# GNJMA Presentation

August 12, 2020

MCI Reliability DRIVEN™

# Outline

- Market and Company Overview
- Support and Coach Maintenance
- Clean and Protect Product Offerings

# Significant Actions Since COVID

- Consistent communication and COVID homepage info
- Regular customer newsletters
- Social media postings to support associations
- Resources on:
  - Parked vehicles, Cleaning & Disinfecting, Project Product
  - Customer tools and checklists
- Webinars for groups and individual companies
- Warranty extensions
- Increase focus on training and MCI Academy
- Participate in lobbying and customer relief efforts
- Sales & support team direct contact

**Whatever it takes to help customers get to the other side of COVID**

# MCI Resources @ www.MCICoach.com


**TOOLS AND SUPPORT:**

**Table of Contents**



**Guides and Downloadable Resourses.**

# MCI Resources @ www.MCICoach.com


## MCI Clean and Protect Product Guides

### NFI Parts

Below you will find a variety of resources for NFI Parts, including our white paper on the best practices as the industry restarts/ramps up business. For more information, contact your Regional Parts Manager, Customer Service Rep. or email us partsinfo@nfi.parts

- **White Paper - Safety of Bus and Coach Transportation** PDF
- **CDC Public Health Considerations for Reopening Mass Transit During the COVID-19 Pandemic** PDF
- **Clean and Protect Product Guide** PDF | Website

nfi.parts

### Your Extreme Clean Commitment Toolkit

To help motor coach operators share their enhanced cleaning practices with clients, passengers and the media, MCI has created the Extreme Clean Commitment Toolkit to share information on your enhanced cleaning procedures, products and equipment that will optimize passenger and driver protection in the coming months.

- **MCI Academy Cleaning & Disinfecting Slides** 07/20 PDF | 06/25 PDF | 06/02 PDF
- **Motor Coach Disinfecting Protocol checklist** PDF | Excel | Images
- **A checklist communicating your cleaning practices to share with customers** PDF | Word | Additional Options
- **A sample customer e-blast summarizing enhanced cleaning practices** PDF | Word
- **A sample press release to promote those practices with local media or on social media** PDF | Word
- **Download all files** ZIP Folder

**Webinars, Checklists and Customizable Tools**

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# MCI Resources @ www.MCICoach.com

## Cleaning & Disinfecting Resources

| Coach Disinfecting Protocol | | | | |
|---|---|---|---|---|
| Version 1.0 May 22, 2020 | | | | |
| **Item** | **Schedule A** | **Schedule B** | **Schedule C** | **Notes/Responsibility** |
| **Coach movement scenarios and recommended disinfecting schedules** | | | | |
| General home facility lot movements - no customers on board | ✓ | optional | optional | Maintenance personnel |
| Before each trip - home facility | | ✓ | optional | Driver or Maintenance personnel |
| During trips - idle times with no customers on board | | ✓ | | Driver |
| End of the day - home facility | | | ✓ | Maintenance personnel |
| Before each trip - away from home home facility | | ✓ | | Driver |
| End of the day - away from home facility | | ✓ | | Driver |
| | | | | |
| **Item** | **Schedule A** | **Schedule B** | **Schedule C** | **Notes/Responsibility** |
| **Checklist before boarding a coach - Utilize a "Clean-In / Clean-Out" philosophy** | | | | |
| Are the latest company and regulatory agency guidelines being followed? | ✓ | ✓ | ✓ | CDC, Health Canada, WHO, state/ provincial & federal goverments |
| Have hands been washed thoroughly? | ✓ | ✓ | ✓ | Always wash hands before entering and after exiting a coach |
| Have garbage containers been emptied and other items removed as necessary? | optional | ✓ | ✓ | |
| Has the coach interior been cleaned? | optional | ✓ | ✓ | Disinfecting is only effective on clean surfaces. |
| Are all the required cleaning and/or disinfecting materials on-hand (soap & water/ disinfectant/ rags/ mop/ bucket)? | ✓ | ✓ | ✓ | Never dry sweep a coach. |
| Confirm if disinfecting will be completed by hand or by fogging. If fogging, is a machine available? | Hand wiping | ✓ | ✓ | Fogging process is recommended for all Schedule C disinfecting |
| Confirm contact time of any disinfectant used. | ✓ | ✓ | ✓ | Ensure that minimum contact time is met - leave surfaces "wet" |
| Is all required PPE on hand (safety glasses, respirator, mask, gloves)? | ✓ | ✓ | ✓ | Confirm proper PPE is being used for the specific disinfectant |
| **Stepwell Area - Focus on high touch surfaces, grab rails must be disinfected all around** | | | | |
| Entrance door switch pad | ✓ | ✓ | ✓ | |
| Entrance door grab rail | ✓ | ✓ | ✓ | Clean all around |
| LH stepwell grab rail | ✓ | ✓ | ✓ | Clean all around |
| RH stepwell grab rail | ✓ | ✓ | ✓ | Clean all around |
| Entrance door key(s) | optional | ✓ | ✓ | |
| Lock/unlock pin | optional | optional | ✓ | |
| Stepwell flooring | optional | optional | ✓ | |
| **Driver's area - Focus on high touch surfaces, steering wheel, switches, controls** | | | | |
| Steering wheel & switches | ✓ | ✓ | ✓ | |
| RH switch panel switches | ✓ | ✓ | ✓ | |


**Resources on maintaining, cleaning and disinfecting are /will be accessible from MCI's home page.**

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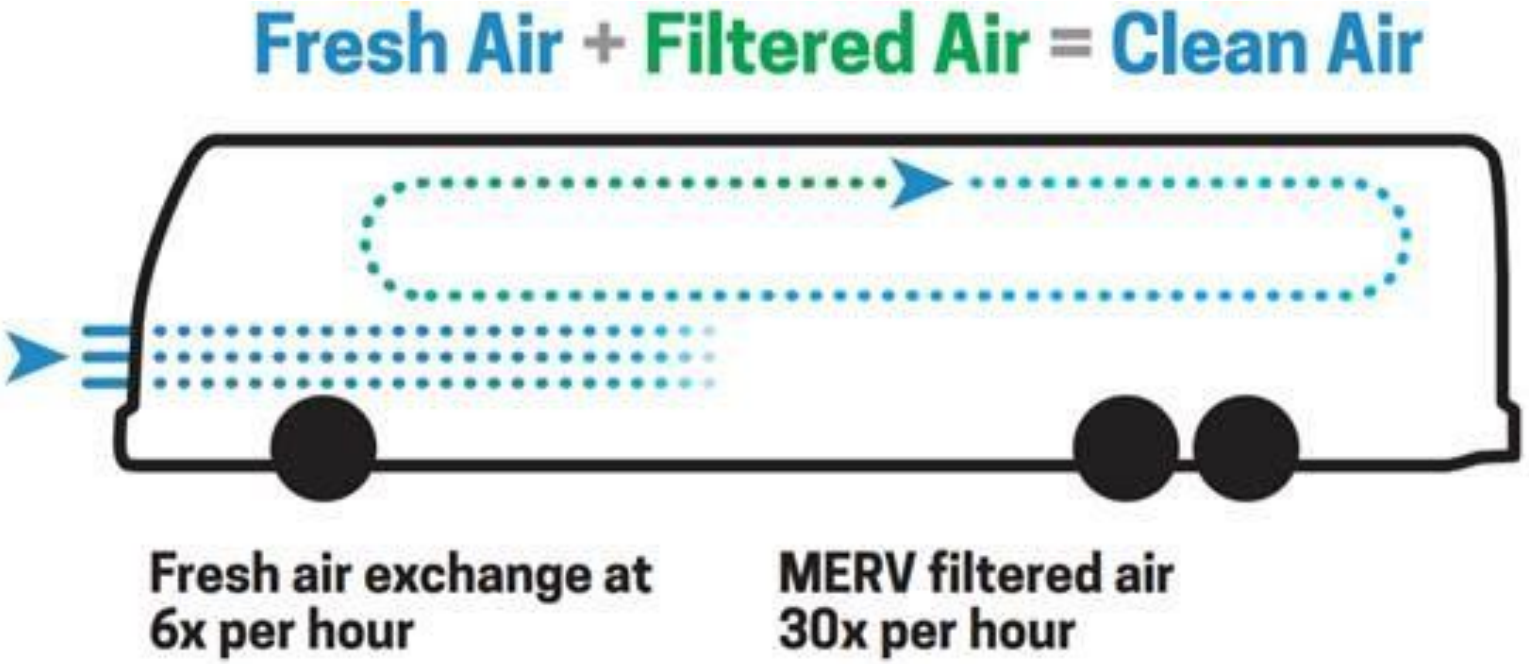
# J-Coach HVAC System InfoGraphic




Available for customer use on our toolkit

# FAQ

**What disinfectant should I use: (See prior webinar for details)**

- Preferred: L-Lactic Acid, Hypochlorous Acid
- Avoid: Bleach or Ammonia

**Can you provide an overview of the HVAC system and filtration?**

- Generally the virus spreads person to person through respiratory droplets at close contact (within 6') or by touching surfaces which have been contaminated by droplets
- Respiratory droplets are heavy and will fall to the floor after being expelled due to gravity. NOT Airborne, floating through HVAC systems
- Droplets are also quite large in diameter, which means will be captured at a high % by standard MERV 5 or higher HVAC filter media (MCI = min MERV 5)
    - Change filters every 3 months as a rule of thumb
- The fresh air inside an MCI motorcoach is replaced every 10 minutes (6 times each hour)
- Is filtered approximately every 2 minutes. (30 x per hour)
- The HVAC system automatically optimizes fresh air

**What are the top ways to prevent the transmission of the virus?**

- 1. Physical distancing, including the use of masks
- 2. Regularly cleaning and disinfecting surfaces

# FAQ

**What products are people adding to their coaches/fleets:**

- Disinfecting fogger
- Driver barriers, especially in scheduled service
- Upgraded MERV filters specifically with anti-microbial coating.
  - We are NOT offering MERV 13 due to reduction in HVAC performance.
- UV-C anti-microbial lighting system in HVAC

**Have you explored other solutions?**

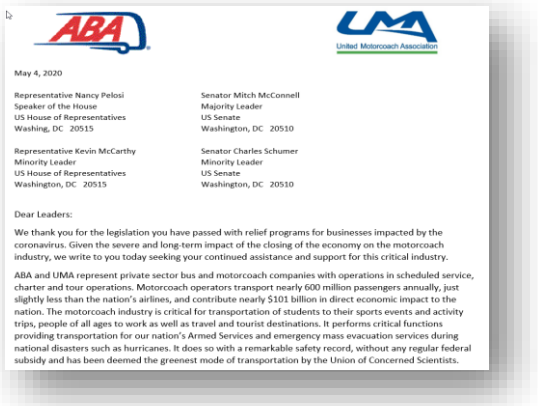
- Continuous systems: Photo Catalytic Oxidation (PCO) Hydrogen Peroxide – also UV + Catalyst.
- FAR-UV

(Industry risk if determined airborne vs. droplet)

**Are we being heard on the Hill?**

- CERTS act is a direct result of our congressional outreach

# Activity on the Hill



ABA — UMA United Motorcoach Association

May 4, 2020

Representative Nancy Pelosi
Speaker of the House
US House of Representatives
Washing, DC 20515

Senator Mitch McConnell
Majority Leader
US Senate
Washington, DC 20510

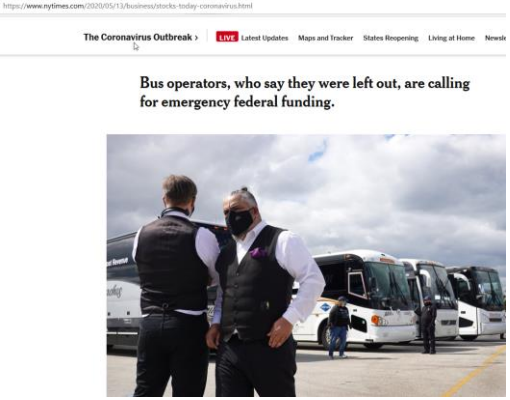
Representative Kevin McCarthy
Minority Leader
US House of Representatives
Washington, DC 20515

Senator Charles Schumer
Minority Leader
US Senate
Washington, DC 20510

Dear Leaders:

We thank you for the legislation you have passed with relief programs for businesses impacted by the coronavirus. Given the severe and long-term impact of the closing of the economy on the motorcoach industry, we write to you today seeking your continued assistance and support for this critical industry.

ABA and UMA represent private sector bus and motorcoach companies with operations in scheduled service, charter and tour operations. Motorcoach operators transport nearly 600 million passengers annually, just slightly less than the nation's airlines, and contribute nearly $101 billion in direct economic impact to the nation. The motorcoach industry is critical for transportation of students to their sports events and activity trips, people of all ages to work as well as travel and tourist destinations. It performs critical functions providing transportation for our nation's Armed Services and emergency mass evacuation services during national disasters such as hurricanes. It does so with a remarkable safety record, without any regular federal subsidy and has been deemed the greenest mode of transportation by the Union of Concerned Scientists.

https://www.nytimes.com/2020/05/13/business/stocks-today-coronavirus.html

The Coronavirus Outbreak › LIVE Latest Updates Maps and Tracker States Reopening Living at Home

**Bus operators, who say they were left out, are calling for emergency federal funding.**



## Communication of our needs

- Thousands of letters and meetings by operators.,
- MCI sent over 500 letters and had 20 meetings with legislators in business locations and congressional committees.
- 18 advocacy (lobbying firms) providing guidance to the associations.
- Coordinated media campaign for the DC rally.
- Continued correspondence with DC media outlets.

## The ask of Congress is unified and is being heard:

- Senator Jack Reed (D-Rhode Island) and Senator Susan Collins (R-Maine) introduced the Coronavirus Economic Relief for Transportation Services (CERTS) Act.
- CERTS Act provides $10 billion in relief to coach operators, school bus operators, and passenger vessels; no less than 50% in the form of grants.
- Successfully advocated for legislation (now law) that amends the Paycheck Protection Program to increase the covered period and allow for additional non-payroll expenses to be eligible (24 weeks or year end usage and 60% to payroll).
- Every meeting we've had indicates the message of the industry is being heard and understood.

## What's next?

- The House (Democrat) passed its latest COVID-19 relief package, the HEROES Act, on May 15th.
- Senate (Republicans) introduced the Health, Economic Assistance, Liability, and Schools (HEALS) Act on Monday, July 27th. CERTS Act not currently included.
- Continued negotiations with White House, Senate and House leaders to finalize a relief package.
- Continue outreach to congressional offices and committees to push for CERTS Act inclusion in the final relief package.
- Monitor and advocate on COVID-19 relief package developments as the House and Senate deliberates in August – continue outreach.

# Pre Owned Coach Trends

- Market only active at low values.
- Average ASP$ of retail units since COVID is $28,000.
- Only 4 units sold over $50,000 to operators.
- Approximately 25% of Low Blue Book
- Cash deals, as lending tightens.  Only one customer has delivered with financing pre-approved and strong business case.

| Row Labels | Sum of Invoice Price | Count of UNIT | Average of Invoice Price2 | Average of Net Book Value |
|---|---|---|---|---|
| Operator PRE COVID Deal | $510,000 | 3 | $170,000 | $222,358 |
| Operator | $921,623 | 32 | $28,801 | $68,529 |
| Dealer/Operator | $87,000 | 3 | $29,000 | $83,239 |
| Scrap | $53,782 | 27 | $1,992 | $25,236 |
| **Grand Total** | **$1,572,405** | **65** | **$24,191** | **$67,338** |
| | | | | |
| Note: | | | | |
| Since COVID, sold 40 "Retail" units at average of $29K, Plan was 130 units at $114K per units | | | | |
| Units selling for 25% LBB | | | | |

# Finance Company Status

- Out of the 20 lenders utilized in 2019, all but 3 (TIAA. Access, ENGS) have stated that they remain committed to the market.  TIAA had pulled back prior to COVID.

- Lenders are in the second round of payment modifications (July-Sept), and based on market conditions, they are preparing for a 3rd round, possibly more.

- Most understand that working with the operator is their best option, not repossessing coaches.  Expense to repo, expense to store/maintain, disposition uncertainty.

- Largest sources (Wells, TCF, Key, Customers, Midland) are only considering new financing if:
    - Customers are operating at 75% of pre-COVID revenue
    - A contract or fix stream of revenue is supporting the purchase
    - The customer has historically been a strong operator

- Sources with smaller portfolios of coaches are a bit more willing to consider new deals.

- What operators need to do to get continued support from lenders:
    - Be proactive and transparent with information
    - Complete the lender required information on a timely basis
    - Keep physical damage insurance  (comprehensive) on the coach

# Organizational Update

- Most recent combination with New Flyer (from Sister Companies) to a unified company with 2 Brands.
  - Before: 2 companies, 2 Brands
  - Now: 1 Company, 2 Brands MCI & New Flyer

- Goal to keep our face to the customer familiar
  - Sales – Pat Ziska & team
  - Support – Steve Batho and field technical solution team.
  - Technical support and ERSA
  - Parts – Scott Robertson, Tim Barnes and team

- Leverage and build on the New Flyer resources.

# MCI Model Range

## MCI J-Series

- J4500 & J3500
- 35’ & 45’
- # 1 Selling coach
- Common application for tour, charter and employee shuttle

100% Electric CHARGE 2020/1

## MCI D-Series

- D4500 & D4000 Commuter, D4505 and D4005, and D4000 ISTV
- Available in 40’ & 45’
- All-time best-selling coach model and #2 currently
- Common application for public sector commuter transit agencies and large private scheduled service operations

CNG

## Next Generation MCI D45 CRT LE

- Current line D45 CRT LE
- 45’ model featuring an innovative Low Entry (LE) vestibule with a ramp
- First model in our next generation of D-Series coaches
- Available in 40’ & 45’
- Commuter transit and employee transportation

100% Electric CHARGE 2021/22

Integrated with MCI Connect Telematics

Leadership in ADAS (Advanced Driver Assistance Systems)

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# Next Generation D Coach: D4520

Rational:

- D45 CRT LE – Innovation for transit
- Common production line, engineering and vehicle systems
- Operator benefits
- Modernization


# *Service, Support and Maintenance*

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# Customer Care

**Steve Batho – Director Customer Service – steve.batho@mcicoach.com**

- **Continuing 24/7 Technical Call Support**
  - ERSA & Technical Call Centers Remain Open – **800-241-2947**
- **TSM – Technical Solution Regional Managers**
  - Dave Mailhot – National Director – TSM USA
    - Regional Managers: Tim Nash - West & Dan Crespo – East
- **Service Centers**
  - Kevin Keith – Service Center Director
- **Field Engineering now reports to Customer Service**
- **Developing a support plan for Florida and Southern California**
  - Leverage local service provider resources
    - New Flyer Locations – Ontario CA
    - New Flyer +150 Field Techs
    - Regional TSM Support
    - ERSA Vendors
    - 3rd Party Support Service Providers – Create MCI Warranty outlets
- **Parts – NFI Regional Warehouse Network**
  - Fresno
  - Louisville

# Customer Key Service & Support Issues

## Impacts of Long Term Storage of Coaches

- Dead batteries = < 10.5 V
  - Boosting dead batteries
    - Electronic modules can be impacted
    - Potential safety hazard
- Amerex System Back Up Battery Expires
  - Inadvertent discharges can occur
- On Board Battery Charger Needs Minimum voltage to operate
  - Charger will not activate if batteries are below 10.5 V
- Recommend Batteries are charged regularly during storage
  - Idle charging is not effective
- Tires, Brake Chambers, Wheel Seals …
  - Coaches need to run and be driven regularly
- DEF Expiry Dates Causing Engine Codes
  - Shelf life can be as low as 6 months

- **DDC GHG17 Update:**
  - Permanent corrective action now available
    - See MCI Service Bulletin SI 3135 for details

# Coach Batteries

Coach batteries are one of the most important components installed on our vehicles. Even so, they are largely forgotten, that is until they stop working. There are some basic maintenance and preventive maintenance steps that can extend the life of your batteries. This will decrease cost and increase dispatch reliability.

- **Alternators make horrible battery chargers!**
  - When a coach is running on the road, the alternators are designed to handle the electrical load of the vehicle. There is only a small percentage of power used to replenish the battery system. This will reduce at low idle speeds.
- "Jump" starting a coach should be avoided. This should only be used as a last resort. It is extremely easy to cause some very expensive electrical system damage by improperly connecting jumper cables to start a coach. Jump starting should only be attempted from the rear jump posts in the engine compartment. We have seen a number of control module failures due directly to improper jumping. Please refer to the maintenance manual chapter 7 for the correct procedure.
- Some Battery conditions to keep an eye on:
  - Dirty or moisture covered batteries will suffer from surface discharge.
  - Cracked, bulging and distorted casings.
  - Tight corrosion free connections.
  - Correct electrolyte levels and Specific Gravity.

Chapter 7 in our maintenance manuals has all of the scheduled and troubleshooting procedures that will help you keep this system operating at peak levels. There are also valuable classes and webinars on our LMS site on batteries, the charging system, electrical connections and system integrity.

# Battery Condition – Testing & Charging

- **Battery Condition** – State of charge, clean physical appearance and terminal connections are critical before attempting to start or boost/jump start engine.
  - **Test voltage on each battery individually with multi-meter**
    - If voltage reading on each battery is 12.4 volts or higher, charge is sufficient to start engine
    - If voltage reading is less than 12.4 volts, charge or replace batteries before starting engine
    - Remember, This is only telling you part of the story.
  - **Inspect physical appearance, terminal connections and securement**
    - Look for bulging sides, leaking, excessive contaminants on top – Replace or clean
    - Battery Terminal Connections must be clean and secured properly
    - Battery hold down secured properly
    - Battery Cable connections – As a reference, there can only be a voltage drop at a single connection of 1/10$^{th}$ of a volt. And a voltage drop on a on an entire branch of .5 of a volt.
  - **Properly test the health of the batteries**
    - Check the Electrolyte level and Specific Gravity of each Cell
    - Perform a load test
  - **Important Suggestions! – Take the time and deal with dead or discharged batteries properly!**
    - Jump or boost starting should be avoided whenever possible, especially when batteries are completely depleted, i.e. below ~10.5 volts
    - Alternators are designed to maintain batteries & electrical system, not charge them! Discharged batteries never fully recover and alternator life is diminished.
    - Onboard Inverter/ battery charger will not work with batteries below ~10.5 volts
  - **Follow all battery and electrical safety warnings found in Section 7 of any recent MCI Maintenance Manual. Keep master disconnect off until battery conditions are corrected.**

# A few New Battery Considerations:

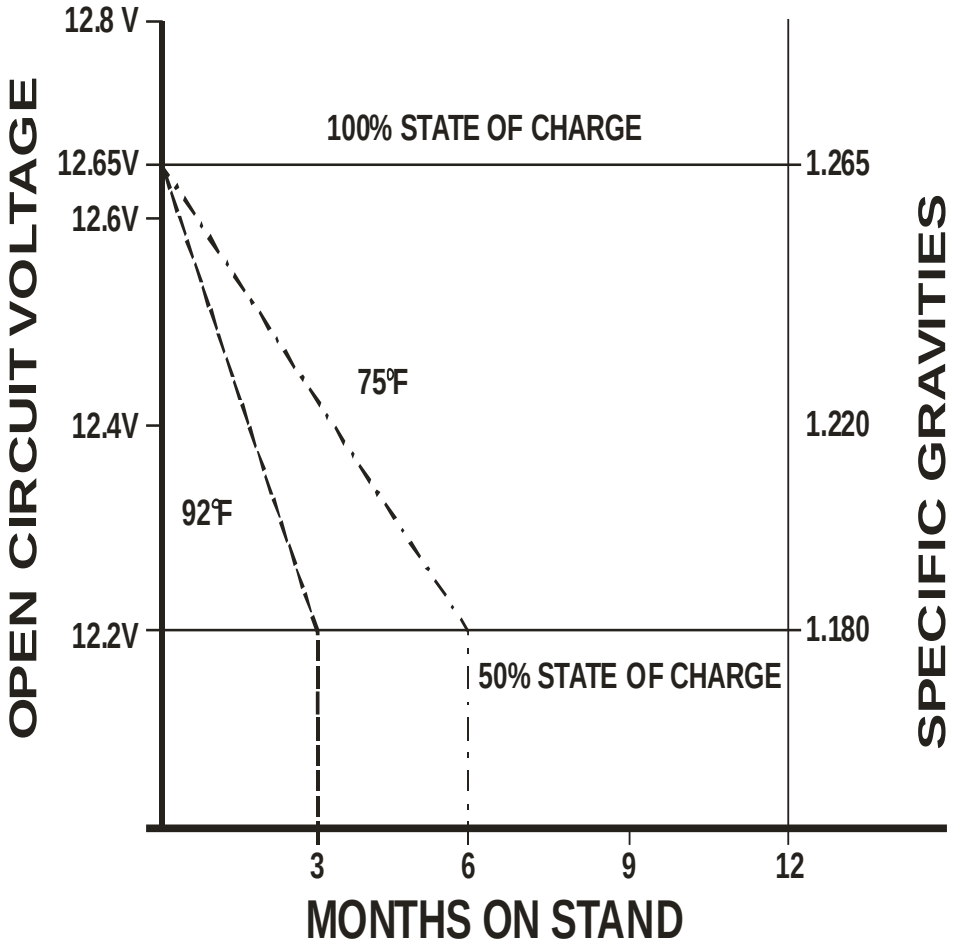
For best service life, even **NEW** batteries should be inspected prior to installation.

Batteries are normally shipped **LOW** of electrolyte and will need to be serviced before installation into the coach.

- Lighter, safer and cheaper to ship, fewer HAZMAT spills

- Batteries may spend time in storage even before they even arrive to you.
  - Remember, ALL batteries will discharge over time
  - Storage temperature is an important factor

**Effect of Storage Temperature On Self-Discharge- Typical Conventional Batteries**

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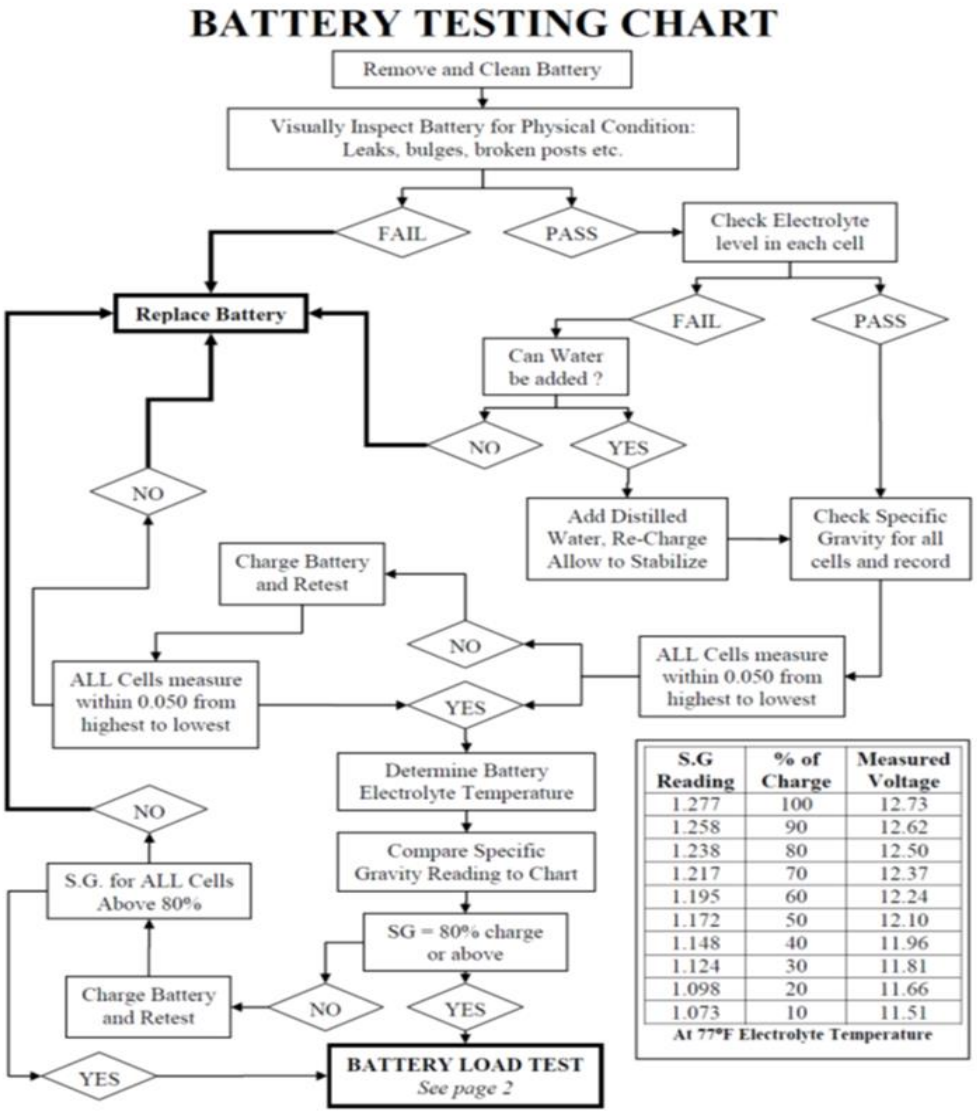
# Battery Testing

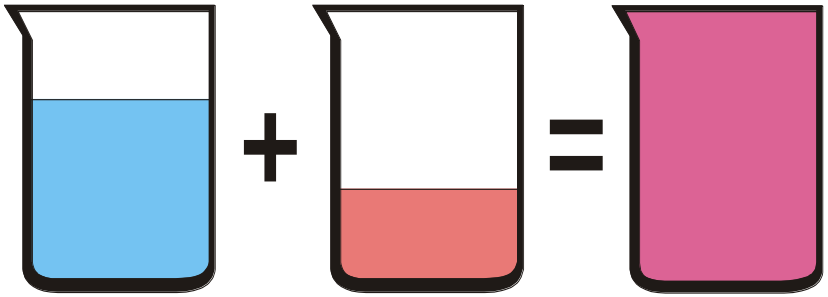


# Battery Electrolytes:

## What is Electrolyte?

**A Mixture that promotes chemical reaction**

- Specific Gravity of PURE water ($H_2O$) = 1.000
- Sulfuric Acid ($H_2SO_4$) concentration is DENSER than water
- Approaches 1.000 as cell discharges



**64% WATER**
**SP. GR. = 1.000**

**36% ACID**
**SP. GR. = 1.835**

**ELECTROLYTE**
**SP. GR. = 1.270**

## Why Is Electrolyte Measured?

**The electrolyte concentration (Specific Gravity) can be compared to the battery' state of charge (SoC)**

| CHARGE LEVEL | SPECIFIC GRAVITY | VOLTAGE (12) |
|---|---|---|
| 100% | 1.265 | 12.68 |
| 75% | 1.225 | 12.45 |
| 50% | 1.190 | 12.24 |
| 25% | 1.155 | 12.06 |
| DISCHARGED | 1.120 | 11.89 |



# Battery Load Testing

- Following the Battery Inspection chart that is available for down load, you would have performed a visual, Voltage, and Specific Gravity checks on the battery.
- The battery has PASSED all of these checks and is at least 80% state of charge.
- Attach the load tester leads as required by the manufacturer of the tester. Different testers have different leads but will be able to read volts and Amps and apply the load.
- Determine the batteries CCA rating, divide by 2
- Turn the tester knob until 1/2 of the CCA rating shows on the Amp meter – Maintain this rate for 15 seconds
- After Time has elapsed, AND current still flowing, read available voltage.
- Turn OFF the load and allow the tester to cool

- Remember that MINIMUM passing standards for a battery do NOT always meet the needs of our coach electrical system
- In practice, any battery that drops below 10.5 volts during a load test should be considered SUSPECT
- You must determine if you trust that battery to provide trouble free operation to your fleet

| BATTERY LOAD CHART | |
|---|---|
| Battery Temp | Acceptable Voltage |
| 120 °F | 10.1 vdc |
| 110 °F | 10.0 vdc |
| 100 °F | 9.9 vdc |
| 90 °F | 9.8 vdc |
| 80 °F | 9.7 vdc |
| 70 °F | 9.6 vdc |
| 60 °F | 9.5 vdc |
| 50 °F | 9.4 vdc |
| 40 °F | 9.3 vdc |
| 30 °F | 9.2 vdc |
| 20 °F | 9.1 vdc |
| 10 °F | 9.0 vdc |
| 0 °F | 8.9 vdc |

Minimum acceptable voltage under load

# 3 Minute Battery Test

- Battery is disconnected or removed from the coach
- Inspect battery
  - **PASS**, is ready / capable of charging
- Connect charger
- Set to @ 30 Amp rating
- Allow battery charge rate (amp meter) to stabilize approximately 3 minutes
- Check voltage **WHILE** charging
- If more than 15 volts are required to charge @30 Amps INTO battery cells, battery has excessive internal resistance – the battery has '**SULFATED**' plates
- Your done, that battery will never be dependable

# Amerex Fire Suppression System

- **Long term parking coach**
  - Batteries maintained and remain connected with master disconnect off
    - Fire suppression will remain active during storage period
  - Batteries on coach disconnected for storage or charge depletes
    - Fire suppression will remain active until internal battery of Amerex system depletes to 6 volts. Beeper will activate to alert that the battery has depleted to minimums. Once the beeper stops, the system will retain just enough voltage to fire the bottle.

- **Recommended restart of coach after an extended period:**
  - Prior to any work being done on coach
    - Install Alarm Test Module (Amerex P/N 21447, NFI P/N 135582 ) aka Squib simulator
      - Note: If the coach has a two bottle system two test modules will be needed.
    - With alarm test module installed, proceed with changing and/or charging the house batteries
    - Perform the recommended Semi-Annual Maintenance (section 5.3 in the Amerex manual, **see note below*). Replace any defective items found during maintenance inspection.
    - Alarm test module should remain installed for 24 hours allowing the Amerex back up batteries to fully charge
      - **Note: Amerex internal back up batteries must be replaced every two years. Replace if out of date.**
    - If after 24 hours, the “green light” ready is illuminated with no trouble or activation alarms on the “Alarm test module” the system can be placed in full service.
    - This would be a perfect time to conduct all preventative maintenance required on Amerex system
      - Bottle charge needs to be checked every 6 years, Bottle will need to be hydrostatic tested at 12 years.
      - New squib (Electric Actuator P/N 14036) – Replaced at 6 years
      - **The Amerex Maintenance Manual calls for a minimum Semi Annual inspection. See Section 8.**

  - *Note: Reference Amerex Manuals P/N 19680 and 13980 *(add hyperlink)*

# Tools required…

- NFI Part number of Amerex Alarm Module
  - 135582

# Diesel Exhaust Fluid - DEF

As customers have been returning coaches to service we have been seeing more reported engine issues that can be in part attributed to poor DEF fluid quality. DEF quality has always been important, however, before our industry was forced to park vehicles for longer periods of time, DEF fluid quality was maintained spontaneously.

This was due in part to a couple of reasons:

- Both the Coach and Truck Industries were operating at higher mileages and with that our DEF usage was higher.
- Our bulk storage tanks were cycled at a rate that the fluid quality was always “fresh”.
- The same can be said for the DEF tanks in our coaches.

Question?

How long have those DEF containers been sitting outside in the sun and heat at the local truck stop?

# Diesel Exhaust Fluid - DEF

**The effects of air and temperature can not be overstated!**

| TEMPERATURE ° F | TEMPERATURE ° C | MINIMUM SHELF LIFE |
|---|---|---|
| < 50° F | < 10° C | 36 months |
| < 77° F | < 25° C | 18 months |
| < 86° F | < 30° C | 12 months |
| < 95° F | < 35° C | 6 months |

Storing a coach**:**

- Top off DEF tank
  - Fill with pure DEF from sealed container or reliable bulk source
  - Excessive air space in tank aids in degradation of fluid quality
  - Tank is designed to expand and contract with thermal changes & freezing
- Storage Conditions:
  - DEF concentration and purity varies on variations and maximum stored temps
  - When in doubt, throw it out…

Items to consider before placing a coach back into service:

- Soak the coach DEF tank cap in warm water. This will clear the vent of crystalized DEF. (Ref MCI S/B 3077)
- Change DEF filters, Flush the System with tested DEF.

# Cummins Free Fleet Health Check

**During this unique season of unplanned downtime, your local Cummins Sales and Service branch wants to partner with you to help you prevent unwanted issues by performing a health checkup on your fleet. That way, when life begins to resume as normal, your buses are operating at peak efficiency and don't miss a beat.**

**What is a Fleet Health Check and How do I Schedule One?**

Scheduling a fleet health check is as simple as contacting your local Cummins Sales and Service branch and asking for one. The branch will work with you to send a certified field technician to your location to perform a complete check on all your Cummins powered buses.


**Bus Health Check Includes:**

- Retrieval of full ECM image
- Fault code review
- Update calibration (if needed)
- Inspection of all belts and hoses
- Fluid level check
- Visual inspection for leaks (oil, trans, fuel, coolant)
- Battery connection condition check
- Charging/starting system
- Harnesses – visual check of wiring condition
- Inspection of radiator
- Enabling of DPF temp stabilization feature (only if regen is not set to “0” mph)


After retrieving and analyzing the data on each bus, the branch will provide their findings to you in a quick, easy to understand manner. If during the analysis process, maintenance items are identified that need to be addressed, they will work with you directly to complete the work in a timeframe that works for you and your operation.

**Schedule Your Free Fleet Health Check Today!**

Call your local Cummins Sales and Service branch or call 1-800-CUMMINS (1-800-286-6467).

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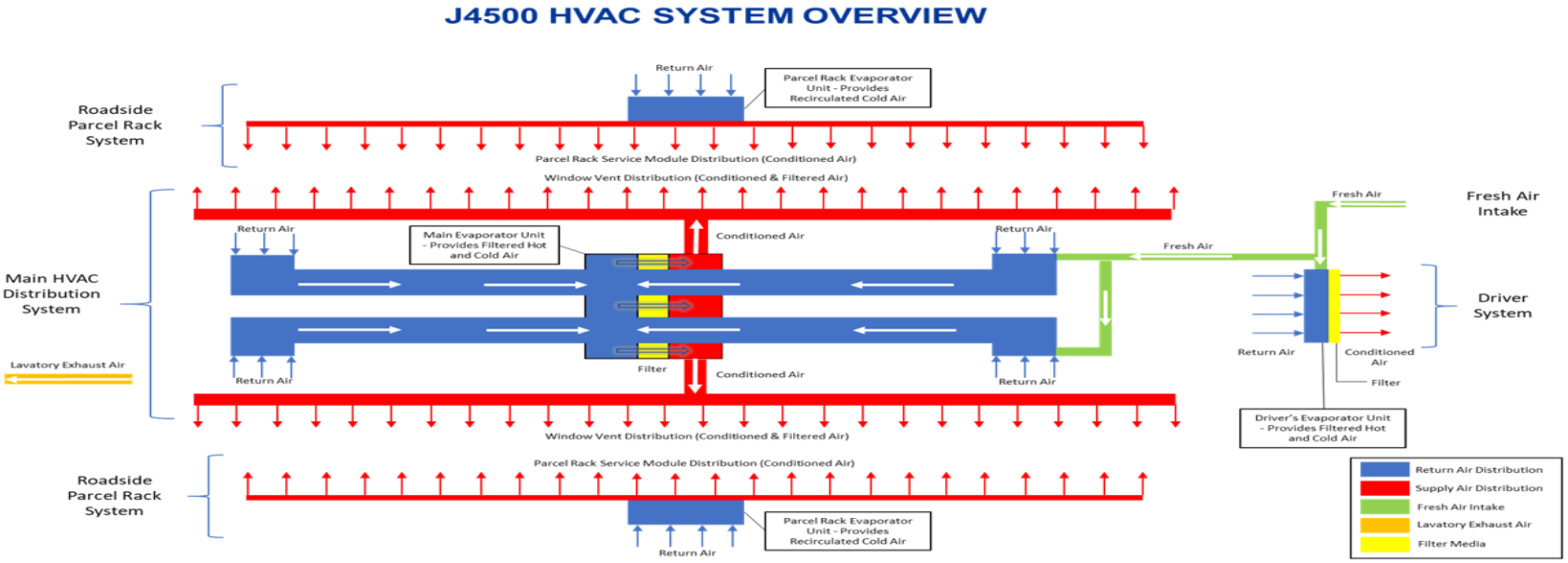
# Notes on HVAC

## What are the 3 most important elements of Motor Coach HVAC?

## Airflow! Airflow! Airflow!

The HVAC systems in your coaches are designed and engineered to work as efficiently as possible. All of the airflow dynamics have been taken into consideration and optimized.

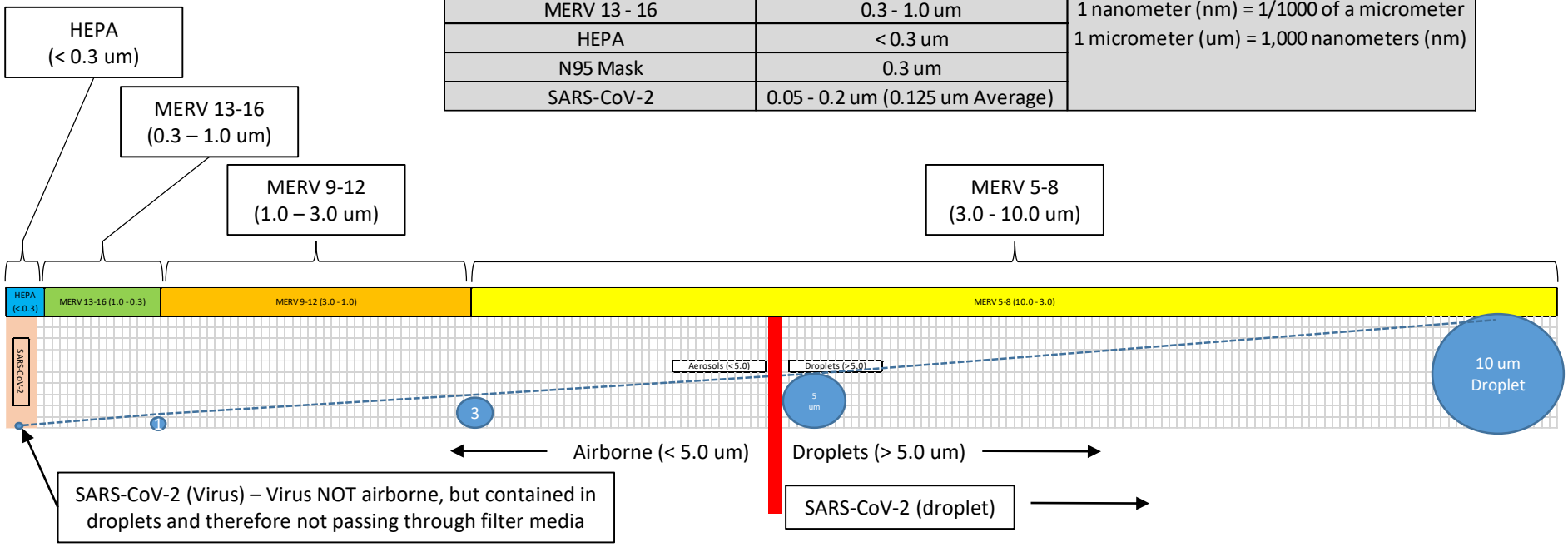



MCI Reliability DRIVEN™

# MERV (Minimum Efficiency Reporting Value) Ratings & SARS-CoV-2 Virus Size

The actual SARS-CoV-2 virus is smaller in diameter than the particle capture size of most filter media. However, since it is only spread in a droplet form, it is trapped by MERV 5 – 8 (80% - 95% arrestance) or higher media (

| Filter Rating | Particle Capture Size | Terminology |
|---|---|---|
| MERV 1 - 4 | > 10 um | 1 micrometer (um) = 1 micron<br>1 nanometer (nm) = 1/1000 of a micrometer<br>1 micrometer (um) = 1,000 nanometers (nm) |
| MERV 5 - 8 | 3.0 - 10.0 um | |
| MERV 9 - 12 | 1.0 - 3.0 um | |
| MERV 13 - 16 | 0.3 - 1.0 um | |
| HEPA | < 0.3 um | |
| N95 Mask | 0.3 um | |
| SARS-CoV-2 | 0.05 - 0.2 um (0.125 um Average) | |



# Flush the Condenser

- Flush the condenser coil from inside out using a water stream or water mixed with air pressure regularly. Direct the pressure straight through the coil to prevent bending of fins.
- Ensure that drain holes located at the bottom of the shroud assembly are also rinsed clear of debris to allow for proper drainage It is recommended that external cleaning should performed monthly with a clean water rinse. It is also recommended that the coil surfaces of the radiator should be cleaned quarterly as part of the unit's regularly scheduled maintenance. Special attention should be considered to the bottom of the coil where excessive amounts of debris and other foreign matter can collect.
- Water may be used to rinse fibers and dirt. For loaded fibers or dirt, a vacuum cleaner or a non-metallic bristle brush may be used. The tool should be applied in the direction of the fins, as going against the direction may cause damage (fin edges bent over). Loaded fibers should be removed prior to using a water stream to prevent driving the debris further into the coil.
- For the monthly clean water rinse, it is important that the temperature not exceed 130° F (54° C) or for the water pressure to exceed 100 PSIG to avoid damaging fins.
- For the quarterly cleaning, it is recommended to first clean the coil with a coil cleaner and then use a chloride remover to remove any soluble salts.

**⚠ WARNING**

**A high pressure water jet, steam, harsh chemicals, bleach, or acidic cleaners should not be used to clean coils as they can accelerate corrosion of the coil.**

**Accessing the Condenser Coil**

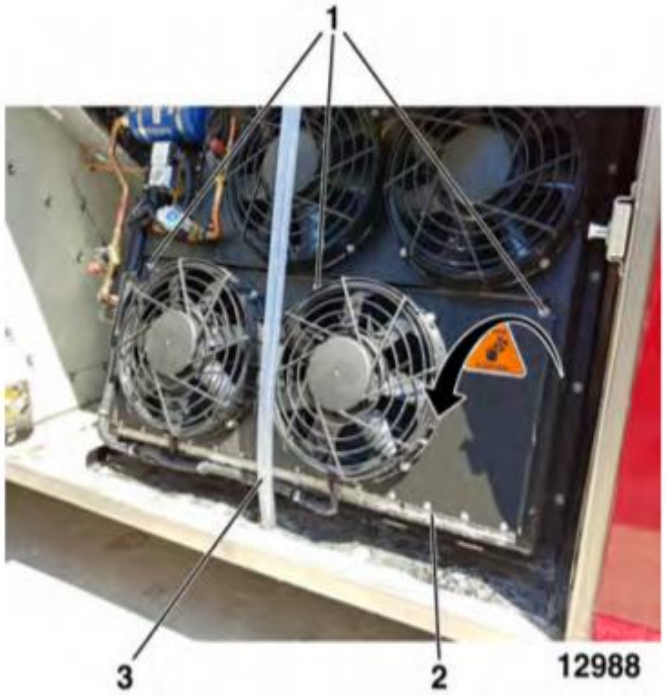



**Figure 37. Condenser Coil Access**

| Item | Description |
|---|---|
| 1 | Fan Shroud Panel Bolts |
| 2 | Hinge Assembly |
| 3 | Fuel Overflow Funnel Drain Hose |

# Radiator

## Radiator

It is recommended that radiator external cleaning should be performed monthly with a clean water rinse. It is also recommended that the coil surfaces of the radiator should be cleaned quarterly as part of the unit's regularly scheduled maintenance. Inspection of air seals, inlet/outlets, and fasteners of attaching components should be made at the appropriate intervals (see **Section 10** for intervals).

### Radiator Cleaning

The radiator can be accessed by swinging the RAD/CAC unit out (refer to **Accessing the Cooling Module**). It is essential that the radiator core be kept free from corrosion and debris, and that regular maintenance be performed with the other cooling system components. Water may be used to rinse fibers and dirt. For loaded fibers or dirt, a vacuum cleaner or a non-metallic bristle brush may be used. The tool should be applied in the direction of the fins, as going against the direction may cause damage (fin edges bent over). Loaded fibers should be removed prior to using a water stream to prevent driving the debris further into the coil.

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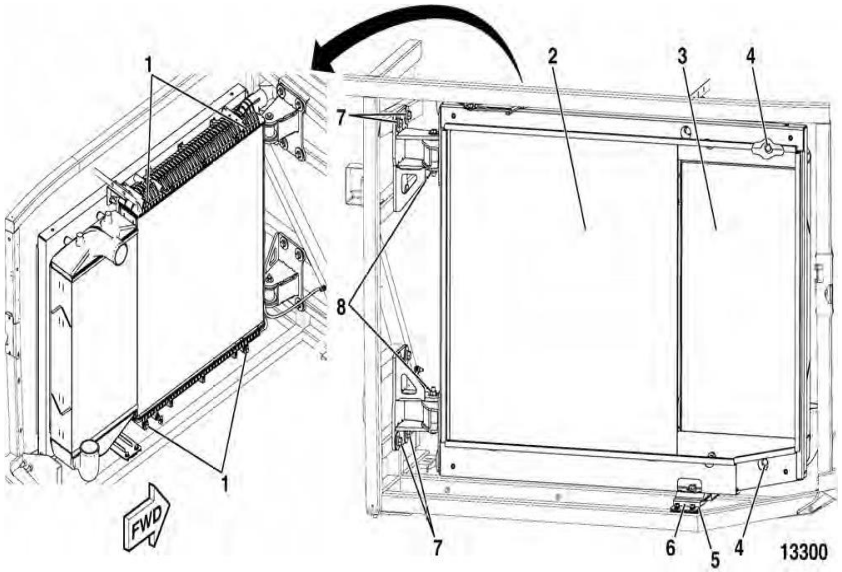
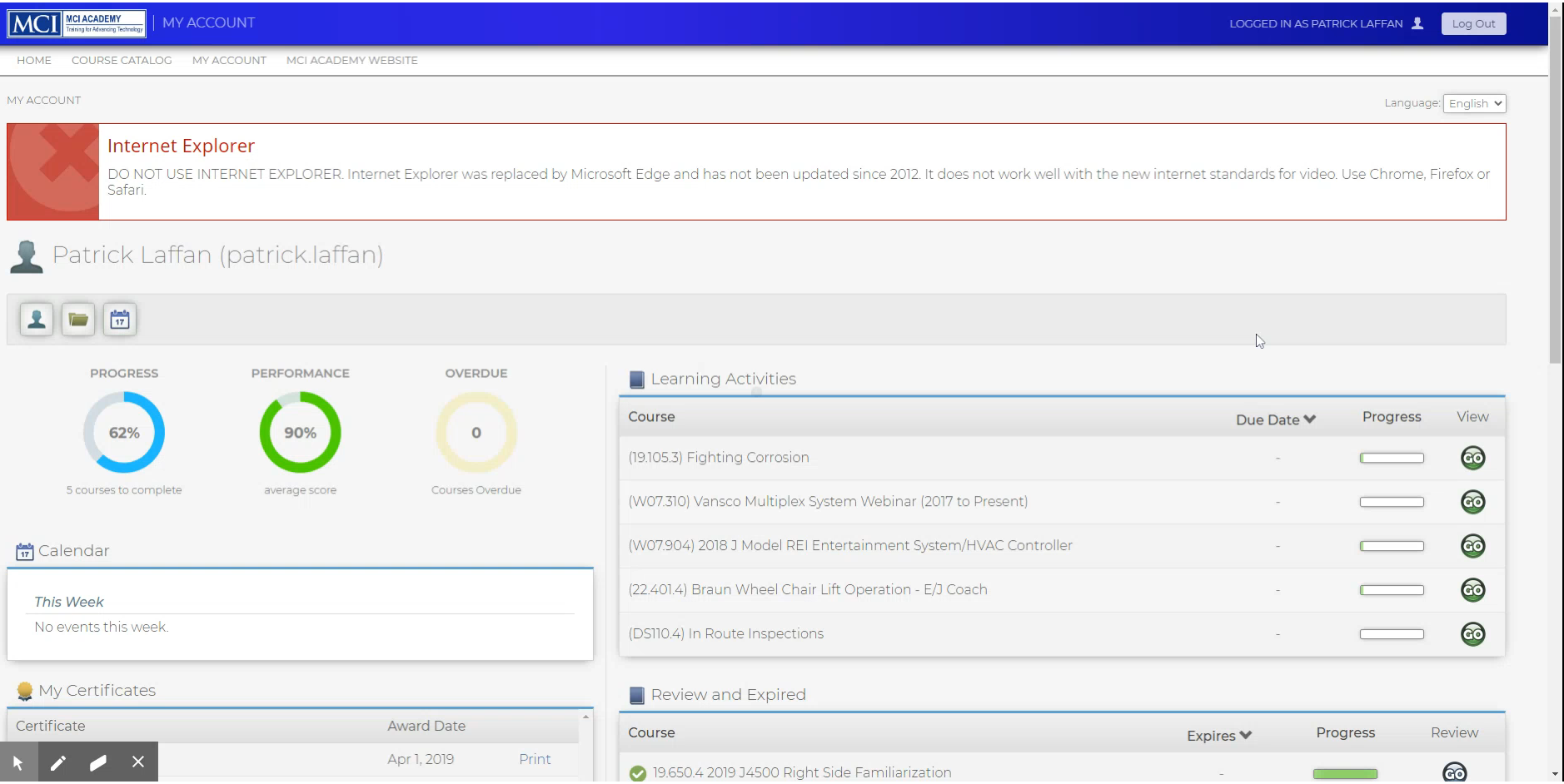



| Item | Description |
|---|---|
| 1 | Hex Flange Nut - Torque to 24–28 ft-lb (33–37 Nm) |
| 2 | Radiator Unit |
| 3 | Charge Air Cooler Unit |
| 4 | Screw - Torque to 24–28 ft-lb (33–37 Nm) |
| 5 | Cooling Module Support Ramp Assembly |
| 6 | Cooling Module Support Run Up Block - Apply Loctite 243 to Screws |
| 7 | Capscrew - Torque to 100–120 ft-lb (136–163 Nm) |
| 8 | Nut - Torque to 60–65 ft-lb (81–88 Nm) |
| NOTE: Apply S-11 grease between the inner and outer pivot bushings when re-installing the unit. | |

# MCI Academy

*If you need access*
*for yourself of your employees, please email*
***Scott.Crawford@MCICoach.com***




MCI Reliability DRIVEN™

# NFI Parts: Clean & Protect

MCI Reliability DRIVEN™

# NFI Parts – Four Clean and Protect Principles

## Disinfecting

- Ensure Surfaces are clean before disinfecting
- Use a CDC approved disinfectant
- Foggers can be used to apply disinfectant

## Distancing

- Driver barriers
  - Ensure AS2 polycarbonate if in drivers view while operating
  - Many types exist
- Optional seat layouts to ensure 6' of separation


## Air Quality

- Filtration with anti microbial technology
- UV-C lighting in HVAC system
- Ventilated roof hatches to keep more air moving

## PPE

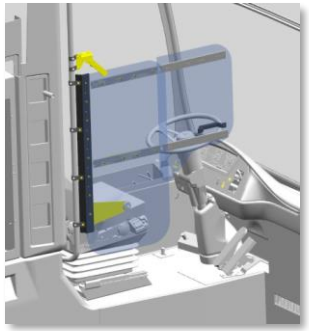
- Hand sanitizer dispensers
- Masks for drivers

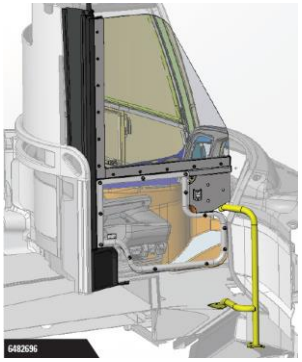
**Further information can be found at www.nfi.parts/cleanandprotect**

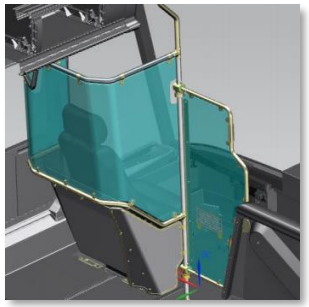
# Drivers Protection Systems

**Now Available!**

***Starting at $800***







**Bus and Coach partitions, shields and barriers to keep your drivers safe.**

**Good:** SVP off the shelf offerings, limited warranty. Virus protection layer. AS2 compliant system.

**Better:** AROWguard off the shelf offerings – warranted life of vehicle. AS2 glass compliant. Virus and assault protection layer.

**Best:** AROWguard custom fit and designed by customer fleet, warranted life of vehicle, AS2 glass compliant. Virus and assault protection layer.

**Further information can be found at www.nfi.parts/cleanandprotect**

MCI Reliability DRIVEN™

# Air Filtration

Now Available!

**NFI Parts offers a variety of air filtration products to keep your vehicle interior air clean.**

**Air Flow:** Make sure the filter you use is designed to keep the proper air flow through your system. Higher filtration can restrict airflow and burden your motors.

**Antimicrobial:** A layer of filtration that uses copper and silver ion properties to kill 99.95% of viruses it contacts with.

**It is a good practice to change out your air filters every 3-6 months.**

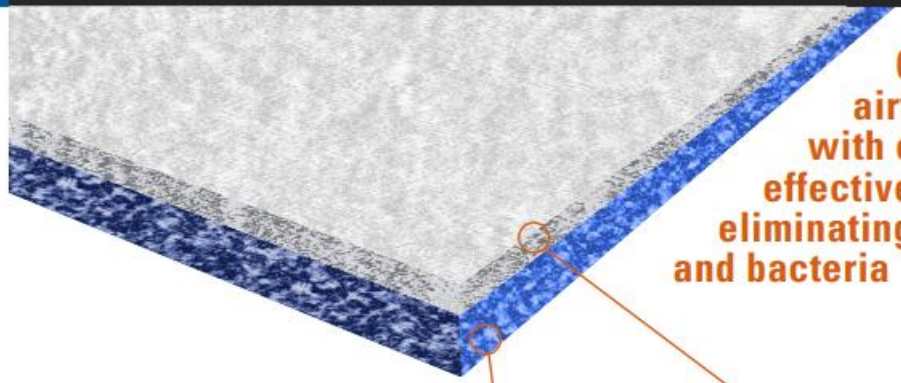
**Further information can be found at www.nfi.parts/cleanandprotect**

# Antimicrobial Filter

INFORMATION SHEET

nfi.parts

MCI



**OE Approved airflow filter with over 99.95% effectiveness in eliminating viruses and bacteria**

- Patented-protected PuraWard® Antimicrobial Fiber Layer (PWF) - Kills 99.95% viruses by using a copper and silver ion property
- Merv8 filtration media for typical dust and allergens filtration

## How It Works

Copper ions weaken the amino acids of the cell wall allowing silver to invade the cell. The Copper and silver then react with key enzymes to cause sterilization, suffocation and starvation of the pathogen.

## FEATURES

- Flow-rate tested and approved for MCI brand coach applications - will not harm fan motor
- No modifications needed - no need for filter frame reconstruction, can be cut and installed in existing filter assemblies
- UL 900, and ASHRAE Compliance
- Manufacture recommends a 3 month replacement schedule
- Typical coach uses ~10ft of material
- No shelf life for the anti-microbial coating – does not degrade over time

| NFI Part No. | Description |
|---|---|
| 6482974 | FILTER-MERV8, W/PWF FIBERS, 90 FT ROLL (24" WIDE) |

MCI Reliability DRIVEN™

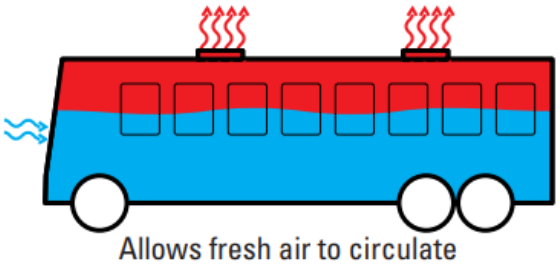
# Ventilation

**Now Available!**

***Starting $1,200 for a 2-fan kit***


**The power safety vent is a combination emergency exit and roof ventilator that utilizes the built in electric fan for extracting condensation, stale or hot air from inside the vehicle to improve passenger safety.**

- Creates an airflow and cross breeze with a durable low profile fan




***Be mindful of dust and pollens when ventilating.***
*In conjunction with the filtration techniques you can select the best options for riders.*

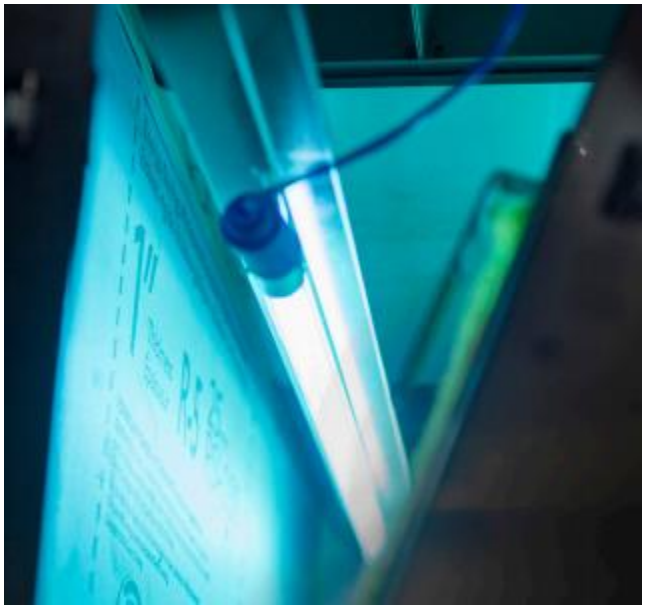
**Further information can be found at www.nfi.parts/cleanandprotect**

MCI Reliability DRIVEN™

# UV Lighting

Available August

*Starting at $1,200*




## UVC technology reduces viruses, bacteria and mold in the HVAC system.

- Simple installation into most main evaporator compartments of motor coaches
- UVC lamp reduces viruses, bacteria, and mold in the air and on the HVAC coil by 99.9%
- Does not use harmful chemicals
- Produces no pollution

**Further information can be found at www.nfi.parts/cleanandprotect**

MCI Reliability DRIVEN™

# Clean and Protect Products

**Now Available!**


**Key products to help maintain a clean vehicle environment and promote a safe riding experience.**

- Disposable Gloves, Masks and dispensers
- Fog and cleaning products
- Multi-purpose cleaner and sanitizer
- Mixing bottles and triggers

**Further information can be found at www.nfi.parts/cleanandprotect**

MCI Reliability DRIVEN™

# Clean and Protect Products – Rider Awareness












*Free with select purchases*


## Keep your riders in the know.

**Now Available!**

- Easy peal and stick
- Choose the messaging you want to need

**Further information can be found at www.nfi.parts/cleanandprotect**

MCI Reliability DRIVEN™

# Future Initiatives – Purification Products

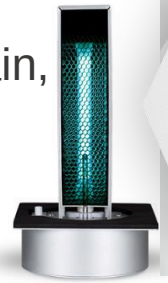
Future Initiative

## Proactive Air and Surface Purification System

- This purification system excels in reducing the critical range of particulates <0.5 microns
- Tested and qualified by the FDA, CDC, EPA, OSHA, NASA, KSU, UofF, NSF

**Certified to eliminate 99.9% of the below pathogens in laboratory and real world**

- Disinfects without down time or allocated labor and gets in areas you can't
- Easy to install and maintain, can be placed anywhere on the vehicle
  - uses 12V DC power



## How it Works

**Air + Humidity ⇨ HEC + Oxidizers**

Fully contained unit replicates nature's process indoors by converting Air & Humidity into High Energy Clusters (HEC) and Advanced Oxidizers. Air is passed across proprietary UVX light and 6 metal honeycomb matrix, which is amplified by enhanced specular reflection, delivering unmatched pathogen elimination in air and on surfaces the vapor comes in contact with.

## Is it Safe?

**System showed no safety concerns from top testing facilities and Level 3 Bio-safety Labs.**

As part of the disinfection process the unit uses Hydrogen Peroxide at very low concentrations coming in at 50% less than the OSHA limit!

## Air and Surface!

**The system disinfects the Air AND Surfaces by creating a vapor of Hydrogen Peroxide.**

This along with the HEC clusters destroy dangerous pathogens at the cellular level in the air and on surfaces.

MCI Reliability DRIVEN™

# *What can MCI do for you?*

MCI Reliability DRIVEN™