?

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HAWKER® Headlines

Summer 2019 edition

Quick Tips!



What are the **benefits of AGM batteries** (like Hawker®) over flooded/wet-cell or gel-cell batteries?

Find out...**Watch the training video at**

www.hawkeraplus.com

under the **Hawker® Helpdesk** tab.



Answer to question from last issue:

Does hot weather affect my battery when I'm not using it?

Yes, due to increased self-discharge. You see, the typical flooded/wet-cell SLI (starting, lighting, ignition/instrumentation) battery loses about 3% of its capacity per month when sitting unused at 77°F (25°C), whereas the Hawker® ARMASAFE™ Plus 6TAGM (deep cycle/SLI) battery loses much less at about 1 to 1 1/2% per month.

However, for every 15°F (8.3°C) increase in temperature, the battery's self-discharge rate doubles from its previous rate. For example:

- at 92°F (33.3°C), the self-discharge rate for a flooded-cell is 6%, and for a Hawker® AGM it's 2-3%
- at 107°F (41.6°C), the self-discharge rate for a flooded-cell is 12%, and for a Hawker® AGM it's 4-6%
- at 122°F (50.0°C), the self-discharge rate for a flooded-cell is 24%, and for a Hawker® AGM it's 8-12%

So, if you have batteries that aren't being used, be sure to test and recharge them often (at least every 3 months)...and more frequently as temperatures go up. **Better yet, place them on a trickle- or float-charger!**

Did you know:



that **Voltage (V)** is a unit of measurement for electromotive force. The electromotive force is caused by a difference in charge between two points (e.g., between the battery's positive (+) and negative (-) battery terminals). *Colloquially, voltage is known as electrical pressure*; it's the force that moves electrons through circuitry to provide power!



Training: One, two, three, four...

Contact Hawker® for free training on batteries and more!

Set down that multimeter and call your Hawker® FSR today. And, together we'll schedule your unit for **free Battery Maintenance and Recovery Training (BMRT).**



Next Issue:
When should I replace my Hawker® battery?

Questions?

Visit our website at: www.hawkeraplus.com

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Spring 2019 edition

Quick Tips!



Should you test your **Hawker® Armasafe™ Plus 6TAGM** battery when it's wired in parallel, series, or series-parallel?

Find out...**Watch the training video at**

www.hawkeraplus.com

under the **Hawker® Helpdesk** tab.



Answer to question from last issue:

How do I properly stack Hawker® Armasafe™ Plus 6TAGM batteries that are stored in my battery room?

Far too often, vehicle batteries (which weight a lot) are improperly stacked...which results in battery damage...and creates a potentially dangerous situation, especially if they fall onto an unprotected foot! You see, the standard 6TMF battery weighs in at 75 lbs. Due to the type, amount, and density of the materials used in a **Hawker® Armasafe™ Plus 6TAGM battery...it weighs in at 88 lbs.** Therefore, vehicle batteries **should never be stacked more than two high.** Ideally, Hawker® batteries should be stored in their original ruggedized corrugated cardboard shipping container...which safely allows for stacking two high.

However, what if you no longer have the original shipping container, but still need to stack them? Then...



1. Place *nonconductive* (plastic, rubber, cardboard, wood, etc.) dunnage on the plastic top of the bottom battery (but not on top of the terminals).
2. Stack dunnage until it rises **at least ¼ inch above** the bottom battery's terminals.
3. Place the second battery on top of the dunnage – insuring it does not touch the bottom battery's terminals.
4. **Do not stack a third battery on top of the second battery!**

Also, by keeping your batteries off the ground, you'll reduce the likelihood of damage caused by rolling stock (from such items as hand trucks, pallet jacks, forklifts, etc.).

Did you know:

that there are numerous **FREE** resources to help you get the longest life out of your **Hawker®** batteries?

- ✓ Hawkeraplus.com
- ✓ Hawker Hotline
- ✓ Hawker Headlines
- ✓ Hawker Helpdesk
- ✓ Battery Maintenance and Recovery Training
- ✓ Highly-trained Field Support Representatives

Training: *Attention: Army, Navy, Air Force, Marines...and Coast Guard!*



Wondering how you should properly care for your **Hawker®** batteries. Have no fear...contact your Hawker® FSR today to schedule **free Battery Maintenance and Recovery Training (BMRT)**. We just can't make it any easier!

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HAWKER®

Headlines

Winter 2019 edition

Quick Tips!



Need to decipher the labels and markings on your **Hawker® Armasafe™ Plus 6TAGM** battery? It's simple...Watch the training video at www.hawkeraplus.com under the **Hawker® Helpdesk** tab.



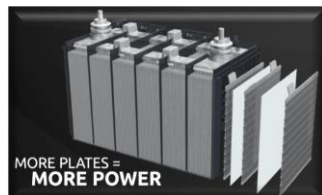
Answer to question from last issue:

I read that Hawker® batteries are VRLA/TPPL AGM batteries. What does that even mean?

VRLA is an acronym for **Valve-Regulated Lead-Acid**. Yes, the Hawker® Armasafe™ Plus, Hawker® MIL PC, and Odyssey® batteries are, in fact, LEAD-ACID batteries! The valve-regulated portion simply indicates that the battery's cells are sealed, but are capable of off-gassing (under extreme conditions), then resealing.

TPPL is an acronym for **Thin Plate Pure Lead**. We use *thin plates* because it allows us to use as much as 2X more plates than a standard lead-acid battery of the same size

...which means there's greater active surface area...which equates to more CCAs! While most lead-acid batteries use lead-alloy plates (typically, lead-calcium), we use 'Pure Lead' ...and by that we mean **99.99% pure lead!**

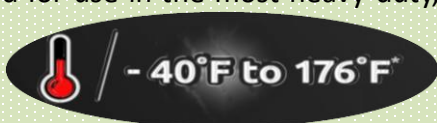


The reason we use **pure lead** is that it has no filler material and therefore virtually no impurities...so it has better electrochemical properties...which results in **more cold cranking amps, more amp hours, a slower self-discharge rate, extended shelf life, and overall longer operational life!**

AGM is **Absorbed Glass Mat**...a fiberglass tissue between the plates...it holds the electrolyte...like a sponge!

Did you know:

That **Hawker®** batteries are designed for use in the most heavy-duty, austere, and demanding conditions! In fact, they are designed to provide up to **three times longer life** than conventional flooded-cell batteries. Additionally, due to the *absorbed glass mat (AGM)* technology, they have **superior vibration resistance**...and are exceptionally **tolerant to wide temperature extremes**.



* Temperature range for models with metal jackets

Training:

Well, the new year is here and so are new opportunities! We've already started conducting **free Battery Maintenance and Recovery Training (BMRT)** with units of the 88th Readiness Division (USAR). Thinking you'd like some for your unit? Easy Fix! Just contact your **Hawker® FSR** and request your free BMRT. Cuz, *battery readiness increases operational readiness!*



Next Issue:
How do I properly stack Hawker® Armasafe™ Plus 6TAGM batteries that are stored in my battery room?



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Quick Tips!



So, you think these are **load testers**? Wrong.
It's a common mistake...but, they're **conductance analyzers**!
How do you use them? Watch the training video at
www.hawkeraplus.com
under the **Hawker® Helpdesk** tab.



Answer to question from last issue:

What is the proper way to lift and carry a Hawker® Armasafe™ Plus 6TAGM battery while it's still in its shipping box?

Unlike most vehicle batteries, you can actually lift and carry the Hawker® Armasafe™ Plus 6TAGM battery by its **carrying handles** while it's still in the box! Why? Because it's the most **secure** and **safest** way!

Here's how...see the slot openings on the top of the box? Slide your finger down the notch on the side. Next, pull the handle up through the slot openings. Then, firmly grasp the handle.



Ohhh, but don't forget, because it's 88 lbs...you'll need to **conduct a 2-person lift**!

Did you know:

that **EnerSys®** now makes **4D & 8D AGM batteries**? Well, you asked for 'em...now you got 'em! Currently, they are offered under our **Odyssey®** brand...but we are working to add them to our **Hawker® MIL PC line**.

- ✓ Heavy Grader
- ✓ Compactor
- ✓ HYEX
- ✓ Skid Steer Loader
- ✓ LCM 8



Model	Voltage	PHCA** (5 sec)	CCA*	Nominal Capacity		Reserve Capacity Minutes	Nominal Dimensions				Terminal	Torque Specs in-lbs (Nm max)
				(20 Hr Rate-Ah)	(10 Hr Rate-Ah)		Length in (mm)	Width in (mm)	Height in (mm)	Weight lbs (kg)		
4D-1300	12	2400	1300	170	153	370	20.39 (518.0)	8.78 (223.0)	8.58 (218.0)	117.3 (53.3)	SAE	60 (6.8)
8D-1500	12	2700	1500	220	198	475	20.39 (518.0)	10.87 (276.0)	8.86 (225.0)	143.0 (65.0)	SAE	60 (6.8)

- ✓ Earthmoving Scraper
- ✓ Dozers: D5, D7, & D9
- ✓ LSV
- ✓ and others!

Training:

It's been a great year for the 99th Readiness Division (USAR)...
Their shops got **free Battery Maintenance and Recovery Training**!
Hello 88th Readiness Division (USAR)...2019 is your year!
Missing out? Contact your **Hawker® FSR** to request your free **BMRT**. After all, we are here...to support you!



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Quick Tips!



How do you know if your **mechanic's load tester** is up to the task for **6T-sized** batteries?
Find out now...watch the training video at
www.hawkeraplus.com
under the **Hawker® Helpdesk** tab.



Answer to question from last issue:

When conducting a mechanic's load test, how does the battery's load voltage measurement relate to its state of charge?

When conducting a mechanic's load test on a **Hawker® Armasafe™ Plus 6TAGM** battery, be certain you are using a load tester that's rated for it!

Not sure if yours is...
check out the **Hawker® Helpdesk** video above or...
the last two issues of **Hawker® Headlines**.

Generally speaking, so long as the battery reports at least a 10-volt reading or higher during the load test, the battery has passed.

Want a more definitive assessment, here ya go

Load Voltage Measurement	Percent State Of Charge	Battery Health	Test Result
> 10.9	> 90	High	Pass
10.9	90		
10.8	80		
10.7	70	Medium	
10.6	60		
10.5	50		
10.4	44		
10.3	38	Low	
10.2	32		
10.1	26		
10.0	20		
< 10.0	0-20	Dead	Fail

Notes:

1. Only test a fully-charged battery.
2. Apply a 550 amp load for 15 seconds, record lowest load voltage.
3. If fail, attempt recharge, then retest. If fails again, scrap.

Did you know:



that **Shelf Life** pertains to a new battery that has not yet been placed into service? The **Hawker® Armasafe™ Plus 6TAGM** battery boasts a **24-month** shelf life when consistently stored at 77° F (25° C)! Furthermore, per MIL-PRF 32143C, the battery has been designed to still be able to deliver at least 50% of its rated capacity at the end of that period ... **and that's before recharging it!!!**

Training:

Need assistance with **inspecting, testing, charging, & storing** your **Hawker® Armasafe™ Plus 6TAGM** battery? It's just one simple phone call away to receive **free** on-site Battery Maintenance and Recovery Training (BMRT). Your **Hawker® FSR** stands at the ready...to support you!



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What is the proper way to lift and carry a Hawker® Armasafe™ Plus 6TAGM battery while it's still its shipping box?

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Over the past year, we've had nearly 2,000 views of our Hawker® Helpdesk technical support videos.

Now for even better news...
5 new videos are on their way to
www.hawkeraplus.com
 under the **Hawker® Helpdesk** tab.



Answer to question from last issue:

Are there any load testers that will adequately test my Hawker® ARMASAFE™ Plus 6TAGM battery?

The answer is...**Yes**, but remember from last issue...

*"To effectively perform a **"mechanics" load test**, it's recommended that the load tester be capable of applying a load that is equal to one-half of the battery's Cold Cranking Amps (CCAs). So, if a battery is rated at, say, 1000 CCAs, the load tester should be capable of applying a 500 amp load."*

Theoretically, since the **Hawker® Armasafe™ Plus** battery is rated to provide a minimum of 1225 CCAs, it's appropriate to use a load tester that can provide an amp load of 612 ½. **However, per TB 9-6140-252-13** (dated 31 Jan 2012), a **550 amp load** is considered sufficient when load testing the Hawker® ARMASAFE™ Plus...since technically...1100 CCAs is the minimum performance standard required by **MIL-PRF 32143**.

Most often, the **load testers** that can provide the necessary **amp load** to perform an adequate mechanic's load test are **bench top models** vice handheld models.

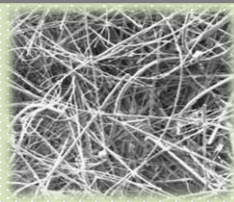
Most importantly though...check the load tester's AMP rating!



Did you know:



that **Hawker®** and **Odyssey®** brand batteries (made by **EnerSys®**) have **absorbed glass mat (AGM)** material between the lead plates? The AGM material is like a sponge that holds all the electrolyte in the battery. As a result, the batteries can be placed on their side...or even upside down...and the electrolyte will not leak out!



Training: Spring is here...time to get your battery maintenance in gear!



We provide free on-site Battery Maintenance & Recovery Training (BMRT)...even if it's raining.
 How can you get the technical training you need?
 Simple, contact your Hawker® FSR...indeed!

Next Issue:
 When conducting a mechanic's load test, how does the battery's load voltage measurement relate to its state of charge?

Questions?

Visit our website at: www.hawkeraplus.com
 Call us at 877-485-1472

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NSN: 6140-01-485-1472
 Part No: 9750N7025
 CAGE Code: 0WY95



HAWKER®

Headlines

Winter 2018 edition

Quick Tips!



Have a deeply drained battery that's not charging?
Maybe **your charger** requires the battery to have
a specific amount of **voltage** before it will begin charging!

Learn how to use these chargers...watch the video at

www.hawkeraplus.com

under the **Hawker® Helpdesk** tab.



Answer to question from last issue:

Can I use a handheld load tester on my Hawker® ARMASAFE™ Plus battery?

Typically, **no!** To effectively perform a **"mechanics" load test**, it's recommended that the load tester be capable of applying a load that is equal to one-half of the battery's Cold Cranking Amps (CCAs). So, if a battery is rated at, say, 1000 CCAs, the load tester should be capable of applying a 500 amp load.

But, most **handheld** load testers are rated to provide a 125 amp (or less) load. As such, they are very capable of testing batteries with a CCA rating of 250 (or less).

However, the **Hawker® ARMASAFE™ Plus** 6TAGM battery is rated at a whopping **1225 CCAs** (though MIL-PRF-32143C only requires it to be 1100 CCAs). So, technically, most handheld load testers **will not** provide an adequate test for high CCA batteries.

Special note: per TB 9-6140-252-13 (dated 31 Jan 2012), a 550 amp load should be applied when load testing the **Hawker® ARMASAFE™ Plus** [which is equal to one-half of the CCA's required by the battery's military performance (MIL-PRF) standard listed above].



Did you know:



that **EnerSys®** VRLA/AGM batteries (to include **Hawker®** and **Odyssey®**) are **exempt** from the requirements of the International Air Transport Association (IATA) **Dangerous Good Regulations** and the U.S. Department of Transportation (DOT) **Hazardous Materials Regulations** since they **meet specified testing criteria!** See our "Requirements for Shipping Nonspillable Batteries via Expedited Carrier" download.

Training: Congratulations to the 81st RSC (USAR) on getting all 41 of their

CONUS maintenance shops **trained** in 2017!

Hello 99th RSC (USAR)...training for your 44 maintenance shops begins in January 2018!

Jealous? Want your unit trained? Contact your **Hawker® FSR** for free on-site Battery Maintenance & Recovery Training (BMRT).



Next Issue:
Are there any load testers that will adequately test my Hawker® ARMASAFE™ Plus 6TAGM battery?

Questions?

Visit our website at: www.hawkeraplus.com

Call us at 877-485-1472



NSN: 6140-01-485-1472

Part No: 9750N7025

CAGE Code: 0WY95



HAWKER®

Headlines

Fall 2017 edition

Quick Tips!



Need some clarity on how to charge your **Hawker® ARMASAFE™ Plus** 6TAGM battery with a conventional (non auto-off) charger?

Learn how...watch the video at

www.hawkeraplus.com

under the **Hawker® Helpdesk** tab.



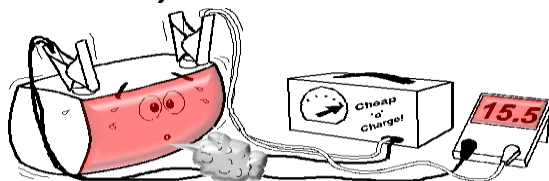
Answer to question from last issue:

What type of charger should I use with a Hawker® ARMASAFE™ Plus battery?

There are many different makes and models of 12- & 24-volt DC battery chargers on the market...and most will work just fine.

However, heed the following:

- We highly recommend that you use a **constant voltage** charger
- For **single battery** charging, the actual measured output from the battery charger should be at least 14.4 volts DC, but should **not exceed more than 15 volts DC!**
- For **series or series-parallel charging**, the actual measured output from the battery charger should be at least 28.8 volts DC, but should **not exceed 30 volts DC!**



By the way...

- the **optimal** ambient temperature range while charging is from 68°F - 86°F
- the more amps your charger can provide, the *faster you'll be able to recharge...but*
- **Caution Note:** maximum charger amperage output cannot exceed 700 amps (at 15 volts DC at 77°F)

Did you know:



that our **Hawker® MIL PC** batteries are the same batteries as our commercially-available **Odyssey® Extreme Series** batteries? Yup...the only difference is the labels. Oh, and we also manufacture the **Odyssey® Performance Series!**



Training:



*Batteries lose their stored energy,
Every operator and mechanic can attest this is true,
We've trained military motor-pools to recover those batteries,
And we can show you how too!*

Schedule **free on-site Battery Maintenance & Recovery Training (BMRT)** by contacting your **Hawker® FSR** today!

Next Issue:
Can I use a handheld carbon pile load tester on my Hawker® ARMASAFE™ Plus?

Questions?

Visit our website at: www.hawkeraplus.com

Call us at 877-485-1472



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HAWKER®

Headlines

Summer 2017 edition

Quick Tips!



Unsure if a **multimeter** is the right tool to **TEST** your **Hawker® ARMASAFE™ Plus 6TAGM** battery?

Well, be unsure no more...**watch the video at**

www.hawkeraplus.com

under the **NEW** Hawker® Helpdesk tab.



Answer to question from last issue:

What CCA reading indicates a fully charged Hawker® ARMASAFE™ Plus battery?

Well, **technically**, the battery must provide at least 1100 Cold Cranking Amps (CCAs) to be compliant with **MIL-PRF-32143C** (dated 9 Feb 2016) when brand new.

However, the **Hawker® Armasafe™ Plus 6TAGM** battery was built to outperform the military performance standard! Therefore, it's rated to provide a minimum of **1225 CCAs** when brand new.

So, how do you check a battery's CCAs...it's really quite simple, use a **battery conductance analyzer**. A battery conductance analyzer checks the battery's voltage...as well as its conductance (the opposite of resistance). It then converts conductance into a measure of resistance. Next, using **Ohm's Law** (as discussed in the Hawker Headlines Spring 2017 edition) and additional proprietary software, it determines the battery's **calculated CCAs**.

But, due to the wide variety of analyzers on the market, we recommend that a new Hawker® Armasafe™ Plus 6TAGM battery be checked for 1400 CCAs.



Did you know:



that our **Hawker® MIL PC G31 SAE** battery was recently assigned an **NSN** by the Defense Logistics Agency (DLA)? So, if you're looking for a **Group 31 AGM battery** (w/standard SAE terminals) having the power & performance of a **HAWKER®**...look no further than **NSN 6140-01-662-7350**.

Training: A big **"SHOUT OUT"** to the **81st RSC (USAR)**...they want to **save money** on batteries and **increase operational readiness**. So, they scheduled **free on-site Battery Maintenance & Recovery Training (BMRT)** for their units. Do the same, contact your **Hawker® FSR** today!



Questions?

Visit our website at: www.hawkeraplus.com

Call us at 877-485-1472

Next Issue:
What type of charger should I use with a Hawker® ARMASAFE™ Plus battery?



NSN: 6140-01-485-1472

Part No: 9750N7025

CAGE Code: 0WY95

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HAWKER®

Headlines

Spring 2017 edition

Quick Tips!



Not sure how to properly **INSPECT**
a Hawker® ARMASAFE™ Plus 6TAGM battery?

No problem...watch the video at
www.hawkeraplus.com
under the **NEW** Hawker® Helpdesk tab.



Answer to question from last issue:

Why is just measuring voltage inadequate for testing a Hawker® ARMASAFE™ Plus battery?

Well, generally, *that's true for all lead acid batteries!* And, here's why...

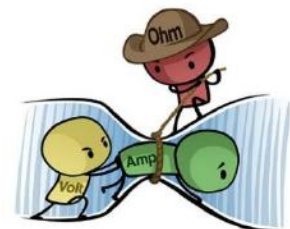
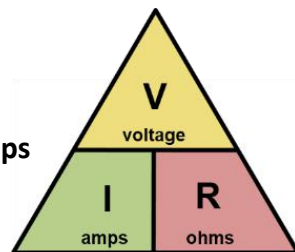
According to Ohm's Law:

Voltage ÷ Resistance = Amps (Current) or simply $V/R = I$

So, for a New Hawker® ARMASAFE™ Plus battery:
 $12.9 \text{ volts} \div 0.0017 \text{ ohms (internal resistance)} = 7588 \text{ max amps}$
and about 1/6 of max amps = CCAs = 1265
(though we publicize 1225 CCAs)

but

for a permanently **sulfated** battery that is charged:
 $12.9 \text{ volts} \div 0.645 \text{ ohms (internal resistance)} = 20 \text{ max amps}$
1/6 max amps = **about 3 CCAs**



In other words, it takes the same amount of voltage to push 3 CCAs through **380 times** more resistance!

So, while you have the **voltage**, there are **very few Cold Cranking Amps!**

Did you know:



that your Hawker® ARMASAFE™ Plus 6TAGM battery is manufactured to strict military design and performance specifications?
It's true...MIL-PRF-32143C (dated 9 Feb 16) is the most current edition. Need a copy? Contact us at 877-485-1472.



Training:

Want on-site Battery Maintenance and Recovery Training
...but don't want to spend a lot?

Well, contact your Hawker® FSR today for **FREE BMRT!**
Oh, and did I mention that it's **FREE?** Yup, **FREE!**



Questions?

Visit our website at: www.hawkeraplus.com
Call us at 877-485-1472

*This newsletter brought to you by your Hawker® Battery Field Support Team
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*Next Issue:
What CCA reading
indicates a fully charged
Hawker® ARMASAFE™
Plus battery?*

NSN: 6140-01-485-1472
Part No: 9750N7025
CAGE Code: 0WY95



HAWKER®

Headlines

Winter 2017 edition

Quick Tips!



Introducing our latest in world-class customer support...

the **Hawker® Helpdesk** video series!

Coming this spring...to www.hawkeraplus.com



Answer to question from last issue:

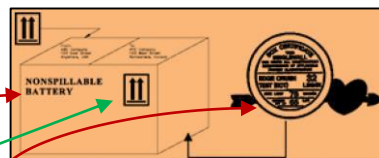
What are the shipping requirements for a Hawker® Armasafe™ Plus battery?

Generally, here are the guidelines:

1. It must be **protected against short circuits** and securely packed in a strong package.
2. The phrase "**Nonspillable**" or "**Nonspillable Battery**" must be plainly and durably marked on each battery and the outer packaging.
3. The orientation arrows "↑↑" may be included on the opposite vertical sides of every package. Additional markings such as "This End Up" may be added to the package.
4. The "**From**" and "**To**" address is **required** (preferably on the top of the carton).
5. The **Box Certification stamp** must remain legible.
6. The use of durable, inert cushioning should be used to protect the battery and terminals as follows: corrugated, honeycomb, foam, bubble wrap, poly bag, terminal protectors, etc...
7. **No "Corrosive" labeling is required.**
8. **No required paperwork** (i.e. Shipper's Declaration for Dangerous Goods).
9. All EnerSys Nonspillable batteries specifically meet IATA Special Provision A67.



For more complete details, visit www.hawkeraplus.com for the downloadable brochure as shown on the right: "**Requirements for Shipping Nonspillable Batteries**"



Did you know:



that depleted (or spent) **batteries can be recycled**. Spent lead-acid batteries are *not regulated as hazardous waste* when the requirements of 40 CFR Section 266.80 are met. This should be managed IAW approved local, state, federal, & military requirements. **Consult your state environmental agency, federal EPA, and/or military equivalent for further guidance.**

Training:



Lack of energy got your motor-pool down?

Well, we've got the cure! Contact your Hawker® FSR today for **free Battery Maintenance and Recovery Training BMRT**). We'll get you **re-energized!**

Next Issue:

Why is just measuring voltage inadequate for testing a Hawker® Armasafe™ Plus battery?

Questions?

Visit our website at: www.hawkeraplus.com
Call us at 877-485-1472



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HAWKER®

Headlines

Fall 2016 edition

Quick Tips!

So, we've all heard the phrase, "**Safety is Paramount**"...and, it's painlessly true!

The Hawker® Armasafe™ Plus 6TAGM battery weighs **88 pounds**...without packaging.

As such, it's **highly recommended** that a two-person lift be used. And, as always, follow all OSHA, Military, and local safety directives/regulations.



Answer to question from last issue:

What if a gray vent cap is elevated on my Hawker® Armasafe™ Plus battery?

As you learned from the **Summer 2016** edition, there are 6 vent caps on the top of each battery. **Each cell** has it's own *vent cap* to allow for the potential venting of gases



In the **extremely rare** instance that a vent cap becomes raised, do the following:

1. Ensure the battery is *cool*
 2. Use *thumb pressure* or a rubber mallet to push it back down.
 3. Using a felt pen, write an "**R**" next to the vent cap
 4. *Inspect* the battery for damage
 5. *Test* the battery
 6. *Recharge*, if necessary.
- **Note:** If the same vent cap ever "pops-up" again (you'll know because of the "**R**"), it's time to replace the battery!

Did you know:



that the most current **Safety Data Sheet (SDS)** for Hawker® batteries is available for download at www.hawkeraplus.com? It's dated 16 Jun 2016. So download, read, and post it today!



Training:



Over the **past 10+ years**, hundreds of active, guard, and reserve motor-pools have received free *Battery Maintenance and Recovery Training (BMRT)*. But, has it been a while? Has your unit had turnover? No problem, contact your Hawker® FSR today!

Next Issue:
What are the shipping requirements for a Hawker® Armasafe™ Plus battery?

Questions?

Visit our website at: www.hawkeraplus.com
Call us at 877-485-1472



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CAGE Code: 0WY95

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HAWKER®

Headlines

Summer 2016 edition

Quick Tips!

Hear Ye, Hear Ye:

Announcing our **new 36-month Limited Warranty** for all

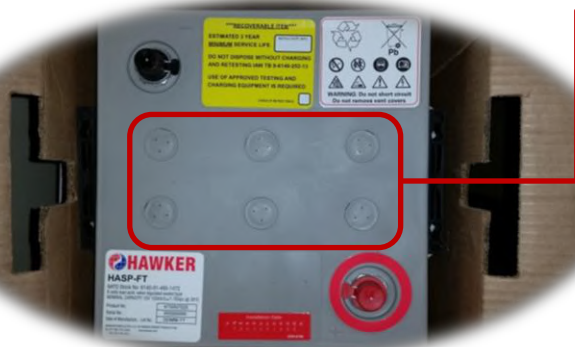
Hawker® Armasafe™ Plus and MIL PC batteries! Find it at: www.hawkeraplus.com

That's **double** the warranty from previous years...now **compare that to the competition!**



Answer to question from last issue:

What are those six gray discs on the top of my Hawker® Armasafe™ Plus battery?



Those six gray discs are actually **vent caps** that cover **one-way valves (a.k.a., valve-regulated)**. If the battery gets too hot...say, from overcharging...gases are created. If the pressure from the gas becomes too great, then **the valves and the vent caps allow some of the gas to escape**, thereby preventing rupture of the battery's casing.

Furthermore, underneath each vent cap is a **flash arrestor!** If there are **any sparks in the battery compartment**, the flash arrestor ensures that they **do not enter the battery**...which could contain explosive hydrogen (or hydrogen-sulfide) gas!



Flash arrestor

Did you know:

that the **U.S. Army is transitioning** from flooded wet-cell batteries to **valve-regulated lead acid (VRLA)** and **absorbed glass mat (AGM)** batteries (like the **Hawker® Armasafe™ Plus** and **MIL PC** brands)?

Reference:

Department of the Army, Office of the Deputy Chief of Staff, G-4 (DALO-MNF) Memorandum dated 29 Mar 2016

Training:



US Army Ordnance School (91B AIT); Camp Pendleton; Fort Campbell; CT, DC, IA, IL, KS, NH, & WV ARNGs...what do they have in common? They got battery maintenance smart this year...for free! Wanna get smart too? Ask us for **FREE Battery Maintenance and Recovery Training (BMRT)**

Questions?

Visit our website at: www.hawkeraplus.com
Call us at 877-485-1472

This newsletter brought to you by your Hawker® Battery Field Support Team and is NOT an official publication of the US Government.



Next Issue:
What if a gray vent cap is elevated on my Hawker® Armasafe™ Plus battery?

NSN: 6140-01-485-1472
Part No: 9750N7025
CAGE Code: 0WY95



HAWKER®

Headlines

Spring 2016 edition

Quick Tips!



Looking for a copy of the latest SDS (Safety Data Sheet) for Hawker® brand batteries?

It's easy to find... simply visit us at www.hawkeraplus.com.

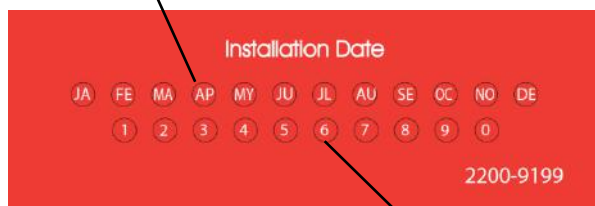
It's available for download in PDF format.

Answer to question from last issue:

How do I indicate when my Hawker® battery was installed? Well, technically, there are two ways!

- The **first** method is to locate the red "Installation Date" sticker on the top lower center of the battery...simply remove the oval disc representing the install month, then remove the number corresponding the last digit of the year it's installed (e.g., for April 2016, remove "AP" and "6").
- The **second** method is to locate the yellow "***RECOVERABLE ITEM***" sticker on the top upper center of the battery. For this method, simply write in the month and year of install (e.g., Apr 16 or 04/16).
- **Here's a tip:** Since it seems redundant to indicate twice when the battery was initially installed...**use the red label for the initial installation, then use the yellow label for a second installation.**
- **And yet another tip:** *If you write using a **grease pencil or other erasable pen**, then the date space on the yellow sticker can be cleaned and used for subsequent installations!*

Remove



Remove



Did you know:

that this sticker on the side of your Hawker® battery indicates that it is designed for "6T" battery spaces (the standard NATO battery size for tactical land vehicles (per STANAG 4015))...and that "AGM" indicates the electrolyte is held in absorbed glass matting (fiberglass tissue) in between the lead plates? Well, now you do!

6TAGM

Training:



Spring into summer with a **new skill set**...effective battery maintenance and recovery. Simply contact your Hawker® FSR for **FREE Battery Maintenance and Recovery Training (BMRT)** Good for you...and even better for your unit!

Next Issue:
What are those six gray discs on the top of my Hawker® Armasafe™ Plus battery?

Questions?

Visit our website at: www.hawkeraplus.com
Call us at 877-485-1472

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NSN: 6140-01-485-1472
Part No: 9750N7025
CAGE Code: 0WY96



HAWKER®

Headlines

Winter 2016 edition

Quick Tips!

Want to keep your Hawker® Armasafe™ Plus 6TAGM battery from freezing? It's easy...keep it charged! A deeply drained Hawker® is susceptible to freezing at 5° F or lower, but **a fully charged Hawker® is designed and tested to operate at -40° F.** In fact, fully charged...it'll resist freezing down to -80° F!!!

Answer to question from last issue:

Where are the CCAs listed on the Hawker® Armasafe™ Plus 6TAGM battery? The minimum is on the front label (see below).



The industry definition of **Cold Cranking Amps (CCA)** is:

"the amount of amps that a fully charged **12-volt** battery can deliver at **0° F (-18° C)** for **30 seconds** while still maintaining at least **7.2 volts**"

Did you know:

that multiple manufacturers make 6TAGM batteries for **NSN 6140-01-485-1472**. The only way to ensure that you'll receive the **Hawker® Armasafe™ Plus 6TAGM** is to include our company specific **Part No. & CAGE Code** (as found on the label above...see★) when ordering. That is, Part No.: **9750N7025** & CAGE Code: **0WY96**

Training:

It's a new year....and time for a new approach to **maintaining & recovering batteries**.

Contact your Hawker® FSR for

FREE Battery Maintenance and Recovery Training (BMRT)

...and get the year off to a **positive START!**

Questions?

Visit our website at: www.hawkeraplus.com

Call us at 877-485-1472

This newsletter brought to you by your Hawker® Battery Field Support Team and is NOT an official publication of the US Government.

SEALED LEAD ACID MILITARY VEHICLE BATTERY

NSN: 6140-01-485-1472
Battery Type: 6TAGM
Manufacturer's Product No.: 9750N7025★
Manufacturer's CAGE Code: 0WY96★
Voltage and Capacity at 20 Hour Rate: 12V 120Ah
Contract No.: Contract Number
Date of Manufacture - Lot No.: MMY-LL

Minimum Requirements per MIL-PRF-32143

Reserve Capacity at 27°C: 230 minutes
Discharge Rate and Time to 7.2V at -18°C: 1100 amps 30 sec.
Discharge Rate and Time to 7.2V at -40°C: 400 amps 30 sec.

NONSPILLABLE BATTERY

In accordance with ICAO/IATA instruction 806-special provision A67, IMDG UN No. 2800 class 8 exempt. US D.O.T. regulation 49 C.F.R section 173.159 para d. classified as non-hazardous and unrestricted for transportation when securely packed and protected against short circuits. Sealed lead battery. Battery must be recycled.

As such, it's listed here.

However, this is the **minimum requirement per MIL-PRF 32143**.

Actually, for a brand new Hawker® Armasafe™ Plus 6TAGM you should **expect and test for at least**

1225 CCAs!

Next Issue:

Where do I indicate when my Hawker® 6TAGM battery was installed?



NSN: 6140-01-485-1472
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HAWKER®

Headlines

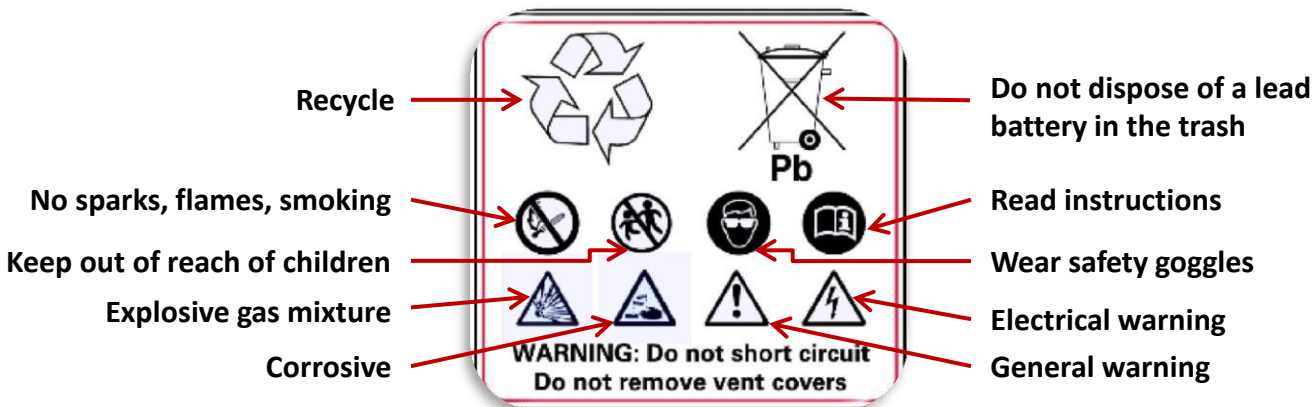
Fall 2015 edition

Quick Tips!

The Hawker Armasafe Plus 6TAGM battery is still authorized for use in U.S. Army HMMWVs! Not sure where to find the authorization, see the *Sep 2015 PS Mag (Issue 754)*, page 60 down in the lower left corner...or contact your TACOM LAR.

Answer to question from last issue:

How do I decipher the symbols on the Hawker® Armasafe™ Plus battery warning label? See the image below for the answers...



Did you know:

that there's a Hawker® battery for your Group 34 or Group 78 needs??? It's the **Hawker® MIL PC Group 34/78** battery...and it's **NSN is 6140-01-600-5837**. So, if you have **AMMPS, TQGs, ITVs, OGPks, etc.** that use either Group 34 or Group 78 batteries, you can have the same technology, superior quality of workmanship, and proven combat performance as your Hawker® Armasafe™ Plus 6TAGM battery! **It's a deep-cycle capable battery with a minimum of 850 CCAs and 135 minutes of reserve capacity!!!**



Training:



What's all this talk about ***maintaining & recovering batteries*** ...it's pretty simple, right? TRUE...if you have the proper training!!! So, contact your Hawker® FSR for **FREE Battery Maintenance and Recovery Training (BMRT)**... you'll be glad you did!

Questions?

Visit our website at: www.hawkeraplus.com
Call us at 877-485-1472

Next Issue:
Where are the CCAs
listed on the Hawker®
Armasafe™ Plus battery?



NSN: 6140-01-485-1472
Part #: 9750N7025



HAWKER®

Headlines

Summer 2015 edition

Quick Tips!

Hello summer...and hello high temperatures!!!



Remember:

- Don't store good batteries in direct sunlight...it'll increase the battery's normal self-discharge rate...and you'll just have to recharge it
- Try to keep the battery room cool (fan, A/C, open window, etc.)...77° F (25° C) or lower is optimal...it'll slow the battery's self-discharge rate
- If a battery is too hot to touch, then it's too hot to charge...remove it from the charger...or you may damage the battery or cause an unsafe condition

Answer to question from last issue:

Where's the date of manufacture on my Hawker® Armasafe™ Plus battery? Simple, it's located on the top of the battery, in the lower left corner, on the following label...

For example:

0615-24

indicates the DOM as

June 2015 – Lot Number 24



And, did you also know each one is individually **serialized** allowing you to track the battery during its life!

Did you know:

that there is a difference between **open circuit voltage (OCV)** and **closed circuit voltage** (also known as "load" voltage)? You guessed it, OCV is measured when there are no electrical loads on the battery. The Hawker® Armasafe™ Plus 6TAGM battery should be at least 12.9 VDC (OCV) when brand new. **Furthermore,** US Army TB 9-6140-252-13 indicates that a new 6TAGM battery should be no less than 12.85 VDC (OCV) when installed...and a recharged 6TAGM should be no less than 12.65 VDC (OCV) when installed.

Training:



So, how much training on battery maintenance and recovery did you receive at your MOS school? If you're like most...*none!* **Want to get battery smart?** Then... contact your **Hawker® FSR** for FREE Battery Maintenance and Recovery Training (BMRT).

Visit our website at: www.hawkeraplus.com

Call us at 877-485-1472

Connect with us on:



Questions?

Next Issue:
How do I decipher the symbols on the Hawker® Armasafe™ Plus battery warning label?



NSN: 6140-01-485-1472
Part #: 9750N7025



HAWKER®

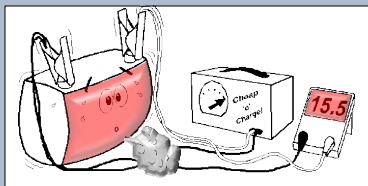
Headlines

Spring 2015 edition

Quick Tips!

US Army TM 9-6140-200-13, "Operator and Field Maintenance for Automotive Lead-Acid Storage Batteries" has specific guidance regarding **batteries that show signs of melting or swelling...**

- ⚠️ "Immediately **stop** charging any battery that develops signs of melting or swelling or if the surface temperature of the case is too hot to comfortably touch with a bare hand."
- ⚠️ "**Do not** handle or attempt to move battery until it has cooled for a couple hours to avoid the risk of an explosion."



- ⚠️ "Failure to comply may result in personnel **injury or death.**"

Answer to question from last issue:

What safety apparatus should every battery room have? Well, here are some recommendations...



- ✓ OSHA approved PPE
 - Chemical splash goggles or face shield
 - Acid resistant apron, ¾ length or longer
 - Polyethylene rubber gloves
- ✓ First aid kit
- ✓ Eye wash station
- ✓ Emergency deluge shower
- ✓ Class "C" or "ABC" fire extinguisher
- ✓ Safety Data Sheet (SDS)



Did you know:

that **EnerSys®** is proud to have manufactured over **1.8 million Hawker® Armasafe™ Plus** batteries for our nation's warfighters. **We are honored** to serve those who serve in the Army, Navy, Air Force, Marines, & Coast Guard. We sincerely **thank-you** for your service, commitment, and dedication!

Training:



Have a pile of "bad" batteries? **Are you sure they're bad?** Not so fast!
Contact your **Hawker® FSR** for Battery Maintenance and Recovery Training (BMRT).
And, remember, **BMRT is FREE!**

Visit our website at: www.hawkeraplus.com

Call us at 877-485-1472

Connect with us on:



Questions?

Next Issue:
Where's the date of manufacture on my Hawker® Armasafe™ Plus battery?



NSN: 6140-01-485-1472
Part #: 9750N7025

This newsletter brought to you by your Hawker® Battery Field Support Team and is NOT an official publication of the US Government.



HAWKER®

Headlines

Winter 2015 edition

Quick Tips!

US Army TM 9-6140-200-13, "Operator and Field Maintenance for Automotive Lead-Acid Storage Batteries" has specific guidance regarding frozen batteries...



- "Do not attempt to operate equipment with frozen batteries."
 - "Do not attempt to slave start equipment with a frozen battery."
 - "Do not attempt to charge a frozen battery."
 - "Attempting any of these actions may cause the battery to explode."
 - "Frozen flooded batteries should be disposed of without attempting to thaw or recharge."
- Note: per manufacturer's recommendations, a Hawker® AGM battery should first be completely thawed prior to attempting recharge.



Answer to question from last issue:

How do I inspect a Hawker® Armasafe™ Plus 6TAGM battery (new or used) before I install it?

- ✓ Ensure the top (lid) is intact and sealed to the bottom casing
- ✓ Verify there are no cracks in the casing (top, sides, bottom)
- ✓ Confirm there are no signs of a melted casing or melted terminals
- ✓ Validate there is no unusual or abnormal case bulging
- ✓ Certify cleanliness of the battery case and terminals
- ✓ Check that all six of the one-way vent valves are flush with the top (lid)
- ✓ Inspect the terminals, apply light hand torque, they should not rotate
- ✓ Look for the presence of all manufacturer labeling



ArmaSafe 6TAGM

Did you know:

that **EnerSys®** is the world's largest manufacturer of industrial batteries...and that we manufacture the **Hawker® Armasafe™ Plus 6TAGM battery**, the **Hawker® MIL PC** line of batteries...and the **Odyssey® Performance Series™** of batteries? Check us out at www.hawkeraplus.com and www.hawkermilpc.com!



Training:



How much training have you received in battery maintenance and recovery?

Yep, I thought so! **No problem**, call your **Hawker® FSR** for **FREE** Battery Maintenance and Recovery Training (BMRT).

Visit our website at: www.hawkeraplus.com

Call us at 877-485-1472

Connect with us on:



Questions?

Next Issue:
What safety apparatus
should every battery
room have?



NSN: 6140-01-485-1472
Part #: 9750N7025



HAWKER®

Headlines

Fall 2014 edition

Quick Tips!



*For guidance in caring for your lead-acid batteries, you can always **contact your Hawker® battery FSR** and/or reference the following publications:*

- *Current EnerSys® TM for the Hawker Armasafe™ battery (contained in each battery carton)*
- *TB 9-6140-252-13 (dated Sep 2011)*
- *TM 9-6140-200-13 (dated May 2011)*



Answer to question from last issue:



What can I use to neutralize spilled or leaking electrolyte? A lead-acid battery's electrolyte is generally comprised of sulfuric acid and water (either distilled or deionized). Sulfuric acid is known to be highly corrosive, carcinogenic, reactive, and poisonous...it can damage your vehicle and seriously harm you – do not inhale or allow contact with your skin. It is extremely important to wear all appropriate PPE when handling Sulfuric Acid. **Use soda ash (sodium carbonate) or lime (crushed limestone) to neutralize any spills or corrosion**, then rinse the affected area with water. It's important to follow all Federal, State, Local, and Military regulations when disposing of the neutralized waste.

Did you know:

That prior to installation....

- A new Hawker® Armasafe™ Plus battery should be at least **12.85 volts DC** and **1225 CCAs**
- A used Hawker® Armasafe™ Plus battery should be at least **12.65 volts DC** and **1100 CCAs**

Well, now you do! So, place them on charge until the install specs are met...so you can count on your battery to perform as you'd expect.

Training:



Tired of throwing away batteries...need some help recovering them?

No problem, call your Hawker® FSR for FREE Battery Maintenance and Recovery Training (BMRT).

Check out our website at: www.hawkeraplus.com

Call us at 877-485-1472

Connect with us on:



Questions?

This newsletter brought to you by your Hawker® Battery Field Support Team and is NOT an official publication of the US Government.

Next Issue:
How do I inspect a Hawker® battery before I install it?



NSN: 6140-01-485-1472
Part #: 9750N7025



HAWKER®

Headlines

Summer 2014 edition

Quick Tips!

Whenever you are testing or charging batteries, you should:

- ✓ Follow all military safety regulations
- ✓ Keep sparks, flames, and cigarettes away from the battery
- ✓ Remove jewelry and exercise caution when working with metallic tools to prevent short circuits and sparks
- ✓ Always review charger-specific instructions
- ✓ Turn off the charger before the connecting leads
- ✓ Not lean over a battery when testing...and especially when charging
- ✓ Never charge a frozen battery
- ✓ Never charge a visibly damaged battery



Answer to question from last issue:



Is a load tester sufficient to test and evaluate a battery? Yes, if you have the right one. Far too often load testers found in military motor-pools are **not designed to accurately load test** batteries used in military tactical & tracked vehicle fleets, as well as GenSets (TQGs). **Here's why**...most hand-held carbon pile load testers only apply about 75-125 amps....and that's not enough!! Per **US Army TB 9-6140-252-13**: If you are testing a battery with a CCA rating < 1000, you'll need a load tester that can apply 350 amps; **if you are testing a battery with a CCA rating > 1000 (like the Hawker® Armasafe Plus™) you'll need a load tester that can apply 550 amps!**

Did you know:

that SAE Terminal Conversion Kits are available for your Hawker® MILPC Group 31 battery (NSN: 6140-01-520-7112)? So you've tested the batteries in your Bradley or RG31 and they're no good...looks like it's time to replace them. But wait, the replacement Group 31 batteries you ordered have threaded studs instead of SAE terminals! **No problem.** An SAE Terminal Conversion Kit is all that's required! They can be ordered on **DD Form 1348-6 using CAGE Code 0WY95 & Part Number 3217-0049.** Also, suitable kits may be available at your local auto parts store.



Training:

Batteries cost money.

Wanna save money?

Recover batteries!!!

Call your **Hawker® FSR** for

FREE Battery Maintenance and Recovery Training (BMRT).

Check out our website at: www.hawkeraplus.com

Call us at 877-485-1472

Connect with us on:



Questions?

This newsletter brought to you by your Hawker® Battery Field Support Team and is NOT an official publication of the US Government.

Next Issue:
What can I use to neutralize spilled or leaking electrolyte?



NSN: 6140-01-485-1472
Part #: 9750N7025



HAWKER®

Headlines

Spring 2014 edition

Quick Tips!

Spring into action as the weather heats up...

Winter was exceptionally tough across the U.S., and that means your batteries, like you, were exposed to very cold temps. Now, with the temps heating up, **so too will your batteries CCAs**...so expect them to be higher. But, be cautious of the following effects:

- Increase in battery self-discharge rate
- Lower voltage
- Shortened life

To mitigate any undesired effects...monitor your batteries and keep them at a full state of charge! For a **Hawker® Armasafe Plus™**, that's **12.9V & 1225 CCAs** (minimum).



Answer to question from last issue:



Is a voltmeter or multi-meter sufficient to test and evaluate a battery? Well, yes & no! If battery voltage is less than the install spec...then you know you need to recharge. *But, what if the voltage is at or above the spec?* **Do you know if the battery actually has the necessary CCAs?** Uhm, you do not!!! You see, batteries can have voltage with no CCAs...but not the other way around. Therefore, a voltmeter or multi-meter is only a good "first check". If you have a **battery conductance analyzer** (image left)...you can **check both volts and CCAs...with one tool!!!**

Did you know:

There are U.S. Army charging procedures for your **Hawker® Armasafe Plus™** batteries?

Reference: U.S. Army
TB 9-6140-252-13

Characteristic	Single 12 volt battery	24 volt battery or 12 volt series	Buss Bar (12 volt batteries)
Type	Constant voltage output (constant current chargers not recommended)		
Connector	Alligator or NATO slave connector		
Min Voltage ²	NLT 14.4 VDC	NLT 28.8 VDC	NLT 14.7 VDC
Max Voltage ²	NMT 15.0 VDC	NMT 30.0 VDC	NMT 15.2 VDC
Min Amps	NLT 10 amps	NLT 5 amps per battery	NLT 10 amps per battery
Charge complete	amp meter at 1 amp or less for 3 hrs or more	1/2 amp per battery for 3 hrs or more (e.g., if 4 batteries, amp meter reading should be 2 amps or less)	amp meter at 1 amp or less for 3 hrs or more (e.g., if 12 batteries on a buss, amp meter reading should be 12 amps or less)

Training:



Tired of burning through batteries at the cyclic rate??? Call your **Hawker® FSR** for **free Battery Maintenance and Recovery Training (BMRT)**. It'll be the best call you make this spring!!!

Questions?

Check out our website at: www.hawkeraplus.com

Call us at 877-485-1472

Connect with us on:



Next Issue:
Is a load tester sufficient to test and evaluate a battery?



NSN: 6140-01-485-1472
Part #: 9750N7025



HAWKER®

Headlines

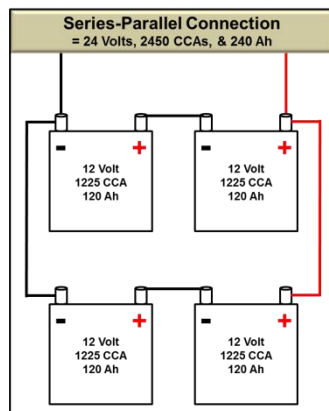
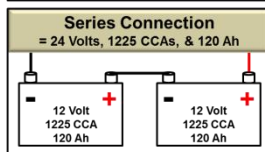
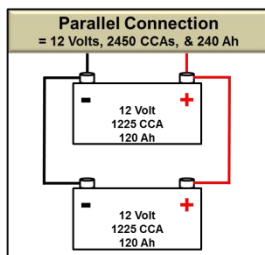
Winter 2014 edition

Quick Tips!

Basic battery configurations:

- Parallel (rare in the military fleet)
- Series (e.g., HMMWV, MTVR, TQGs)
- Series-Parallel (e.g., FMTV, LVS, HEMTT, PLS, HETS, M915, M916, ASV, MRAP, Stryker, LAV, M113)
 - Note: the M1A1/2 has 6 batteries in series-parallel & the M1A2 SEP has two sets of 6 batteries with each set in series-parallel

* Note: diagram voltages and CCAs are nominal



Answer to question from last issue:

Should I charge multiple batteries individually or together as a system? Multiple batteries can be charged as a system...that's how the vehicle's alternator or generator does it. However, if there are differences between each battery's voltage (by 1 or more volts) in the battery pack...they should be charged individually.

Did you know:

that there are many ways to identify the positive & negative terminals on a Hawker® Armasafe Plus™

6TAGM battery...even in low- or no-light situations?

- Out-of-the-box, the positive terminal has a red cap, the negative terminal has a black cap
- The top of each terminal is stamped with either "+" or "-"
- Beside each terminal, the plastic case is embossed with either "+" or "-"
- The positive terminal is larger in diameter
- The positive terminal has a round, red sticker that surrounds it
- The positive terminal side has raised ridges above Armasafe Plus™ sticker



Training:

Since last issue the WI ARNG, IA ARNG, TX ARNG, JTF-CS, Red River Army Depot, & MCB Camp Pendleton received **FREE** battery maintenance and recovery training (BMRT). Isn't it your turn???
Contact a Hawker® FSR today!



Questions?

Check out our website at: www.hawkeraplus.com

Call us at 877-485-1472

Connect with us on:



Next Issue:
Is a voltmeter or multi-meter sufficient to test and evaluate a battery?



NSN: 6140-01-485-1472
Part #: 9750N7025



HAWKER®

Headlines

Fall 2013 edition

Quick Tips!

Not all chargers are equal. While no specific brand of charger is required when charging a Hawker® battery, you must ensure that the charger is compatible with the AGM-style of lead-acid batteries. Under most circumstances, **if you are charging a single 12-volt battery** (or multiple batteries in a 12-volt parallel system) you must insure that the charger does not provide more than 15 volts. **If you are charging in a 24-volt series** (or 24-volt series-parallel system) the charger cannot provide more than 30 volts. Otherwise, you can overheat and potentially damage the battery. **Here's how to check** if your charger is safe to use...(1) connect the charger to the battery using the charger's alligator clamps, (2) turn on the charger, (3) make contact with the alligator clamps using a multimeter...so long as the charger's output voltage doesn't exceed **15 volts on the 12-volt setting** or **30 volts on the 24-volt setting**, you should be good-to-go. **Note:** many chargers have multiple settings (low, med, high)...you must test each setting you intend to use...after all, it's a different setting!

Answer to question from last issue:

Can I accurately test my Hawker® when its connected in series-parallel? No...because multimeters, load-testers, and conductance analyzers will read across the parallel connection. Therefore, you must **disconnect all parallel connections** to get an accurate measurement.

Did you know:



that there have been advances in battery management? I know you're not still using a pager or a pay phone...right??? Then why are you still charging batteries with 1990's technology? In the modern world, there are advanced diagnostic smart chargers on the market that not only outperform traditional chargers, but they incorporate battery testing, interactive digital displays, user-controllable settings, and thermal sensors at the battery clamps (to provide overcharge protection). And here's the best part...they're **1/2 the price (or even less)** than the primary old-style chargers found in most military motor pools. Want to know more... **contact your field support representative (FSR)**



Training:



Over the summer, DC ARNG, MD ARNG, UT ARNG, WA ARNG, MN ARNG, GA ARNG, Fort Stewart, Hunter AAF, Fort Hood & MCB Camp Pendleton got **free** battery maintenance and recovery training (BMRT). **Want yours...**contact a Hawker® FSR.

Questions?

Check out our website at: www.hawkeraplus.com

Call us at 877-485-1472

Connect with us on:



Next Issue:
Should I charge
multiple batteries
individually or
together as a system?



NSN: 6140-01-485-1472
Part #: 9750N7025



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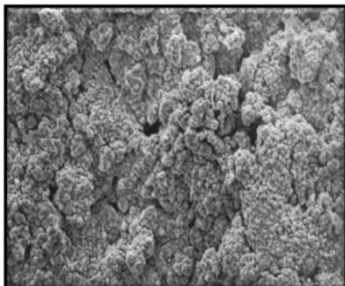
Headlines

Spring 2013 edition

Quick Tips!

Plate sulfation: As batteries drain, a natural chemical process takes place inside the battery where sulfuric acid releases from the liquid electrolyte mixture and then forms as a solid on the lead plates. **This plate sulfation adds resistance** within the battery. Resistance affects the batteries ability to release energy (power for your equipment) AND accept energy during recharge. The good news is that as you re-charge your battery, **plate sulfation is reversed!** **Keep your batteries fully charged to significantly prevent sulfation!!**

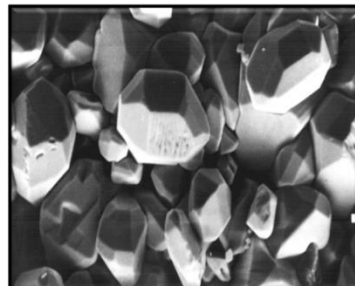
New plate



Partially sulfated plate



Deeply sulfated plate



Answer to question from last issue:

How does warm weather affect a battery? For every increase of 18° F, the battery self-discharge rate doubles! The standard 12-volt flooded battery self-discharges at about 3% capacity per month at 77° F (if left unused or if not placed on a "trickle" charger). The Hawker® Armasafe™ Plus 6TAGM battery self-discharges at a little less than 1% capacity under the same conditions. So...@ 95° F x 2, @ 113° F x 4, and at 131° F x 8!!! **Best bet:** Store your batteries in a ventilated area, check voltage and recharge more often, connect unused batteries to a trickle charger or simply use them routinely where they'll receive a charge via the vehicle's onboard generator/alternator.



Did you know: that the Hawker® Armasafe™ Plus is considered at a 100 percent state of charge when it's at 12.9 volts (open circuit voltage (OCV)) and a minimum of 1225 cold cranking amps (CCAs)?

Training:



Since the last issue, NM ARNG, ID ARNG, WY ARNG, OK ARNG, OH ARNG, MO ARNG, MCB 29 Palms, & MCB Camp Pendleton have gotten **battery smart**...and they are **saving batteries and \$\$\$!** **Wanna get battery smart???** ...request free diagnostic, preventive maintenance, and corrective maintenance training from a Hawker® FSR.

Check out our website at: www.hawkeraplus.com

Call us at 877-485-1472

Connect with us on:



Questions?

Next Issue:
Can I accurately test my Hawker® when its connected in series-parallel?



NSN: 6140-01-485-1472
Part #: 9750N7025



HAWKER®

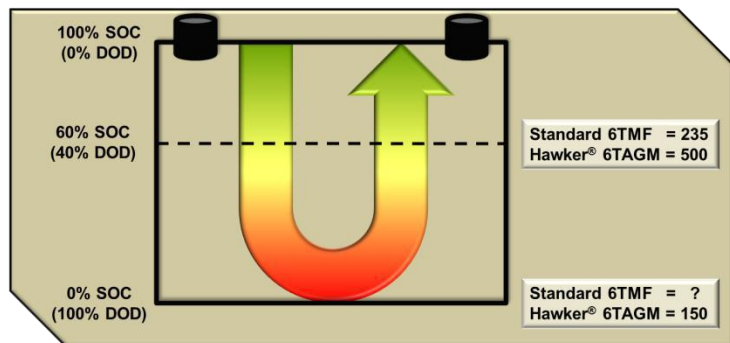
Headlines

Winter 2013 edition

Quick Tips!

Cycle Life affects battery life! So what's a cycle? One cycle of a battery = full charge down to full discharge then back to full charge. Fully cycling is something you probably do with your cell phone battery every day!

So, the CL is the total **number of cycles** a battery can perform before failure.



Answer to question from last issue:

How do I recover a deeply drained Hawker® battery?

- Rule #1** - Never let your battery drain past 11.5V (open circuit voltage)
- Rule #2** - Get it on a charger to prevent additional plate sulfation & to reverse the sulfation process.
 - ✓ Note: The charger should apply no more than 15 volts and no less than 10 amps to the battery.
- Rule #3** - If, after an initial charge, you have not reached install specs per TB 9-6140-252-13, drain some energy from the battery (using a carbon pile load tester, or a 12 volt accessory such as a vehicle lamp, etc.). Then, reconnect the battery to the charger.
 - ✓ Note: If after your second attempt you have added at least .2 (that's point 2) volts or more, keep going through the process...you just might be on your way to recovery!

Did you know: that Hawker® is more than just the 6TAGM Armasafe™ Plus battery?



Group 31: Forklifts, construction and auxiliary equipment.
NSN: 6140-01-520-7112

Group 78: OGPK
Part No: 0785-2026



Group 34/78: GenSets
Part No: 0785-2025

Training:



Are you throwing away good batteries??? Want to learn how to recover and maintain them? Here's how...request free diagnostic, preventive maintenance, and corrective maintenance training from a Hawker® FSR.

Questions?

Check out our website at: www.hawkeraplus.com

Call us at 877-485-1472

Connect with us on:



Next Issue:
How does warm weather affect my battery?



NSN: 6140-01-485-1472



HAWKER®

Headlines

Fall 2012 edition

Quick Tips!

Cycle Life affects battery life! So what's a cycle? It's when you take a fully charged battery, discharge it, then fully recharge it. The typical starting, lighting, and ignition (SLI) flooded battery is designed to accept 12.6 volts and is considered drained when it reaches a 40 percent depth of discharge...at that point its open circuit voltage is about 12 volts and typical 6TMF batteries can be recovered about 235 times. **Be careful** not to fall below that point though, because you might not be able to recover it! **The Hawker® Armasafe Plus 6TAGM battery** is about 12.3 volts at the same 40 percent depth of discharge but it is **able to be recovered about 500 times!!!** And, if you completely drain it (100 percent depth of discharge) an open circuit voltage battery test will read 11.5 volts or lower...you should still be able to recover it 150 times!!! Obviously, though, draining the battery to that low of a level affects battery life...so your best bet is to keep it charged and never let it fall below 12.3 volts. By the way, whenever you start your engine, your battery will exhibit a shallow cycle. What's a shallow cycle, you ask? It's when the battery is drained less than 5 percent of its capacity during the discharge. Not to worry, while your vehicle is running, the onboard alternator or generator replenishes the loss.

Do you know:

that Hawker® is more than just the 6TAGM Armasafe™ Plus battery? Interested in other Hawker® batteries for your tactical vehicles, construction equipment, auxiliary equipment, tactical quiet generators (TQG), ATVs, remote weapon stations, or objective gunner protection kit (OGPK)? Then visit us at www.hawkermilpc.com and see what solutions we can provide for you...or call one of our Hawker® Field Support Representatives!

Answer to question from last issue:

How do I recover a deeply drained Hawker® battery? Well, depending upon the age of the battery, as well as how long it's been left in a deeply discharged state...you just might be able to bring it back to life. You see, as batteries age...and as they drain...plate sulfation occurs naturally. Therefore, **rule number 1** – never let your battery drain past 11.5 volts (open circuit voltage). Too late???, then **rule number 2** – get it on a charger as quickly as possible to prevent additional plate sulfation and to reverse the sulfation process. The charger should apply no more than 15 volts and no less than 10 amps to the battery. If, after an initial charge, you have not reached install specs per TB 9-6140-252-13, then **rule number 3** - drain some energy from the battery (using a carbon pile load tester, or a 12 volt accessory such as a vehicle lamp, etc.). Then, reconnect the battery to the charger. While charging, it should continue to reverse the sulfation process and accept a greater charge. If after your second attempt you have added at least .2 (that's point 2) volts or more, keep going through the process...you just might be on your way to recovery! However, if you cannot get the battery to accept at least .2 volts, then the battery has lived its useful life. Remember, if a battery is left in a deeply drained state for too long, the plate sulfation reaches a point of no return...and its time to replace it with a new one. **So...keep your Hawker® batteries charged and prevent plate sulfation!**

Training:

HALT! Are you throwing away good batteries??? Want to learn how to recover and maintain them?

Here's how...request free diagnostic, preventive maintenance, and corrective maintenance training from a Hawker® FSR.

Questions?

Check out our website at: www.hawkeraplus.com

Call us at 877-485-1472

Connect with us on:



Next Issue:
How does cold weather affect my battery?



NSN: 6140-01-485-1472

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HAWKER®

Headlines

Summer 2012 edition

Quick Tips!

Corrosion on battery terminals can kill your lead-acid battery! As the name implies, "lead-acid" batteries contain acid...sulfuric acid, in fact. Mixed with distilled water, the solution is known as electrolyte. While the electrolyte is a necessary electrochemical component of the battery, it can be a catalyst for corrosion. *Here's how...* if a flooded battery is damaged by a crack in the case, then sulfuric acid can leak out...if a flooded or AGM (Hawker®) battery overheats, it can emit hydrogen gas through any cracks caused by damage or through the vent ports. When acid or hydrogen gas mixes with other contaminants (anti-freeze fumes, grease, oil, humidity, dirt, etc.) and oxygen, corrosion grows on the terminals. As **corrosion builds**, the metal on metal contact between the posts and the cables is reduced...thereby **adding resistance** (to either accepting or delivering energy). If unable to accept a charge, the battery will naturally self-discharge, the plates will sulfate, and the battery will die. In addition, if the corrosion grows to the point that it touches the battery box wall, you just may have created a parasitic energy drain. So to keep your batteries functioning properly...**KEEP THEM CLEAN**. The good news is that your **Hawker® batteries** (by design), when used in a vehicle with a properly tuned electrical system, **rarely vent...and rarely corrode!**

Did you know:

that Hawker® has joined the social media frenzy? Now there are 3 additional ways to connect with us:



Like us on: www.facebook.com/hawkerbatteries

Follow us on: <https://twitter.com/hawkerbatteries>

Join us on: www.linkedin.com/pub/hawker-batteries/54/713/6aa

Answer to question from last issue:

What type of testing equipment can I use to test my Hawker®? In most military maintenance shops, there are usually one or more of the four following testers...the voltmeter or multimeter, a duo-check, the load tester, and/or a battery conductance analyzer. While the **voltmeter/multimeter** is a good first check, it only identifies half the required info...voltage. However, it's possible to have proper voltage, but very low cold cranking amps (CCAs). The **duo-check** reports the specific gravity of the electrolyte mixture, but since Hawker® batteries are sealed, this tester can't be used. In order to properly **load test** the Hawker® you should have a tester that applies at least half the rated CCAs of the battery...for the Armasafe™ Plus it should apply 600 CCAs (however, **US Army TB 9-6140-252-13** allows the use of a load tester with a load rating of 550 CCAs). Lastly, welcome to the 21st century, a **battery conductance analyzer** not only tests the voltage, but also provides a relatively accurate measure of the battery's CCAs...without having to mess with hazardous electrolyte or without draining the battery. *Remember, though*, in order to test a single battery, with either a voltmeter, load tester, or battery conductance analyzer, you **MUST break all parallel connections to isolate the battery**...otherwise, you'll be testing more than one battery and may get a false reading!

Training:

As military maintenance budgets shrink, and you're being asked to do more with less...many active duty, guard, and reserve units are contacting us to help **increase battery life** and reduce premature disposal of batteries. *Been thinking the same thing?*

Wait no more, contact us by phone, on our website, or one of the social media sites and we'll work with you to schedule **free Battery Maintenance and Recovery Training (BMRT)**.

Questions? Visit us at...www.hawkeraplus.com
Call us at...877.485.1472

This newsletter brought to you by your Hawker® Battery Field Support Team and is NOT an official publication of the US Government.

Next Issue:
How do I recover a deeply drained Hawker® battery?



NSN: 6140-01-485-1472



HAWKER®

Headlines

Spring 2012 edition

Quick Tips!

Prevent energy loss and plate sulfation. Batteries in storage...or batteries in a vehicle (that typically sits in the motor pool more often than not) lose energy. During self-discharge there is a natural chemical process that creates sulfate crystals on the lead battery plates. As you know, plate sulfation reduces a batteries ability to release or accept energy. The good news is that plate sulfation can be prevented and in many cases removed. However, severely drained and sulfated batteries will reach a point of no return. **How to prevent energy loss and sulfation...**use an AC or solar type float/trickle/preventive maintenance charger. Remember, though, a trickle/float/preventive maintenance charger is designed basically to maintain a battery at its current voltage and amperage. If a battery is even partially drained, it should receive a full charge using a corrective maintenance charger, then connect it to a trickle/float/preventive maintenance charger (unless your charger has the capability of doing both).

Do you know:

that Hawker® makes a Group 78 battery for use in tactical vehicle Objective Gunner Protection Kits (OGPK)? It's called the MIL PC G78 and it packs a minimum of 880 CCAs and 135 minutes of reserve capacity...that's **80 more CCAs** and **35 more minutes** of reserve capacity more than the battery originally installed. Oh, and it's made right here in the USA.



Interested in another source of supply for your Group 78 needs...as well as the power and quality you expect from a Hawker® AGM battery? Good news...while we're working to get an NSN assigned, the battery can still be ordered by it's part number: 0785-2040 (CAGE code: OWY95).

Answer to question from last issue:

How do I properly store my Hawker® battery? Battery damage from improper storage and handling is one of the leading causes of premature battery failure. All too often, unused batteries are stored one atop the other...in many cases, without the protective shipping box. Did you know that each Hawker® Armasafe Plus™ weighs 88lbs! If you set one battery atop another, without protecting the terminals, time and gravity can damage the terminals, casing, and the plates of the batteries. So, here's what we recommend: (1) never stack batteries more that two high, (2) place nonconductive supporting and separating material between the upper and lower batteries (ideally, place them back in their original shipping box), and (3) store them in a climate controlled environment between 33°-77° F.

Thank-you:

For the third year in a row, EnerSys® (Hawker®) has been recognized by the US Government for maintaining high performance and delivery standards. EnerSys® received the **Silver Award** for maintaining a 'Quality and Delivery' rating of 99.0% to 99.9% in 2011 in support of Defense Logistics Agency (DLA) Land and Maritime. We are quite humbled...and are very honored to be able to serve our men and women in uniform.

Training:

Want to save your unit money? Request a free diagnostic, preventive maintenance, and corrective maintenance training visit from a Hawker® FSR. It costs you nothing, but has the potential to save you big! Contact us...and we'll schedule it together.

Questions?

Check out our website at: www.hawkeraplus.com
or call us at 877-485-1472

This newsletter brought to you by your Hawker® Battery Field Support Team and is NOT an official publication of the US Government.

Next Issue:
What type of testing equipment can I use to test my Hawker®?



NSN: 6140-01-485-1472



HAWKER®

Headlines

Winter 2012 edition

Quick Tips!

Mixing old and new batteries in the same battery pack can affect battery performance and battery life. For peak performance and maximum battery life, a simple guide is to ensure that all batteries within the battery pack were manufactured within the same year (or at least put into service within the same year). Here's why...as batteries age, lead plates can deteriorate and they can develop hardened sulfate crystals on them. These two factors affect a battery's ability to accept, store, and release energy. So, if you mix new batteries with old batteries you will most likely not get the full power you need. Additionally, older batteries will have higher resistance (due to plate sulfation) which will affect charging. By mixing old and new batteries, your battery pack will most likely fall out of balance and remain that way...thereby reducing battery pack performance and individual battery life.

Do you know:

that Hawker® makes a Group 31 battery that's used in many different types of military construction equipment and tactical trucks? It's called the MIL PC 2150 and it packs a minimum of 1150 CCAs and 205 minutes of reserve capacity...that's **225 more CCAs** and **25 more minutes** of reserve capacity than it's chief competitor!



Interested in another source of supply for your Group 31 needs...as well as the power and quality you expect from a Hawker® AGM battery? Good news...it's available via NSN 6140-01-520-7112.

Answer to question from last issue:

Why you shouldn't mix different battery types...or batteries from different manufacturers in the same battery pack:

By now, everyone knows not to mix 6TL with 6TMF batteries...or 6TMF batteries with 6TAGM batteries. But why? Although somewhat similar in basic materials...such as lead, sulfuric acid, distilled water, and plastic...they are not exactly alike in electrochemical designs or properties. In fact, **not all 6TAGMs are alike**...which is why we highly recommend that 6TAGMs from different manufacturers not be mixed in the same battery pack...in fact, it can void your warranty! Some batteries use lead-alloy plates (lead mixed with calcium or antimony, for example); but, Hawker plates are 99.99% pure lead. As such, 6TAGMs from different manufacturers may have different rates of charge and discharge...as well as shelf life. These differences may degrade individual battery performance and life. **Your safe bet**...do not mix different chemistry batteries or batteries from different manufacturers.

Training:

Attention: Logistics Assistance Reps, Supervisory Equipment Specialists, Maintenance Officers, Shop Chiefs, Mechanics, and HazMat personnel - **want to save money on man-hours and batteries?**

Here's how...request free diagnostic, preventive maintenance, and corrective maintenance training from a Hawker® FSR.

Questions?

Check out our website at: www.hawkeraplus.com
or call us at 877-485-1472

Next Issue:
How do I properly
store my Hawker
battery?



NSN: 6140-01-485-1472



HAWKER®

Headlines

Fall 2011 edition

Quick Tips!

Self-discharge degrades available battery power. Have you ever just laid on the couch all day...watching TV? Were you tired by bedtime? Uh, why...you didn't do anything??? True, but your body was still using/losing energy. Guess what...your battery just sitting there on the shelf or in your parked vehicle is losing energy too!!! It's called battery self-discharge. In fact, the average flooded-cell 6TMF battery loses about 3 percent of its capacity per month! Meanwhile, your Hawker® Armasafe Plus™ 6TAGM is losing less than 1 percent...but, in both cases...they are still losing energy. So, to keep your batteries in top condition, **try these tips:** (1) for batteries in vehicles, ensure each vehicle is operated continuously for at least 1 hour per month or (2) connect the batteries to a charger until they are topped off...and for batteries just sitting on the shelf in your battery room, we recommend connecting them to a trickle/float charger until they're needed. Following this tip will help you to reduce plate sulfation (see below) and keep your batteries in peak condition.

Do you know:

that Hawker® makes an alternative to the spiral-wound Group 34 battery that's used in many GenSets (TQGs) as well as in the M-ATV? It's called the MIL PC 1500 and it packs a minimum of 880 CCAs and 135 minutes of reserve capacity...that's **80 more CCAs** and **35 more minutes** of reserve capacity than the red or blue top spiral-wound batteries...and **130 more CCAs** than the yellow top!



Interested in another source of supply for your Group 34 needs...as well as the power and quality you expect from a Hawker® AGM battery? Good news...while we're working to get an NSN assigned, the battery can still be ordered by its part number: 0785-2025

Answer to question from last issue:

Why does lead-acid battery plates sulfate? Basically, as a lead-acid battery uses/loses its stored energy, a chemical reaction takes place between the lead plates and the sulfuric acid in the electrolyte. During this reaction, it creates lead sulfate crystals on the plates...and the longer the battery remains discharged, the worse the condition becomes...until finally, the plates are completely coated in lead sulfate (which insulates the plates). Plate sulfation increases internal resistance, thereby reducing a batteries ability to accept/or release a charge. This "kills" batteries. **Here's what you can do about it:** routinely test your batteries and keep them fully charged...you'll extend your batteries life and reduce man-hours spent replacing them!

Training:

Want to know a secret? Some active, guard, and reserve units get full life out of their batteries! **Here's why...**Because they received free diagnostic, preventive maintenance, and corrective maintenance training from a Hawker® FSR. **Want to get that free training?** Contact us...and we'll schedule it together.

Questions?

Check out our website at: www.hawkeraplus.com
or call us at 877-485-1472

Next Issue:
Why you shouldn't
mix different
batteries in the same
battery pack.



NSN: 6140-01-485-1472



HAWKER®

Headlines

Summer 2011 edition

Quick Tips!

Insufficient run time degrades battery life. Think of batteries in banking terms, your battery is like your checking account. Every time you start a vehicle, energy stored in your Hawker® Armasafe™ Plus battery is used to power the vehicle's starter....that's like making a withdrawal. In order to insure your vehicle starts each and every time...and to keep the battery in optimal condition...that energy must be replaced....or in the case of your checking account, you must redeposit money before you can withdraw more. That's the main reason why your vehicle has an alternator or generator (or in the case of your checking account, Direct Deposit)...to put energy back into the battery! However, replenishing that energy is not instantaneous...it takes a little bit of time (just like you working for your paycheck), that's why it's recommended that every time you start a vehicle, you should let it run for at least 20 minutes...so the alternator or generator can do it's job. Following this Quick Tip could save you from frustration....and a trip to your unit's battery room.

Do you know:

that lead-acid batteries can be charged in wide variety of ambient temperatures, but that the optimal charging temperature is between 68° F - 86° F (20° C - 30° C).

that the shelf life of the Hawker® battery is 30 months! That means that a fully charged battery can maintain its charge for 2 ½ years when stored at around 77° F. Note that we still recommended you check the battery's Open Circuit Voltage (OCV) at least annually. If it has fallen below 12.85 Volts, simply top it off so it's always ready for installation! Also, to protect the battery's terminals from potential damage during storage, never stack more than one battery atop another...and only if they are in the original packaging.

that the self discharge rate of the Hawker® battery is less than 1% per month when stored at 77° F or lower! But, as temperatures begin to rise, the self discharge rate for all lead-acid batteries increases...in fact, for every increase of 48° F, it doubles. So keep your stored batteries in a temperature controlled environment and they'll last you longer.

Answer to question from last issue:

Why does the Hawker® battery have more cold cranking amps (CCAs) than other 6T-sized batteries? The standard "wet cell" or "flooded" battery has 750 CCAs, other Absorbed Glass Mat (AGM) batteries claim 1100 CCAs, but the Hawker® Armasafe™ Plus battery has 1225 CCAs. As you know from the last edition of Hawker® Headlines, the Hawker® battery is heavier because it has more lead. But, don't stop the presses yet...there's more! Part of the technology in the Hawker® battery is "thin-plate pure-lead" or TPPL...and those plates are made from 99.99% pure lead...unlike other batteries that have recycled lead and other impurities in the plates.

So, more lead + TPPL = more CCAs...in the same battery space!

Training:

What's your lead-acid battery recharge success rate? A number of active, guard, and reserve units have recharge rates in excess of 75%! **Want to know why?** Because they received free diagnostic, preventive maintenance, and corrective maintenance training from a Hawker® FSR.

Want to know how? Contact us, it's that simple.

Questions?

Check out our website at: www.hawkeraplus.com
or call us at 877-485-1472

Next Issue:
Why lead-acid battery plates sulfate. And, what you can do about it.



NSN: 6140-01-485-1472



HAWKER®

Headlines

Spring 2011 edition

Quick Tips!

Insufficient run time degrades battery life. Think of batteries in banking terms, your battery is like your checking account. Every time you start a vehicle, energy stored in your Hawker® Armasafe™ Plus battery is used to power the vehicle's starter....that's like making a withdrawal. In order to insure your vehicle starts each and every time...and to keep the battery in optimal condition...that energy must be replaced....or in the case of your checking account, you must redeposit money before you can withdraw more. That's the main reason why your vehicle has an alternator or generator (or in the case of your checking account, Direct Deposit)...to put energy back into the battery! However, replenishing that energy is not instantaneous...it takes a little bit of time (just like you working for your paycheck), that's why it's recommended that every time you start a vehicle, you should let it run for at least 20 minutes...so the alternator or generator can do it's job. Following this Quick Tip could save you from frustration....and a trip to your unit's battery room.

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Questions?

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Next Issue:
Why lead-acid battery
plates sulfate. And,
what you can do
about it.



NSN: 6140-01-485-1472



Headlines

Fall 2010 edition

Quick Tips!

Cold affects your battery!!! Electrical current is produced by a battery when a connection is made between the positive and negative terminals. When connected, an internal chemical reaction generates electrons to supply the current to your vehicle's electrical devices. Lower temperatures cause that chemical reaction to slow. The Hawker® battery is MIL-PRF tested to operate from -40° F (-40° C) up to 176° F (80° C). Even at 0° F (-18° C) the Hawker® can provide over 1225 Cold Cranking Amps (CCAs). However, at -40° you'll have about 600 CCAs. So, to keep your Hawker® batteries operating at their peak performance, always keep them fully charged at or above 12.85V and protect them from temperatures below -40°.

Do you know:

that an alternator is a variable speed, variable load, battery charging system and that output voltage varies in proportion to the alternator's revolutions per minute (RPM). So then, how does the alternator act as a constant voltage charging system? Answer: through the use of a solid state voltage regulator. In most cases, the voltage regulator is attached directly to the outside housing of the alternator. Additionally, certain voltage regulators manufactured for use on military vehicles have a selector switch on them where the mechanic selects the appropriate setting between a 6TMF battery or a Hawker® 6TAGM battery. **Unsure if you have a switchable voltage regulator?** Check the data plate on the regulator (e.g., it may state "BATT SEL") or contact the alternator OEM.

Answer to question from last issue:

Why the Hawker® battery weighs so much...in this corner you have the standard 6TMF "flooded cell" battery weighing in at 73 lbs wet....and in the other corner you have the Hawker® 6TAGM weighing in at 88 lbs! Let's get ready to....? No, it's not a fight, it's simply the technology. Standard 6TMF batteries must allow for spacing between the negative and positive plates for the liquid electrolyte. The Hawker® 6TAGM battery does not since the electrolyte is absorbed in glass-mat technology that is placed between the plates. The lead plates and the AGM material are compressed together and placed in each of the six cells in the battery. Due to this compression, the Hawker® contains more plates, therefore more material, and viola...more weight! More weight = more power!

Training:

Studies show that 75% of all Hawker® batteries red tagged for disposal are still serviceable and some have years of life remaining. So, why train the troops to shoot, move, and communicate but not recharge a battery? **In FY10**, the Hawker® FSR team trained over 200 units/motor pools at NO COST. Why wasn't yours one of them? **Interested?** Contact us, it's that simple.

Questions?

Check out our website at: www.hawkeraplus.com
or call us at 877-485-1472

Next Issue:
Why the Hawker® battery has more CCAs than a 6TMF battery.



NSN: 6140-01-485-1472

Quick Tips!

Heat affects battery life!!! Batteries self-discharge faster at higher temperatures. Lifespan can also be reduced at higher temperatures - most manufacturers state this as a 50% loss in life for every 15°F over 77° cell temperature. Lifespan is increased at the same rate if below 77°F, but capacity is reduced. This tends to even out in most systems - they will spend part of their life at higher temperatures, and part at lower. **So keep batteries protected when possible, shield from direct sunlight, allow for air circulation and check the voltage frequently.** Keep your Hawker batteries fully charged at or above 12.85V year round for best results.

Do you know HOW TO GET THE MOST OUT OF YOUR HAWKER® Batteries ?

We offer NO COST battery maintenance training at your location.

Topics include: causes of premature failure, battery preventive and corrective maintenance, testing and charging in and out of the platform. **Interested...**contact us at 877-485-1472 or send us a feedback form (go to the contact section) of www.hawkeraplus.com to coordinate. Stop disposing of batteries and start recovering them for re-use.

Need generator batteries? www.hawkermilpc.com



Hawker® **MIL PC 1500** (Part No. 0785-2025)

Specs: 12v, 880 CCAs, 135 min reserve capacity, Group 34 battery size. *We're working hard to get an NSN assigned. Until then, you can obtain through local purchase method. Call the Defense Logistics Information Service (DLIS), a DLA agency, at (877) 352-2255 or DSN 661-7766 (or email dlacontactcenter@dla.mil) and tell them you want the MIL PC 1500 available via NSN.*



Hawker® **MIL PC 2150** (Part No. 0790-2010; NSN: 6140-01-520-7112)

Specs: 12V, 1150 CCA, 205min reserve capacity, Group 31 battery size

Generator Size	Generator Model	Battery	NSN
10kW	803A/813A	MIL PC 1500 Group 34	Pending
15kW	804A/814A	MIL PC 1500 Group 34	Pending
30kW	805A/815A/815B	MIL PC 1500 Group 34	Pending
60kW	806A&B/816A&B	MIL PC 1500 Group 34	Pending
100kW	807A (100kW)	MIL PC 2150 Group 31	6140015207112
200kW	809A (200kW)	MIL PC 2150 Group 31	6140015207112

Questions?



NSN: 6140-01-485-1472

Check out our website at: www.hawkeraplus.com
or call us at 877-485-1472

Next Issue:
Why the
Hawker®
battery weighs
so much...

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