327-E

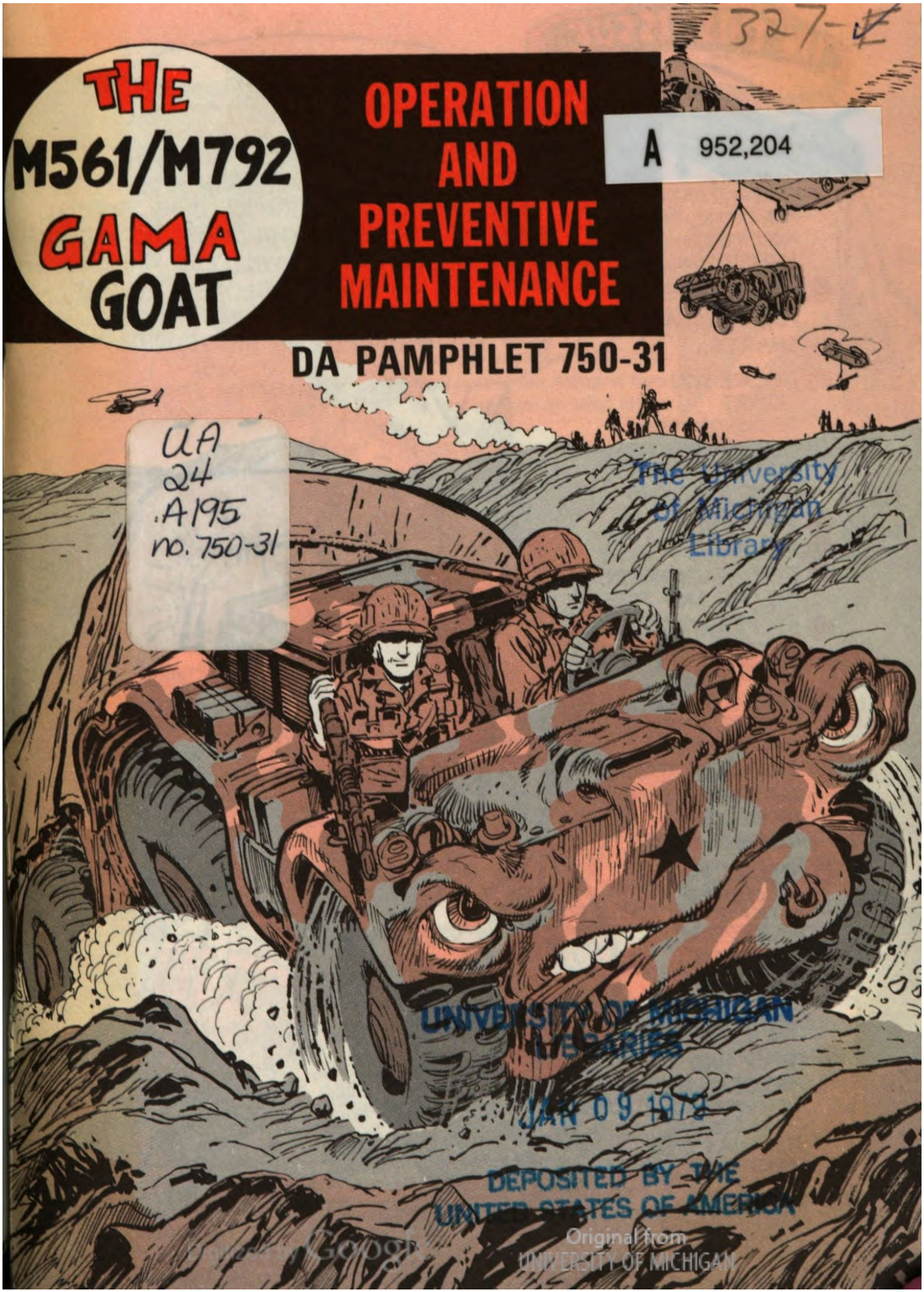
THE M561/M792 GAMA GOAT

OPERATION AND PREVENTIVE MAINTENANCE

A 952,204

DA PAMPHLET 750-31

UA
24
.A195
no. 750-31



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ENGINE:

Make	Detroit Diesel
Series	3-53 (TM 9-2815-214-34)
Type	Liquid cooled, in line, 2 stroke-cycle, 3-cylinder diesel
Governed RPM limits	500 minimum, 2800 maximum
Crankcase oil	13 qts when changing oil filter)
Oil pressure	18 to 30 PSI — idling speed, 40 to 60 PSI — operating speeds

FUEL:

Capacity	40 gal (2 tanks)
Uses type:	
Grade DF2 Fuel (of Spec VV-F-800)	Do not use below 32°F
Grade DF1 Fuel (of Spec VV-F-800)	Do not use below 10°F
Grade DFA Fuel (of Spec VV-F-800)	All temperatures
Jet (MIL-J-5624)	All temperatures
CITE Fuel (MIL-F-45121A)	All temperatures

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NEW FEATURES

DATA

COOLING SYSTEM:

Capacity	19 QTS
Operating temp	160 to 200°F
Pressure	15 PSI (MAX)

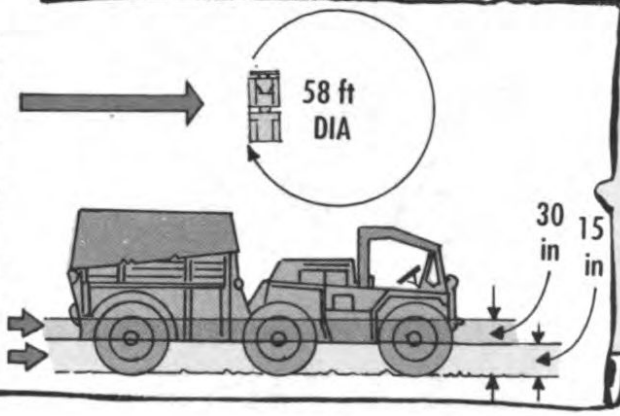
TIRES:

Size	11:00 X 18, 6-ply, tubeless

PRESSURE:

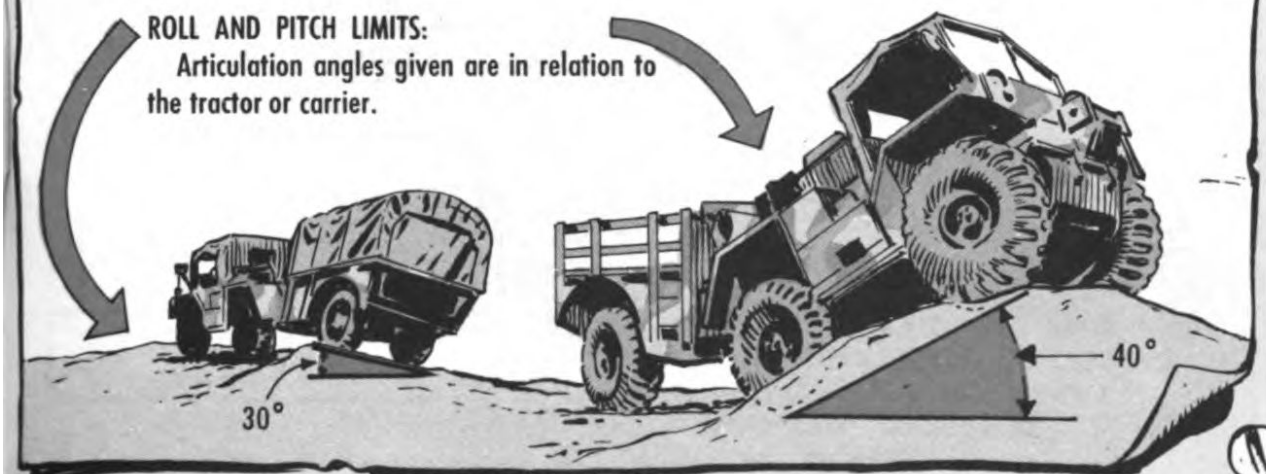
Highway	22 PSI
Cross-country	18 PSI
Sand, snow & deep mud	12 PSI
No spare tire	See page 36

PAYLOAD	2900 lbs (includes 2 crew members)
TURNING DIAMETER	58 ft
Cruising range	384 miles
Load Classification	4 Loaded 3 Empty
Vertical Wall Climb	18 in
Fording Depth	2½ ft
Ground Clearance	15 in



ROLL AND PITCH LIMITS:

Articulation angles given are in relation to the tractor or carrier.



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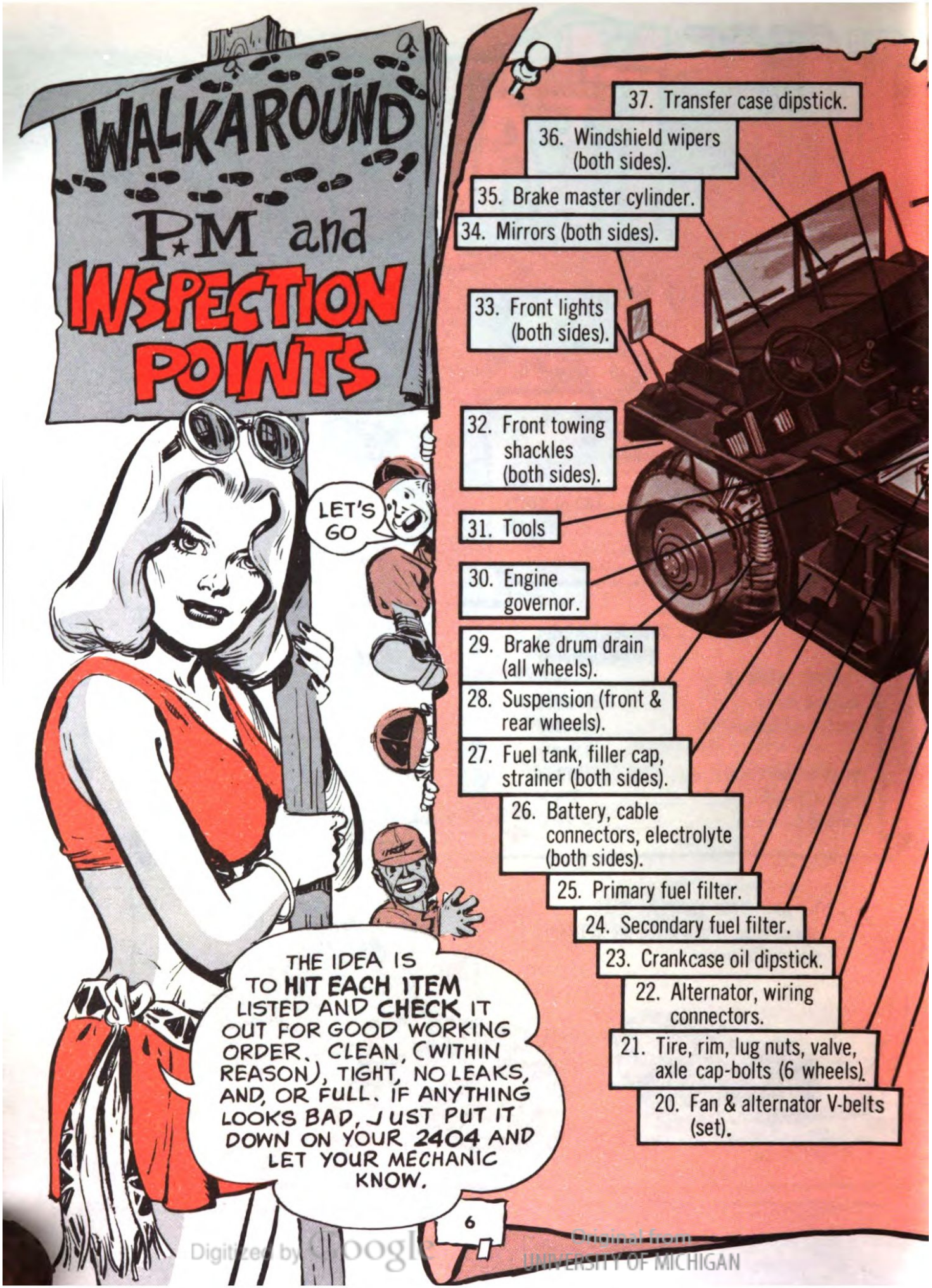
WALKAROUND P★M and INSPECTION POINTS



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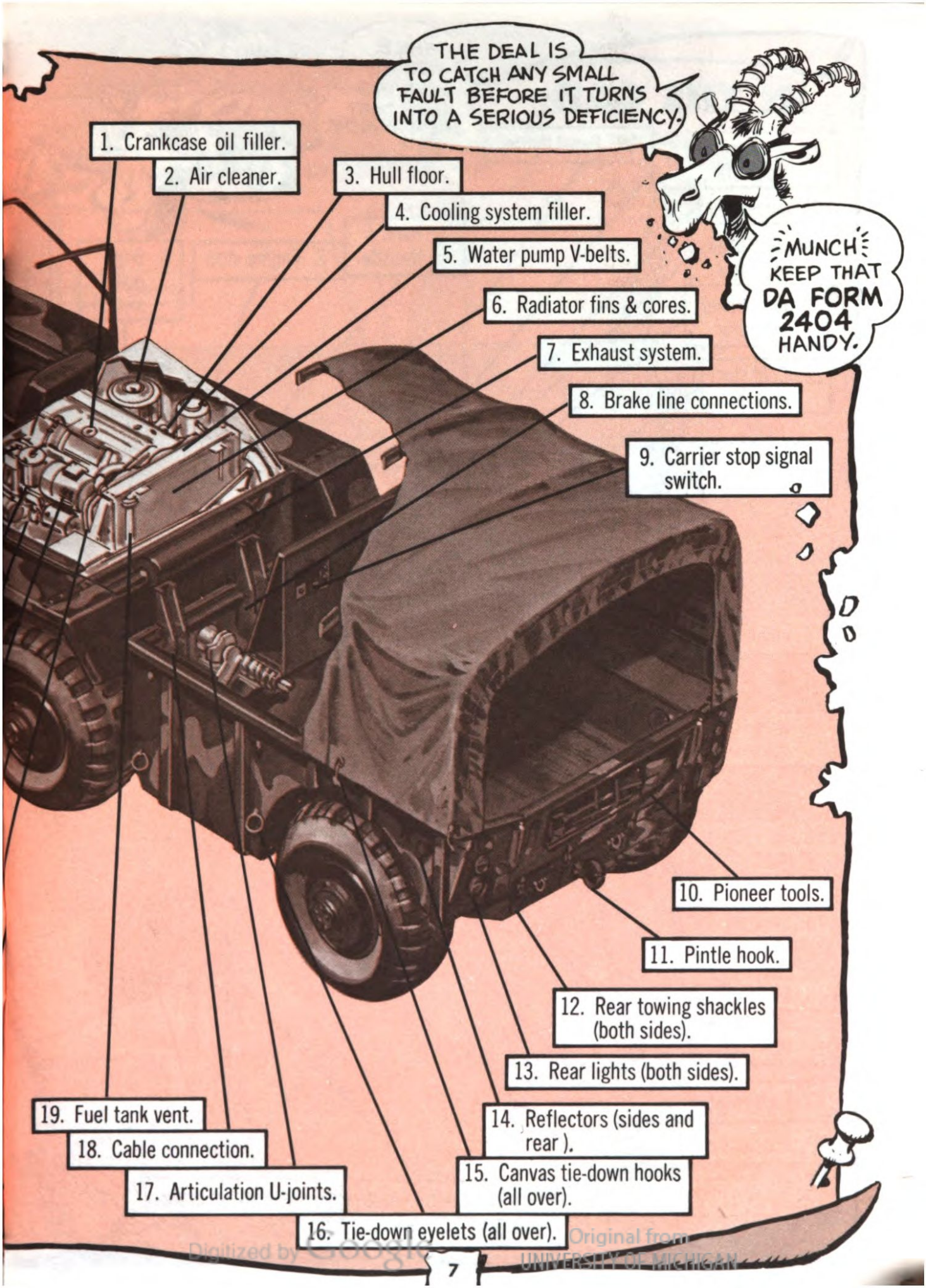

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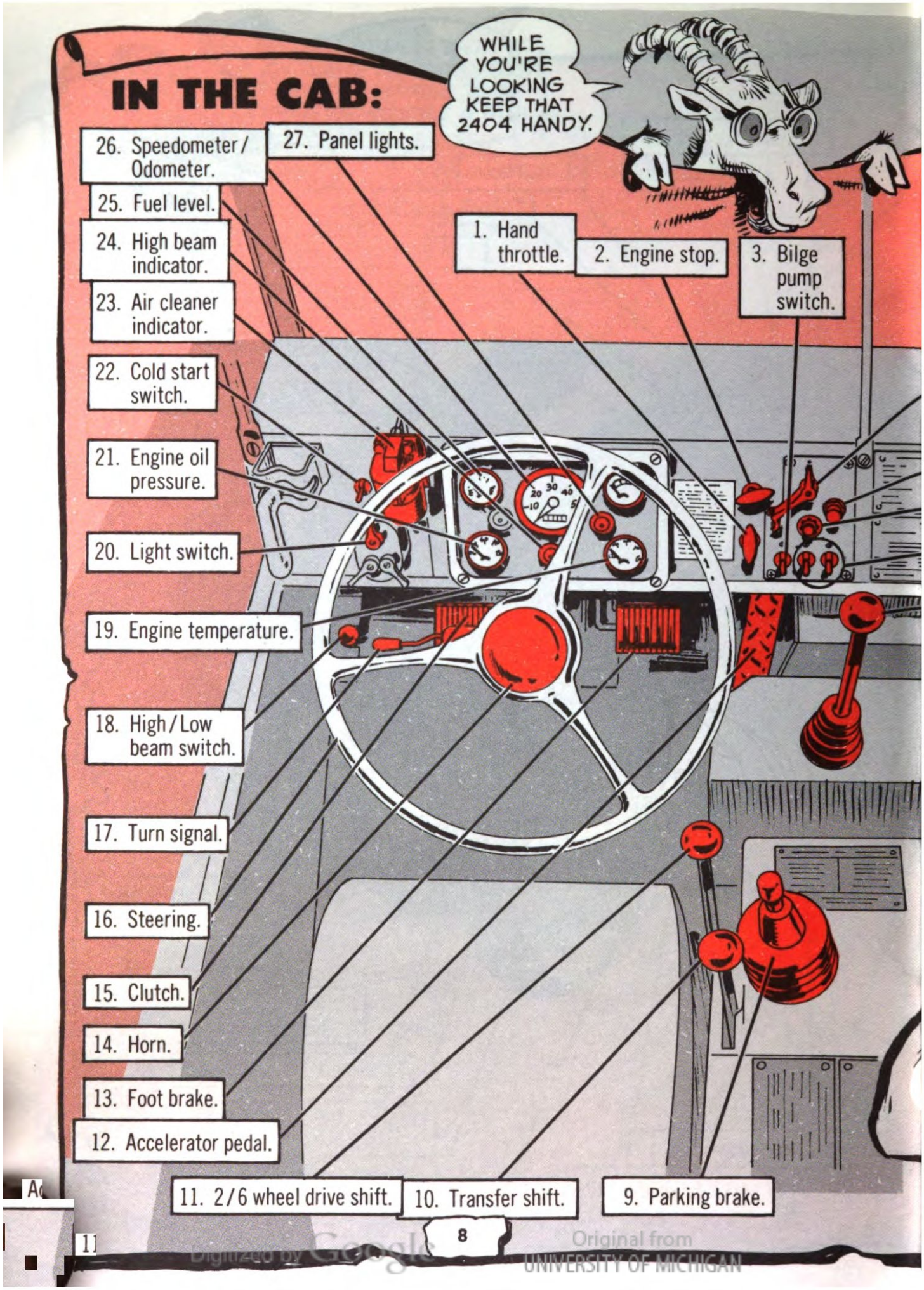

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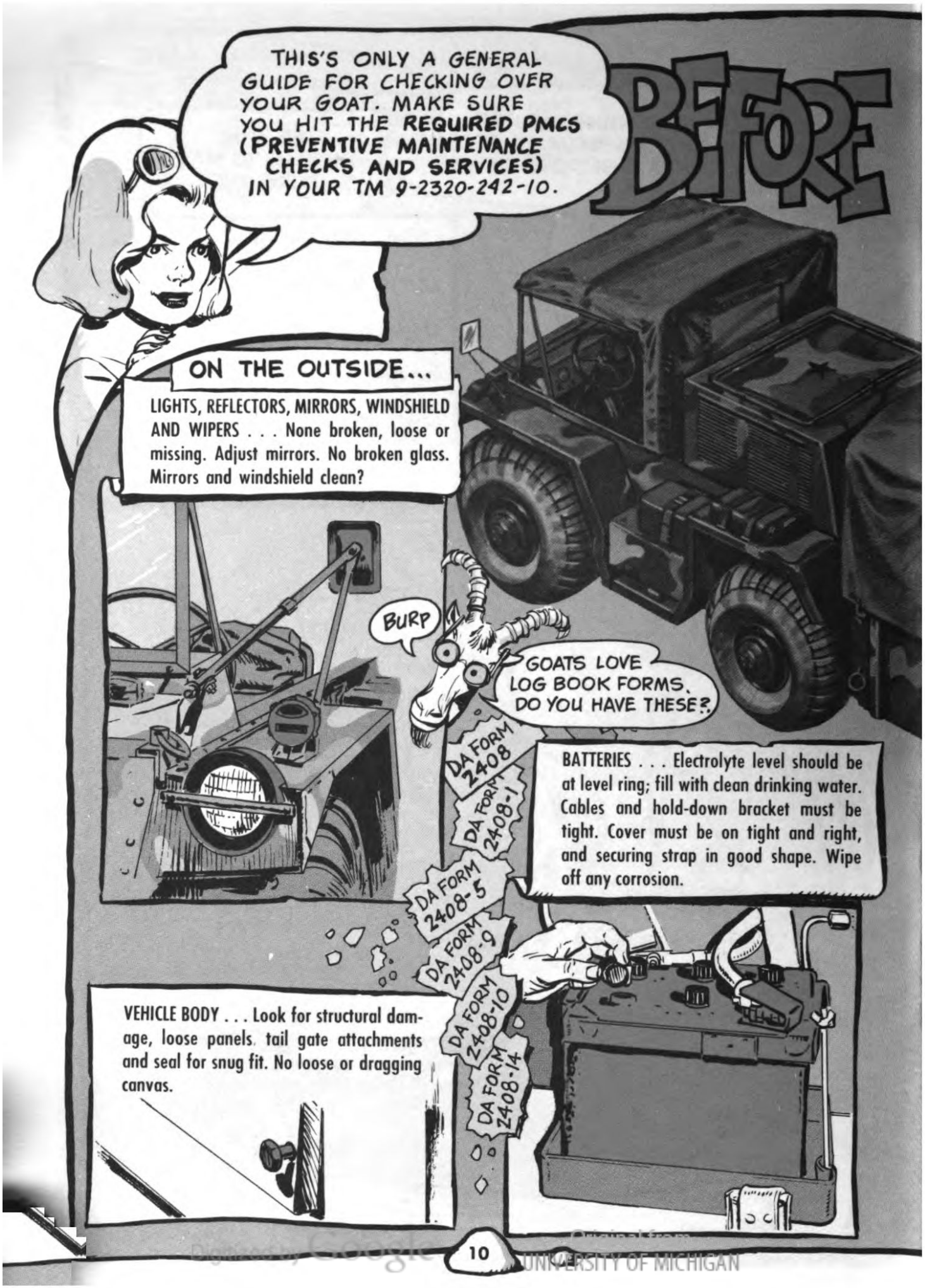

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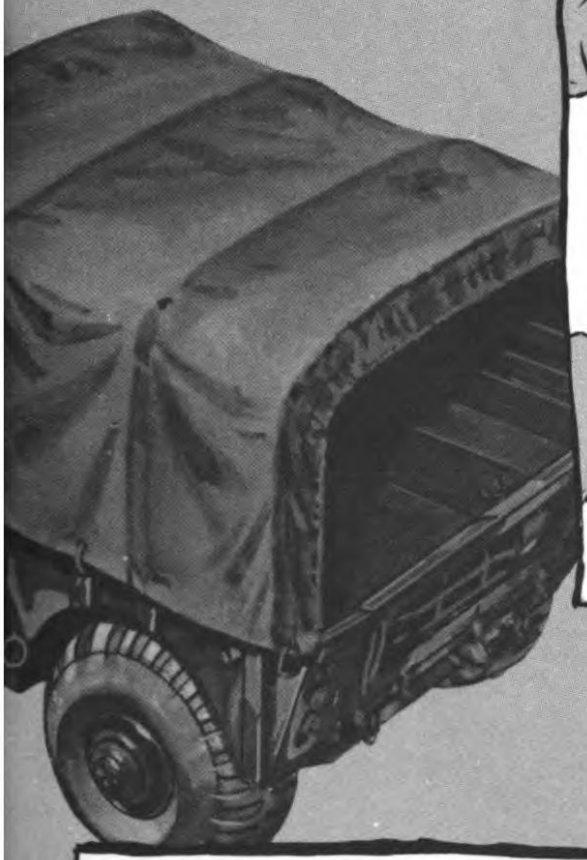
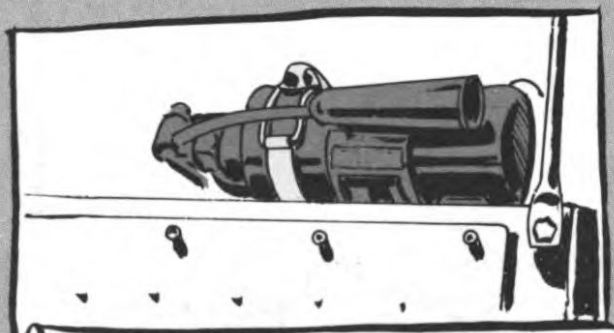
YOU GO

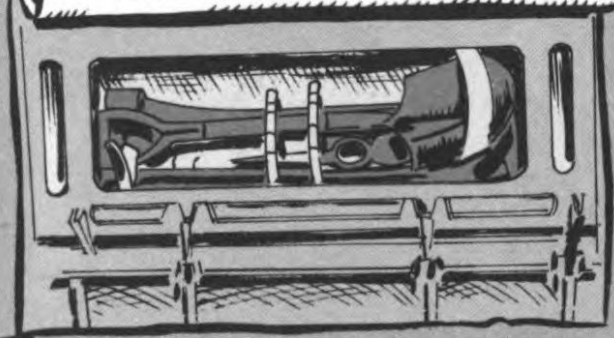
FUEL TANKS . . . Fill to base of the ne
slowly so fuel will level in both tanks. You
can fill both at once to save time. Keep
fuel caps on tight. Strainer should have no
rips.



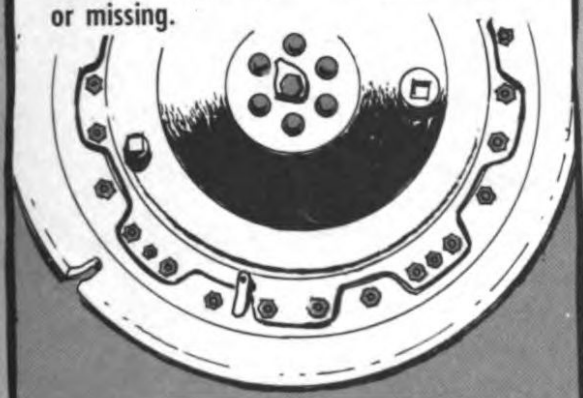
HAVE YO
DA FORM 240
IN HAND... MARK
UP ANYTHING
WRONG YOU
CAN'T FIX.



SPECIAL EQUIPMENT . . . Fire extinguisher, fuel can and pioneer tools in place and secure?



TIRES & WHEELS . . . Adjust tire pressure for cross-country or highway. No wheel lug or drum nuts, or axle retaining bolts loose or missing.



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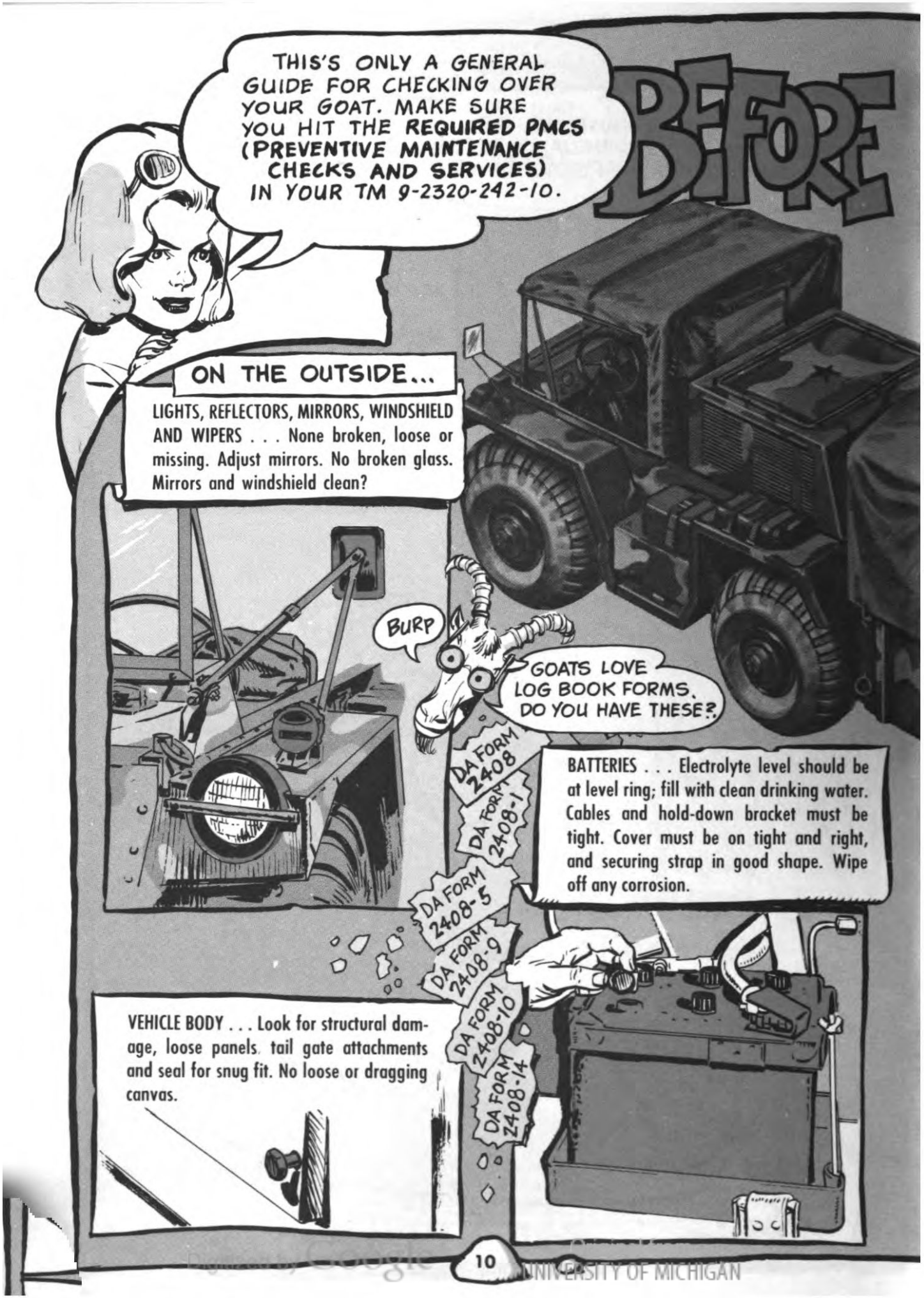

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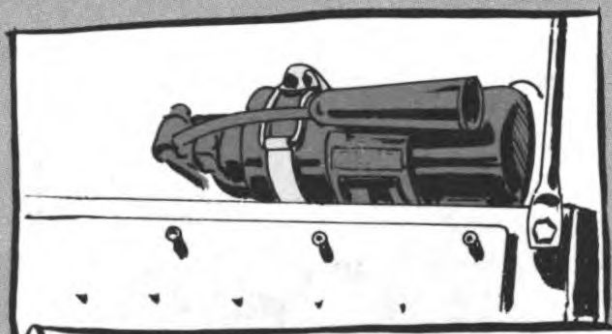
YOU GO

FUEL TANKS . . . Fill to base of the neck, slowly so fuel will level in both tanks. You can fill both at once to save time. Keep fuel caps on tight. Strainer should have no rips.

HAVE YOUR DA FORM 2404 IN HAND... MARK UP ANYTHING WRONG YOU CAN'T FIX.



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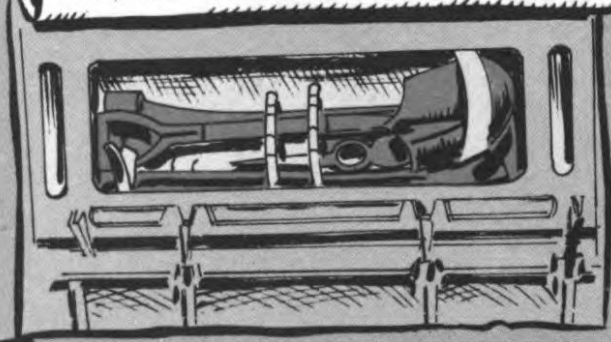

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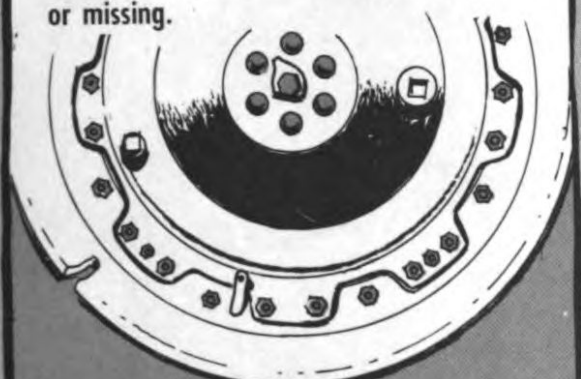

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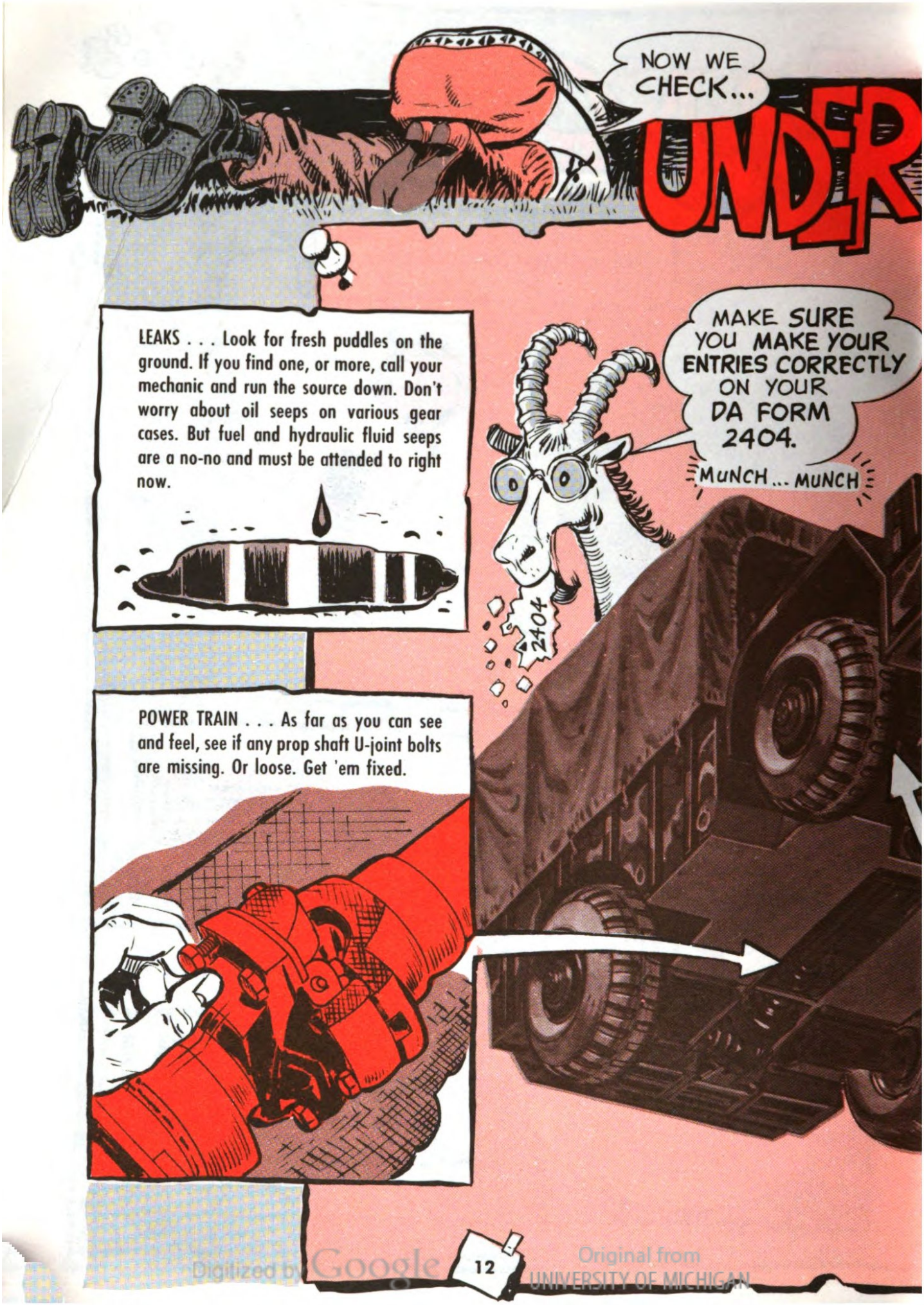

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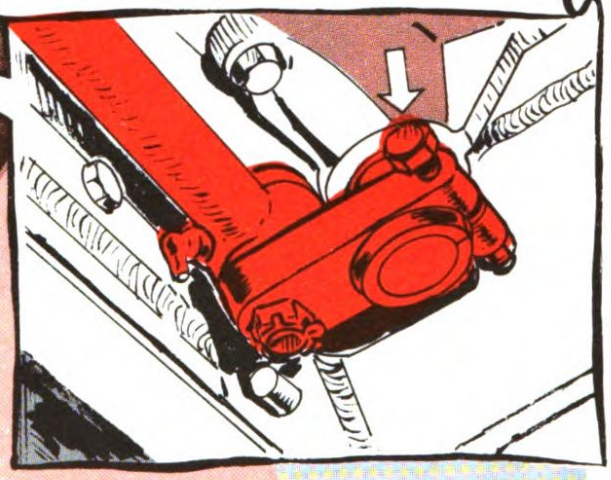
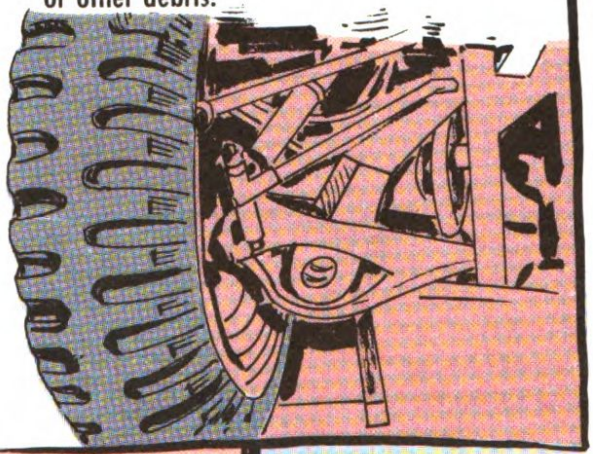
NEATH

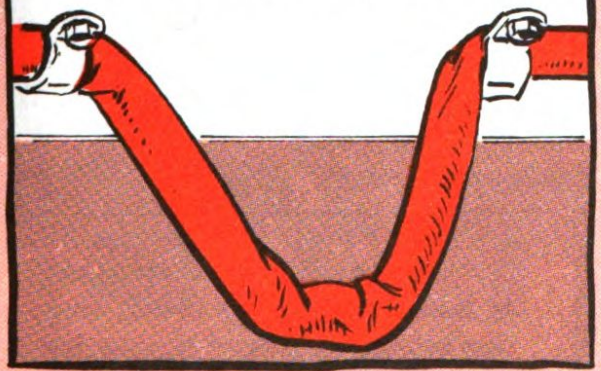
STEERING SYSTEM . . . Here again, give the whole system a good look for general damage or looseness. Report anything that looks suspicious.



SUSPENSIONS . . . Look over the springs, shock absorbers, frames, suspension arms, ball joints, attaching nuts for looseness and damage. Knock off any chunks of mud or other debris.



BRAKE LINES . . . If you see any pinched or hanging lines, seeps, leaks or anything that doesn't look right, mark it up on your 2404 and don't move out until it's fixed.



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HE-HE-HA THAT TICKLES.

NOW CHECK THE IN-BETWEEN

YUM! CASHEW-FLAVORED PAPER.

CHOMP

ENGINE COMPARTMENT...

UNLATCH THE ENGINE COVER... CAREFUL! IT'S SPRING LOADED... IT'LL DENT YOU. THEN PUT THE BRACE IN PLACE.

ENGINE OIL . . . You're OK if oil level is between ADD and FULL. But it's best to bring it up to the full mark. When adding go by your LO. Never overfill. It's best to wait about one minute after stopping engine before checking to get a more accurate reading. Make the check with an unscrewed (but seated) dipstick, and be sure to screw it tight after checking.

RADIATOR COOLANT . . . Level should be 1/2 inch below filler neck. Add clean drinking water only. This is pressurized system so put the cap back on tight. If it's loose your system will overheat. Add enough antifreeze to protect the system down to your lowest ambient temperature.

PRIMARY FUEL FILTER . . . Drain about 1/2 cup into a cup and inspect for water or contamination. If you find more than normal crud, drain and check the secondary filter. If it's contaminated too, report it and make sure it's all out before moving out. If it's too bad, the elements may need special attention by your mechanic.

V-BELT SETS . . . Tension OK? No bad splits or fraying?

A GENERAL LOOK . . . No loose electrical connections, no oil, water or fluid leaks, no loose components and nothing suspicious looking. No puddles of oil, water, fuel on hull floor. Especially after a heavy rain.

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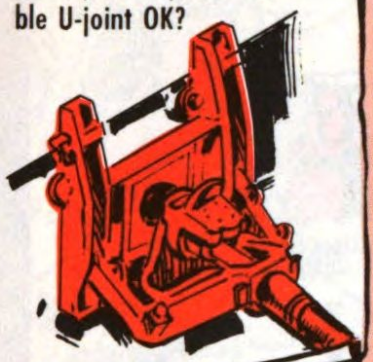
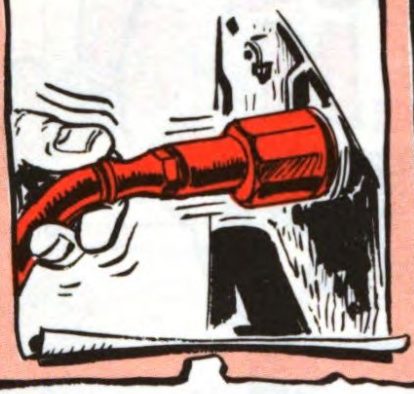
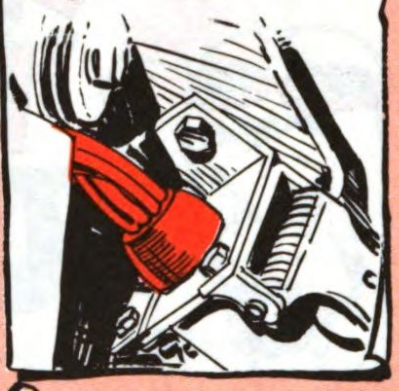
ARTICULATION JOINT . . . Not loose or damaged? Hitch pins in place? Double U-joint OK?



HYDRAULIC AND AIR LINES . . . Tight? Not leaking? No bad kinks.



INTER-VEHICLE ELECTRICAL CABLE . . . Connection tight?



CARGO BODY...

CANVAS CANOPY . . . Tie-downs tight? No large rips?

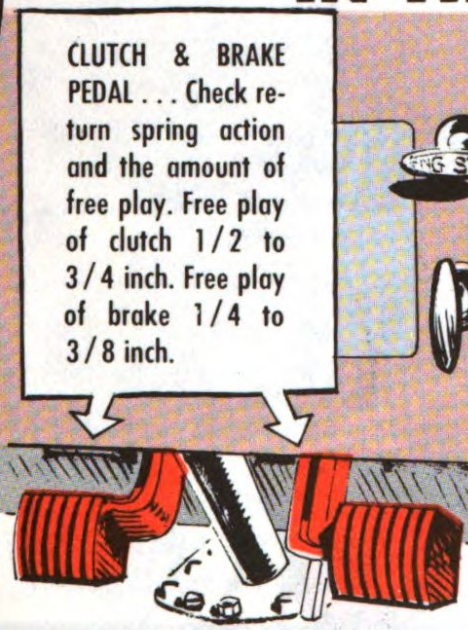
CARRIER STOP SIGNAL SWITCH . . . Works OK?

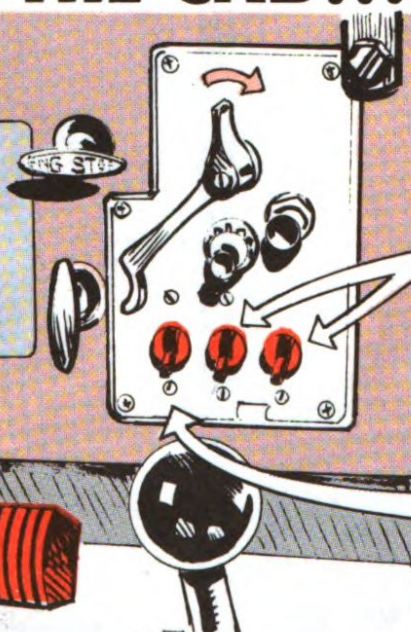
LITTER RACKS (IF AMBULANCE) . . . Straps holding tight, litters in place and secure?

TAIL GATE . . . Secure? Tight?

IN THE CAB...

CLUTCH & BRAKE PEDAL . . . Check return spring action and the amount of free play. Free play of clutch 1/2 to 3/4 inch. Free play of brake 1/4 to 3/8 inch.





LIGHTS, HORN & WIPERS . . . Horn honk? Flip on master switch, all lights OK, including brake lights? Wipers work OK?

BILGE PUMP . . . Work OK? Don't run dry more than 12 seconds.

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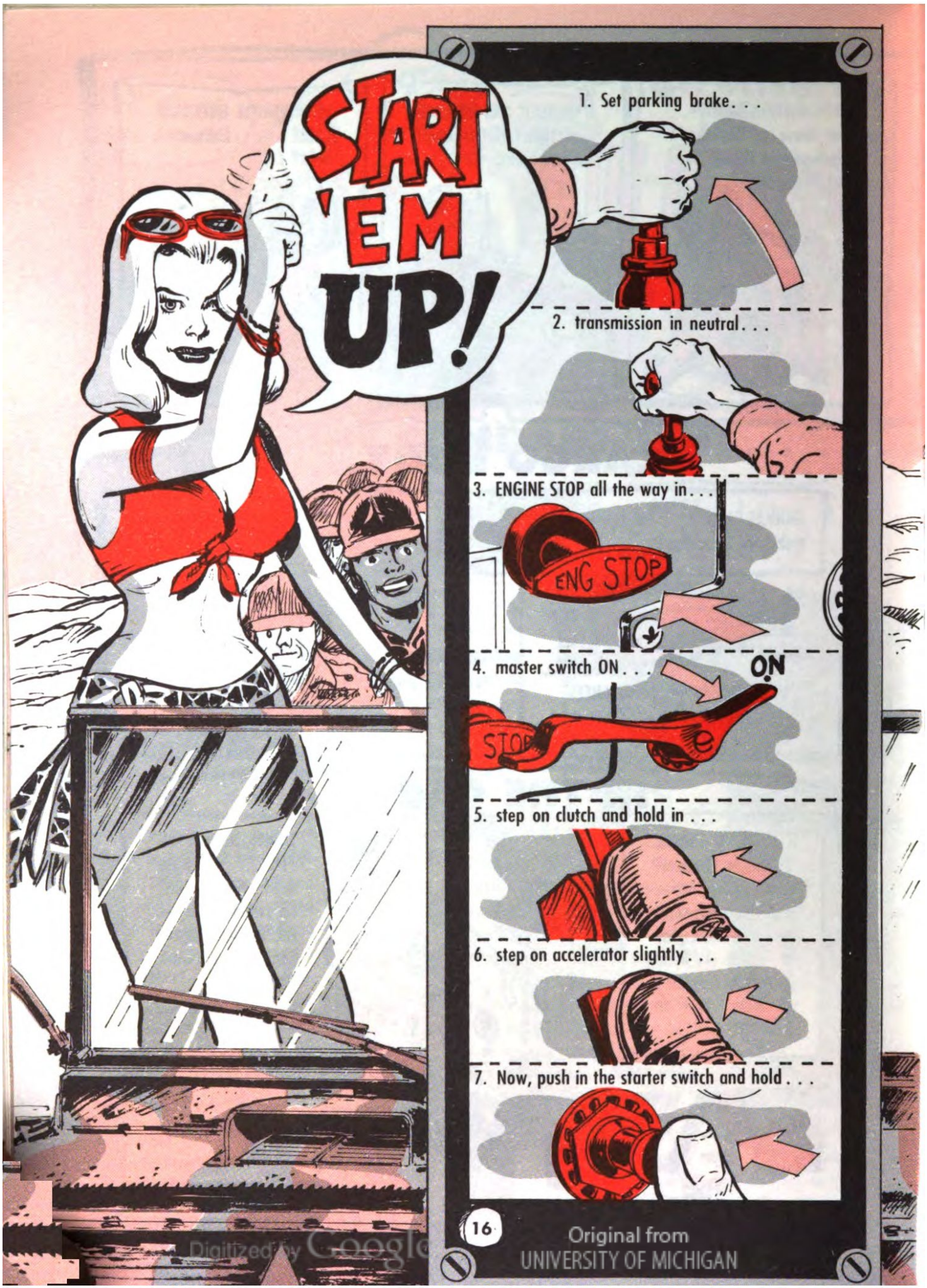

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IF SHE DOESN'T FIRE UP WITHIN 15-20 SECONDS...

Stop cranking . . .

and turn OFF master switch . . .

wait 30 seconds to cool starter . . . then try again.

If the weather is below 32°F, start like it says on page 26.

CHOMP! AFTER STARTING RUN AWHILE TO WARM-UP. THEN CHECK...

BATT-GEN INDICATOR . . . Needle should settle down about 3/4 into the green. If it stays in the yellow or goes into either of the reds, write it up on Form 2404.

AIR-CLEANER INDICATOR . . . If 1/2 or more of red is showing, shut down and clean air cleaner. See page 32.

OIL PRESSURE . . . Idling pressure is 18-30 PSI; but it should register at least 12 PSI within 10 seconds after you start.

TEMP GAGE . . . Operating temperature is 160° to 200°.

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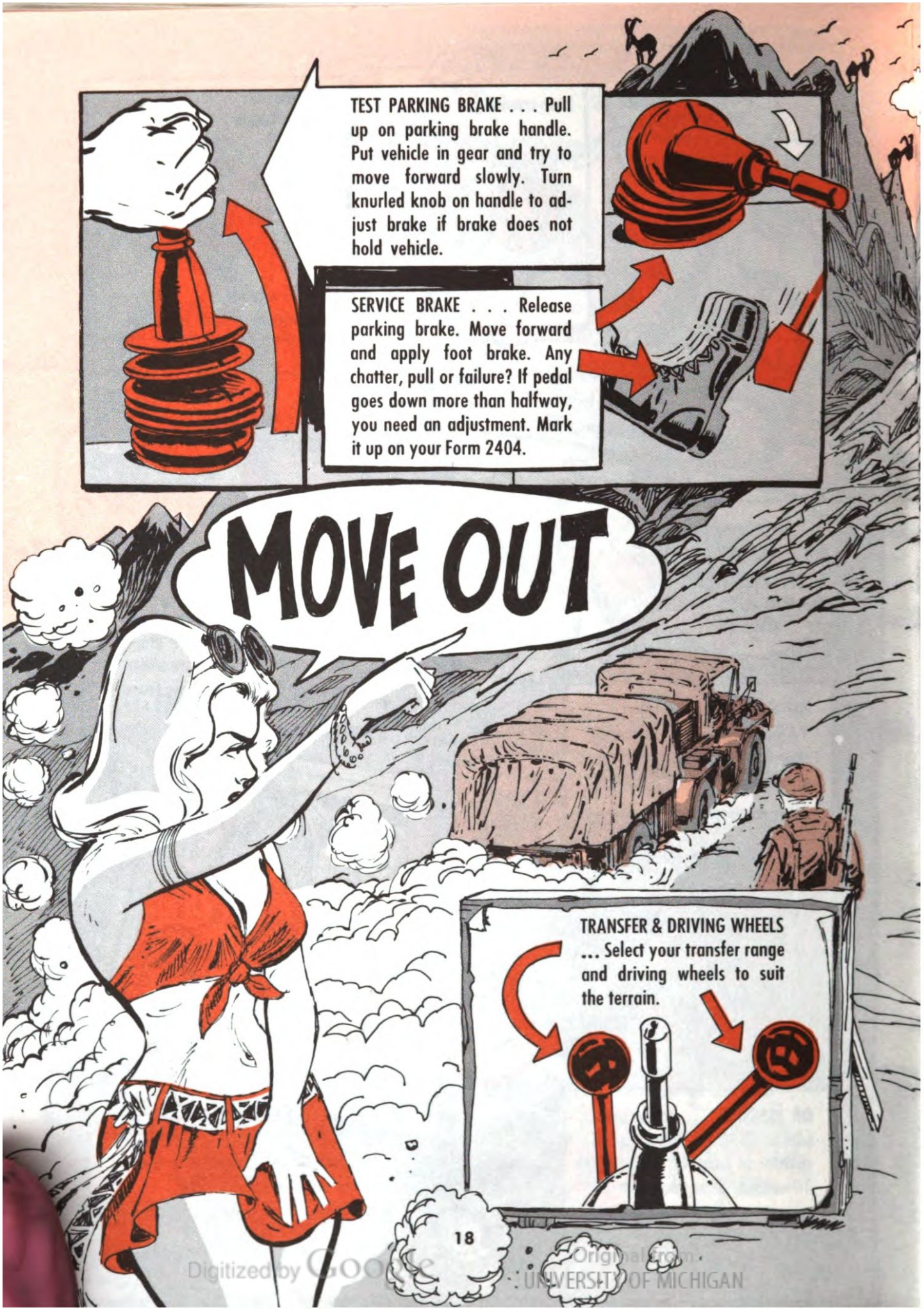

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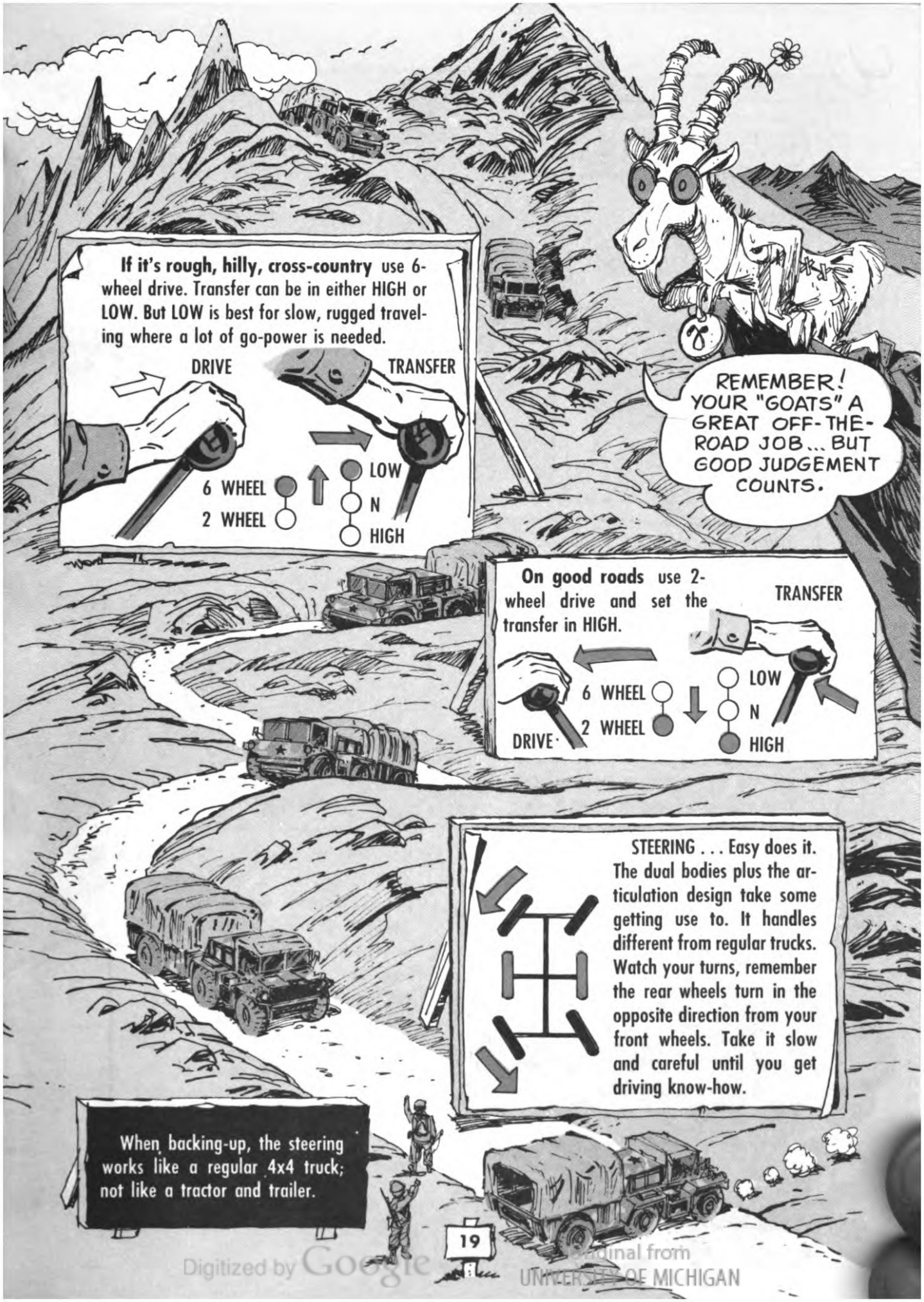

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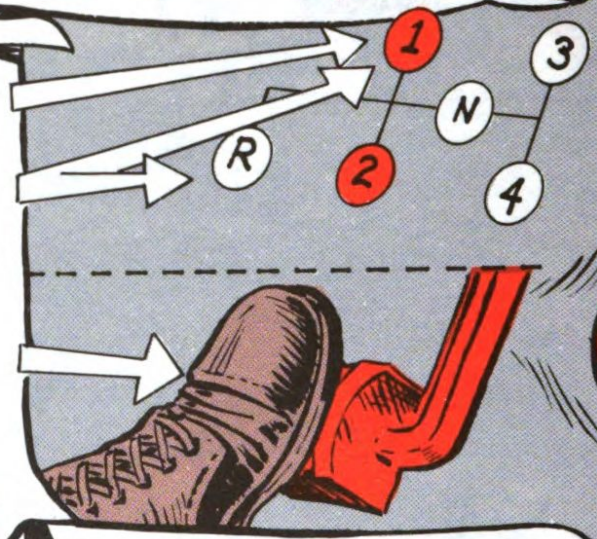
OPERATING POINTERS

NEW VEHICLE...For the first 100 miles road speed is limited to 40 MPH; second 100 miles no faster than 50 MPH. After 200 miles go by the road speeds shown on the "CAUTION" speed plate.

TO BE A GROOVY DRIVER...

KNOW

1. Always move out in 1st regardless of terrain and wheel drive.
2. Always stop before shifting into 1st or reverse.
3. Never skip gears when shifting . . . up or down.
4. Never ride the clutch.
5. Before going down a hill, slow down, get into the right gear for the slope, keep within the speed shown on caution plate and avoid using clutch while going down.



SOME REAL WISE GUY BLEW THIS L'IL CRITTERS' ENGINE, 'CAUSE HE USED IT AS A BRAKE.

6. Never use the engine to brake (by downshifting) for a fast screeching stop. And watch the engine speed downhill. The engine gives braking power when at top RPM, but the governor has no control over the engine RPM when it's pushed by a loaded vehicle. When the engine RPM goes over the rated governed speed on a downgrade you can blow the engine. Use the brake and gears to keep your speed under control. Since there is no tachometer you'll have to stick to the gear ranges and road speed on the "Caution" plate.

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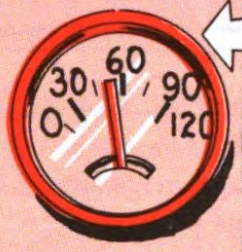
DURING-OPERATION CHECKS:



OIL PRESSURE . . . Normal operating pressure is 40 to 60 PSI.
OPERATING CONTROLS...Watch the steering, shifting, power train, clutch, transmission and transfer for any possible trouble or difficulty of operation. And keep an ear open for sounds that indicate trouble.

THESE

7. Overheating . . . if temp gage goes over 220°, stop your vehicle and run the engine at high idle until temp drops. Never add water to a hot cooling system.

8. Don't force the controls.

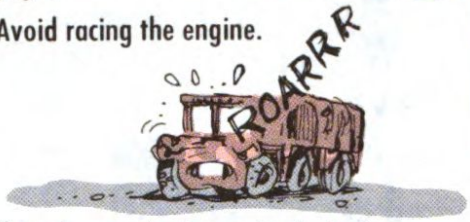
9. Never rock the vehicle between 1st and reverse. This'll ruin the transmission real quick.

10. Use 6-wheel drive with transfer in LOW to creep over obstacles, through mud, bogs, snow or loose sand.

11. To get better traction in deep snow, mud, or ice, put chains only on the 2 center wheels. Always use chains in pairs, never on a single wheel only. Using one chain can tear up the power train.

12. To get out of a skid, let up on the gas and pump brakes lightly. Don't clutch.

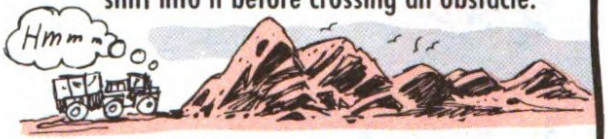
13. Avoid racing the engine.



14. If stuck or under heavy load, don't race your engine and slip the clutch to gain power—downshift.

15. Never shift from 2-wheel drive into 6-wheel drive while moving. Stop, drop to idle . . . then make the shift.

16. Plan ahead . . . pick the gear range and shift into it before crossing an obstacle.



17. Approach ditches and obstacles head-on; ease all wheels over at a low slow speed. No charging.

18. LAST... Always keep within the gear ranges and road speed limits you see on the driving "CAUTION" plate.

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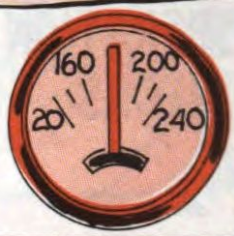
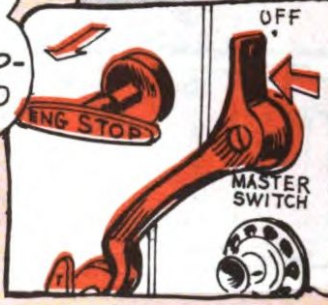
STOPPING...

YOU CAN USE THE ENGINE ALONG WITH THE BRAKE TO STOP- BUT DON'T DO IT FAST.

COOLING—temp gage should be at 180°. If above, run at high idle until it drops.





LAST—flip the master switch to OFF and pull out the engine-stop handle. Leave it out; don't push it in until you're ready to start again.

NOW.. LET'S HAVE AN...

AFTER OPERATION CHECK

ENGINE COMPARTMENT — Look for leaks. Too much oil, water, fuel puddled on the hull floor could mean trouble. Let your mechanic know if you have leaks. Wash and pump out bilge waste.

FUEL TANKS—Fill up to prevent condensation.

WHEELS AND TIRES — Look for deep tire cuts. Remove debris stuck between tire bead & rim. No sheared lug or retaining bolts.

UNDERNEATH AND IN-BETWEEN — Remove stuck brush and other debris.

PARKING BRAKE — Set it before walking away. And if you must park on a slope, chock at least 2 wheels, one on each side.

DA FORM 2404

WRITE UP ANY FAULT THAT YOU CAN'T CORRECT; INCLUDE ANYTHING YOU SUSPECT IS WRONG.

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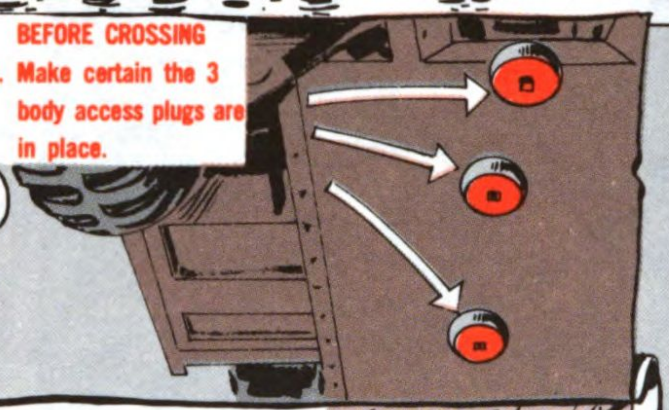
WATER-OPERATION

WHEN **FORDING**, YOUR DEPTH LIMIT IS **30** INCHES, AND THE CURRENT SHOULD BE NO MORE THAN **6 MPH** (THAT'S TROTTING SPEED).

BEFORE CROSSING

1. Make certain the 3 body access plugs are in place.



2. Is the tailgate closed and sealed tight all around?

3. Get into 6-wheel drive.

4. Put transfer in LOW.

5. Shift transmission into 1st gear.

6. Switch on the bilge pump.

WHEN CROSSING... STAY IN **1**ST OR **2**ND. KEEP A STEADY LOW **SPEED** OF **2** OR **3MPH**... ABOUT WALKING SPEED. KEEP ENGINE RPM UP.

WHEN ACROSS...TURN OFF BILGE PUMP AND THEN, INSPECT UNDERNEATH FOR ANY STUCK BRANCHES OR OTHER JUNK.

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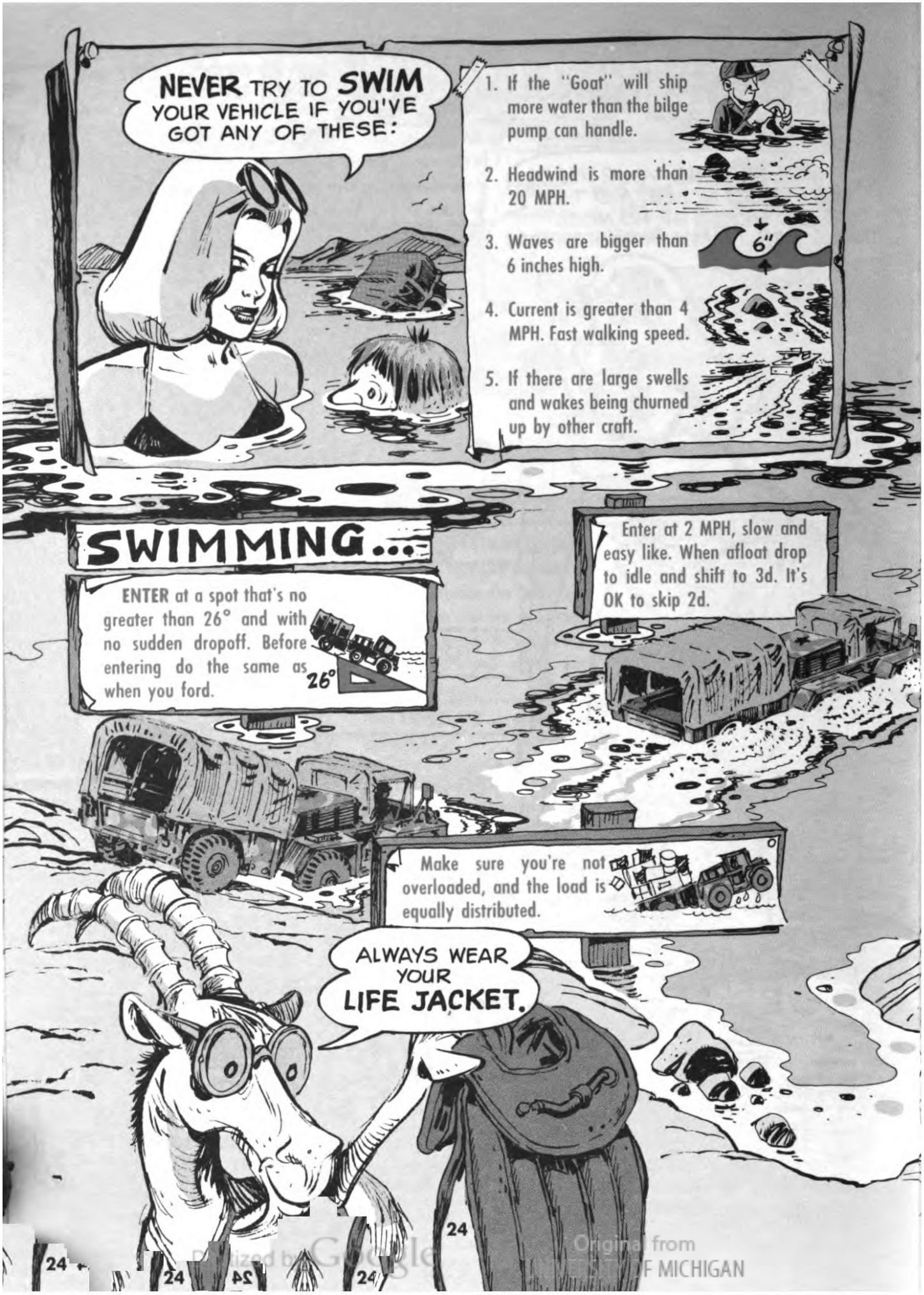

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You can use reverse gear to help maneuver or stop, but before shifting into reverse, brake and wait until the wheels stop then make the shift. Do the same when going forward again.

HEY, HEY!! LIKE COOL IT WHEN TURNING, WATCH THOSE WAKES FROM OTHER CRAFT.. SPLITSVILLE, STAY A-WAY.

Keep in mind that turns and stops take more maneuvering area so plan your turns and stops well ahead.

Accelerate until the speedometer reads between 19 and 21 MPH. This'll propel the "Goat" at about 2 MPH.

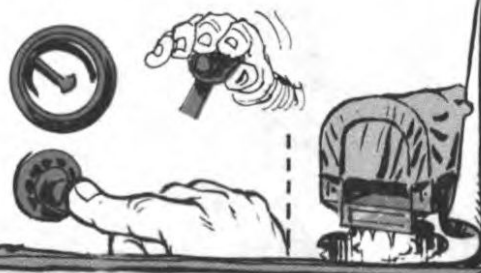
EXIT at a shore that's sloped no greater than 22°, and is firm ground.

Avoid mucky banks that can cause the "Goat" to slip back and ship water.

Approach the bank head-on, not at an angle.

Drop engine RPM to idle and shift to 1st gear, go out slow and easy. Give the water a chance to drain off.

On the bank, stop the bilge pump, drop the tailgate and let any trapped water run out.



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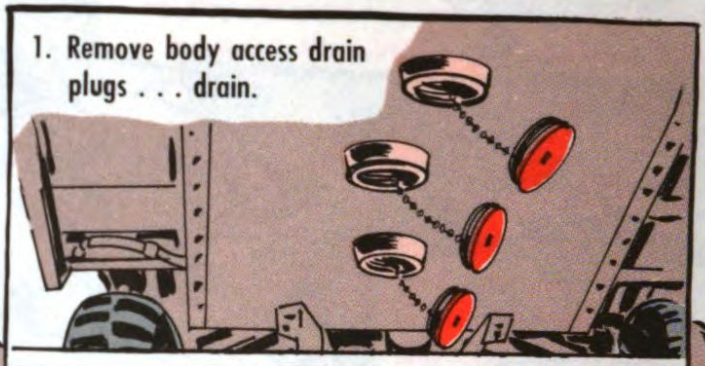
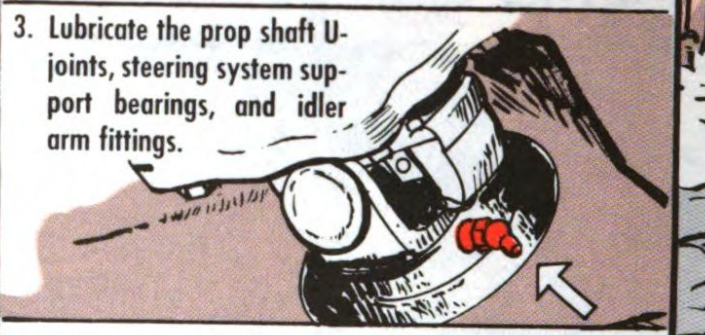
AFTER FORDING OR SWIMMING:

1. Remove body access drain plugs . . . drain.

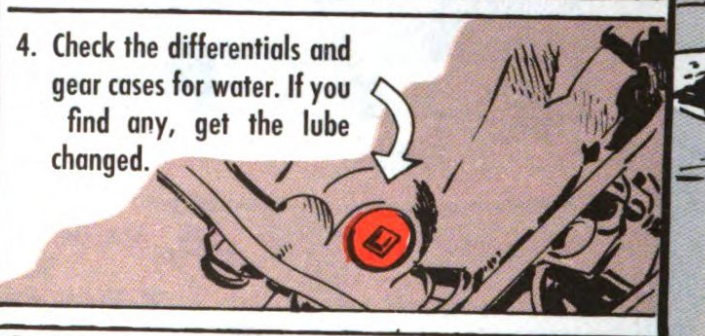


2. Remove brake drum drain plugs . . . drain out any water. If you find more than a trickle report it on your Form 2404.

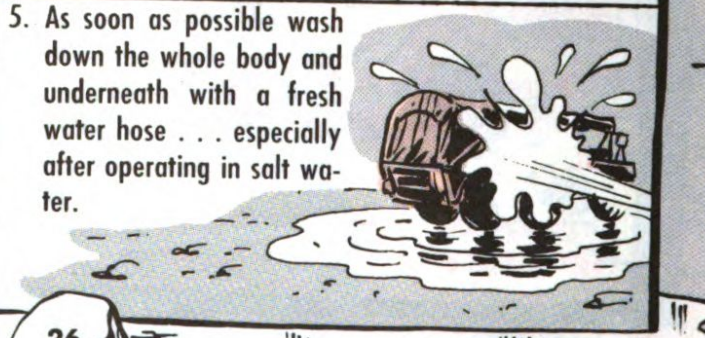
3. Lubricate the prop shaft U-joints, steering system support bearings, and idler arm fittings.



4. Check the differentials and gear cases for water. If you find any, get the lube changed.



5. As soon as possible wash down the whole body and underneath with a fresh water hose . . . especially after operating in salt water.



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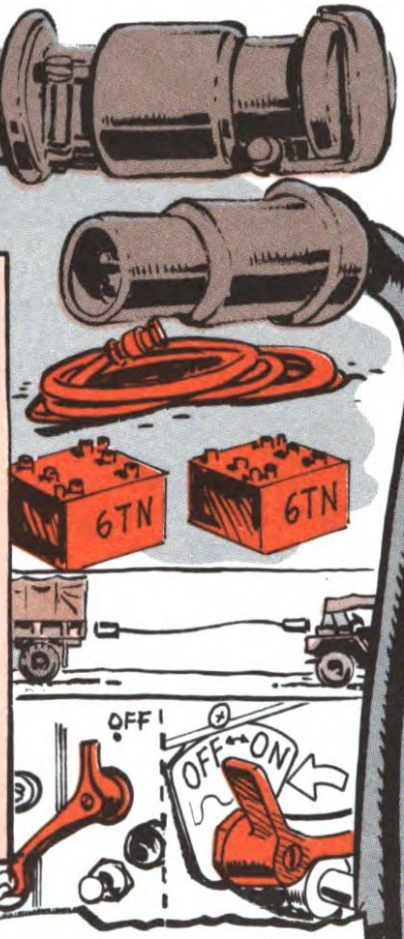
AUXILIARY STARTING

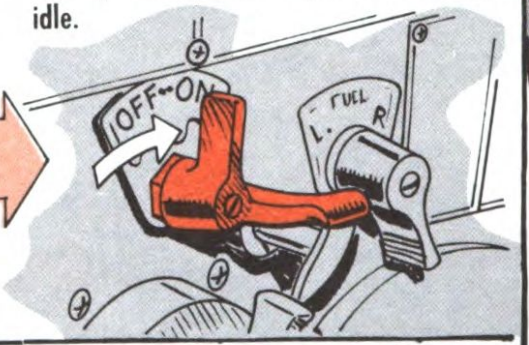
IF YOUR GOAT IS EQUIPPED WITH A SLAVE RECEPTACLE...

1. Get a slaving cable from your company's common tool set.
2. Find another vehicle that's equipped with a slaving receptacle and has 6TN batteries (same as your "Goat"). Like a 2½- or 5-ton truck.
3. Bring both vehicles within cable reach, set parking brakes, shift to neutral and . . .
4. turn OFF master switch in both. Then . . .

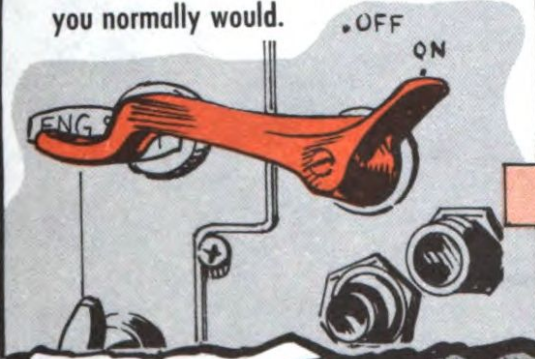


5. Hook-up the slave cable making certain a positive-to-positive and negative-to-negative connection is made.

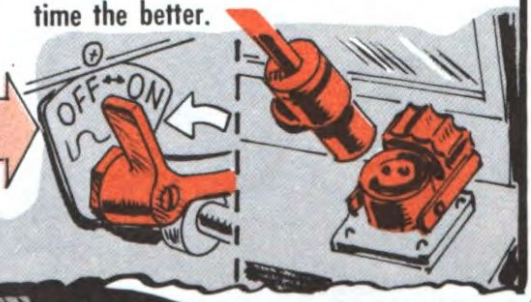
6. Turn ON ignition or the master switch in the slaving vehicle, start it up and run at high idle.



7. Push in ENG stop, turn ON the master switch in the slaved "Goat" and start as you normally would.



8. After your "Goat" is started and running OK, turn OFF the slaving vehicle and disconnect the cable. Make the disconnect as fast as possible. The shorter the hook-up time the better.



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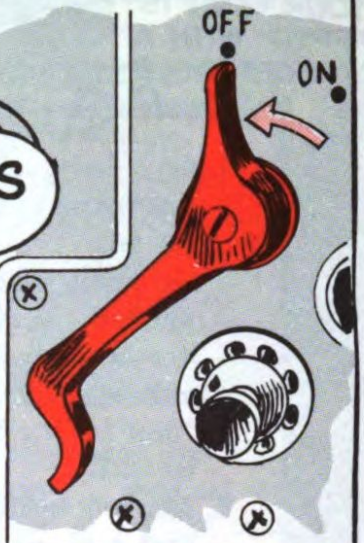
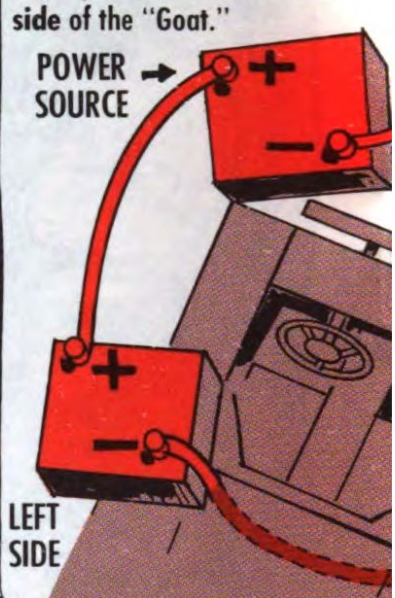
USING **JUMPER CABLES** IS TRICKY. SO FOLLOW THIS PROCEDURE:

1. Make sure the "Goat's" master switch is OFF.

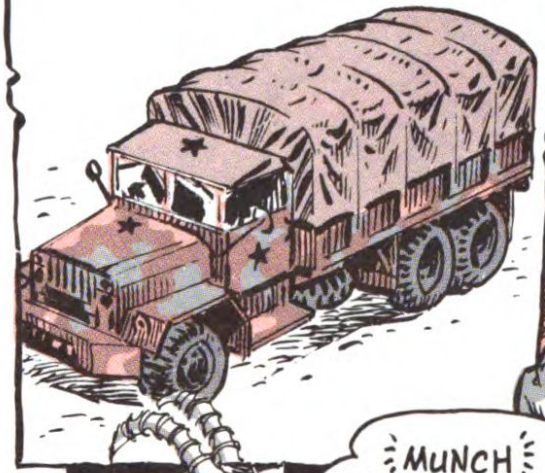


Jumper cables are regular issue:
NSN 2920-01-027-0125

2. Connect the jumper cable from positive (+) post of the 24-volt power source to the positive (+) post of the battery that's on the **LEFT** side of the "Goat."



USE ANY 2½-OR 5-TON VEHICLE TO TOW YOUR "GOAT".



TOW START—

TOW, NEVER **PUSH**. IT'S **BEST** TO USE A TOW BAR. A TOW BAR GIVES BETTER CONTROL AND SAFETY.

:MUNCH: YOU CAN FIND A TOW BAR ON ANY 5-TON WRECKER.

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3. Next, connect the negative (–) post of the power source to the negative (–) post of the battery that's on the **RIGHT side** of the "Goat."

POWER SOURCE

REMEMBER! 24-VOLTS LIKE ON ANY 2½-OR 5-TON TRUCK.

RIGHT SIDE

4. Flip ON the master switch and start.

OFF

ON

5. After you're started, remove the positive (+) cable from the "Goat" and the power source . . . completely.

6. Then remove the negative (–) cable. This will head off dangling, flashing cables.

REMEMBER! HOOK TH' TOW BAR TO MY FRONT TOWING SHACKLES.

AFTER YOU'RE HOOKED-UP . . .

1. Place the Transfer in HIGH . . .

HIGH

2. Move into 2-wheel drive . . .

2 WHEEL

3. Shift to 3d . . .

N 3

4. Push in ENGINE STOP handle . . .

P

5. Master switch ON . . .

OFF ON

6. Release parking . . .

7. Depress clutch . . .

8. Signal to start towing; when you're rolling at about 10 MPH, depress accelerator slightly, release the clutch slowly and fully. The engine should start. If it doesn't start after several tries, it's a job for your company mechanic.

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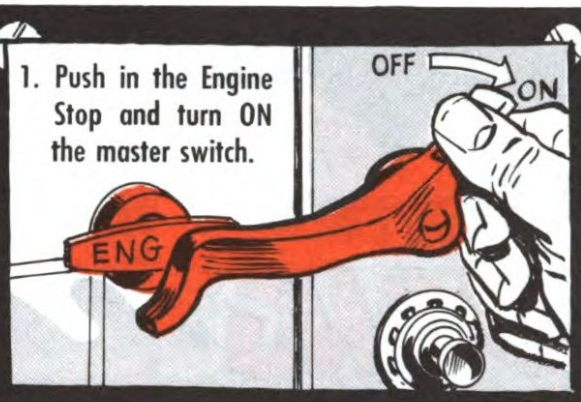
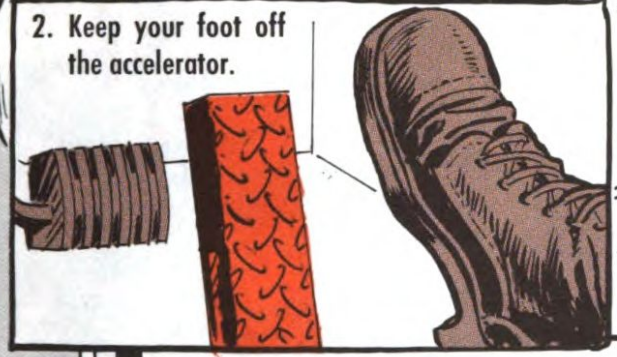
COOL IT, "MON"... FEAST YOUR FLICKERS ON THIS **STEP** BY **STEP**:

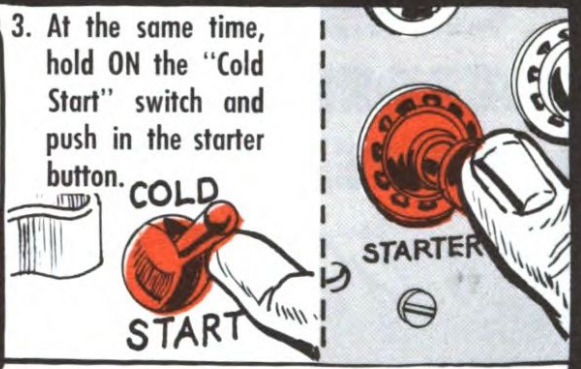
1. Push in the Engine Stop and turn ON the master switch.



2. Keep your foot off the accelerator.

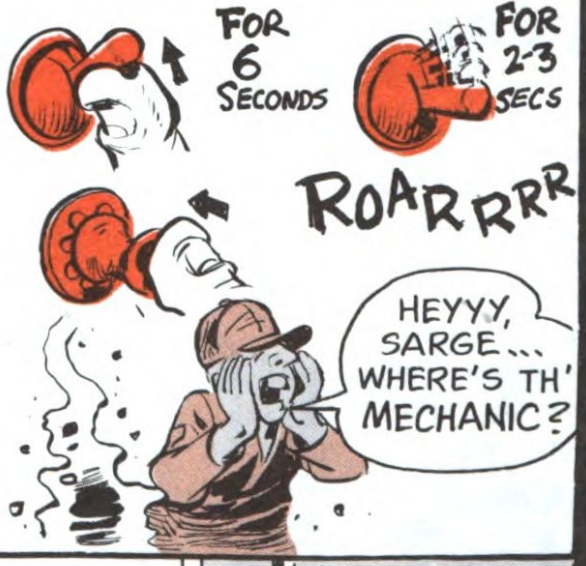


3. At the same time, hold ON the "Cold Start" switch and push in the starter button.

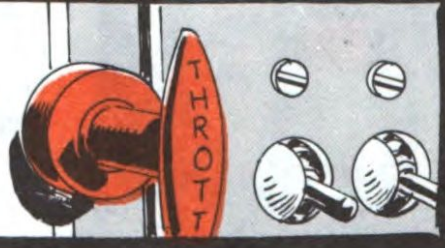


4. If engine doesn't start in about 45 seconds, keep cranking, release the cold start switch and push in the foot accelerator about half-way.

5. Still no start? Release accelerator, keep cranking and again hold on the "Cold Start" switch for about 6 seconds, then OFF for 2 or 3 seconds. Continue doing the ON-OFF cycle with the heater swich until the engine starts. But the whole starting process should take no longer than about 45 seconds. If you can't start in this time, you better call your mechanic. Cranking the engine for long periods without stopping to cool the starter will burn it out.



6. Lasf, adjust the hand throttle to run at high idle until the engine temperature gage starts to register before moving out.



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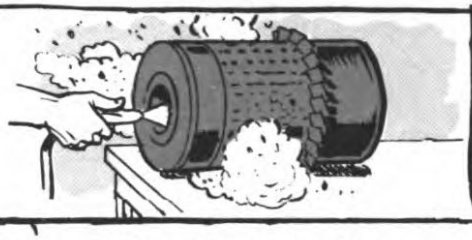
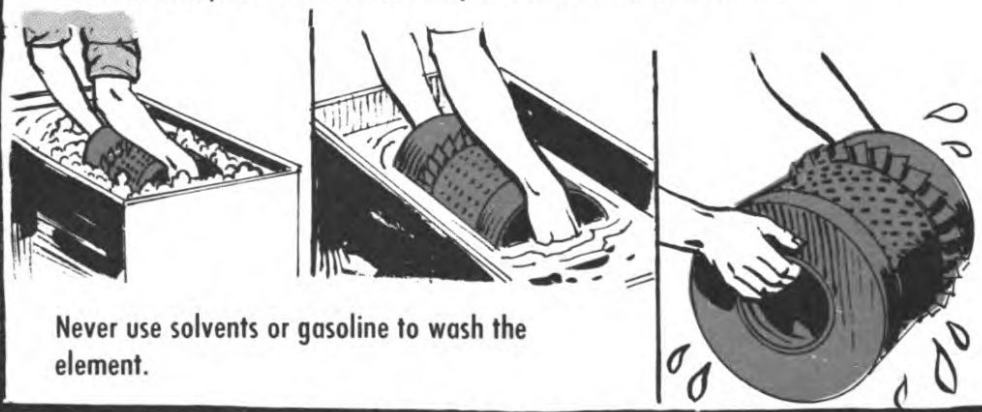
TO CLEAN...

1. Blow out the element with an air hose; blow from inside out. (Air Pressures Not Greater Than 100 PSI)



2. If no air is available, wash the element with non-sudsing detergent and luke-warm water. After rinsing, let it set and dry for 24 hours. Never install a wet element. If you can't wait, put in a new element and return the wet one to stock so it can be re-used when dry. A wet or even damp element could cause trouble.



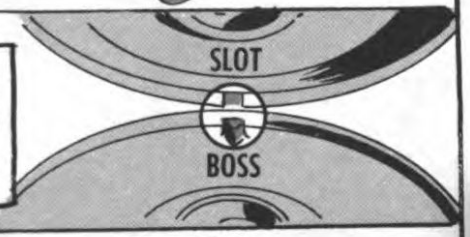
Never use solvents or gasoline to wash the element.

3. Blow and wipe out the shell, filter base and vacuator valve. And remove the rag from the intake elbow. Make certain the gasket and clamps are in good condition.

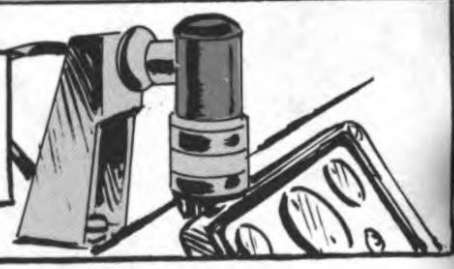
TO REINSTALL...

1. Put the element into the shell and tighten the top wing nut. Careful . . . don't damage the fins.

2. Set the shell onto the base and aline the arrows, and/or the slot in the shell with the base boss . . . then clamp tight.



LAST — Reset the air-restriction indicator to show green.



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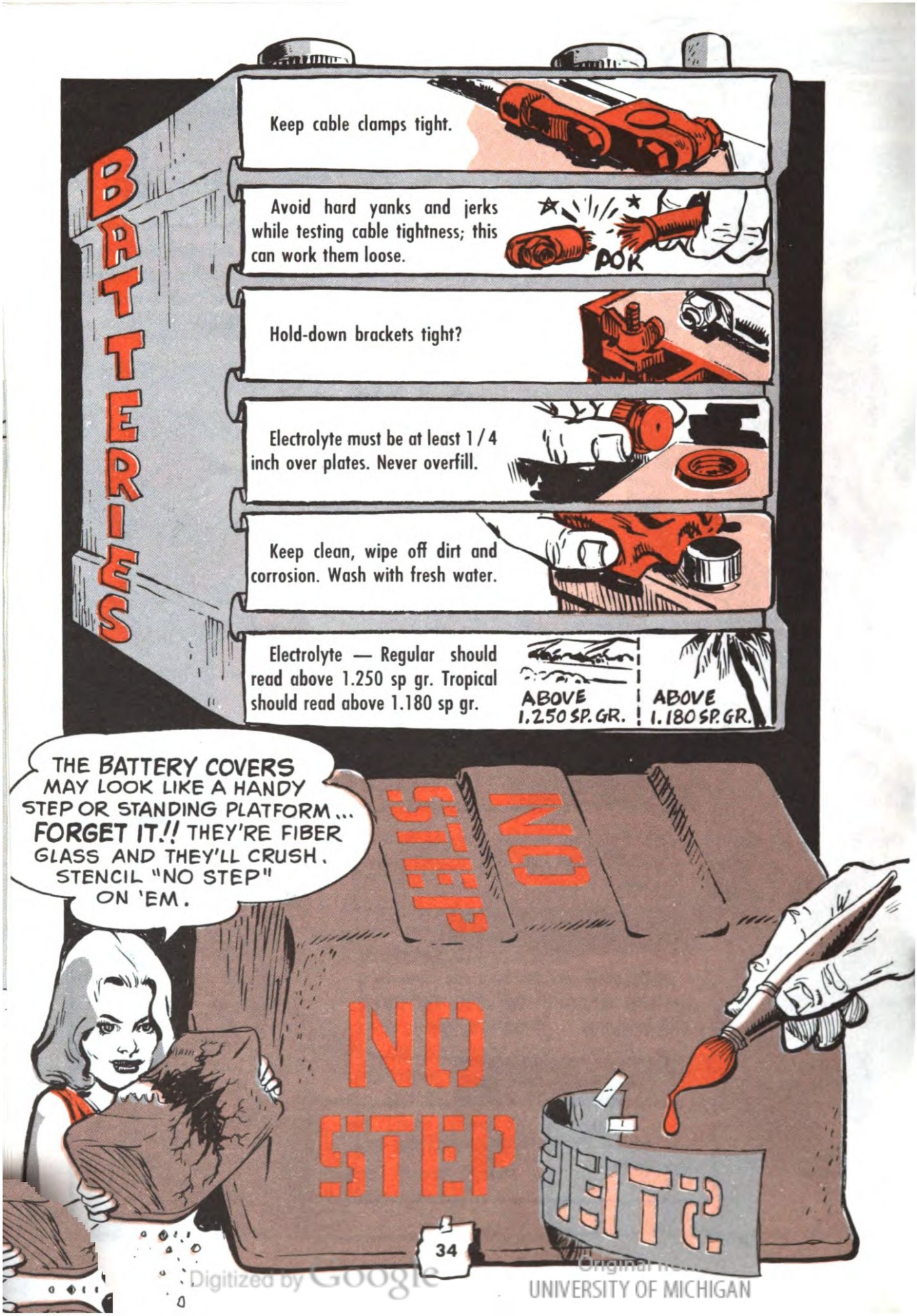

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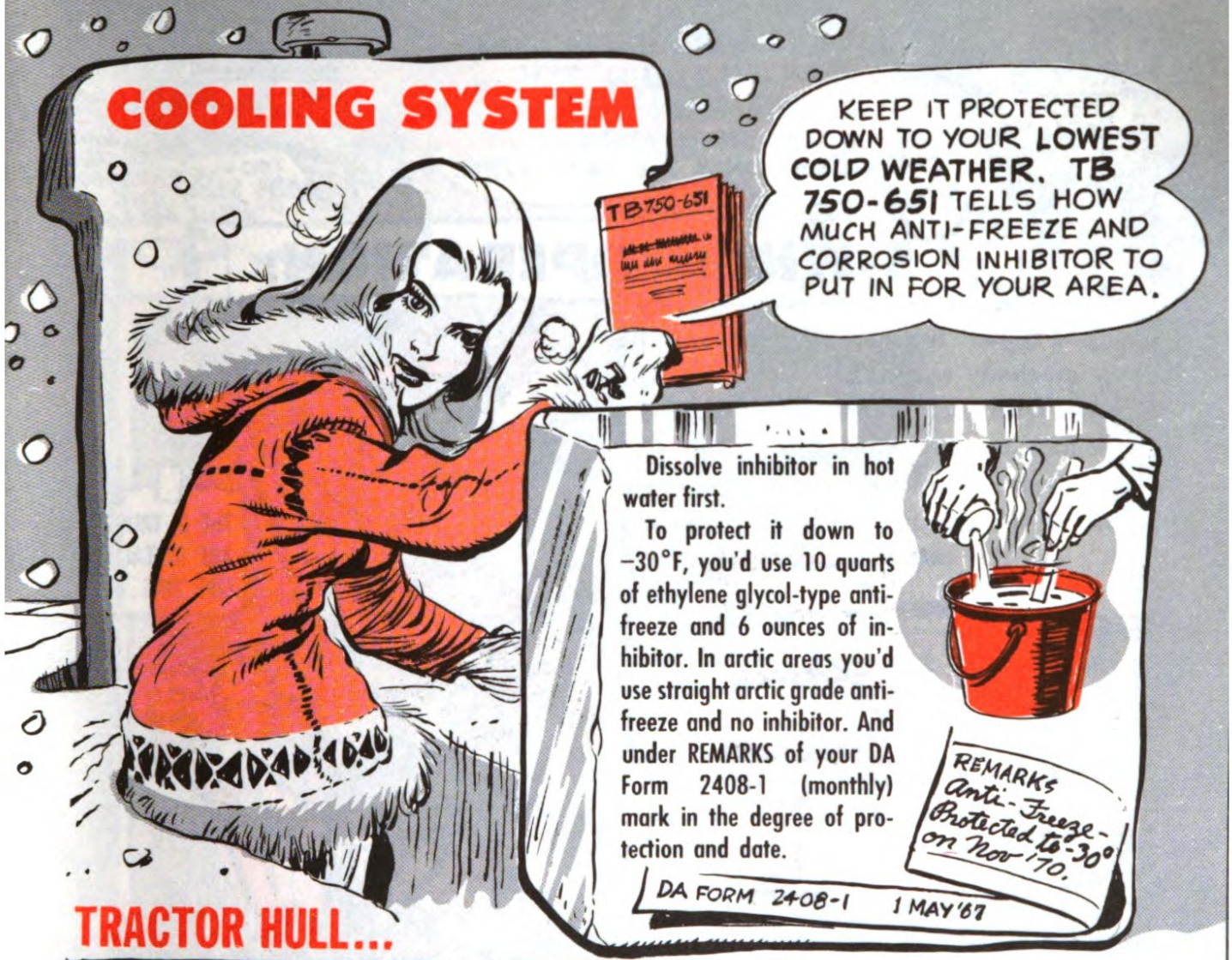
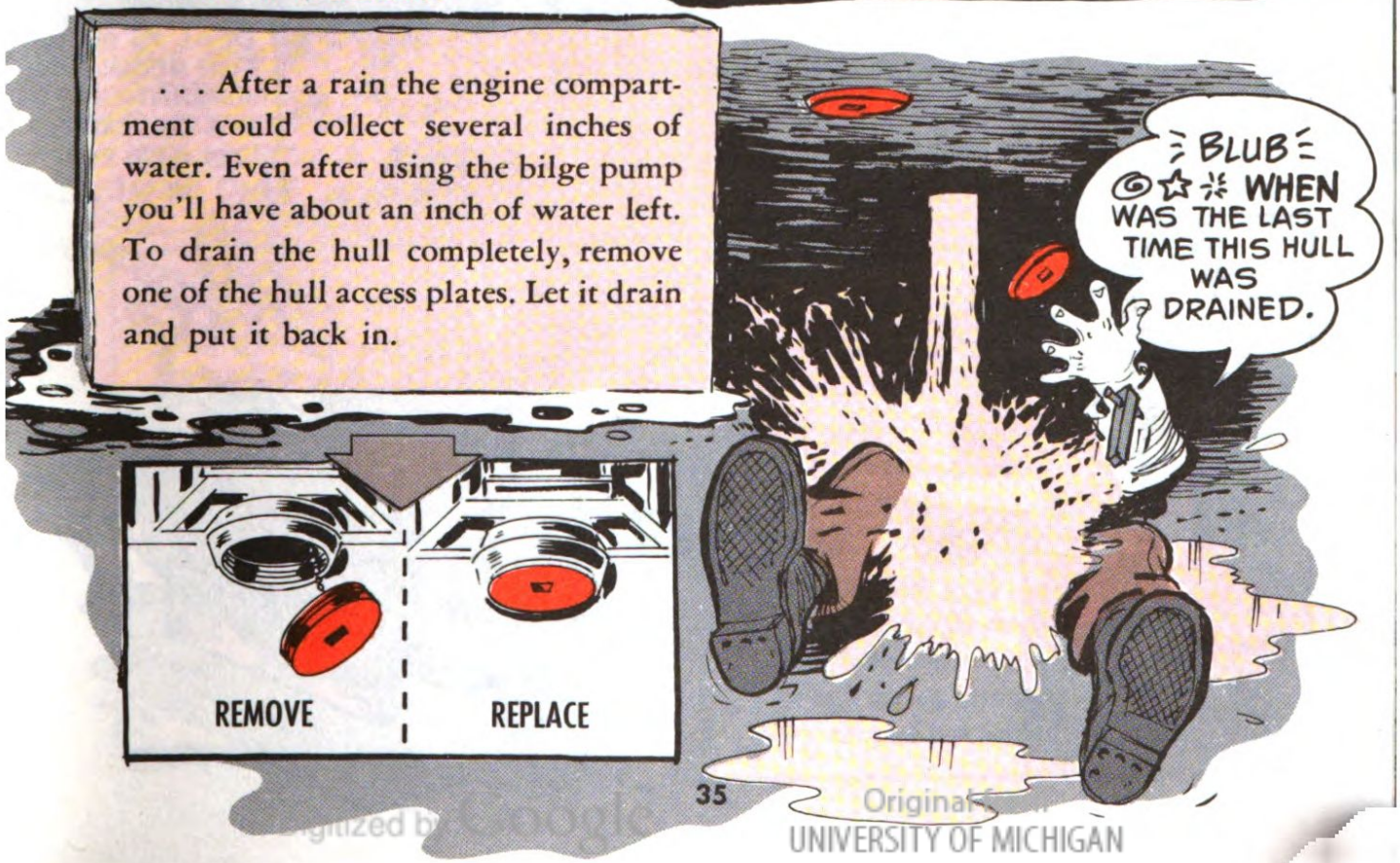
COOLING SYSTEM



TRACTOR HULL...

. . . After a rain the engine compartment could collect several inches of water. Even after using the bilge pump you'll have about an inch of water left. To drain the hull completely, remove one of the hull access plates. Let it drain and put it back in.



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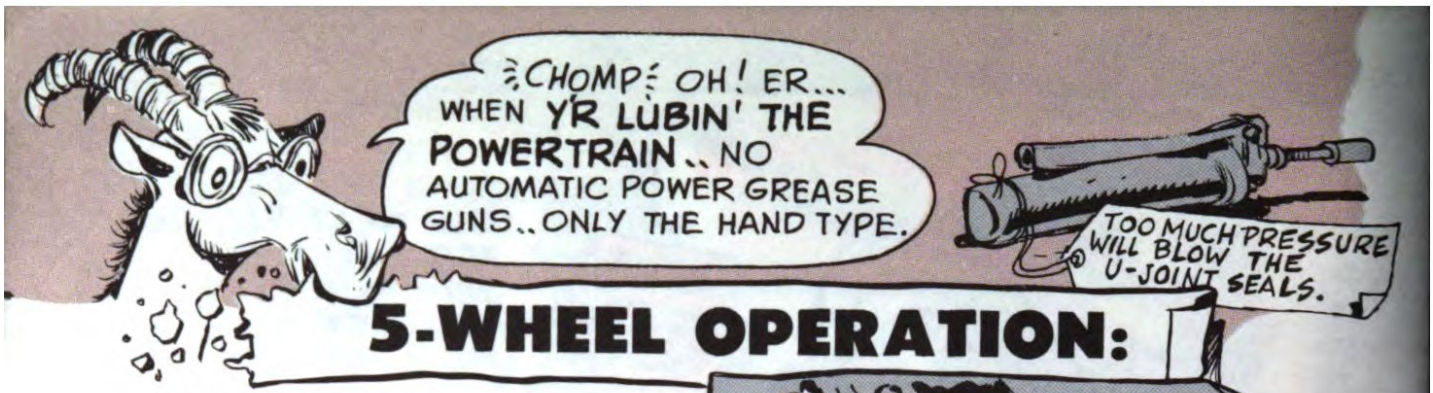
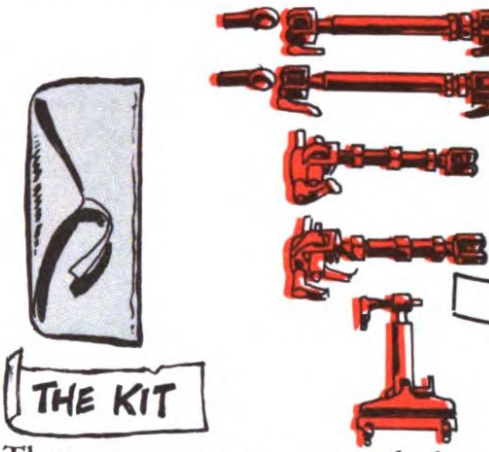
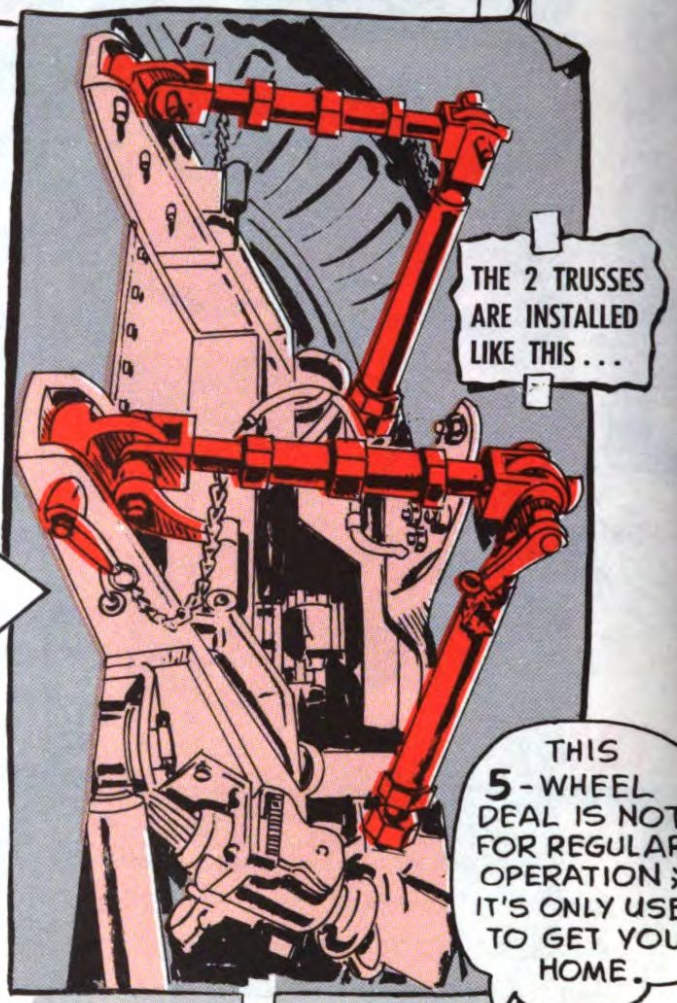


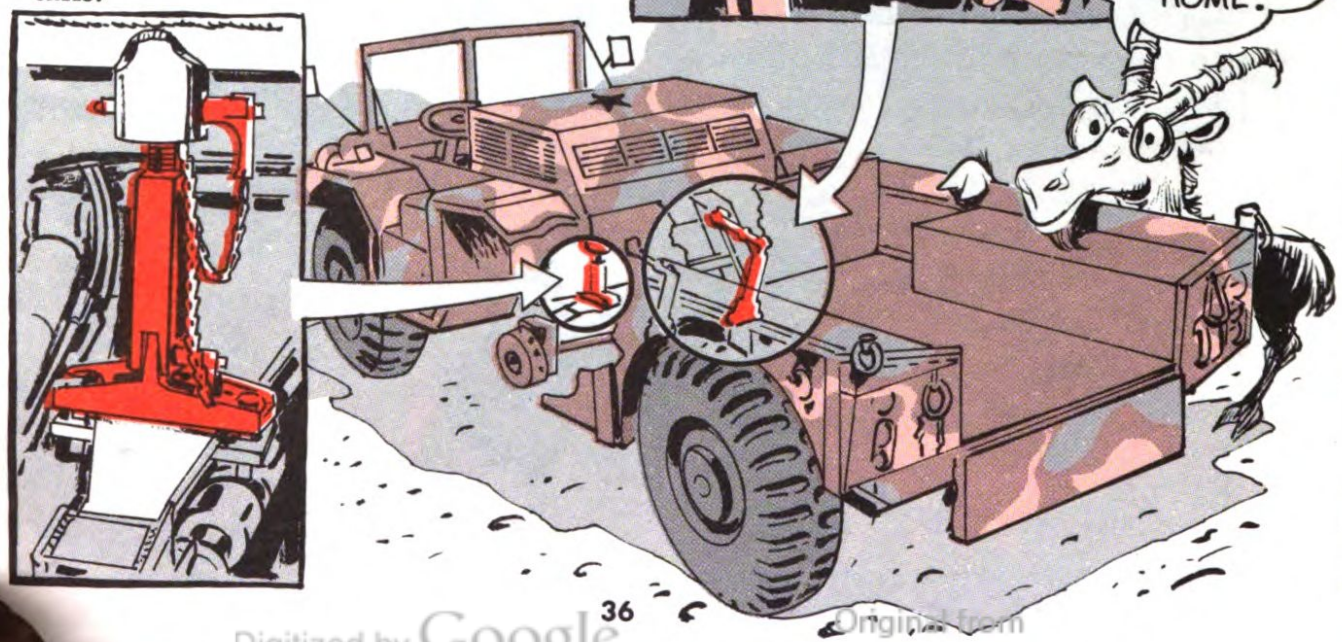
5-WHEEL OPERATION:

The "Goat" has no spare tire. There's an interbody truss and brace kit that comes with every vehicle. This kit lets you lock out the articulating feature so the "Goat" assumes the rigid characteristics of a regular 1-piece frame truck.



Then you remove one of the center wheels and use it on the front or rear as a replacement tire and wheel. The braces and truss are installed as shown here. See your -10 TM for exact details.





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JACK POINTS...

CHECK THIS... CAUSE YOU GOTTA KNOW WHERE TO LIFT.

JACK POINTS

FRONT AND REAR WHEELS — Place jack under the lower suspension arms in the area of the coil springs.

CENTER AXLE — Use the jack pads on the A frames.

CARRIER HULL — Position the jack at the reinforced side frames or under frame below pintle hook.

THE WHEEL AND TIRE WEIGH OVER 100 POUNDS, SO GET A FRIEND, YOU DIG?

CHANGING WHEELS

1. Chock the other wheels to prevent the "Goat" from rolling off the jack.

2. Loosen the wheel lug nuts about a 1/2-turn.

3. Place jack under the jack point with larger part on level solid ground and lift away.

4. After all lug nuts are removed, lift the wheel off. Sliding it off will damage the threaded studs. This also applies when putting the wheel back on.

5. INSTALLING LUG NUTS — Tighten finger tight then tighten in a crisscross pattern with the lug wrench. Make 'em good and tight.

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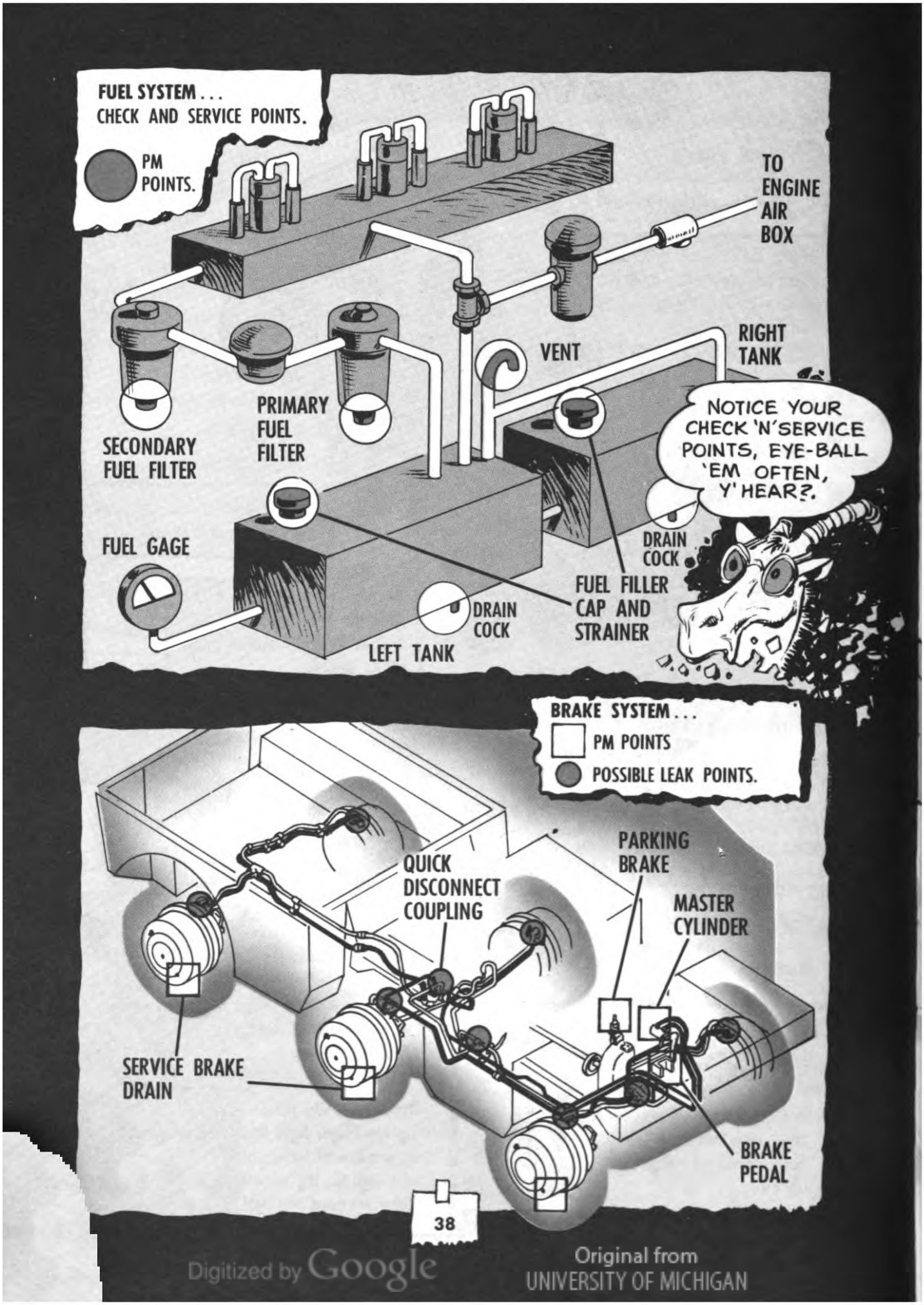

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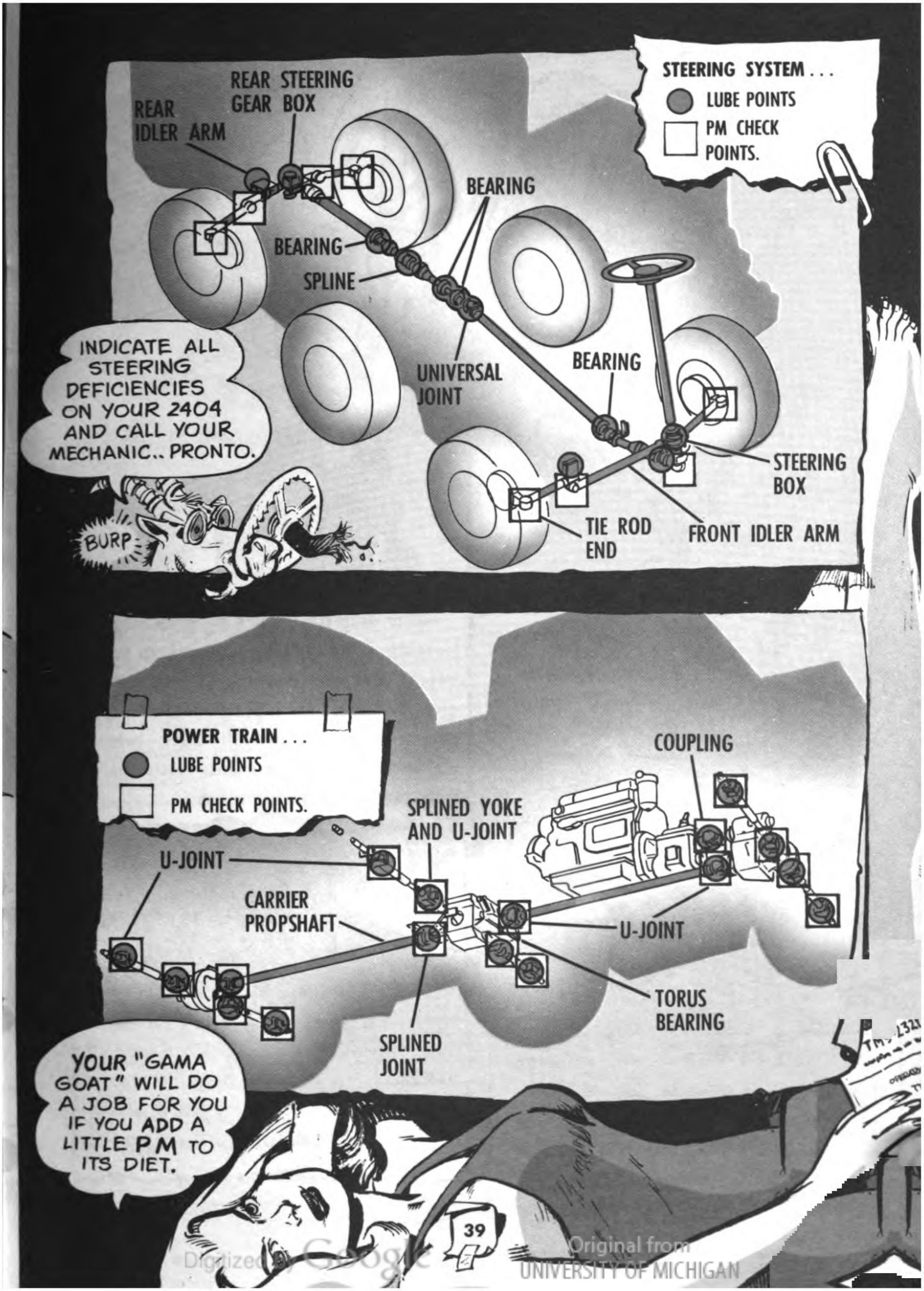

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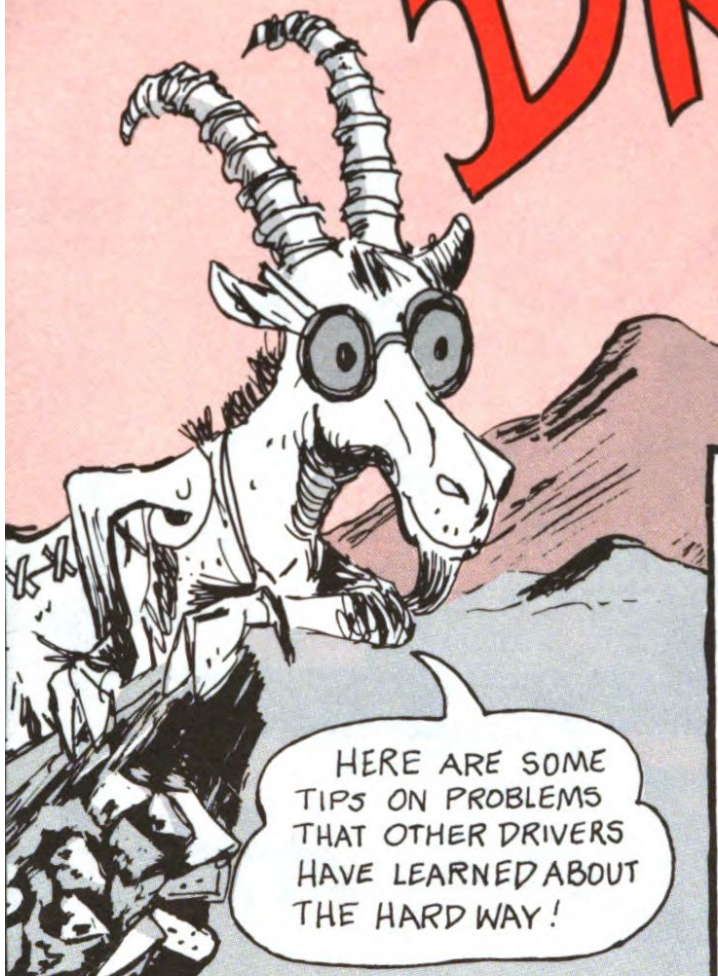
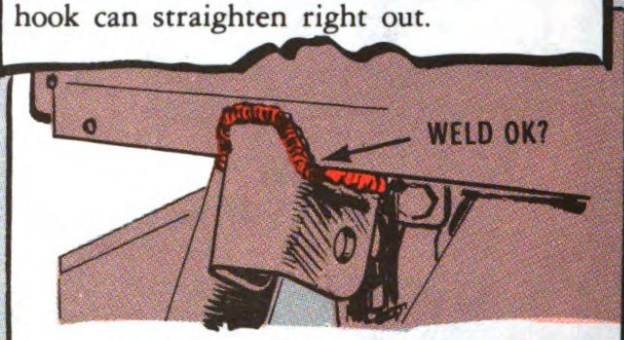
DRIVER TIPS



Never drop the tailgate or travel with it hanging down. It's light metal, to save weight, and gets dented and bent pretty easy. And never put a heavy weight on the tailgate—even your own full weight—when it's held open on the chains. That chain hook can straighten right out.

ENGINE COVER—Before sticking your head under there, be sure the engine cover's tipped all the way back. Straighten out the hinge brace and lock it. Pull the rod brace down and set it in place. Then a gust of wind won't slap that cover down on your neck.



BRACE BRACKET—This's for the 5-wheel operation kit. Eyeball the weld all around. Some brackets have torn loose, probably because the brace assembly wasn't installed right. (More on that coming.)

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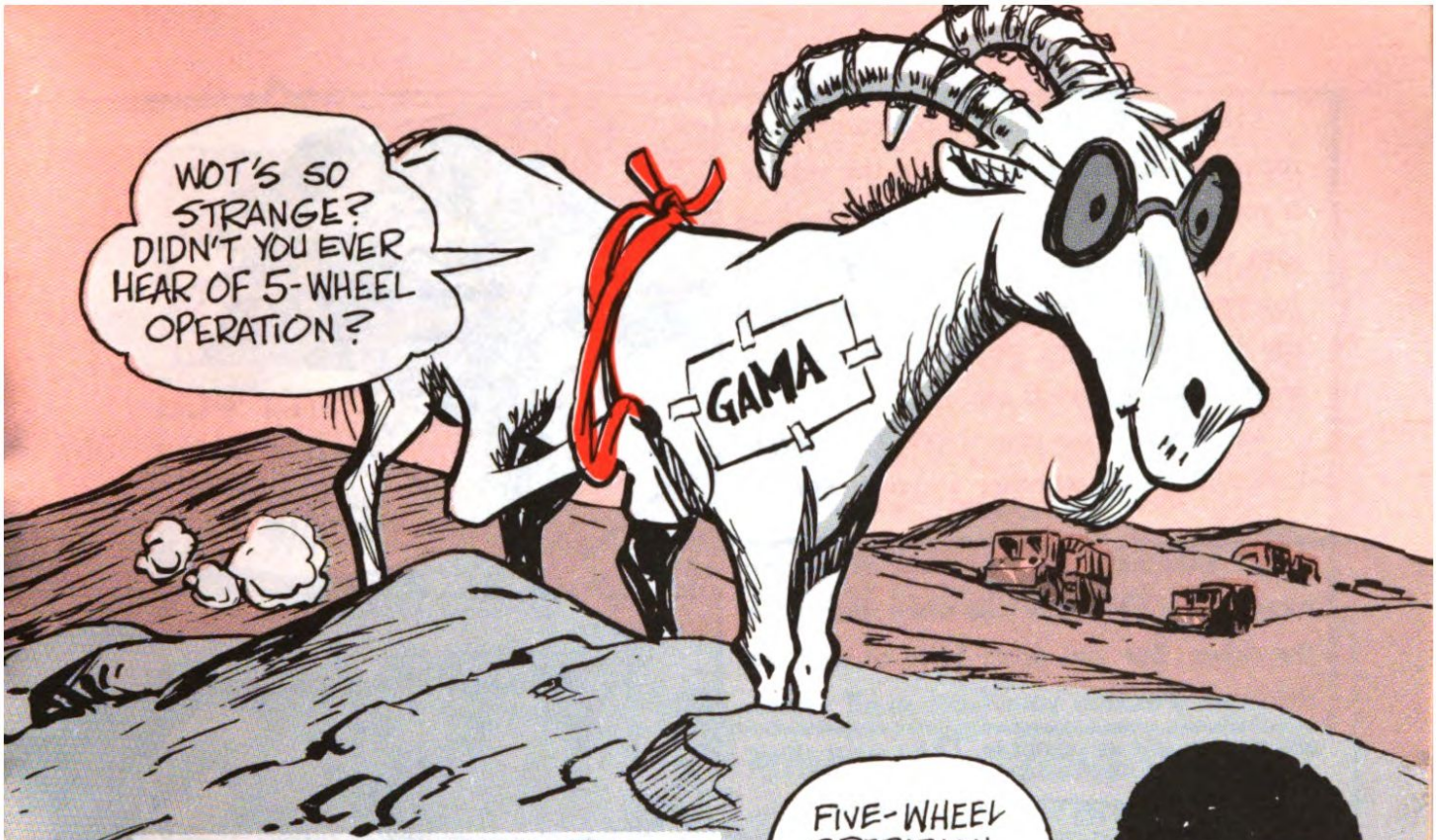
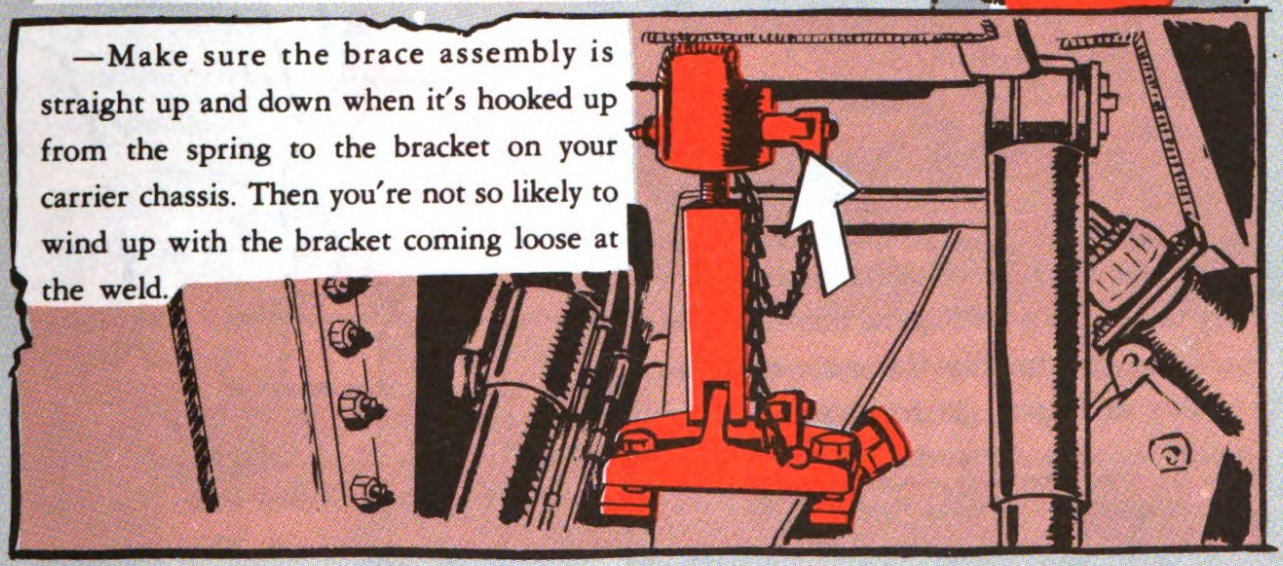


5-WHEEL OPERATION—That truss 'n' brace setup lets you operate with one wheel missing. Like when you've got a flat tire. (There's no spare.)

Be prepared! Clean all that protective stuff off the hardware and give it a coat of lube. Otherwise, on a cold day, you'll have one heckuva time adjusting all those connections.

—Make sure the brace assembly is straight up and down when it's hooked up from the spring to the bracket on your carrier chassis. Then you're not so likely to wind up with the bracket coming loose at the weld.



—When you're traveling on 5 wheels, stop once in a while and make sure those brace-to-spring nuts 'n' bolts are tight. It'll save you some stripped threads. Eyeball all the other hookups, too.

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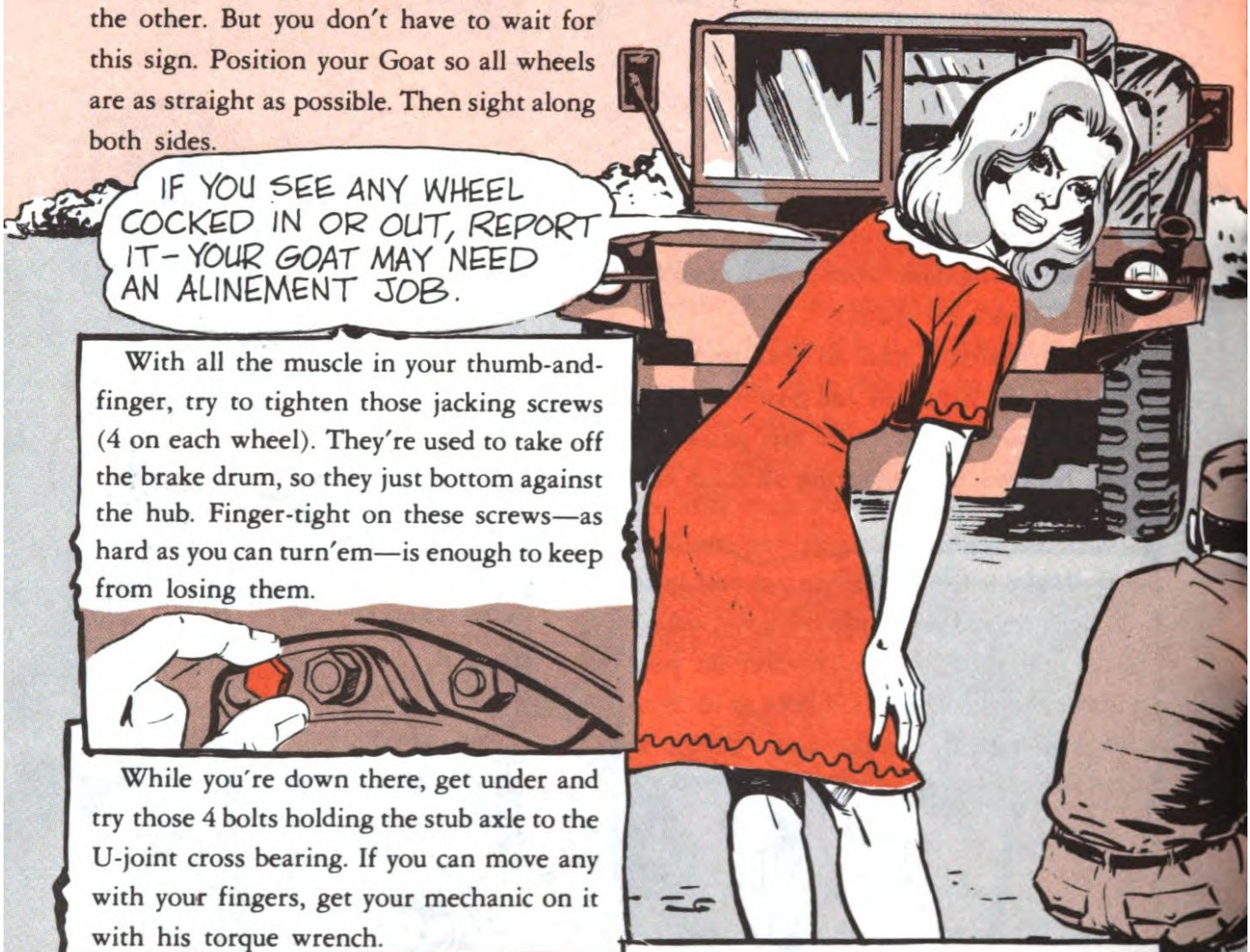
TIRES & WHEELS—A puncture can be repaired with the tire right on the vehicle. If you spot a nail or something else sticking into the tire, don't pull it out—not until you've got your tubeless tire repair kit on the spot. You can probably fix the tire without losing much air.

But report it on your 2404. Your mechanic will decide whether a better repair is needed.

Bad alinement will show up as uneven wear on the tire—one side worn more than the other. But you don't have to wait for this sign. Position your Goat so all wheels are as straight as possible. Then sight along both sides.



With all the muscle in your thumb-and-finger, try to tighten those jacking screws (4 on each wheel). They're used to take off the brake drum, so they just bottom against the hub. Finger-tight on these screws—as hard as you can turn 'em—is enough to keep from losing them.

While you're down there, get under and try those 4 bolts holding the stub axle to the U-joint cross bearing. If you can move any with your fingers, get your mechanic on it with his torque wrench.

Now grab ahold of each wheel at the top and push in and pull out. This'll show up loose wheel bearings—a dull knocking sound. Bad? Report it!

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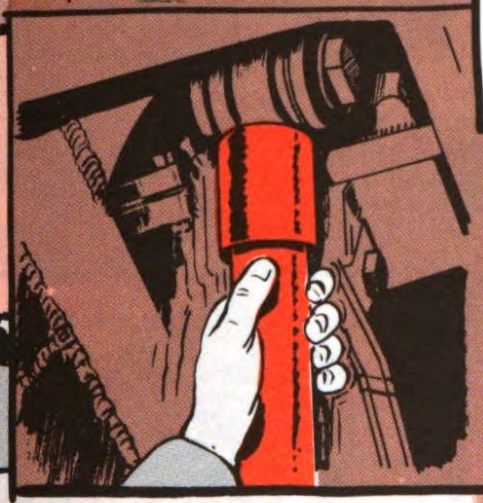
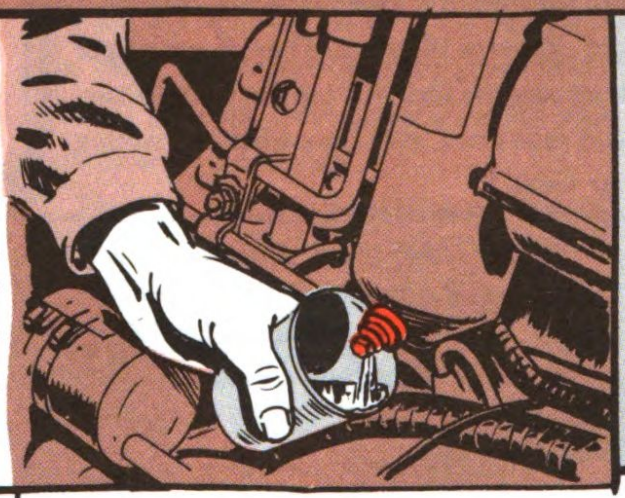
ARTICULATION JOINT ASSEMBLY—There're some strange parts in that hookup.

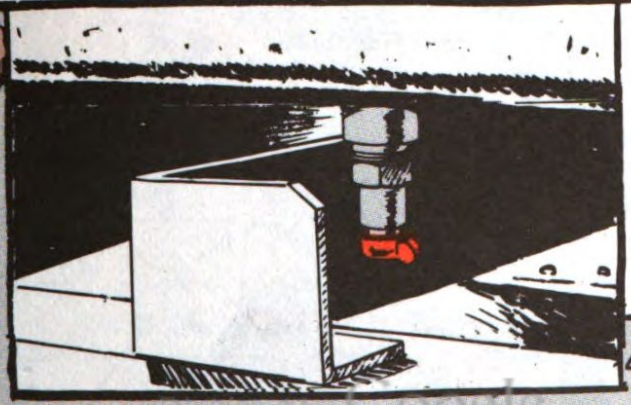
Look for shiny places that may point to hard wear on moving parts. They may just need lubing. Get your wrench in there. Put a little tug on all nut 'n' bolts —no strong arm stuff, just enough to tell whether any of 'em are loose. Get your mechanic to check out any loose parts. Maybe all they need is tightening to the right torque.



SUSPENSION ASSEMBLIES—You've got a shock absorber for each front and rear wheel and 2 for each center wheel. Keep a close eye on 'em. Shake to see if they're loose. If any are leaking, get'em replaced.

FUEL FILTERS (primary and secondary)—Some guys think that just draining their fuel filters is enough. Not so. Like your -10 TM says, you catch the drainings in a container and see if there's any dirt (even tiny specks) or any water (blobs) in your fuel. If you've got this kind of junk in your secondary filter, report it on your 2404. You may be in for fuel injector trouble.





Remember, too, you've got draincocks on your Goat's fuel tanks.

So, in real damp weather, you can head off fuel problems by draining some off the bottom of your tanks every week or so.

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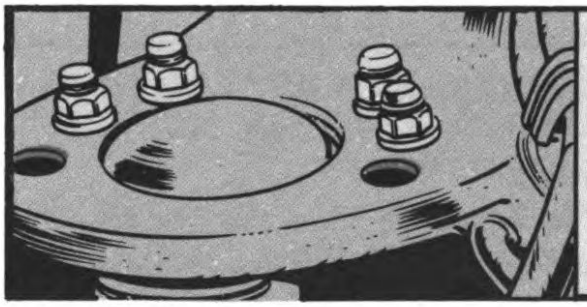
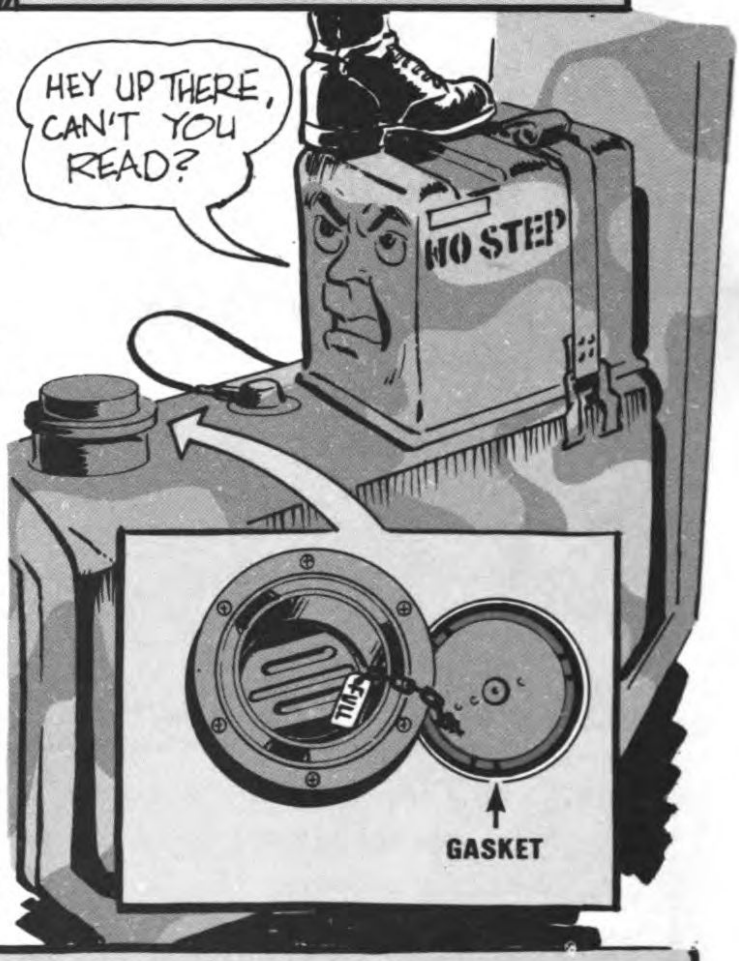


No need to get excited if there're 2 empty bolt holes in the upper suspension arms. The new setup calls for 4 bolts, leaving the outer 2 holes (nearest the wheel) empty.

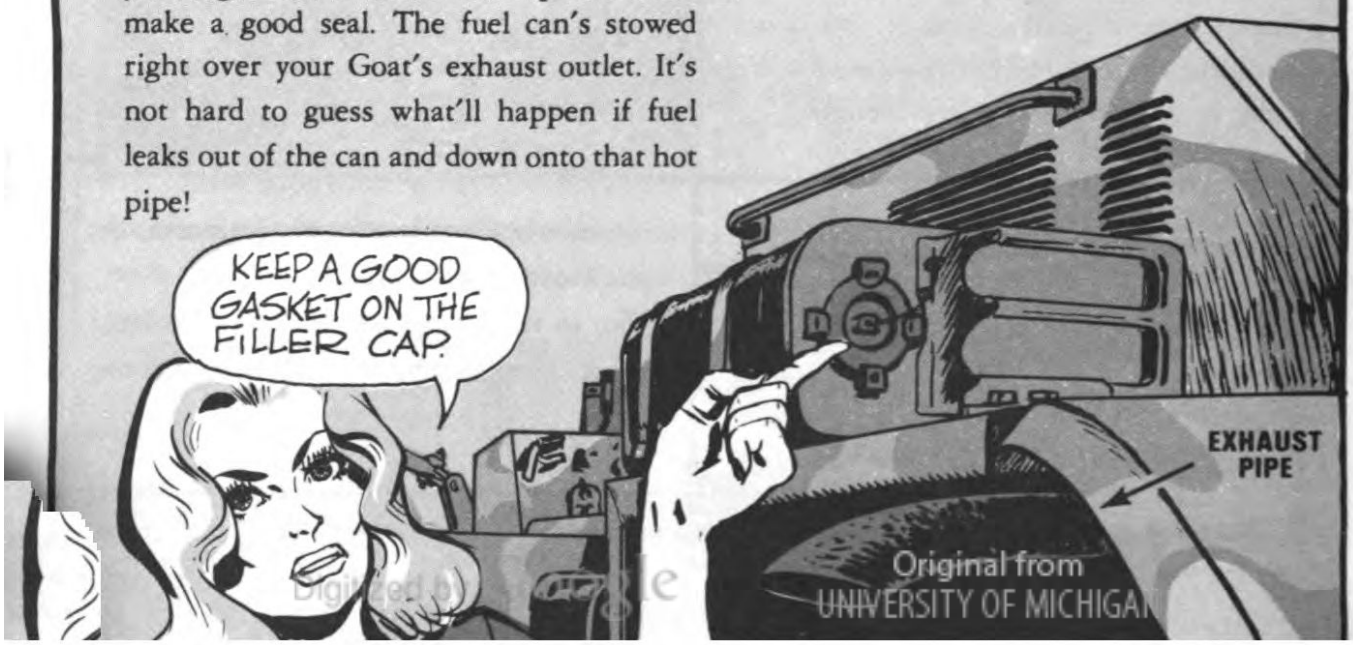
BATTERIES AND COVERS—Those battery covers look almost like they were meant for steps. No, no, no—you'll bust the cover for sure! It's fiberglass and won't hold your weight. Having the covers stenciled "No step" will help remind you.

FUEL TANKS—Learn the easy way. Keep your fuel up to the FULL mark as much as possible. With low fuel and traveling on a slope, the fuel level may slant below the pickup tube. You'll be drawing air, not fuel.

And make sure the filler caps on your tanks fit snug and have good gaskets. On a slope, the fuel in the higher tank will be siphoned into the lower tank and may fill it right up to the filler cap. Then, if you've got a bum cap, the fuel will run out past the cap. Good caps are a must, too, when swimming your Goat.



GAS CAN—Hot stuff! The gasket on your 5-gallon fuel can's filler cap had better make a good seal. The fuel can's stowed right over your Goat's exhaust outlet. It's not hard to guess what'll happen if fuel leaks out of the can and down onto that hot pipe!



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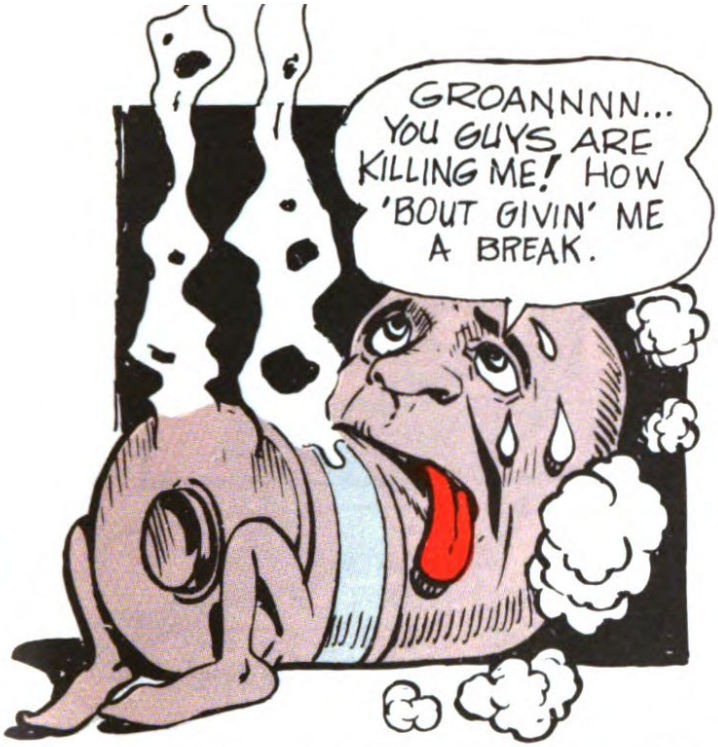


ON YOUR MARK-GET SET—MOTOR MURDER—Starter motors are being burned up by guys who won't give up until it's too late. Stick to the rundown for starting in your -10 TM. Give your starter a chance to cool off between tries. Quit if your engine won't take ahold after 4 tries. Get your mechanic to check it out.

In real cold weather, your engine preheater may do the trick. But, if you're operating at high altitude (over 5,000 feet), your cold start setup will need a little doctoring to make it perk right.

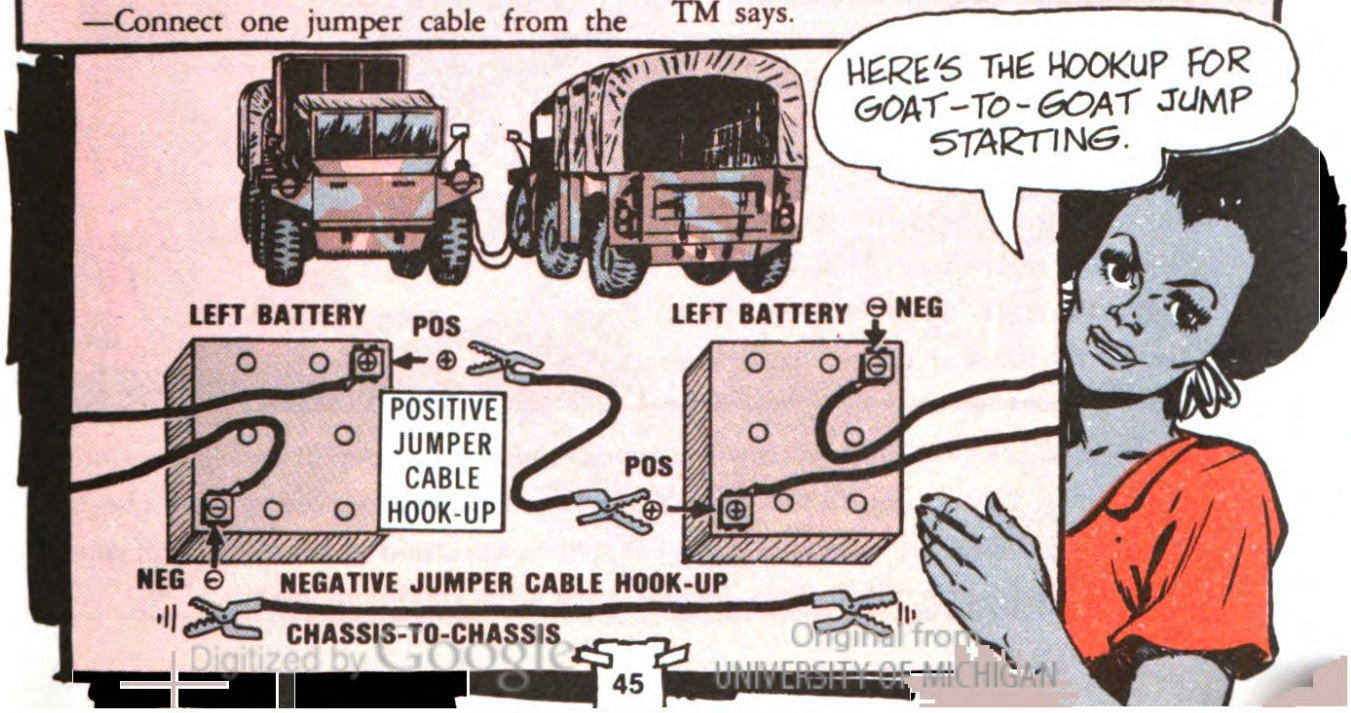
JUMP STARTING—Cold pulls batteries down, too, so you may need help from another vehicle. (No jump starting, though, if you started out with good batteries and ran 'em down trying to start. You've got real trouble—get a mechanic on it.)

If you don't have the slaving setup, you can use clamp-type jumper cables from another vehicle to your Goat. You can hook up the cables to both batteries on your Goat, like it says in your -10 TM or this way like's shown in DA Pam 750-34:

—Connect one jumper cable from the positive battery terminal on the good vehicle to the positive terminal on your Goat's left battery. Never try to jump start to or from your Goat's right battery alone. There's only 12 volts there. On the left side, you've got the 24 volts you need.

Connect the other cable from the negative battery terminal on the good vehicle to any clean, shiny place (no paint, rust, dirt or grease) on your Goat's chassis. Near your left battery is handiest.

Then go ahead and start'er up like the TM says.



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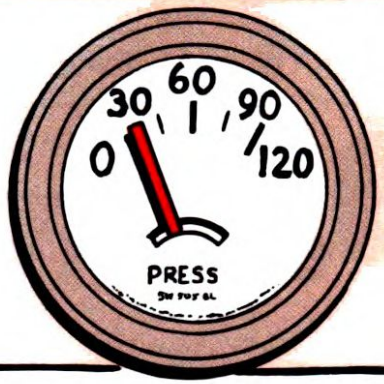
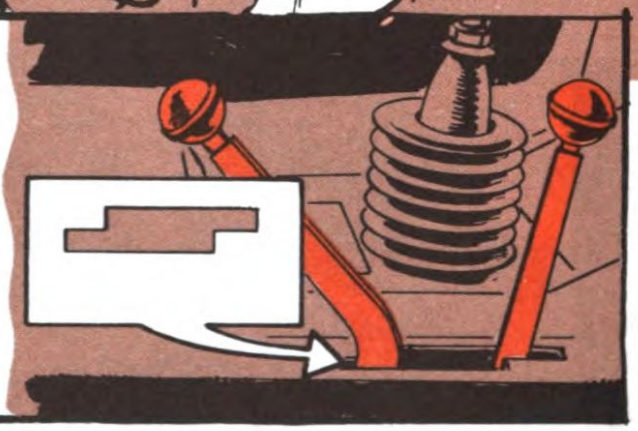
GOOFY GAGE—Don't worry if your oil pressure gage reads down around zero when your engine's running at idle speed. Just rev up your engine and watch the gage. If the needle doesn't climb then, shut down quick—you've got problems!



GLASS-CRACKER—Hold it! Leave that defroster handle in until the heater has warmed up the cab. Your heater puts out a real blast—and this heat on a cold windshield will crack the glass like crazy.

SHIFT LEVERS—You may have trouble with your 2-or-6-wheel drive shift lever or with your transfer shift lever. It won't go all the way or won't stay where you put it. See if the lever is hitting against the fiberglass console. Your mechanic will have to saw out enough at the end of the slot so the lever can be moved all the way in its travel range.



And don't be afraid to shift into 6-wheel drive as soon as you move off the highway into rough country. That's what it's for. There's no point in making your center drive wheels do all the work. With the work spread around, there's less strain on any one part of your drive train. Be sure to shift back to 2-wheel drive when conditions permit.

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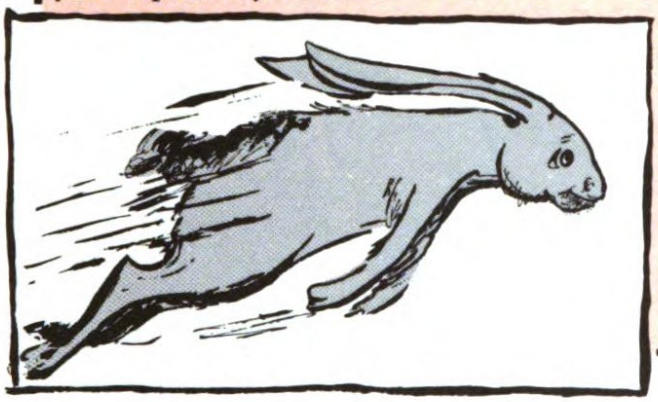
U-JOINTS—Since the first time you climbed into an Army truck—any truck—you've probably heard:

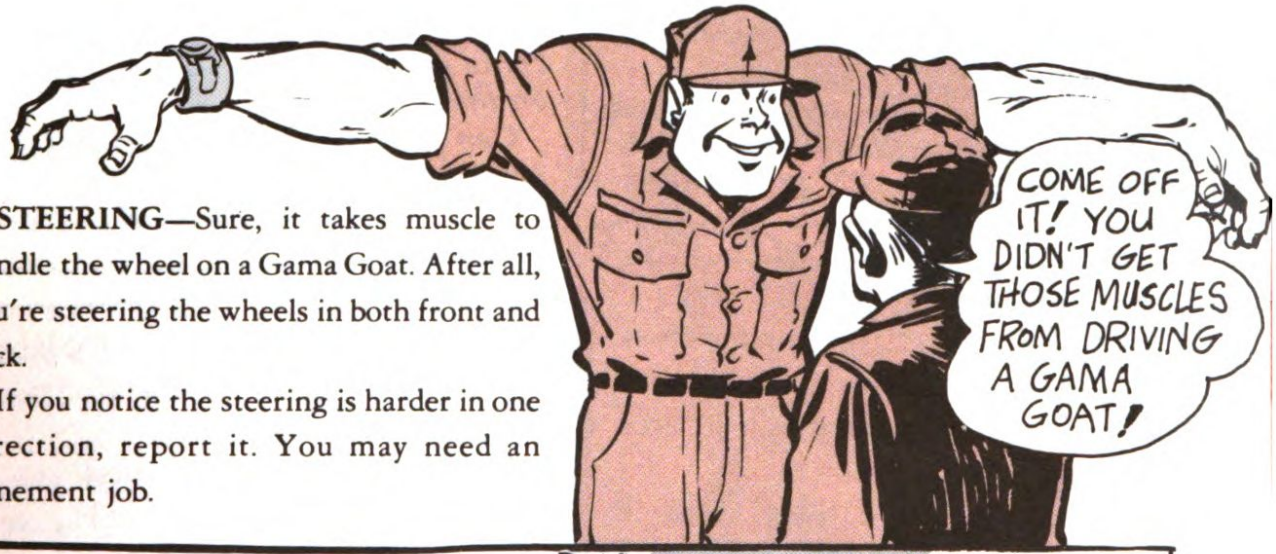


"Never pop the clutch. Let up easy on your clutch pedal after changing gears."

This goes double when you're driving a Gama Goat. That engine's got terrific torque. If you let up on the clutch pedal too fast, you throw a sudden, heavy strain on your whole drive train. Your wheel prop shaft U-joints really feel it bad.

They break!

So, puz-leeze, no clutch popping!



STEERING—Sure, it takes muscle to handle the wheel on a Gama Goat. After all, you're steering the wheels in both front and back.

If you notice the steering is harder in one direction, report it. You may need an alinement job.

Backing your Goat calls for more care, too—especially when you've got a trailer hooked on. You do the same as with any other truck 'n' trailer, except you'll find that the trailer "answers" quicker as you turn the Goat's steering wheel.

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Oil Level, It's A Devil

Dear Half-Mast,

Gama Goat engine oil level is driving me up the wall.

When I drain the crankcase and change the oil and filter, I follow LO 9-2320-242-12 (Apr 72) to the letter.

Trouble is, 12 quarts of OE/HDO come up to nowhere near the F mark on the dipstick.

Can you help me straighten this out?

SFC C. C. B.

Dear Sergeant C. C. B.,

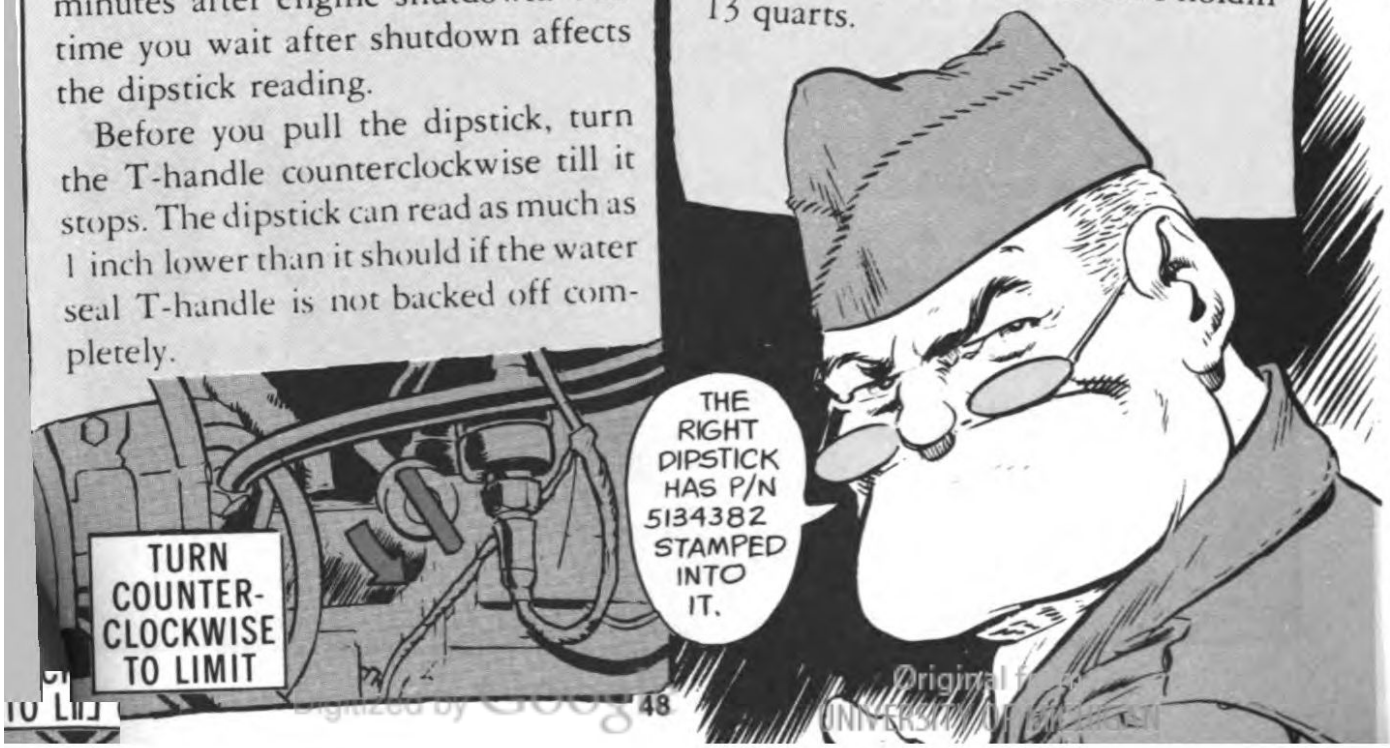
The LO is wrong! Thirteen quarts is right. The Gama Goat takes 13 quarts of engine oil when the oil and oil filter are changed.

To check the oil level, wait 2 minutes after engine shutdown. The time you wait after shutdown affects the dipstick reading.

Before you pull the dipstick, turn the T-handle counterclockwise till it stops. The dipstick can read as much as 1 inch lower than it should if the water seal T-handle is not backed off completely.

Then pull the dipstick, wipe it clean and put it back in. Be careful not to turn the T-handle.

Pull the dipstick and check the oil level. The dipstick will read F, give or take a "hair," when the Goat's holdin' 13 quarts.



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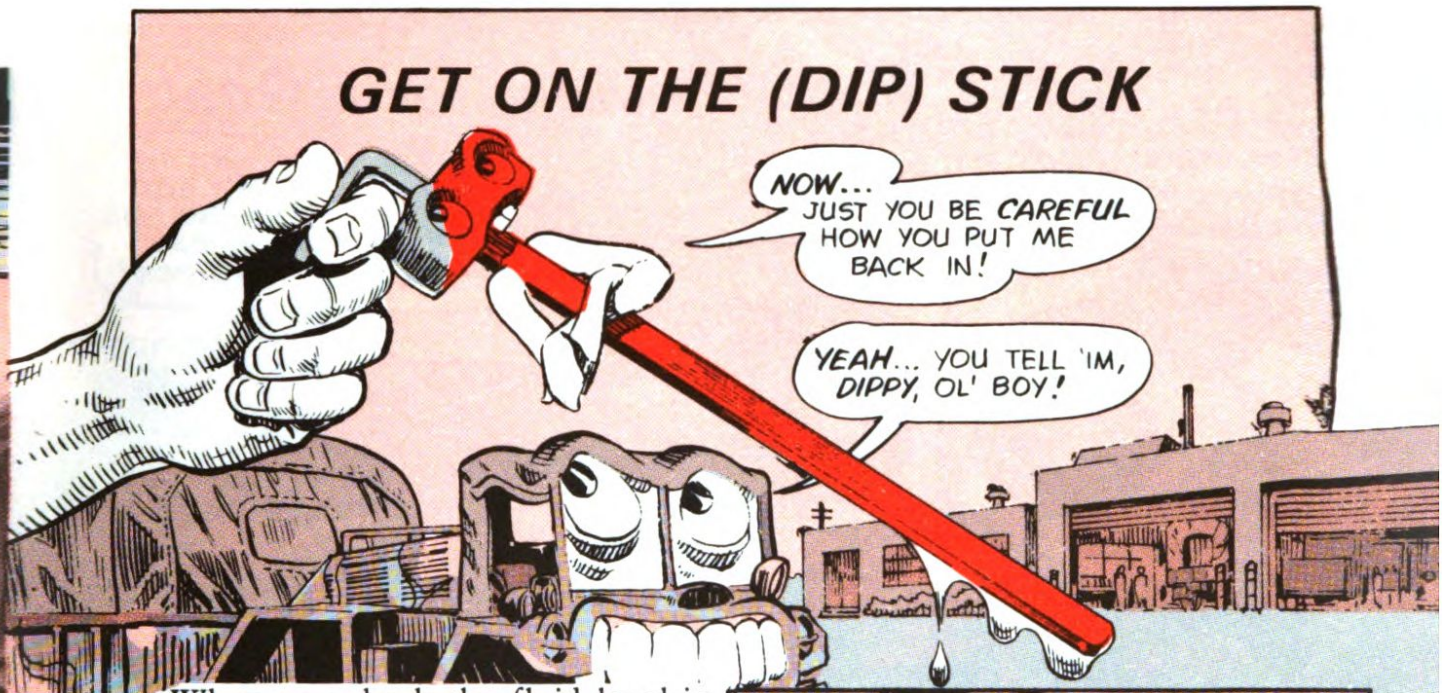
GET ON THE (DIP) STICK

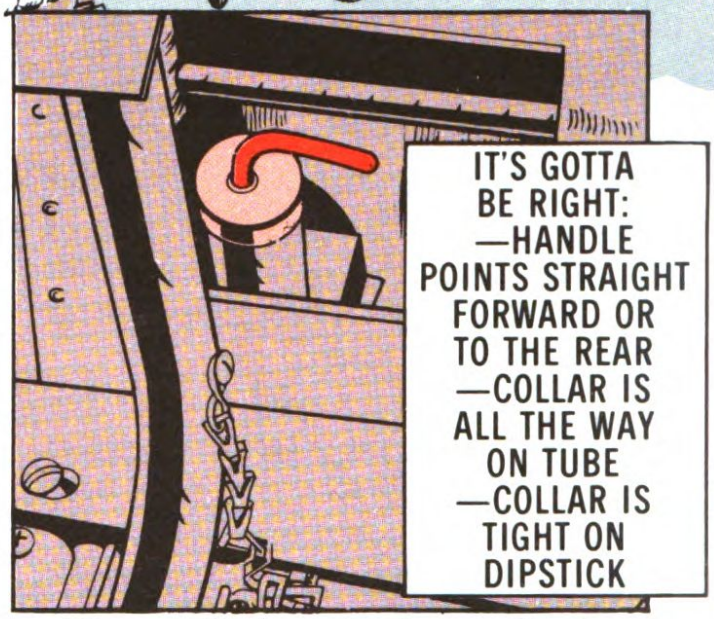


When you check the fluid level in the Gama Goat transfer, be careful how you replace that dipstick.

You could end up with water in the transfer or a broken dipstick.

If you're not careful in pushing it all the way down, the collar of the dipstick can catch on the tube, and the stick'll sit there cocked to one side. This'll let water in, and you know it's a big job to drain and fill that transfer.

And make sure the handle is pointing either straight forward or straight back. If you put the stick in the other way, just the least little bend can get it mixed up in the gears. Sometimes they'll chew a little chunk off, and at other times, they'll chop the end of the stick clear off.



'Course, if the collar's not firmly attached to the stick, get a new dipstick.

A little care today can save a lot of work tomorrow.

A CASE OF SEPARATION

Is the transfer output housing separating from the transfer case on your M561 or M792 1¼-ton vehicle?

It can happen—and does.

Natural vibration loosens those bolts holding the output housing to the transfer case. Then the truck must go to DS for repair.

You can head off trouble by having your mech check the bolts occasionally. He just lifts the console and checks the bolts with his fingers for tightness. If he finds even one loose, the truck has to go to DS.

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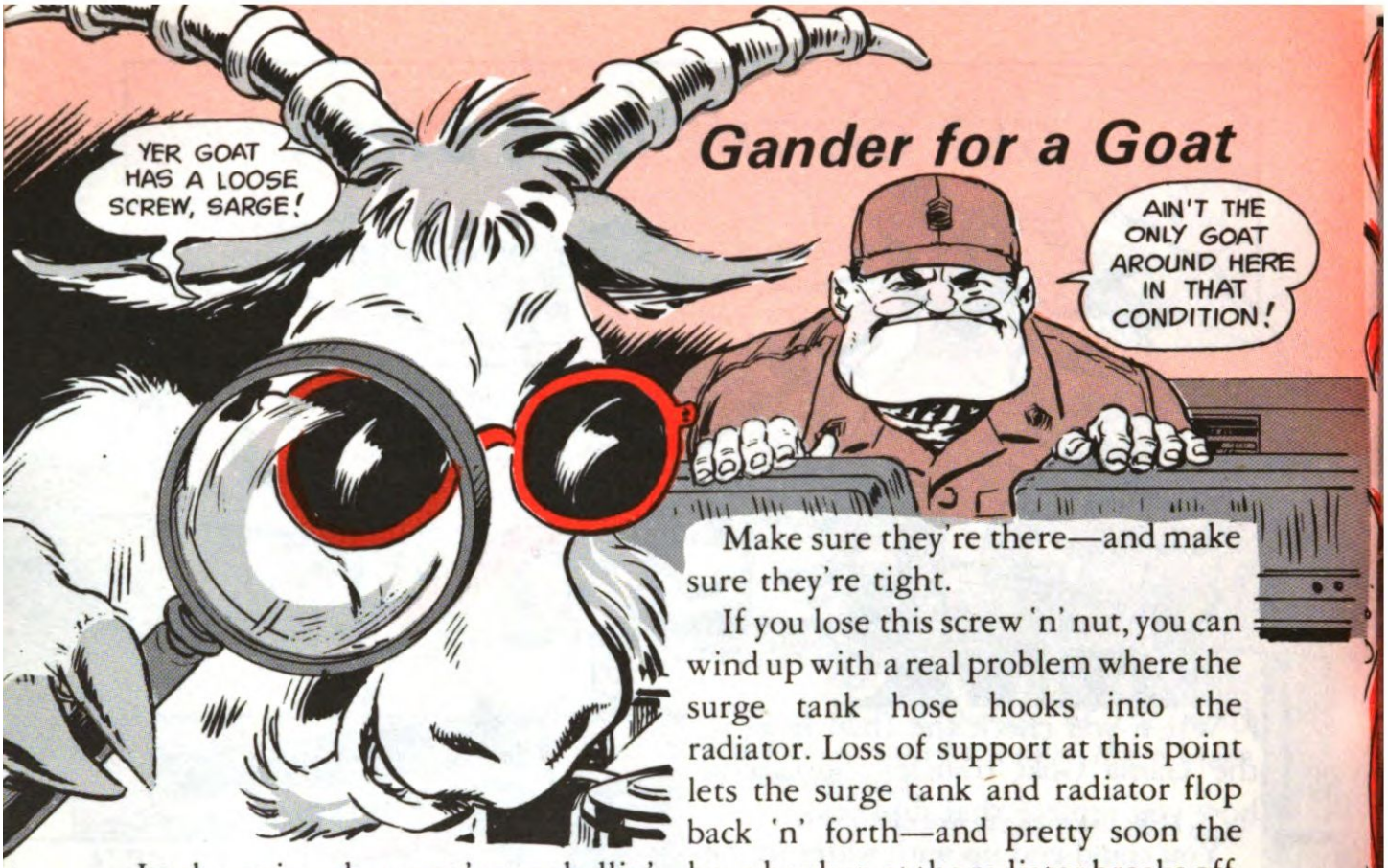
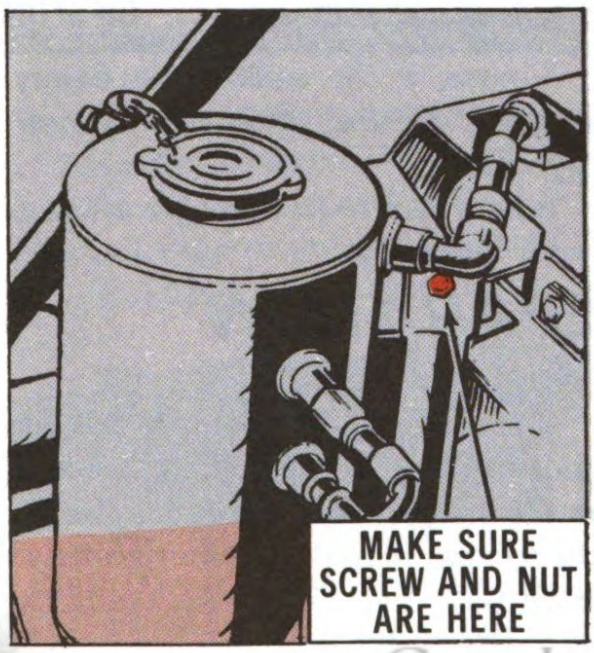
Gander for a Goat



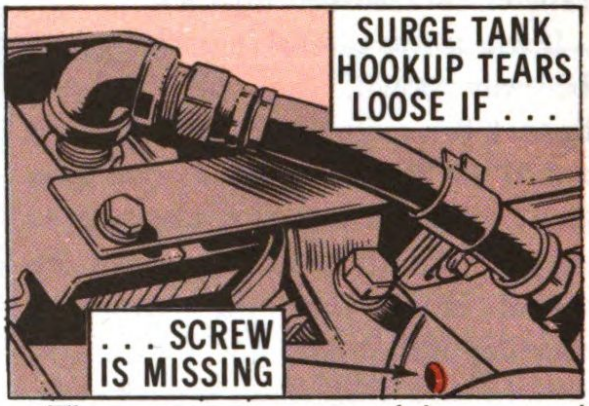
Look again when you're eyeballin' things around the engine cooling system in your Gama Goat. Like while you're checking the coolant level in the radiator surge tank.

Take a special gander at that screw and nut where the surge tank, radiator crossmember bracket and right hand support are hooked together.



Make sure they're there—and make sure they're tight.

If you lose this screw 'n' nut, you can wind up with a real problem where the surge tank hose hooks into the radiator. Loss of support at this point lets the surge tank and radiator flop back 'n' forth—and pretty soon the hose hookup at the radiator breaks off.



The support screw, plain nut and lock washer are in your TM 9-2320-242-20P (Mar 77) with NSN's—Items 2, 6 & 7, Figure 29.

But you'll get an even better hookup by using:

Washer, flat NSN 5310-00-809-4058

Nut, self-locking, NSN 5310-00-483-8792

Screw, NSN 5305-00-225-3839. This screw is longer. It should show at least 3 threads at the end after you've torqued the nut to 96 lb-in.

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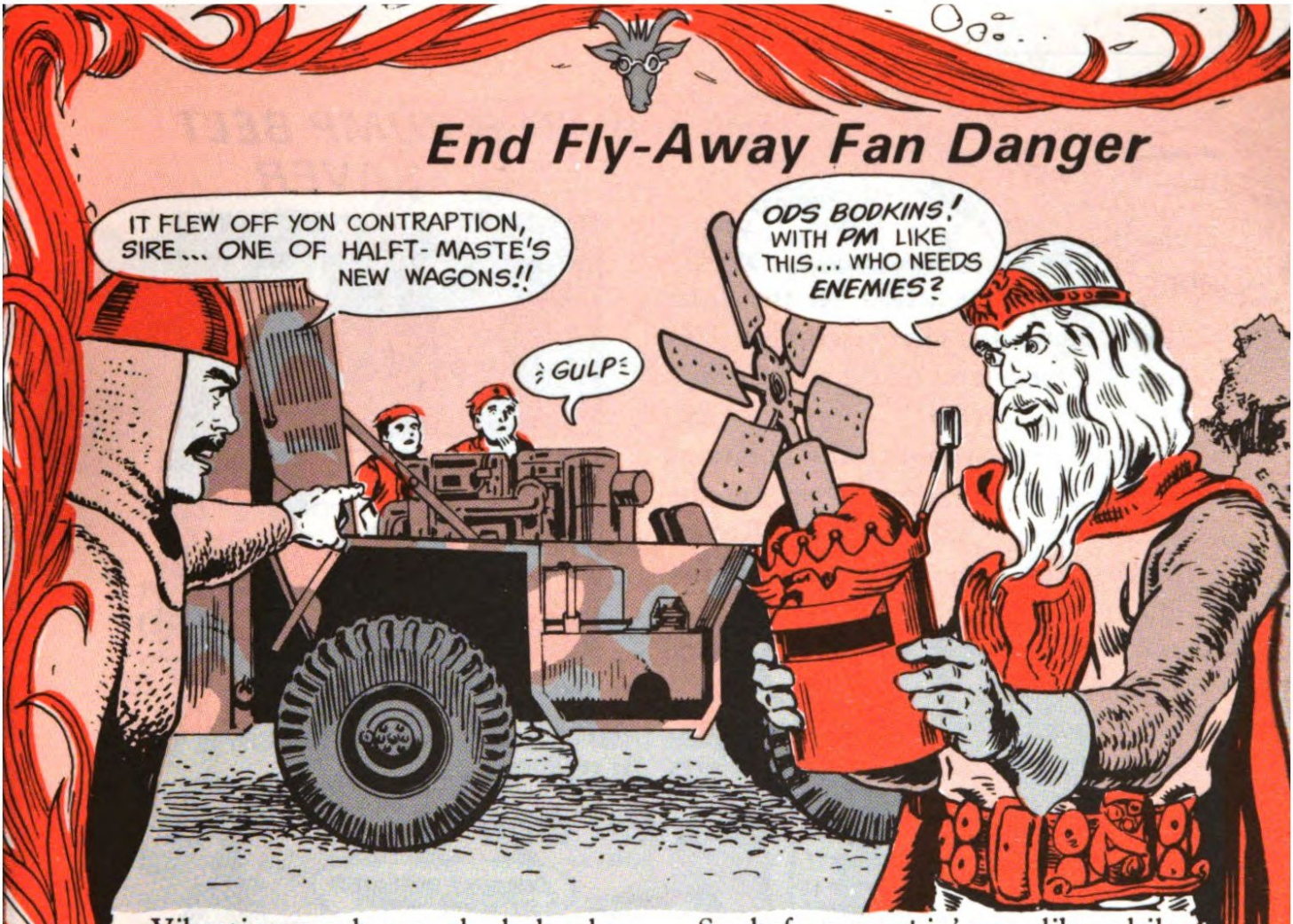
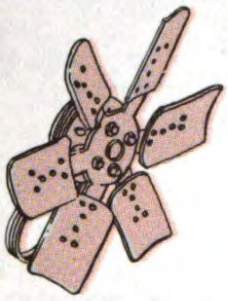
End Fly-Away Fan Danger



Vibration can loosen the bolts that hold your Gama Goat's engine cooling fan to the fan hub pulley. The bolts'll



CHECK FOR LOOSE BOLTS

break, letting the fan fly. That spells damage to any thing or body in the fan's path.

So, before crankin' up—like while you're checking fan belt tension—check for play in the fan/pulley connection. Check by pushing a fan blade toward the front and then toward the rear of the Goat. Feel play?

Tell your mech—he'll tighten all 4 fan blade-to-hub bolts to 19-24 lb-ft.

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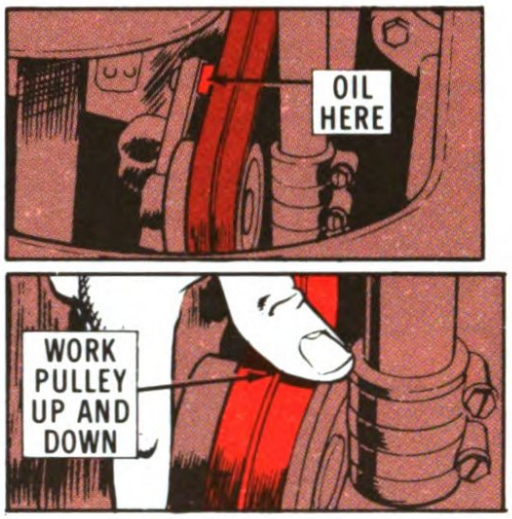
WATER PUMP BELT SAVER

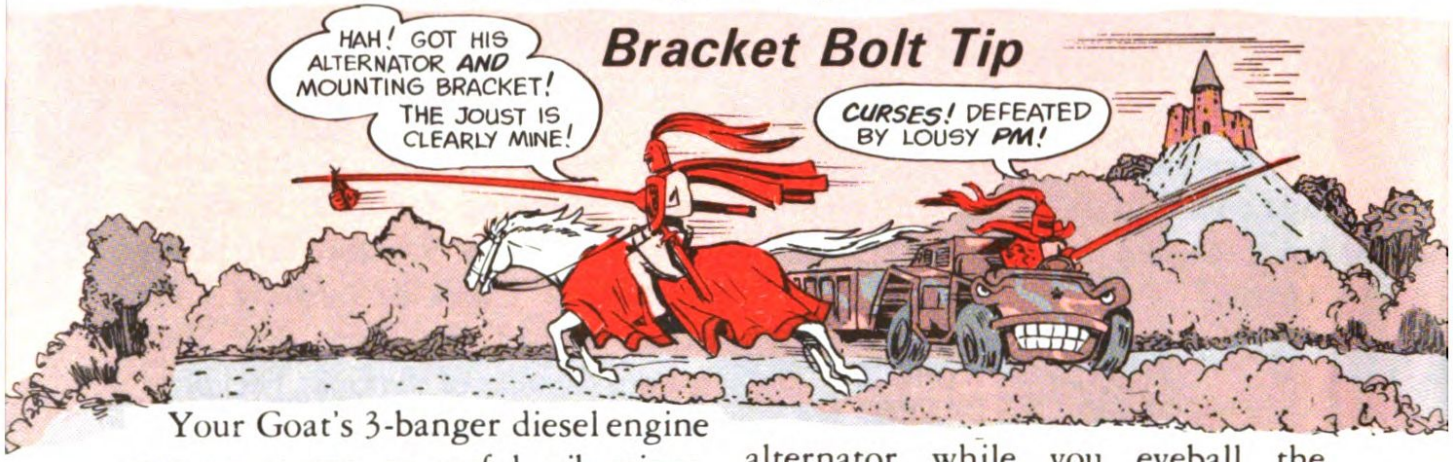
Sticky spring action on the Goat water pump belt idler assembly makes for belt wear and tear. Lack o' lube's the villain, usually.

So, as you do your before-operations service, push down and release the water pump idler pulley. Return sticky? Put some OE/HDO on the idler pulley spring, work the pulley up and down a few times, and check again.

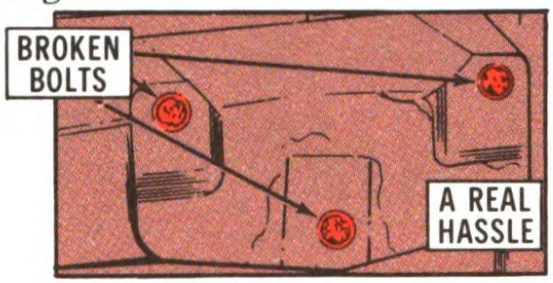


Still stick? Tell your unit mechanic. He'll lube the pulley shaft like it says in para 2-69 of TM 9-2320-242-20 (Sep 76). If lube won't fix it, he'll have to replace it.

Bracket Bolt Tip



Your Goat's 3-banger diesel engine sets up some powerful vibrations. They're powerful enough to loosen, and then break the 3 bolts that hold the alternator mounting bracket to the engine block. A hassle for sure!



So, when pullin' your Goat's before-operations check, while you're working under the hood, try to move the alternator while you eyeball the bracket bolts.

See or feel any play? Tell your mech.

He'll remove the alternator like it says in para 2-71 of TM 9-2320-242-20 (Sep 76), replace the three bracket mounting bolts with NSN 5305-00-068-0511, and torque these new, higher torque bolts to 23-30 lb-ft.

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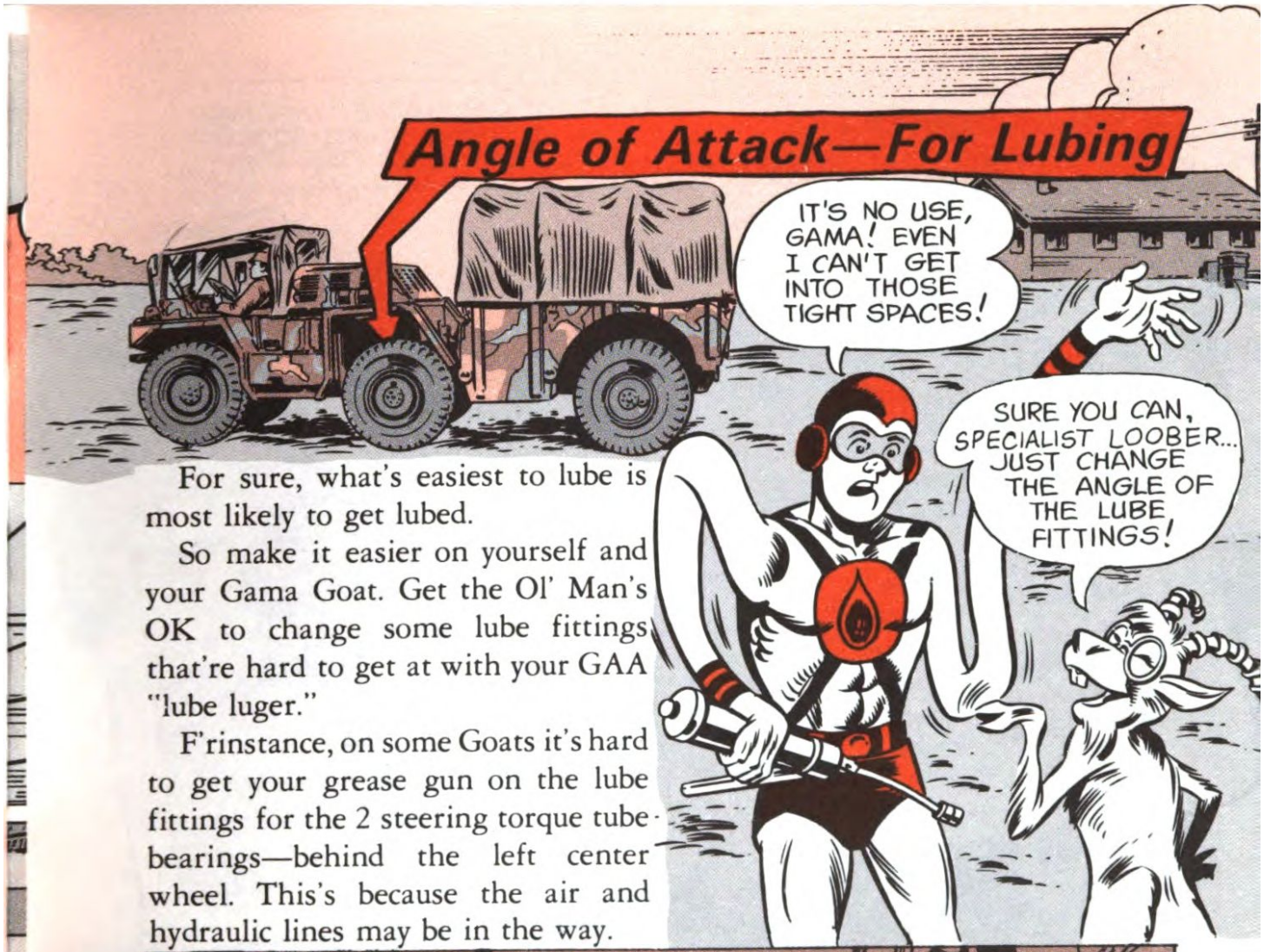
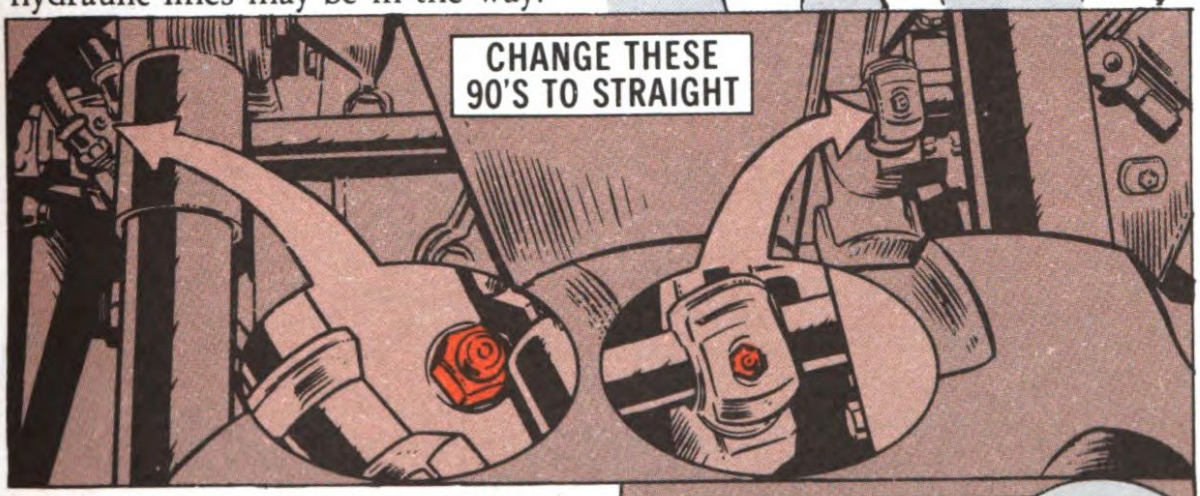
Angle of Attack—For Lubing



For sure, what's easiest to lube is most likely to get lubed.

So make it easier on yourself and your Gama Goat. Get the Ol' Man's OK to change some lube fittings that're hard to get at with your GAA "lube luger."

F'rinstance, on some Goats it's hard to get your grease gun on the lube fittings for the 2 steering torque tube bearings—behind the left center wheel. This's because the air and hydraulic lines may be in the way.



That 90-degree fitting can be changed to a straight job, NSN 4730-00-050-4208, or a 45-degree fitting, NSN 4730-00-172-0028—whichever works out best.

And how about that straight fitting, NSN 4730-00-050-4208, on the wheel spindles? You can change all 6 of 'em to a 90-degree fitting, NSN 4730-00-172-0034, or to a 45-degree fitting, NSN 4730-00-172-0028.

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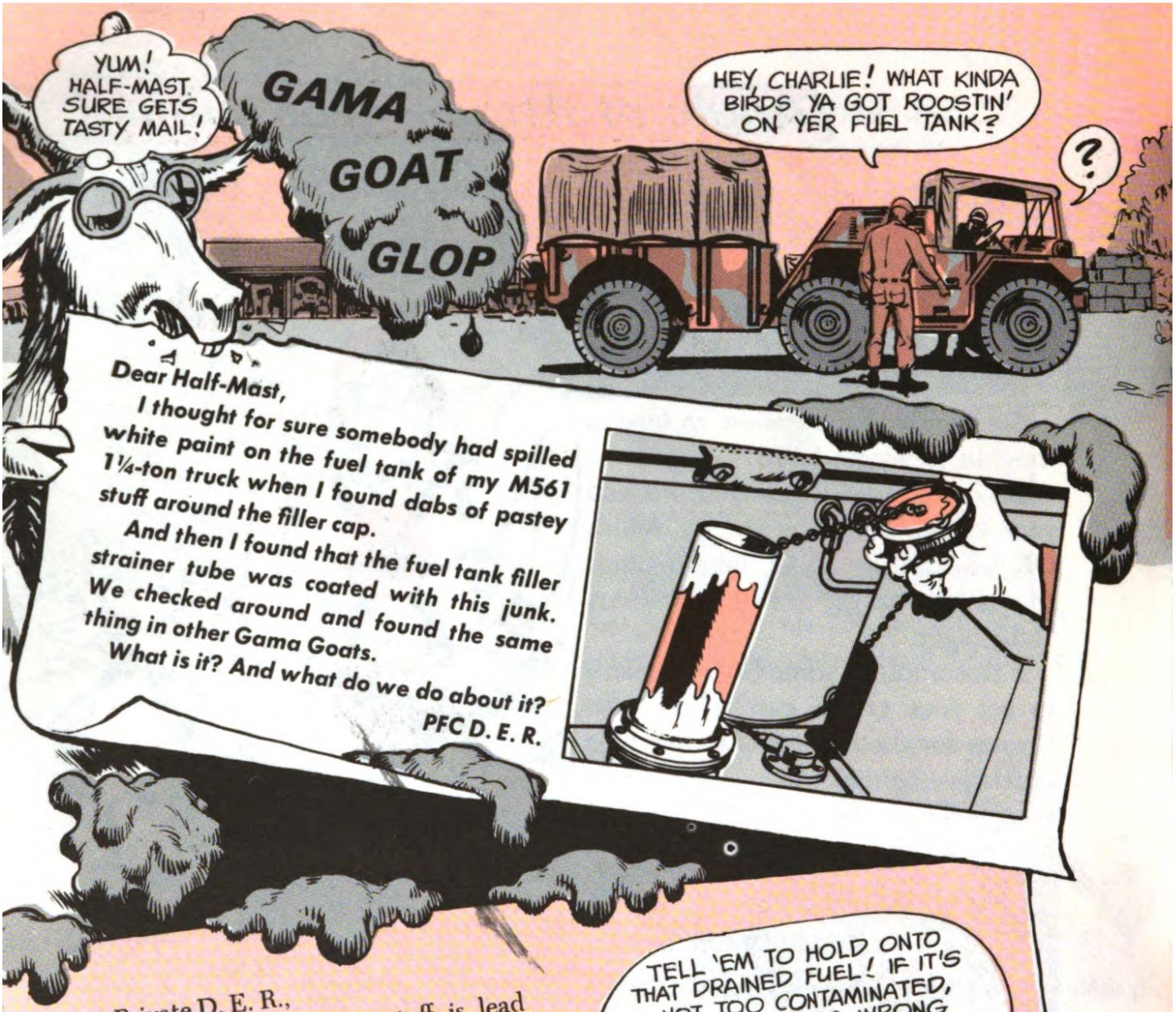


Dear Half-Mast,

I thought for sure somebody had spilled white paint on the fuel tank of my M561 1¼-ton truck when I found dabs of pastey stuff around the filler cap.

And then I found that the fuel tank filler strainer tube was coated with this junk. We checked around and found the same thing in other Gama Goats.

What is it? And what do we do about it?

PFC D. E. R.

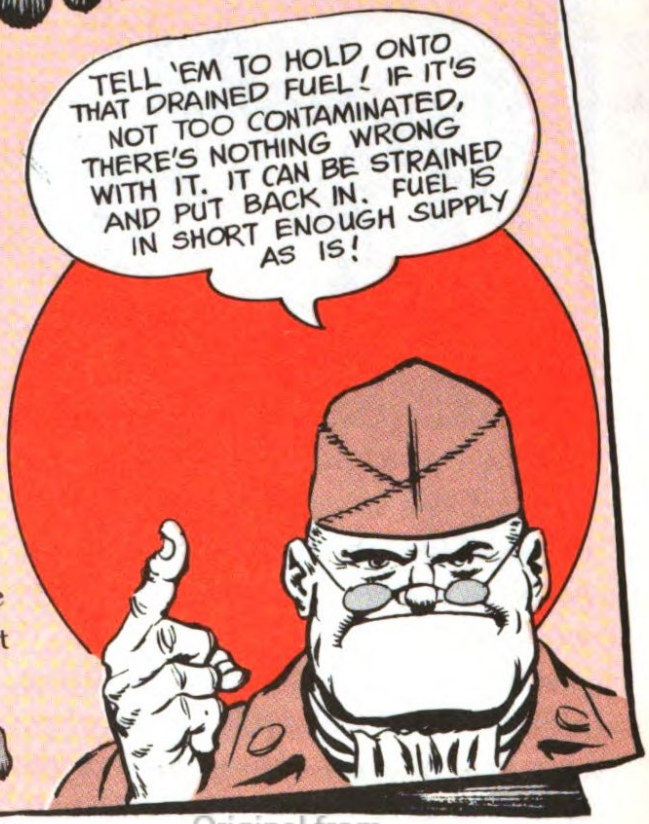
Dear Private D. E. R.,

Relax. That white pastey stuff is lead carbonate. It comes from a chemical reaction between some diesel fuels and the lead coating on the fuel tank filler sleeve.

Your fuel filters will keep this stuff from hurting your Goat's engine. Just make sure you give your filters regular service—which you're probably doing anyway.

Usually, that white stuff runs its course and finally goes away all by itself.

If you're running ragged replacing fuel filter elements, though, you'd better have your support drain the tank and purge it by steam cleaning.



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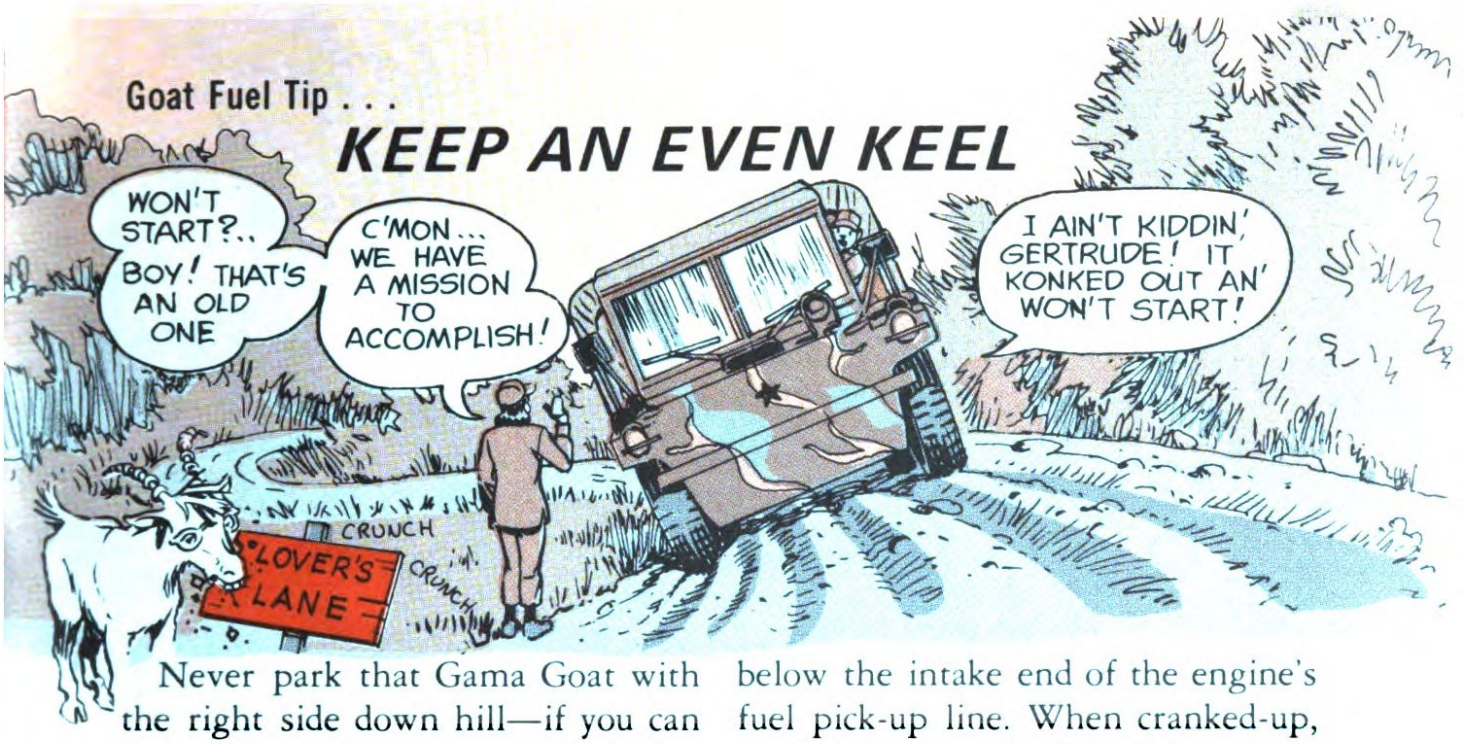
Goat Fuel Tip . . .

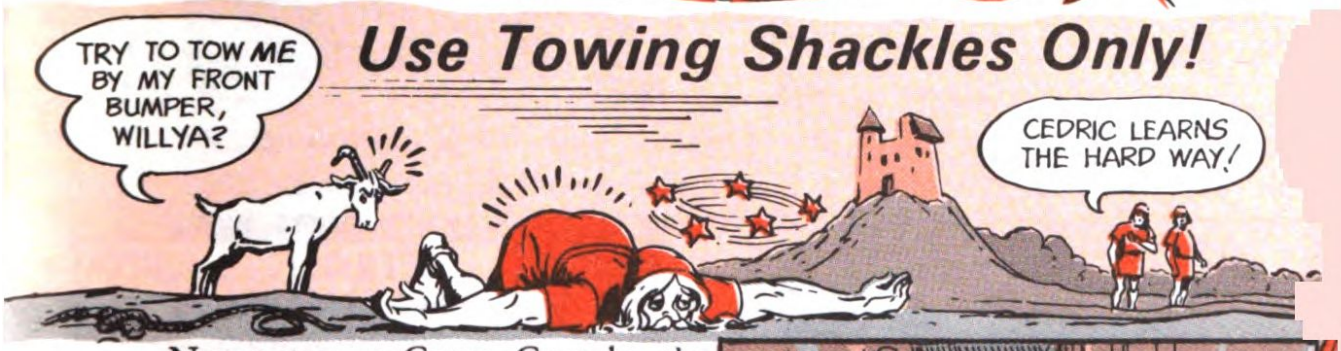
KEEP AN EVEN KEEL



Never park that Gama Goat with the right side down hill—if you can help it. 'Specially when you're hauling a quarter or less of the Goat's fuel tanks' capacity.

Why? The fuel in the left-side tank will drain into the right-side tank, causing the left-side fuel level to drop below the intake end of the engine's fuel pick-up line. When cranked-up, the Goat'll burn the fuel, if any, that's in its lines and filters—then die. The Goat's engine won't budge till you fill the tank at least to the pick-up line, and prime the system by filling both fuel filters.

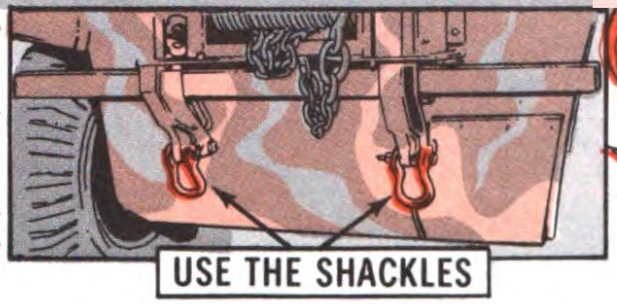
Use Towing Shackles Only!



Never tow a Gama Goat by the front bumper. It'll bend or break.

That bumper's for Goat body protection only.

Follow the towing instructions in para 2-18, TM 9-2320-242-10 (Mar 70) and use the shackles only.



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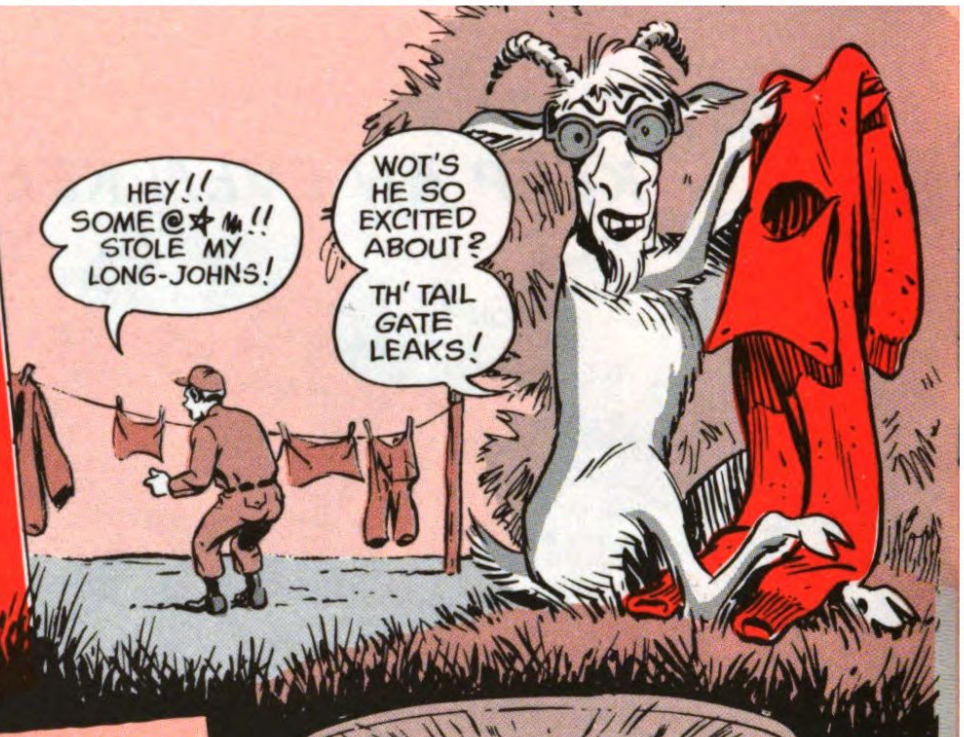
LEAKY GOAT GATE?

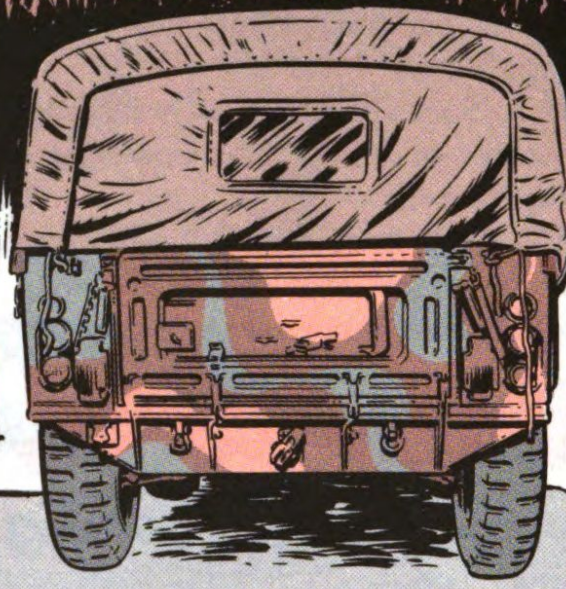


Dear Half-Mast,

My unit has a M561 1¼-ton truck with a banged-up tailgate.

Trouble is, I don't know if it's water-tight. Is there any way, short of taking the Gama Goat swimming, to check the tailgate's watertightness?

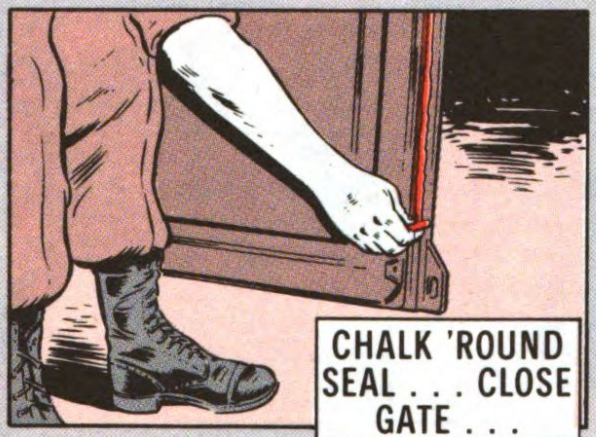
SGT E.J.S.

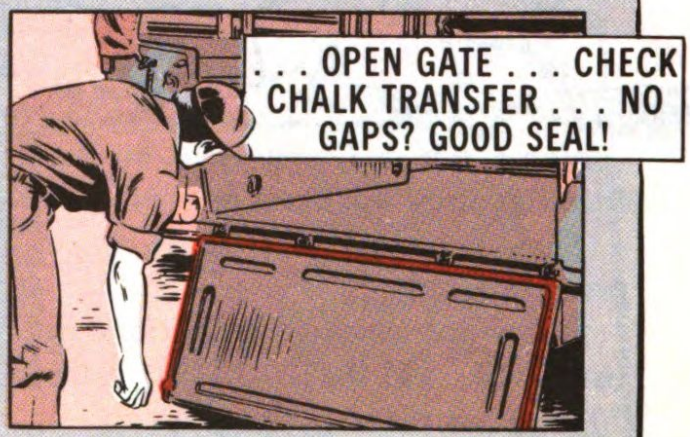


Dear Sergeant E.J.S.,

You bet your gate there is!

Rub chalk all the way 'round the tailgate seal, then button-up the tailgate. Open the tailgate and check the chalk marks on the carrier. If the





chalk transfers to the carrier solidly— no gaps —it's a good bet the tailgate seal is water tight.

Half-Mast

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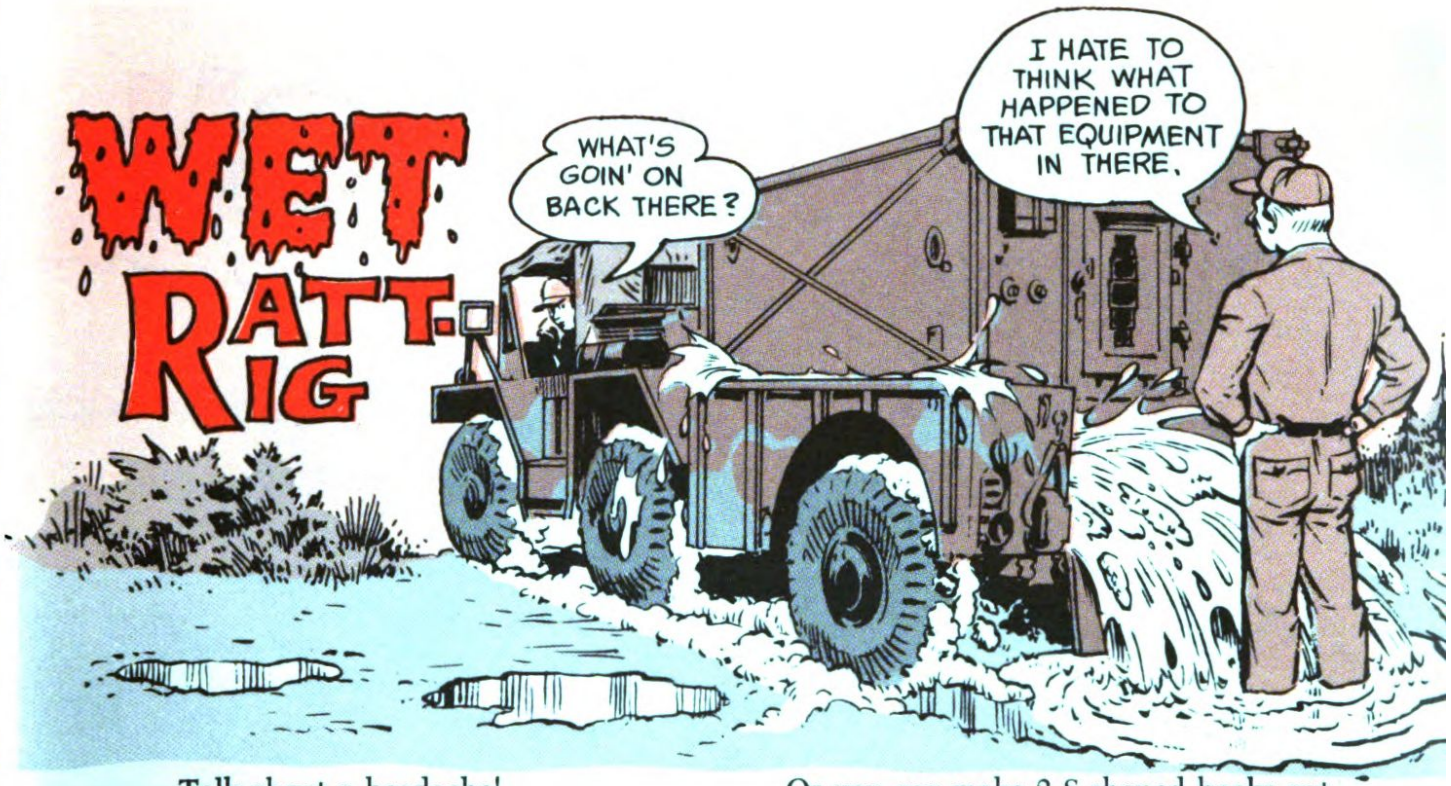
WET RATT-RIG



Talk about a headache!

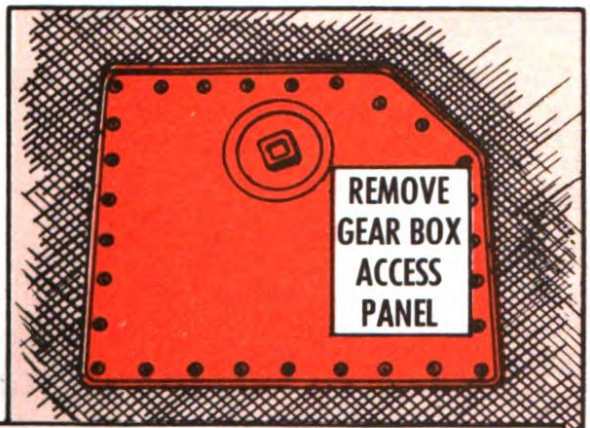
You've got an M561 1 1/4-ton truck carrying a commo shelter—the AN/GRC-122 Ratt-Rig, f'rinstance. And water—rain or wash water—piles up on the carrier floor. It can't get out because of the tailgate's watertight seal.

If there're any breaks in the shelter's watertight seal, this water'll get inside and cause lots of damage.

So what can you do about it?

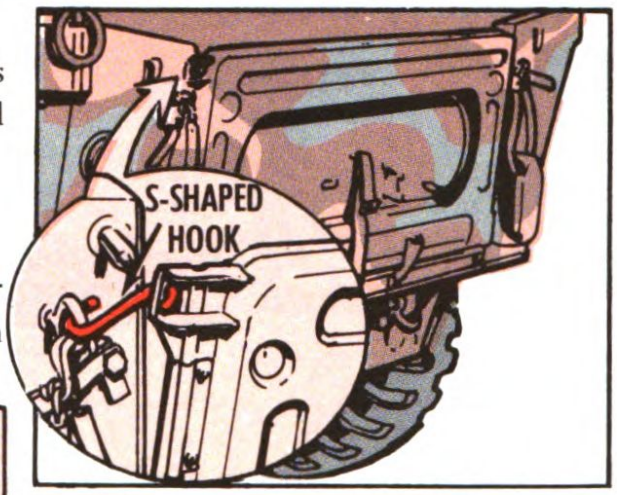
A couple of different things.

Take off the access panel for the rear steering gear box. Then water will drain out through the bottom of the carrier.



PUT PANEL BACK ON WHEN YOU TAKE THE SHELTER OFF AND BEFORE YOU SWIM YOUR GOAT

Or you can make 2 S-shaped hooks out **of heavy wire or rod and use 'em to "crack" your tailgate. These'll hold the tailgate almost closed—open just enough to let water drain out.**



Why not just take out the plug that's in the cover?

Either one's OK—it just depends on how much drainage you need. If you're someplace where rainfall is real heavy, the plug hole may not be big enough. Or it may get plugged up easy with leaves and trash.

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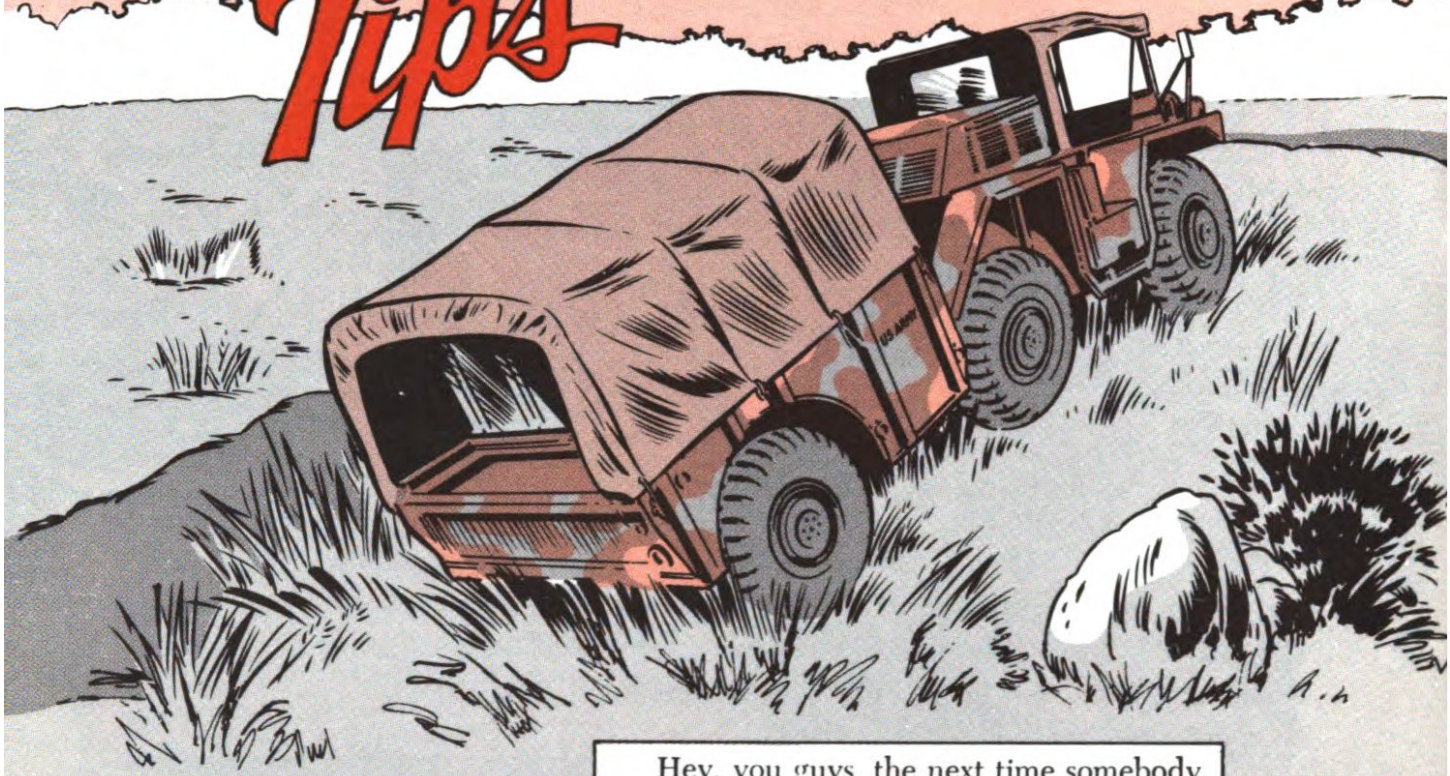
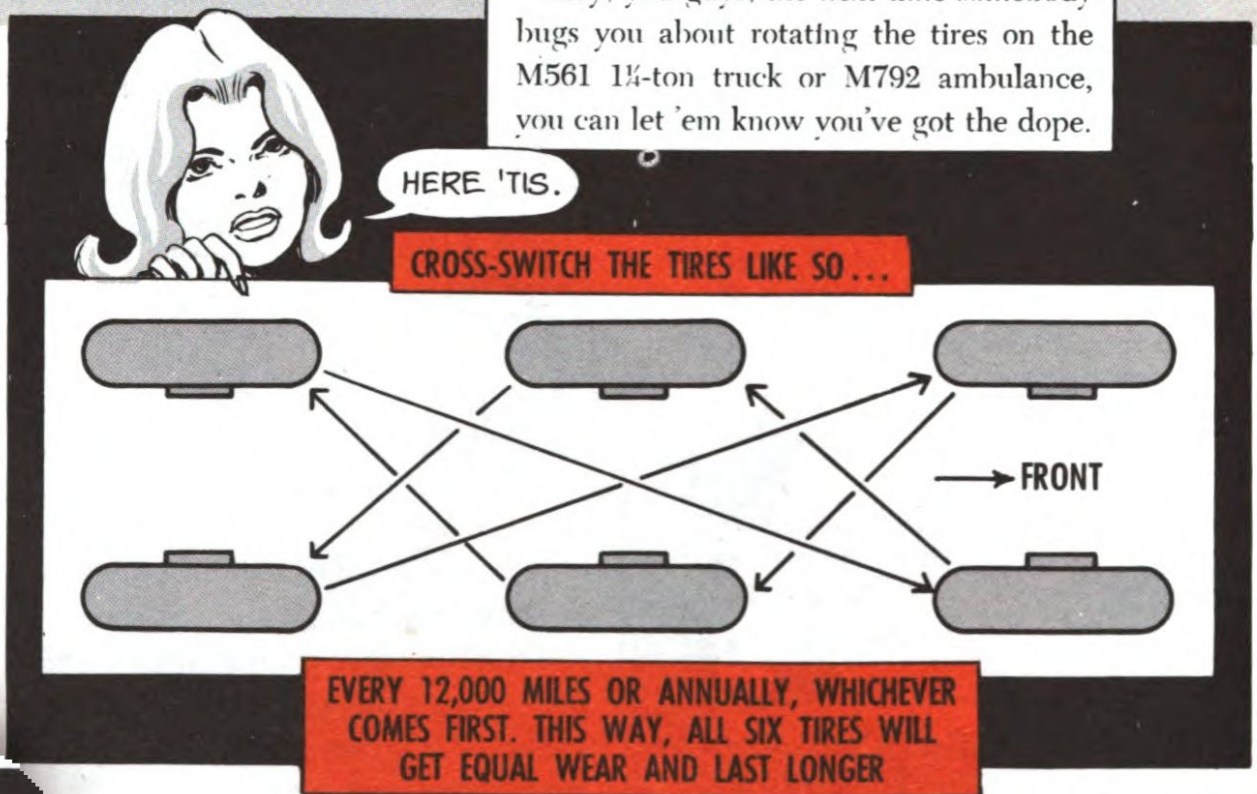
TIRE ROTATION Tips



Hey, you guys, the next time somebody bugs you about rotating the tires on the M561 1¼-ton truck or M792 ambulance, you can let 'em know you've got the dope.



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Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12-38, Operator's requirements for Truck, Cargo, 1-1/4 Ton, 6x6, M561 and Truck, Ambulance: 1-1/4 Ton, 6x6, M792.

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