# GMC 101

MAINTENANCE FOR NEW OWNERS

Ty Hardiman GMCMI Fall Convention 2019 Mansfield, Ohio

## Class Goals & Concepts

- Avoiding on-the-road breakdown
- Identify common repairs
- Do-it-yourself vs hiring someone
- Equipping your shop
- Where to find support
- Value of a GMC mentor
- The value of one good opinion versus many mediocre ones.

- We are assuming work on a factory coach without conversions such as fuel injection, brake upgrades, engine swaps, etc.
- These are my methods based on my research and others will have opinions as well

# GMC Motorhome History

- GMC 1973-1978
- 12,921 made
- Has outlasted most motorhomes designed to replace it
- Aluminum & Sheet Moulding Compound (SMC) body never rusted away
- High quality Imron paint jobs still look good

- Powered by a time-tested
  Oldsmobile V-8 and three-speed
  transmission
- Many attempts to replace the Oldsmobile powertrain but difficult to improve
- GM made a great vehicle, now we are the stewards
- How long will the GMC last?

# Reliability of the GMC Motorhome

- We are going to talk about known failure points
- Please don't get nervous as we talk about all these things today
- Any car can break down any time, even new ones
- No better time in history to be a GMC Motorhome enthusiast because so many clubs and websites to give us info

- Often easier to get parts now than in the past
- Most vintage cars are only driven at car shows and parades
- We are driving these 45 year old vehicles 5,000, 10,000, 25,000 miles per year
- We can achieve this when we take maintenance into our own hands

# Setting Realistic Expectations

- Don't want to be a "Gut & Run" owner
- Interiors are fun, but mechanical reliability gets you to the destination
- Prioritize spending for reliability over appearance
- Not all work has to be done the first year

- Best results come from using top quality parts, vendors, and mechanics on your coach
- The GMC rewards the hands-on owner/mechanic by achieving better reliability
- The goal: our coaches should become more reliable over time.

# Preparing for Roadside Incidents

- Coast out of the traffic lanes
- Turn on hazard lights
- Deploy triangle reflectors
- #1 priority is to prevent a breakdown from turning into a collision
- Reflectors set at 10'/100'/200' or about 4/40/80 paces
- Unpack and test-assemble new reflector kits before use



## **Towing Service**

- AAA Premier RV is one tow option
- GMC may not fit rollbacks
- Best choice is a medium duty wrecker with a wheel lift
- GMCs weigh about 12,000 lbs
- <u>www.gmceast.com</u> has Rob Mueller's towing guide
- Comforting to have a tow plan even if you never use it



# The Fire Triangle & Fire Suppression

- The engine, generator, and propane appliances contain all three components of the Fire Triangle
- Attend an RV fire safety class to learn how to develop and implement your fire safety goals







# Digipanel Warning System

 Attend a Digipanel class to learn more about this engine protection system

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TRANS TEMPE 100 175	EMISSION ERATURE 5 250 325 6 C C ALARU	ENGINE EMPERATURE 175 220 265	CIL RESSURE Y 20 35 69 11 DIGI-PA	NEL HY HANDEMODE HAL

# The Do-It-Yourself Owner/Mechanic

- Knowledge is there but we have to learn it and pass it on
- The coaches will outlast us but the information will pass from one generation to the next
- Hard to find good local mechanics for the GMC
- Very likely that your work quality will exceed a local shop that you would pay for

 By participating in regional clubs and the GMCMI events you are helping sustain the knowledge base for future generations

# GMC Motorhome Knowledge & Repair

#### Primary Sources – Best Information

- GMC Clubs
  - GMCMI conventions & flash drive
  - Regional club meetings & work weekends
- Internet
  - GMCMI & regional club websites technical papers
  - gmc.mybirdfeeder.net
  - gmcmotorhome.info
  - bdub.net
- GMC vendors
- GMC specialist mechanics
- GMC Service Manual

#### <u>Secondary Sources – Useful, but stay</u> <u>skeptical</u>

- Facebook Groups
- Youtube videos

#### <u>Tertiary Sources – Probably better to</u> <u>avoid their advice</u>

- Front desk at the auto parts store
- Non-GMC owners who claim an engine/trans swap would improve performance, fuel economy and would be simple. It's not.

#### Auto Parts Stores

- Rarely find someone who will know your coach
- Their computers don't list the GMC Motorhome
- Tell them you have an Oldsmobile Toronado and give them the same year as your coach
- Take your old part and the GMC parts interchange book with you

- Don't let go of your starter, carburetor, or steering box
- Have your starter rebuilt at a starter shop
- Have your carburetor rebuilt at a carb shop or GMC specialist
- Get GMC vendor or club advice on your steering box

# Log Books

#### Keep accurate records

- Valuable for resale
- Valuable for our own memory
- Often we wish we had past owner records of our coaches

#### Types of log books

- Mechanical service Mileage, date, work done. Add previous info as you discover it
- Fuel & Oil use log each tank
- Trip log You can keep this in your family even if you sell
- Personal parts book for your own memory or future work

#### Project Checklists

- Before starting the project, create a list of work to be performed to achieve your task
- List tools, torque values, any other notes that you learn before or during the project
- Check off each task when complete so you can come back the next day and continue your work

- Pressure paint pen can be used to mark completed items on the coach
- The checklist can be used again in the future on your coach or helping a fellow GMCer do the same task

# **Useful Shop Supplies**

- PB Blaster, AeroKroil, or ATF + Acetone are three common rust breakers. Don't use WD-40
- Anti-Seize copper for carbureted, nickel for fuel injected engines
- Dawn soap best hand cleaner
- Cotton rags
- Spray brake cleaner
- Cotter pin assortment

- Moving blanket to lay on
- Blue Loctite. Red is too strong
- Knee pads
- Ear plugs
- Work gloves
- Wheel bearing grease Mobile 1 or Valvoline Synpower grease

# Useful Shop Tools

- Floor jack
- Electric impact wrench
- 150 lb torque stick. Made only for installing, never for removing lug nuts
- Torque wrench 20-150 foot pounds
- Plastic utility caliper
- Hand wrenches
- Socket set

- Digital multimeter
- Diagonal cutting pliers
- Screwdriver with interchangeable bits
- Dead-blow hammer

# GMC Maintenance Manual

- #1 resource for keeping the GMC on the road
- First stop when researching a maintenance project
- Watch for occasional misprints & errors
- Print out the pages you need for the task, then don't worry about grease on pages



#### GMC Maintenance Manuals for Your Coach

Your coach year	Book No.	Book Name
• 1973-1974	X-7425	1973-1974 Manual – 810 pages
• 1975	X-7525	1975-1976 Manual - 882 pages
• 1976	X-7525	1975-1976 Manual – 882 pages
(two books)	X-7625	1976 Supplement – 142 pages
• 1977-1978	X-7525	1975-1976 Manual – 882 pages
(two books)	X-7725	1977-1978 Supplement – 473 pages

#### GMC Maintenance Manual

	_
General Information, Periodic Maintenance and Lubrication	0
Body, Heating and Air Conditioning	1
Frame	2
Front Suspension and Final Drive	3
Rear Suspension	4
Brakes	5
Engine	6A
Engine Cooling System	6K
Engine Fuel System	6M
Emission Control Systems	6T

3A - Front Bearing 3B - CV Joints 3C - Final Drive

Engine Electrical	6Y
Transmission	7
Fuel Tank and Exhaust	8
Steering System	9
Wheels and Tires	10
Chassis Electrical	12
Radiator and Coolant Recovery System	13
Bumpers	14
Miscellaneous GMC Living Area Facilities	24

# Parts Manual 78-Z

- Covers all years of production
- Extensive illustrations and GM part numbers
- Some part numbers have been replaced by newer numbers
- 568 pages



#### Parts Manual 78-Z





23.015 ROOF - PANEL AND FRAMING





10	9420092	DUC.1 - Spindle and brake to control arm
16	9422297	NUT - spindle and brake to control arm bolt
16	192478	BOLT-hub to dram (procure locally)
16	103329	WASHER-lock, hub to drum bolt
4	721426	DRUM-brake
4	3857731	SEAL ASSYhub
4	7451228	BEARING-cone and roller (hub-inner) (New Departure Hyatt Bearings # J 150269)
4	721425	HU8 ASSYwheel (incl. next 3 items)
32	704921	BOLT-hub (stud)
4	457234	CUP-hub linneri (repl. 7451227)
4	7450343	CUP-front outer bearing (used w/ 7450344 cone) (New Departure Hyatt Bearings # 15243) (red, 7450338)
4	7450344	CONE-front wheel outer bearing (used w/7450343 cup) (New Departure Hvatt bearings # 151035) (reol. 7450336)
4	3936464	WASHER-wheel brg. adi. nut
4	3953436	NUT-act, wheel brp.
4	721381	CAP-wheel bro, seal (outer)
4	3936465	CAP-wheel http://conect

19-6

# Factory Assembly Manual

- Extensive illustrations
- 917 pages





# **Operating Manual**

- Good resource to learn about driving and living in the coach
- For maintenance we will get better information from the Maintenance Manual
- 130 pages



#### GMC Vintage RVing Magazine





#### SPRING 2019

This Publication Article Index covers all newsletters and magazines from the Fall 1982, Volume 1, Issue 1 to the Spring 2019, Issue 142, inclusively. The index topics are arranged alphabetically by description. While Rem descriptions in this index are typically identical to the article titts in the newsletters, there may be diplicit values to to make this index more useful. This index also includes individual parts listed under Replacement Parts articles. There parts are listed in this index built while discription inneur. The publication insue and page numbers are also listed in the index for easy reference. This Publication index will be updated and republished annually.

Note: For easy reference in the index, the first 16 newsletters should be renumbered from the old Volume Number/Issue Number identification scheme, to the Issue Number scheme as shown below:

Publication		Old Volume # Issue #	New Issue #
Fail	82	Volume 1, Issue 1	Issue 1
Winter	83	Volume 1, Issue 2	Issue 2
Spring	83	Volume 1, Issue 3	issue 3
Summer	83	Volume 1, Issue 4	Issue 4
Fall	83	Volume 2, Issue 1	Issue 5
Winter	84	Volume 2, Issue 2	Issue 6
Spring	84	Volume 2, Issue 3	Issue 7
Summer	84	Volume 2, Issue 4	Issue 8
Fall	84	Volume 3, Issue 1	Issue 9
Winter	85	Volume 3, Issue 2	Issue 10
Spring	85	Volume 3, Issue 3	Issue 11
Summer	85	Volume 3, Issue 4	Issue 12
Fall	85	Volume 4, Issue 1	Issue 13
Winter	86	Volume 4, Issue 2	Issue 14
Spring	86	Volume 4, Issue 3	Issue 15
Summer	86	Volume 4, Issue 4	Issue 16

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#### SPRING 2019

For your convenience, a listing of DEDICATED GMC PARTS AND SERVICES SUPPLIERS, who are also club members, is included in this publication. PLEASE SUPPORT THEM WITH YOUR PATRONACE

This Parts Interchange Index should be used in conjunction with the most recert Publication Article lades. But indexes are periodically updated. The Publication Article Index contains a great number of items that are not covered in the Parts InterChange Index. Nembers should should at the first and the Index of the Publication Article Index for the revised numbering of the Final Forewaltions.

The most effective use of this index is made when members also have a capy of the #782 Parts Book. This book has not an except of the #782 Parts Book. This book has and members may find the numerical and alphabetical index located in the back of the book to be quite helphat. The exploded whose in the Parts book of most assemblies are also usery helphal when looking for the conset part name and/or the original part number.

The Parts interchange index is a compliation of the interchange parts listed in newletter/inspanies II through II 4/D pictors additional lister that have been mentioned at one additional lister that have the second second second lister and the second second second second second lister and the second second second second second lister and the second second that members can obtain additional information such as addresses and leighter numbers. This lists is an anged addresses and leighter numbers. This lists is an anged addresses and leighter numbers. This lists is an anged addresses and leighter numbers. This lists is an anged addresses and leighter numbers. This lists is an anged the hubication Article Index 1986.

While considerable effort has gone into the preparation of this tokes, there may be numbers that are no longer current, how leave superchead or may is fast not be been communicated by the memberships at large and may in fast containers or incorrect applications. It is importable that each member use their non-mesures themediate that each member use their non-mesures threads the super subscription of the super-tioned to be used solarly as any and procedures from and to members and thread solar year any fast containers to any and processing to episitic or and to members and thread solar year any energy to replace or any other component manufactures.

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# Lifting the Coach – Lift Points with Floor Jack



# Lifting the Coach – Shoring Points



# Lifting the Coach – DIY Ramps



• Several GMC ramp plans are available online



• 6" to 9" of ramp height is very helpful on under-coach projects

# Lifting the Coach – Roadside Jack

• Bottle jack, lift hook, ground plate





#### Wheels

- GMC had factory 16.5" steel wheels
- Some GMCers have converted to 16" aluminum wheels
- GMC originally used a wheel with a center hole of 4.567" or 116mm and our goal is to match that on replacement wheels
- Most truck wheels made in the last 30 years have a larger center hole than our coach

#### Tires

- Find DOT date code and record in log book
- You'll need to decide how often to change tires. 5-10 years is typical
- Blowouts are expensive and should be avoided
- Tire ply rating is Load Range E
- New tires are available in both 16" and 16.5"
- Don't allow the shop to give you old "new" tires, check the date

## Wheel Removal

- Remove wheels with a 6 point socket and breaker bar or impact wrench
- Lug nut socket size is 1" for steel wheels, 1 1/16" for Alcoas
- Block the coach wheels to keep coach from rolling
- Jack and shore up the coach
- Release air from air bag, install leaf spring if necessary
- Remove lugs nuts and tire

# Installation

- Install lug nuts by hand before using any power tool
- Lug nuts on dry threads (no oil) should be 140 pounds on aluminum wheels and between 150-250 pounds on steel wheels
- Electric impact wrench, torque stick & ear plugs make it easier
- Check lug nut torque before major trips

#### Carburetor Air Filter & PCV Valve

Carb air filter is Wix 42095



• PCV Valve is Fram FV-112



#### Carburetor

- 7 carbs used on GMC: 7043254, 7045254, 7045554, 17057254, 17057559, 17058254, 17058559
- Do not swap your carb away at an auto parts store
- They can be rebuilt by a good carb shop
- Carbs can be rebuilt by GMC Vendors & Specialists

 The GMC motorhome will run fine on a well-tuned Rochester carburetor of the correct model number



### Carburetor Fuel Filter

 Carb fuel filter is Wix 33048 or 33052 (either) and can be changed with two adjustable wrenches (one wrench needs to open 1" wide)





# **Engine Belts**

- Write the belt numbers you have now in your log book
- Our coaches use a "15 section" automotive belt which are about 12mm wide
- Auto parts stores will happily give you the wrong belt (9-10 mm wide) and you won't know until you start install
- Take your utility caliper to the store and measure the belts

- Or get from a GMC vendor or www.vbeltsupply.com
- Billy Massey's website has good info on belts
- http://www.bdub.net/Belts.pdf



# Fuel System

- GMCs like to be fueled slowly and early, in cool weather
- Fuel tanks have rust in them and will eventually need to be removed and cleaned out
- Fuel lines will need to be replaced someday and you'll have to remove the tanks
- Search the entire length of fuel hose for hidden filters

- The most common add-on fuel filter is the Wix 33033. Consider adding one if you don't have it already
- Always carry a couple of spare Wix 33033 in-line filters and a couple of Wix 33048 filters for the carb

### Vapor Lock

- Factory mechanical fuel pump has difficulty pulling modern ethanol fuel 25 or so feet from the fuel tanks
- Electric fuel pump can be installed back by the fuel tanks to push the fuel forward
- For safety, electric fuel pump should be wired to only run when the engine is running



*Electric fuel pump and filter from Applied GMC* 

# Spark Plug Replacement

- Check gap on new plugs before starting. Gap should be .038"
- Optionally remove wheel wells
- Spray old plugs with PB Blaster
- Consider changing one plug at a time to avoid crossing wires.
- Carefully pull boot off plug.
- Remove plug with 13/16" plug socket
- Anti-seize on new plug threads

- Hand spin the plug in
- Torque to 25 lbs with socket
- Dab of silicone grease on porcelain body
- Push plug wire back on to plug
- Keep #5 and #7 wires separated to prevent crossfire
- NGK XR5IX 7355
- Delco R46SZ

#### **Grease Service**

- Grease fitting is called a "Zerk"
- Use grease gun with floppy hose
- "LockNLube" grease gun tip is helpful
- Mobile 1 Synthetic or Valvoline Synpower grease
- 13 grease points in front
- 4 bogey grease points in back
- Consider removing front wheels for ease of access to Zerks



# Front End Alignment

- Most alignment shops cannot handle the GMC
- Use an alignment shop approved by your regional GMC club
- Caster: Max
- Camber RH: 0
- Camber LH: 0
- Toe: 0



# **Engine Battery**

- Sometimes phantom drain will run the battery down
- "Bat Boost" is helpful but may be disconnected or non-functioning
- Wirthco battery disconnect will end phantom drain
- Engine batteries can last 5 years or longer if taken care of
- A group 34/78 AGM battery is a good choice



#### **Engine Battery**

- Inexpensive plug-in voltmeter can monitor engine battery level
- Should read 12.6-12.8 volts when the engine is off
- Should read 13-14 volts when the engine is running
- An 11 volt battery is dead and likely won't start the coach



## Rear Bearing Grease Service 1/7

- Buy new seals before starting
- New seals are best purchased from GMC vendors due to size variances
- If replacing bearings, the Timken numbers are in the GMCMI parts interchange book
- Lift coach, shore, & remove wheel
- Remove dust cover
- Pull cotter pin with diagonal cutters
- Remove castle nut with 1 ¼" socket
- Shake out the outer washer & bearing and place in ziplock bag



#### Rear Bearings 2/7

 Now we need to pull off the brake drum & hub, but the drum usually hangs on the brake shoes preventing us from removing it so we have to adjust the brakes



#### Rear Bearings 3/7

• Need to crawl under the coach and back off the star adjuster





# Rear Bearings 4/7

- When the brakes are loose enough, we can pull the drum
- The drum is fairly heavy
- Now we can spray down the brake system with brake cleaner
- Take the opportunity to inspect or photograph your brakes
- Grease the star adjuster threads so they spin easier in the future



# Rear Bearings 5/7

- We need to pry out the rear seal
- And now, remove the second bearing and place in a ziplock bag
- Time to clean up the bearings with solvent and check to see if everything is still good



### Rear Bearings 6/7

- Hand grease the bearings & races for re-installation
- Install a new seal carefully



 I was taught best practice is to leave the seal a little proud of the face of the hub



# Rear Bearings 7/7

- Carefully set the drum & hub back on the shaft
- Keep everything super clean
- Install the outer bearing and washer and castle nut
- Tighten the castle nut to 30 ft pounds, then back off half a turn, the finger tighten it
- Install a new cotter pin

- Install the dust cover with a dead-blow hammer
- Will need to go back under the coach to tighten the brake adjuster
- I was taught to mount a tire and spin it hard, the tire should stop spinning in about one revolution
- Don't forget to torque the lug nuts to correct value

### Air Bags

- Factory air bag & bogey suspension was an excellent system
- Firestone-brand bags that fit the factory system are no longer made
- Consider buying used air bags at the swap meet to carry on coach as spares
- We will all eventually have to make a long-term decision about replacement air bags

- Spray existing air bags nuts with PB Blaster and work the nuts to make future removal easier
- Consider using anti-seize on the nuts
- Carry a 1 1/8" wrench for air bag work
- Schrader valve & pipe dope can help fix roadside compressor issues

# Engine Oil Change

- Engine change at 3,000 miles
- Wix 51258 filter for 1973-1977. 1978 shows a Wix 51045
- 10w-40, 15w-40 oil weight
- Consider using a FilterMag



# Final Drive Fluid Change 1/2

- GMC original final drive has 10 bolts on the cover
- A messy oil change job
- Need a socket, ratchet, and 3" extension to change the fluid
- Loosen the bolts and the oil will run out
- Leave it to drain overnight



# Final Drive Fluid Change 2/2

- Torque bolts to 24 foot pounds
- Fill with 4 pints (2 quarts) of lube on the side fill hole (11/16 wrench)
- Filling is about as messy as draining it
- Book says use 80w-90 gear lube
- I use 75w-90 EP synthetic
- Book says change 12,500 miles



# Transmission Fluid Change 1/2

- This is a very messy job
- Consider covering floor with a shower curtain and keep a bag of floor dry handy
- Loosen bolts on the pan, fluid will start to dump out into your used oil container
- Might dump 1 gallon of fluid when you finally take the pan off



# Transmission 2/2

- Takes 4-5 quarts of automatic transmission fluid Dexron VI
- Filter is Wix 58882
- Don't forget to install the o-ring on the tube
- Straighten the flange on a steel trans pan and tighten to 12-20 foot pounds
- Consider an aluminum transmission pan



# Transmission Shift Modulator/Fill Level





#### Transmission

 Governor gear failure will force the transmission to remain in first gear





- Consider carrying a spare and a 1/8" drill bit for roadside fix
- Spare can be obtained from a <u>GMC vendo</u>r



### Transmission & Oil Cooler Lines



# CV Joints

- CV joints typically last a long time
- Check the left & right outer boots before major trips, once the boot tears you will have to service it
- Inner boots & CV joints last longer
- Order the right boot from a GMC vendor or reliable source
- Use CV joint grease, usually kept behind the counter at the auto parts stores and sold in silver packets

- I prefer to pull the wheel, brake caliper, and steering knuckle to get to the CV joint
- Separating the upper ball joint can be a challenge, follow the maintenance manual or have a club friend walk you through it

### Steering

- Steering box gearing is special for the GMC
- The auto parts store will likely give you the wrong part in exchange for your good part
- Work with a GMC specialist or GMC vendor to get your original steering box rebuilt or replaced
- Steering shaft (between the firewall and steering box) is often adjusted wrong from a previous owner
- Attend a GMC steering class or work with a club friend to learn the tricks of steering shaft alignment