



**Seagrave**  
*Since 1881*

# **CHASSIS MAINTENANCE MANUAL**

**#56223**

**Rockville Vol. Fire Department Inc.  
Rockville, MD**

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# CHASSIS MAINTENANCE MANUAL

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**1-1. SAFETY PRECAUTION LABELS**

Safety precaution labels are placed in pertinent areas of the apparatus and serve as guidelines for safe operation of the unit. These labels are identified with their part numbers, following these general warning and caution statements.



*P0398100 and P0627700*



*P1234400*



*P1308100*



*P1308200*

P0398100 and P0627700 are representations of the label in the cab or tiller cab, if applicable, of each Seagrave apparatus. (Actual capacity is job-specific)



*P1081400*



*P3422124*



*P3427354*

(located at step area above DPF/SLR cans)



*P1037600*



*P1747300*



*23451-HI*



*P2317611*





P036600



P0640900



P0640500



P0641000



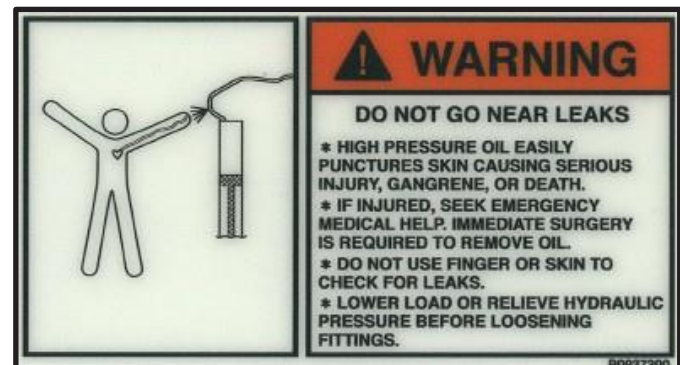
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579101



P1850200



P0937300



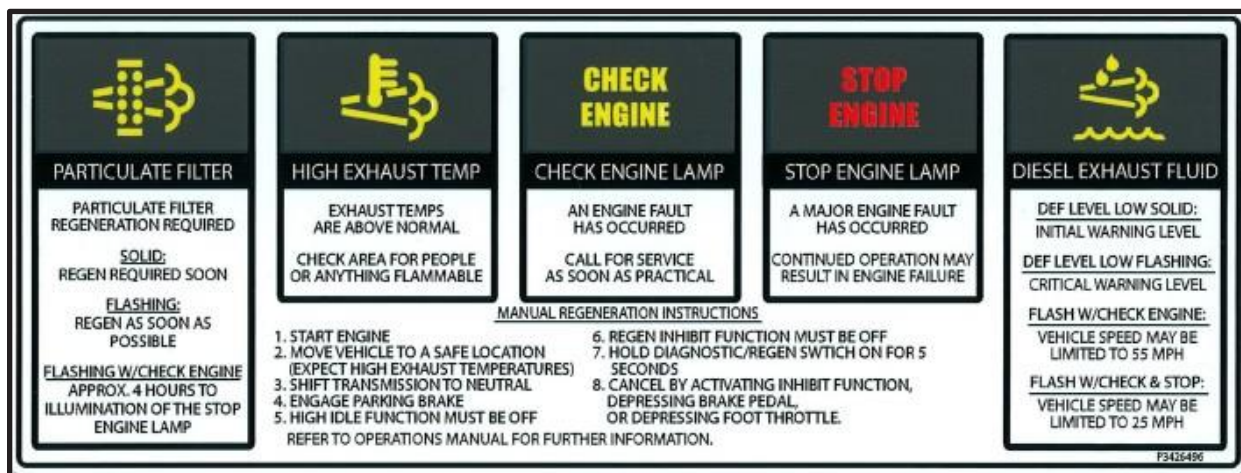
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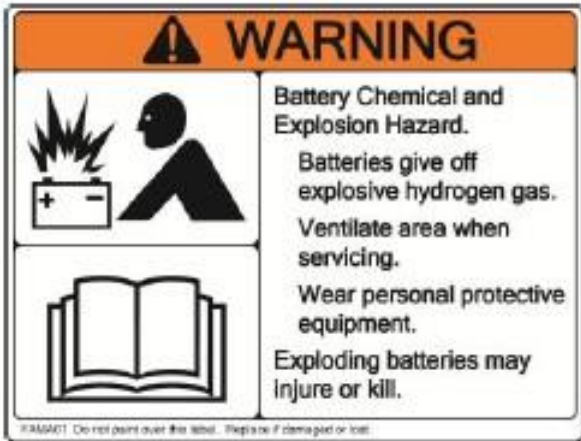


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P3426496





T0146718-01



T0146718-04



T014671802



T0146718-06



T0146718-05



T0146718-07



T0146718-08



T0146718-11



T0146718-09



T0146718-12



T0146718-10



T0146718-13



**T0146718-14**

- T0146718-1401 (1 person)
- T0146718-1402 (2 persons)
- T0146718-1403 (3 persons)
- T0146718-1404 (4 persons)
- T0146718-1405 (5 persons)
- T0146718-1406 (6 persons)
- T0146718-1407 (7 persons)
- T0146718-1408 (8 persons)
- T0146718-1409 (9 persons)
- T0146718-1410 (10 persons)



**T0146718-15**



**T0146718-17**





T0146718-18



T0146718-22



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**T0146718-25**



**T0146718-33**



**T0146718-26**



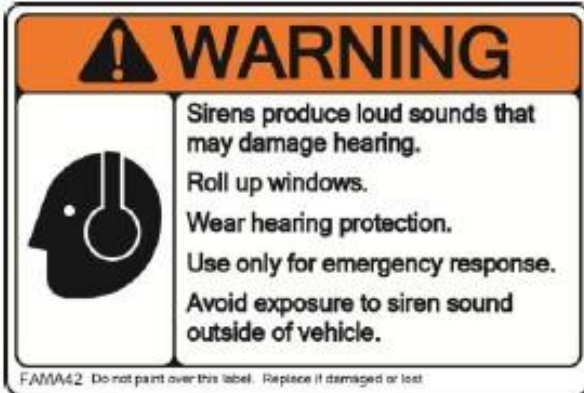
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SECTION 1

WARNING LABELS



T0146718-42



T0146718-44



T0146718-43

PUMPER WARNING LABELS \*WHEN PRESENT



T0146718-22



T0146718-20



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Apparatus No. \_\_\_\_\_  
 Shop NO. \_\_\_\_\_  
 Date \_\_\_\_\_  
 Person doing checking \_\_\_\_\_

**DAILY CHASSIS CHECKLIST & MAINTENANCE LOG**

page 1

KEY: OK = Okay, X= Repairs Required, O= Repairs Made

ITEM	PROCEDURE	STATUS
<b>CAB</b>	Check all cab doors for proper operation	
	Check windows for proper operation	
	Check all mirrors for proper placement and function	
	Check windshield for chips or cracks	
	Check windshield wipers and washers for proper function	
	Check all hazard, blinker, headlight & high beam switches for proper function.	
	Cycle all available switches for proper function.	
	Check heating/defrost system for proper function.	
	Check seats and seat belt systems for proper function	
	Check all horns * DOT, Air, Siren, Electric.	
	Check all communication systems for proper function.	
	Check for proper operation of all gauges and absence of check engine lights.	
<b>LIGHTS</b>	Check all lights for proper function: Scene	
	Perimeter	
	Warning	
	Dome	
	Compartment	
	Hazards	
	AC	
	Headlights	
	Tail lights	
<b>TIRES AND WHEELS</b>	Check for proper tire pressure	
	Check for cuts or damage to tires	
	Check for uneven wear in tread	
	Check for damage to wheels	

\* WHEN APPLICABLE



Apparatus No. \_\_\_\_\_  
 Shop NO. \_\_\_\_\_  
 Date \_\_\_\_\_  
 Person doing checking \_\_\_\_\_

**DAILY CHASSIS CHECKLIST & MAINTENANCE LOG** page 2

KEY: OK = Okay, X= Repairs Required, O= Repairs Made

ITEM	PROCEDURE	STATUS
<b>BRAKES (PARKING &amp; SERVICE) &amp; AIR SYSTEM</b>	Check that brakes set properly	
	Check for parking brake indicator in cluster	
	Release parking brake	
	Check the application and release of service brakes	
<b>SUSPENSION</b>	Check for damage, excessive wear,	
	Broken or leaking front shocks & front/rear springs.	
<b>DRIVE LINE</b>	Visually inspect for damage to drive line and components.	
<b>FUEL TANK</b>	Check mounting hardware is secure, check for excessive corrosion or damage.	
<b>ENGINE</b>	Start the engine and raise the cab.	
	Check for cab lift pump assembly leaking,	
	Check for oil leaks, harness and hose routing or rubbing, damaged components	
	Inspect fan belt for excessive wear.	
	Check fuel/water separator for moisture (drain if moisture found)	
	Check crank case breather tube for debris	
	Check air cleaner for restriction.	
<b>TRANSMISSION</b>	With engine running check fluid level	
	Visually inspect for leaks or damage.	
	Check engagement in Drive, Reverse and Neutral.	
<b>RADIATOR</b>	With engine OFF verify hose routing or rubbing	
	Check for proper fluid level	
	Check for leaks	
<b>STEERING</b>	Check linkage is in proper working order	
	Check for component damage	
	Check steering assist cylinder and hoses for leaks	
	Verify power steering fluid level	

\* WHEN APPLICABLE





Apparatus No. \_\_\_\_\_  
 Shop NO. \_\_\_\_\_  
 Date \_\_\_\_\_  
 Person doing checking \_\_\_\_\_

**DAILY CHASSIS CHECKLIST & MAINTENANCE LOG**

page 3

**KEY:**                      **OK** = Okay,      **X**= Repairs Required, **O**= Repairs

Made

ITEM	PROCEDURE	STATUS
<b>BATTERIES</b>	Check for proper connections	
	Check connections are not loose or corroded	
	Check for proper cable routing.	
<b>EXHAUST</b>	Check for leaks	
	Check for proper placement of exhaust blankets	
	Check that all hardware is secure and not broken or missing.	
<b>COMPARTMENTS</b>	Check that all compartment doors open and close properly	
	Check that all equipment is properly stowed	
	Visually inspect all seals for damage	
	Verify that "do not more truck" alarm comes on when any door is open.	
	Verify proper door alignment.	
<b>PUMP *</b>	Check for leaks	
	Check that all valves function properly	
	Check that unit primes correctly	
	Check that all switches work	
	Check that intercom works (if applicable),	
<b>WHEEL CHOCKS</b>	Check that all chocks are secured in holders properly.	

\* WHEN APPLICABLE



Apparatus No. \_\_\_\_\_  
 Shop NO. \_\_\_\_\_  
 Date \_\_\_\_\_  
 Person doing checking \_\_\_\_\_

10 HOUR/WEEKLY CHASSIS CHECKLIST & MAINTENANCE LOG		
KEY: OK = Okay, X= Repairs Required, O= Repairs Made		
ITEM	PROCEDURE	STATUS
PERFORM DAILY CHECKLIST	All items on check Daily Checklist	
PTO HYDRAULIC GENERATOR	Enable the generator by turning on the generator switch. The generator should operator regardless of transmission gear selected and the parking brake does not need to be on.	
	Verify generator operation by checking the meter by the breaker box and check for AC voltage.	
HYDRAULIC OIL LEVEL	Check oil level	
HYDRAULIC LINES	Inspect for security and leakage	
	Lines should be checked for leakage at fitting and at crimped ends.	
	Inspect hose routing for any chafing	
ELECTRICAL CABLES AND HYDRAULIC LINES	SAFETY DECALS Visually inspect for proper routing and damage.	
SAFETY DECALS	Make sure safety decals and all other operation decals are in place and are not damaged and are legible.	
	See the operations Manual section on Introduction, Safety, Warnings for decal part numbers	
INTERCOM SYSTEM	Check for proper operations	
BREATHING AIR SYSTEM	Check for proper operation	
	Open tank valve and set to approximately 60 PSI on tank gauge.	
	Leave system set for one hour, after one-hour check pressure drop.	
PUMP *	Test the relief valve or governor system	
	Test the priming system	
	Test the transfer valve on two stage pumps	
	Test the pump shift warning indicator lights	
	Perform valve maintenance	
	Check and clean the intake strainers	
	Check the auxiliary engines	
	Verify all gauges are in working order	
	Operator pump controls	

\* WHEN APPLICABLE









Apparatus No. \_\_\_\_\_  
 Shop NO. \_\_\_\_\_  
 Date \_\_\_\_\_  
 Person doing checking \_\_\_\_\_

<b>400 HOUR/YEARLY CHASSIS CHECKLIST &amp; MAINTENANCE LOG</b>		
KEY: OK = Okay, X= Repairs Required, O= Repairs Made		
ITEM	PROCEDURE	STATUS
<b>PERFORM 100 HOUR CHECK LIST</b>	All items on check list	
<b>TELMA *</b>	Check end play in rotor and stator	
	Check air gap measurement	
	Check driveline mount	
	Check axle focal mount	
	Check fastener tightness (driveline and brackets)	
	Check condition on rubber mounts, verify grounds and wiring condition	
	Check relay box function	
	Check relay box contacts and terminal condition, Verify retarder amperage	
	Check hydraulic brake foot pedal adjustment	
	Verify dashboard indicator light function	
	Verify that the TELMA disengages when vehicle stops.	
<b>ENGINE</b>	Check air compressor & air cleaner element	
	Check for air leaks	
	Check air intake	
	Check exhaust system	
	Check cooling fan belt tensioner	
	Change coolant filter	
	Check wiring harnesses	
<b>HYDRAULIC GENERATOR *</b>	Change fluids and filters	
	Inspect electrical wiring for corrosion or loose connections	
	Inspect generator and heat exchanger for debris or impeded air flow.	
<b>WATER PUMP *</b>	Replace the pump gear box oil	
	Check and repair relief valve system	
	Check individual drain lines from pump to the multi-drain	
	Disassemble priming pump to clean valves	
<b>BRAKES AND AXLE</b>	Inspect brake linings	
	Clean spindle	
	Inspect brake springs	
	Grease cam shaft bearing	

\* WHEN APPLICABLE



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Apparatus No. \_\_\_\_\_

Shop NO. \_\_\_\_\_

Date \_\_\_\_\_

Person doing checking \_\_\_\_\_

**2 YEAR CHASSIS CHECKLIST & MAINTENANCE LOG**

KEY: OK = Okay, X= Repairs Required, O= Repairs Made

ITEM	PROCEDURE	STATUS
<b>ENGINE</b>	Check crankcase breather element,	
	Check radiator hoses,	
	Check cold starting air,	
	Check radiator assembly,	
	Check vibration damper,	
	Check engine mounting bolts,	
	Check steam cleaning,	
	Check cooling system,	
	Change DEF dosing filter,	
	Clean or replace DEF filters,	
	Check engine break assembly,	
	Check fan hub,	
	Check overhead adjustments.	
<b>AXLE</b>	Clean anchor pin bushes	
	Clean anchor brackets	
	Clean cam head	
	Clean cam rollers	
	Clean cam anchor pins	
	Apply anti-fretting paste to spindle	
	Refit hub, drum and wheel assembly	

\* WHEN APPLICABLE

































**NOTES**













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## TORQUE TABLE 1 (Lubricated)

FINE OR COURSE THREAD FASTENER	GRADE DESIGNATION	TENSILE STRENGTH MINIMUM	MATERIAL	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1-1/4	1-1/2
				TORQUE FOOT/POUNDS (MIN.-MAX.)									
 CAP SCREW	S.A.E.2 A.S.T.M. A-307 STEEL	64,000 P.S.I.	LOW CARBON STEEL	17 19	26 30	41 45	56 66	83 93	140 150	182 202	270 300	449 500	718 797
 CAP SCREW	S.A.E.3 STEEL	10,000 P.S.I.	MEDIUM CARBON STEEL	26 30	43 47	59 69	93 103	135 145	214 234	332 372	491 551	822 922	1327 1471
 CAP SCREW	A.S.T.M. A-449 S.A.E.5 STEEL	105,000 P.S.I.	MEDIUM CARBON STEEL OR LOW ALLOY HEAT TREATED	27	46	65	100	140	220	338	523	747	1194
 CAP SCREW	A.S.T.M.354BB STEEL			31	50	75	110	150	250	378	583	833	1323
 CAP SCREW	A.S.T.M.A-325			-	-	90 100	-	180 200	305 355	465 525	710 790	1019 1134	1771 1973
 CAP SCREW	A.S.T.M. A- 354-BC STEEL	125,000 P.S.I.	LOW ALLOY OR MED. CARB. QUENCHED TEMPERED	30 34	50 54	71 81	109 119	147 167	239 269	377 427	574 644	1024 1053	1522 1695
 CAP SCREW	S.A.E.6 STEEL	133,000 P.S.I.	MED.CARBON STEEL QUENCHED TEMPERED	39	59	96	140	189	310	490	735	1242	1989
 CAP SCREW	S.A.E.7 STEEL		MED. CARBON ALLOY QUENCHED TEMPERED ROLL THREADED	43	69	106	150	209	350	550	825	1372	2205
 CAP SCREW	S.A.E.8 STEEL	150,000 P.S.I.	MED. CARBON ALLOY QUENCHED TEMPERED	42 46	65 75	105 115	145 165	185 225	330 370	531 591	803 893	1331 1486	2153 2383
 SOCKET CAP SCREW	SOCKET HEAD CAP SCREW ALSO N.A.S. AIR- CRAFT STD.	160,000 P.S.I.	HIGH CARBON ALLOY QUENCHED TEMPERED	46	71	111	156	210	345	569	864	1804	2947
 CAP SCREW	N.A.S.144 AIRCRAFT STD. MS20000 MIL.STD.		HIGH CARBON ALLOY QUENCHED TEMPERED	50	81	121	176	240	395	629	964	1964	3147
 CAP SCREW	N.A.S.624 NATIONAL AIRCRAFT STANDARD STEEL	180,000 P.S.I.	HIGH CARBON ALLOY QUENCHED TEMPERED	52 56	81 91	126 136	188 198	255 270	419 444	668 708	1025 1085	2105 2255	3355 3855

## TORQUE TABLE 2 (Non-Lubricated)

FINE OR COURSE THREAD FASTENER	GRADE DESIGNATION	TENSILE STRENGTH MINIMUM	MATERIAL	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1-1/4	1-1/2
				TORQUE FOOT/POUNDS (MIN.-MAX.)									
 CAP SCREW	S.A.E.2 A.S.T.M. A-307 STEEL	64,000 P.S.I.	LOW CARBON STEEL	15 17	23 27	39 41	50 60	74 93	126 136	163 183	242 272	384 435	617 703
 CAP SCREW	S.A.E.3 STEEL	100,000 P.S.I.	MEDIUM CARBON STEEL	23 27	39 43	53 63	83 93	122 132	193 213	298 338	447 507	705 806	1148 1292
 CAP SCREW	A.S.T.M. A-449 S.A.E.5 STEEL	105,000 P.S.I.	MEDIUM CARON STEEL OR LOW ALLOY HEAT TREATED	24	41	61	90	126	197	303	486	680	1098
 CAP SCREW	A.S.T.M.354BB STEEL			28	45	71	100	136	227	343	536	766	1228
 CAP SCREW	A.S.T.M.A-325			-	-	81 91	-	162 182	272 322	418 478	657 737	937 1052	1629 1831
 CAP SCREW	A.S.T.M. A-354-BC STEEL	125,000 P.S.I.	LOW ALLOY OR MED. CARBON QUENCHED TEMPERED	27 31	45 49	63 73	98 108	132 152	223 253	338 388	522 592	942 1042	1400 1573
 CAP SCREW	S.A.E.6 STEEL	133,000 P.S.I.	MED. CARBON STEEL QUENCHED TEMPERED	35	52	86	126	170	278	439	558	1143	1830
 CAP SCREW	S.A.E.7 STEEL		MED. CARBON ALLOY QUENCHED TEMPERED ROLL THREADED	39	62	96	136	190	318	499	758	1272	2046
 CAP SCREW	S.A.E.8 STEEL	150,000 P.S.I.	MED. CARBON ALLOY QUENCHED TEMPERED	38 42	58 68	94 105	130 150	164 204	305 345	477 537	721 811	1235 1379	1980 2210
 SOCKET CAP SCREW	SOCKET HEAD CAP SCREW ALSO N.A.S. AIR- CRAFT STD.	160,000 P.S.I.	HIGH CARBON ALLOY QUENCHED TEMPERED	41	64	100	140	188	309	511	775	1623	2657
 CAP SCREW	N.A.S.144 AIRCRAFT STD. MS20000=MIL. STD.		HIGH CARBON ALLOY QUENCHED TEMPERED	45	74	110	160	218	359	571	875	1783	2857
 CAP SCREW	N.A.S.624 NATIONAL AIRCRAFT STANDARD STEEL	180,000 P.S.I.	HIGH CARBON ALLOY QUENCHED TEMPERED	46 51	73 83	113 123	170 180	230 245	378 403	603 643	925 985	2898 2048	3028 3228



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**APPARATUS MAINTENANCE BASIC INSTRUCTIONS**

The following sections reflect specific areas that you should pay special attention to in your maintenance routines.

They are:

- Paint Finish Care
- Brakes
- Electrical
- Filters and Fluid Locations
- Lubricants and Lubrication Locations
- Cummins Engine Lubrication and Maintenance
- Seat Belts
- Transmission
- Tires

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### **3-1. FINISH CARE RECOMMENDATIONS**

## **Never Use A Power Washer to Clean Your Apparatus**

It is recommended that the following precautions must be followed to insure proper care of the new finish on your new vehicle. If these recommendations are not followed, your paint warranty may be null and void.

#### **The first 30 days...**

- Avoid parking under trees—sap and bird dropping may damage the newfinish. (Rinse them off as soon as possible.)
- Avoid driving on gravel roads—rock chips may occur on the fresh new finish.
- Never let gasoline, antifreeze and transmission fluid or windshield solvent stand on a painted surface. (Rinse them off as soon as possible.)

#### **The first 90 days...**

- Do not wax or polish the vehicle—this will allow the finish to dry and harden completely. (Do not use any silicone-containing waxes or polishes.)
- After 90 days the vehicle should be polished with a premium quality product.
- Consult the following manufacturers for recommendations:
  - 3M
  - Meguiars

#### **Long term care...**

- Never use ice scrapers to remove ice or snow—this will cause scratches in the finish.
- Never use abrasive cleaners, chemicals, steel wool or scuff pads directly on the finish—this will cause damage to the finish.
- Remove road salt within 1 week by washing or rinsing vehicle with clean water.
- Remove road tar by washing with finger nail polish remover or lighter fluid and a clean cotton cloth. Wipe off excess cleaner ASAP.

#### **Proper washing recommendations...**

- Do not use any commercial washes. Stiff brushes could mar the finish and damage the surface.
- Wash vehicle by hand with cold water and a very mild dish soap. Be sure to use a soft cloth or sponge.
- Wash the vehicle in shade—never in direct sun.
- Allow to air dry or wipe dry using clean cotton rags.
- Do not “dry wipe” the vehicle—dry wiping could scratch the finish.
- If vehicle is washed indoors, vehicle **MUST BE** thoroughly air-dried.

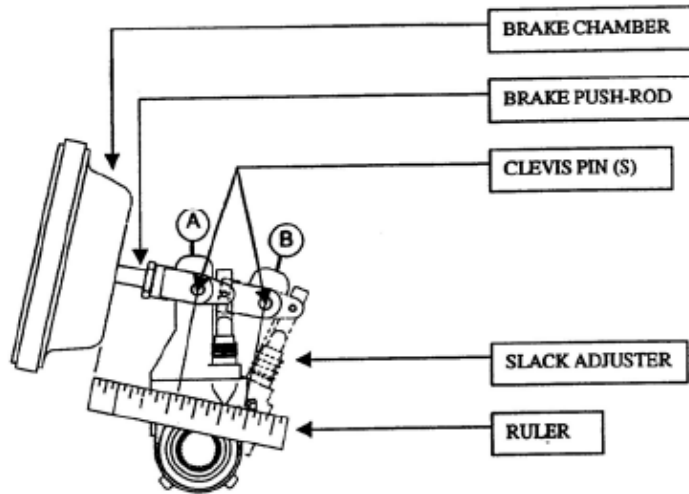
#### **Proper add-on recommendations...**

- If any mounting of additional equipment (light, handles, etc.) is needed, use the following steps.
  - When drilling is required, mark holes to be drilled using a marker.
  - Drill holes using a sharp drill bit.
  - After drilling, remove ALL metal shaving.
- Prior to mounting equipment, apply a compound (ECK® Electrolysis Corrosion Control or Dolphin) to all screws. This will help prevent corrosion blistering from dissimilar metal electrolysis.



## 3-2. BRAKES

### SERVICE BRAKE ADJUSTMENT



### SERVICE BRAKE ADJUSTMENT CHECK PROCEDURE

This procedure will require two people. One will remain in the driver's seat operating the brakes and the other will be underneath the apparatus inspecting the brakes.

**STEP 1:** Engage the Parking Brake and Chock the wheels.

**STEP 2:** Build up the air pressure in the apparatus until governor cut-out pressure is reached (approximately 120 psi).

**STEP 3:** Stop the engine and release the Parking Brakes.

**STEP 4:** With the parking and service brakes released, using an appropriate ruler or tape measure, measure and record the distance from the edge of the brake chamber to the center of the brake push rod/slack adjuster clevis pin (position A above).

**STEP 5:** Now apply the service brakes. Have the assistant hold down the brake foot pedal as far as it will go without moving and hold in that position. Measure and record the distance from the edge of the brake chamber to the center of the brake push rod/slack adjuster clevis pin (position B above).

**STEP 6:** Subtract the distance recorded in position A from position B. This is the amount of actual brake push rod travel.

- If the distance measured exceeds 2" on the rear brakes, the brakes are out of adjustment and require immediate attention.
- If the distance measured exceeds 2" on the front brakes, the brakes are out of adjustment and require immediate attention.

**STEP 7:** Repeat this procedure on all four wheels.

**⚠ DANGER**

It is recommended that safety glasses be worn while inspecting the brakes. The possibility of air exhausting from the brake relay valve and/or dirt and debris falling from the undercarriage into the eyes poses a health hazard.

Always be aware of the location of the brake relay exhaust port and be sure to move away when the driver releases pressure on the brake pedal.

**NOTE:** When inspecting the brake adjustment, it is recommended that the flexible air lines to the brake chambers and brake diaphragms be inspected for air leakage at the same time. The following steps describe the procedure for this inspection.

With spring brakes released, wheels chocked, and service brakes applied and held down by an assistant:

- Grasp each flexible air hose connected to each brake chamber and shake gently.
- Listen for any air leakage at or around each air hose. Inspect hoses for any cracks, cuts, routing problems or wear.
- Listen for any air escaping from around air brake chamber clamps and brake chamber push rod hole. If necessary, place finger around each area and “feel” for any leakage. Any leakage around these areas most likely indicates a defective brake diaphragm.

---

**3-3. SERVICE BRAKE INSPECTION PROCEDURE**

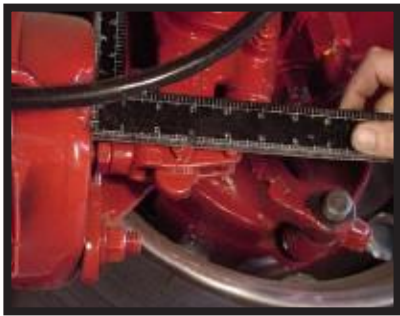
**Inspect the brake lining using a mirror and flashlight.**



This is done by focusing the flashlight beam on the mirror and pointing the beam on the brake components.

The lining should not be less than 1/4 of an inch on either pad. A good rule of thumb is that the lining should not be less than the steel backing of the lining material.

**Inspecting for proper brake adjustment.**



This is done by measuring the amount of brake push rod travel.

With the brakes released, measure the distance from the brake housing to the center of the slack adjuster clevis pin.



With the brakes applied, measure the distance from the brake housing to the center of the slack adjuster clevis pin.

Subtract the recorded distance with the brakes released from the recorded distance with the brakes applied.

The total travel should not be more than 2 inches.

If the distance exceeds 2 inches call the shop for a brake adjustment.

Use this procedure for all four wheels.

---

**3-4. PARKING BRAKE (SPRING) MANUAL RELEASE PROCEDURE**

The spring brake chambers require air pressure to release. If sufficient pressure is not available and if the vehicle must be towed, the spring brakes can be manually released or “caged”.

**TO MANUALLY RELEASE THE SPRING BRAKE CHAMBER**

Unscrew (turn counter-clockwise) the 1/2” diameter bolt located at the end of the spring brake chamber utilizing a 3/4” box end wrench or socket assembly. The bolt should be unscrewed until it can no longer be turned in the counter-clockwise direction. If possible and there is enough air in the system, release the spring brakes by pushing in on the yellow brake knob before attempting to “cage” the brakes.

This will supply air to the spring brakes thus compressing the internal spring making the caging process much easier. After the need for caging the brakes has past, charge the spring brake chambers with air pressure (push dash yellow parking brake in and release brakes) and turn the caging bolt clockwise until it stops.

**NOTE:** The instructions on how to “cage” the spring brake are inscribed on the spring brake housing. The spring brakes should only be “caged” in an emergency when the apparatus must be moved or towed to a new location.



Never attempt to disassemble a spring brake chamber as the release of a powerful spring could result in severe personal injury or death.

This procedure should only be performed by qualified shop personnel.

---

**3-5. SPRING BRAKE CAGING PROCEDURE**

Before attempting to cage the spring brakes, push in the yellow knob to release the brakes if there is enough air pressure to do so. This will make “caging” the brakes much easier. Be sure the wheels are chocked on the apparatus before going ahead with the spring brake caging procedure.



Remove the caging bolt dust cover.



Using a 3/4 box end wrench, turn the caging bolt counter-clock- wise until the bolts stops.



**3-6. ELECTRICAL SYSTEM – ALTERNATOR**

The alternator installed on your apparatus is an AC Delco, Model 55SI, 430 amp.

**⚠ CAUTION**

- Always observe proper polarity when making connections to the electrical system.
- Improper connection of batteries, jumper cables, and charging systems can cause damage to the electrical system or the alternator.

**3-7. ELECTRICAL SYSTEM - BATTERIES**

The batteries installing into your apparatus are AC Delco Champion, 12V group #91, 950 CCA.

The batteries in your apparatus are of the maintenance free design. The battery cables are heavy duty to provide maximize the power available to the electrical system.

To ensure a proper electrical supply, battery terminals must be clean and tight. The state of charge in a battery can be determined from the following chart:

VOLTMETER READING	STATE OF CHARGE
12.84 VOLTS	100%
12.50 VOLTS	75%
12.18 VOLTS	50%
11.88 VOLTS	25%

These are valve regulated sealed batteries and never needs to have water or electrolyte (acid) added.

**⚠ DANGER**

- Avoid exposing battery to gasoline or diesel fuel.
- Keep all sources of ignition away when working around batteries. Sparks caused by connection of battery terminals, jumper cables, or charging systems can be a source of ignition.
- Always wear safety goggles and protective clothing when working on or around batteries. Do not short circuit your battery terminals.
- Remove any metallic items such as watches, bracelets and other personal jewelry to ensure safe installation.
- Never attempt to remove the top decal cover, as it will cause the battery to fail.
- Failure to comply could result in injury or death to personnel.

### **3-8. JUMP STARTING YOUR APPARATUS**

Your Seagrave apparatus has a special receptacle, usually located underneath on the left side of the pump panel for connecting to electrical jumper cables. Special cables are required which are carried by Heavy Rescue. Ordinary jumper cables can, if needed, be used to successfully jump-start the apparatus if the special cables are unavailable.

#### **▲ WARNING**

- The apparatus has a 12V negative ground electrical system.
- Before using jumper cables, make sure the booster vehicle also has a negative ground system (negative terminal attached to a metal part of the vehicle).
- If unsure of the booster vehicle's voltage or ground, do not attempt to jump start as personal injury or severe damage to the electrical system may result.
- The Battery Jumping procedure must be performed exactly as outlined. Otherwise, personal injury and damage to equipment may occur.
- To prevent shorting of the electrical system, remove metal rings, watches or other metallic accessories and do not allow metal tools to contact the positive terminal of the battery.
- Batteries can emit explosive gases.
- To reduce the possibility of personal injury, always ventilate the compartment before servicing the batteries.
- The use of a higher voltage than 12 Volt DC will damage the electrical system.
- When using an external source to jump start the engine, turn the battery disconnect switch to OFF before connecting cables.
- Once the cables are connected correctly, turn the battery disconnect switch ON, then start the engine.

#### **▲ CAUTION**

- To avoid damage to the apparatus's electronic components, the voltage supplied to a vehicle's electrical system must not exceed 16.0 volts.
- When using the jumper cables to start the engine, make sure to connect the cables in parallel to the battery jump start studs:
  - *Positive (+) to Positive (+)*
  - *Then Negative (-) to Negative (-).*
- To reduce the possibility of arcing, remove the negative (-) cable first, and attach the negative cable (-) last.
- Use only equal voltage for jump starting (12 Volt DC).

## **APPARATUS JUMP STARTING PROCEDURE**

The following is the proper sequence to jump start apparatus using ordinary jumper cables:

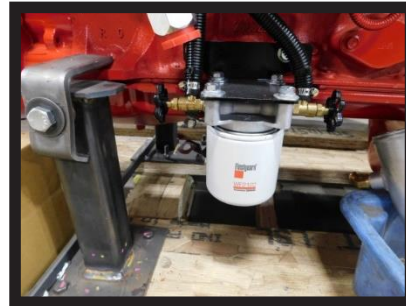
- STEP 1.** Position the vehicles so the jumper cables will reach easily between the batteries.  
Do not allow the vehicles to touch.
- STEP 2.** Turn off all electric motors and accessories in each vehicle.  
Turn off all lights not needed to protect the vehicles or to light the work area.  
In each vehicle, stop the engine, turn off the Warning Light Master Switch.
- STEP 3.** Apply the Parking Brake and shift the transmission to N (Neutral) in both vehicles.
- STEP 4.** Connect the first jumper cable from the positive (+) terminal of the dead battery of the disabled apparatus to the positive (+) terminal on the boosting battery.
- STEP 5.** Connect one end of the second jumper cable to the negative (-) terminal on the boosting battery and the other end to the frame of the disabled vehicle at least 18 inches away from the battery on the disabled apparatus.  
Do not attach the other end directly to the battery negative (-) terminal because a spark could occur and cause an explosion of battery gases.
- STEP 6.** With the jumper cables properly attached, start the engine of the vehicle with the good (charged) batteries. Run the engine at moderate speed (1000 to 1500 rpm).
- STEP 7.** Start the engine in the vehicle with the discharged batteries.
- STEP 8.** Now remove the battery jumper cables by reversing the above sequences exactly:
- \* Negative from previously disabled apparatus
  - \* Negative from boosting battery
  - \* Positive from the boosting battery
  - \* Positive from the previously disabled apparatus

**3-9. FILTER AND FLUID CHECKING LOCATIONS**

Located on the Officer's side of the engine



*Engine Oil Filter*



*Engine Coolant Filter*

Located on the Officer's side of the engine, inside frame rail



*Engine Fuel Filter*



*Primary Fuel Filter  
Filter/Water Separator*

Located in the center rear of the cab facing forward

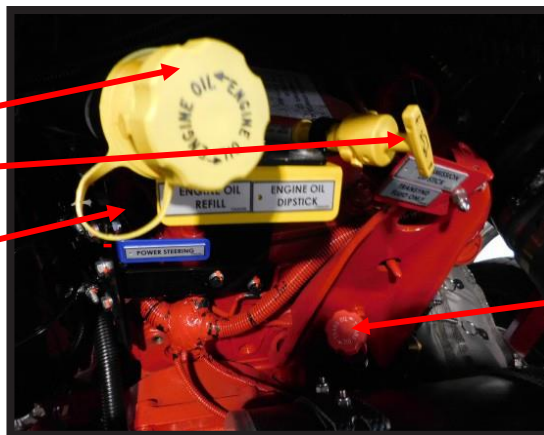


**Access Door for fluid checks:**  
**Oil transmission Power Steering**

**Engine Oil Refill Engine**

**Oil Dipstick**

**Power Steering Refill**



**Transmission Oil Dipstick**

Located outside and under the Officer's cab door



**Fill-Check Door with levels for**  
**the Washer Fluid (R) and**  
**Radiator Overflow (L)**

**Fluid reservoirs for**  
**Washer Fluid (R)**  
**and Radiator**  
**Overflow (L)**





## SECTION 3 BASIC INSTRUCTIONS

### 3-10. FILTERS AND BELTS

Below is a listing of the filters and belts used in your Seagrave apparatus.  
The Filter and Belt Chart below is also located in the Parts Book Drawings of your Electronic Manual.

#### FILTERS & BELTS CHART SO#56223 Rockville Vol. Fire Department Inc. Rockville, MD

DESCRIPTION	SEAGRAVE Part #	MFGR	MFGR PART#	OTHER VENDOR REPLACEMENT PART #
AC Belt	P3427505	Cummins Dayco Products	3288464 5080670	
Alternator-Fan Belt	P3425793	Dayco Products	5100880	
Engine Air Cleaner	P3424839	Donaldson Powercore	P605535	Element: SFA # P1997031
Engine Fuel Filter	Comes on Engine	Fleetguard	FF2299	
Engine Coolant Filter	Comes on Engine	Fleetguard	WF2114	
Engine Oil Filter	Comes on Engine	Fleetguard	LF2084	
Engine Fuel Water Separator	P2598930	Parker	Racor 490	
Power Steering (In Reservoir)	446785-01	Fleetguard	83804E	
Transmission Internal Filter	29548988	Allison	29548988 <small>(Includes both filters, seals &amp; gaskets)</small>	
Cab Front Heater & Defroster Air Filter	P3427742	Badger Truck	BT8-1038	
Overhead EC Evaporator Air Filter	P3427730	Badger Truck	BT8-1213	
Crew Heater Air Filter	P3425792	Badger Truck	BT8-1007	
Hydraulic High-Pressure Filter Element	P2067900	Parker	932669Q	
Platform Leveling High Pressure Filter	P3429901	Parker	SF014G03B TUBA2	





## SECTION 3 BASIC INSTRUCTIONS

### 3-11. LUBRICANTS AND LUBRICATION

Below is a listing of the lubricants used in your Seagrave apparatus.  
 the Lube Chart below is also located in the Parts Book Drawings of your manual and on the inside of the driver's door of your apparatus.

### LUBRICATION CHART

SO# 56223 Rockville Vol. Fire Department Inc.  
 Rockville, MD

LUBRICANT REQUIRED		FLUIDS	CAPACITY
ENGINE OIL		SAE 15W40 API CK-4	44 QTS
ENGINE COOLANT		50% ANTIFREEZE	64 QTS
CHASSIS TRANSMISSION FLUID		TRANSYND ATF	47 QTS
DRIVE AXLE FLUID		SAE 80W90	15/20 QTS
A/C REFRIGERANT		R134A	4 LB, 12 OZ
A/C COMPRESSOR OIL		PAG 46	16.9 FL OZ
POWER STEERING FLUID		DEXRON III ATF	4 QTS
CAB TILT FLUID		DEXRON III ATF	5 QTS
FUEL		ULTRA LOW SULFUR DIESEL	85 GAL
DIESEL EXHAUST FLUID		32.5% UREA WATER SOLUTION	10 GAL
WINDSHIELD WASHER FLUID		WINDSHIELD WASHER FLUID	4 QTS
AUTO LUBE SYSTEM		HLGI 000 GREASE	2.85 QTS
GENERATOR SYSTEM OIL		ISO 46	5 GAL
AERIAL HYDRAULIC FLUID		ISO GRADE 22	70 GAL
FRONT TIRES	425/65R22.5	22,800 LBS @ 120 PSI, 75 INTERMITTENT Max Speed, MPH	
REAR TIRES	315/80R22.5	33,080 LBS @ 130 PSI, 75 (Dual) INTERMITTENT Max Speed, MPH	
INTER TIRES	315/80R22.5	33,080 LBS @ 130 PSI, 75 (Dual) INTERMITTENT Max Speed, MPH	
AMBIENT OPERATING TEMP		-20°F TO 110°F	
CHASSIS PAINT EXT. COLOR(S)		PPG 914728 WHITE DELFLEET PPG 975723 RED DELFLEET PPG 35913 - SILVER BLUE METALLIC	



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**SPECIAL LUBE INSTRUCTIONS**

Each of the following photos will indicate a specific area that will need lubrication. Please refer to your Lubrication Chart for the appropriate type of lubrication to use.

**King Pins (Steering Axles)**

The correct method for lubricating the front axle king pin thrust bearings is to jack up each wheel at the axle. This will remove the load on the bearings.

**Universal Joints**

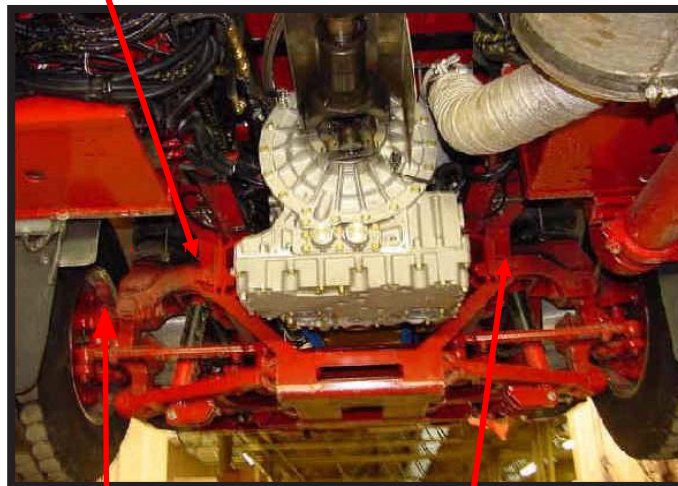
When lubricating the universal joints, it is most important to observe the grease seeping past all four cross bearing seals. If grease does not show at any of the seals, tap the opposite side yoke firmly with a plastic or similar type hammer while applying lube gun pressure. If you are unable to get the grease through, report this condition to the appropriate maintenance department personnel.

**Drive Shaft Slip Yoke**

To prevent drive shaft slip yoke galling or seizure, it is necessary to apply grease to the fitting until it appears at the relief hole in the end of the yoke plug. Then cover the relief hole with your finger while continuing to apply grease full pressure until the grease appears at the slip yoke seal on the spline end. This operation is a two-person job unless your station is equipped with a power lube gun.

**#1 Drag Link, Axle King Pin, Hydraulic Assist Cylinder**

*Drag Link Grease Fitting  
(behind top suspension "A" arm)*

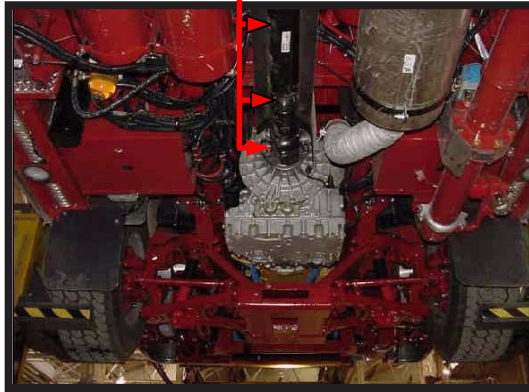


*Axle King Pin Grease Fitting  
two (2) on right side, two (2) on left side*

*Hydraulic Assist Cylinder  
(R/H behind suspension)*

**#2 Drive Line - #1**

**Drive Line #1**  
**3 fittings**



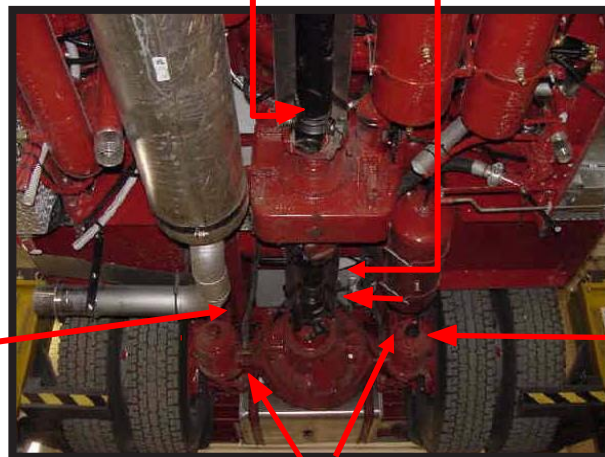
**#3 Drive Line - #2 & #3**  
**Disc Brake Fittings**  
**Slack Adjuster**

**Drive Line #2**  
**three (3)**  
**fittings**

**Drive Line #3**  
**three (3) fittings**

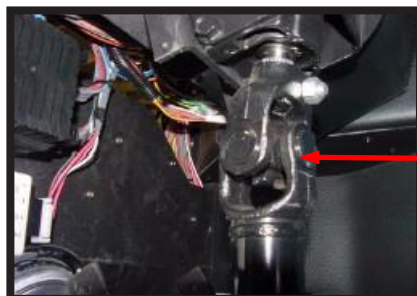
**Disc Brake Fitting**  
**two (2)**

**Disc Brake Fitting**  
**two (2)**



**Slack Adjuster**  
**one (1) each side**

**#4 Upper Steering Column**



**Upper Steering Column**  
**Lubrication Fittings**

**#5 Lower Steering Column**



*Lower Steering Column  
Lubrication Fittings*

**#6 King Pin**

*King Pin Fittings  
(two (2) each  
side)*

*King Pin Fittings  
(two (2) each side)*



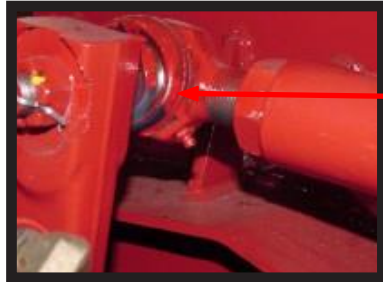
*Tie Rod Ends*

**#7 Cab Tilt Hinge Pin**



*Cab Tilt Hinge Pin Grease Fitting  
(one (1) on each side)*

**#8 Draglink Front Axle**

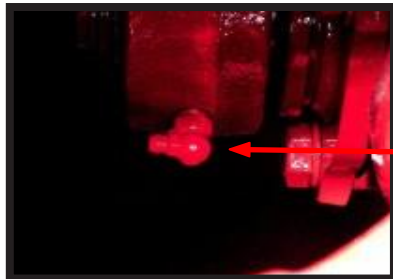


*Draglink Front Axle  
(front view)*



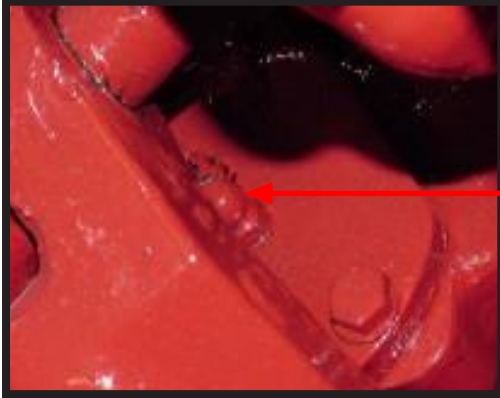
*Draglink Front Axle  
(rear view)*

**#9 Slack Adjuster Front Axle**



Slack Adjuster Front Axle

**#10 King Pin Front Axle**

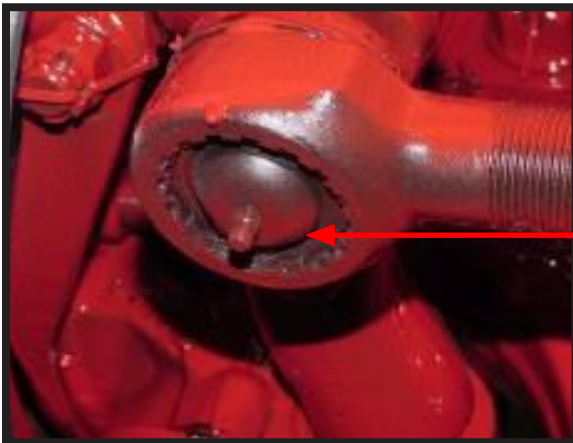


*Top of King Pin  
Front Axle*



*Bottom of King  
Pin Front Axle*

**#11 Tie Rod Ends**



*Tie Rod End  
Front Axle*



**#12 Power Steering Assist Cylinder**



*Power Steering Assist Cylinder  
(rod end rear) Front Axle*



*Power Steering Assist Cylinder  
(rod end front) Front Axle*

**#13 Front Drive Shaft Yoke**



*Front Yoke of Front  
Drive shaft coming  
from Transmission*

**#14 Rear of Front Drive Shaft**



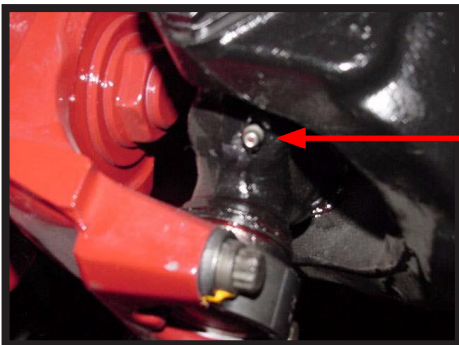
**Front Drive  
shaft rear of  
shaft going into  
Pump**

**#15 Front of Front Drive Shaft**



**Rear Drive shaft  
front of Shaft  
coming out of  
Pump**

**#16 Rear of Rear Drive Shaft**



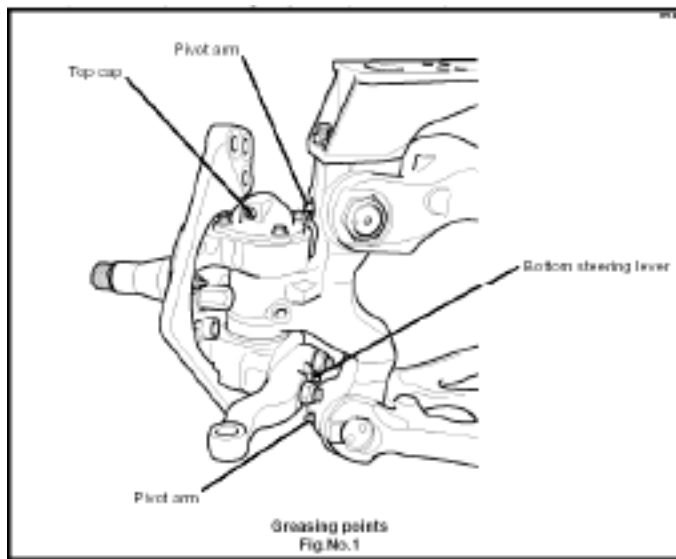
**Rear Drive shaft,  
rear of shaft going  
into rear axle**



**3-12. FRONT HUB – SUSPENSION UNIT LUBRICATION**

Lubricate stub axle and socket assemblies with one of the following recommended greases at regular intervals not exceeding 10,000 miles or 4 (four) weeks, whichever comes first.

Charge with the manufacturer's recommended grease, or the equivalent, at grease points as shown in the following illustration. (Also steering ball sockets and steering relay levers.) See the Meritor PB-1461 Air Disc Brake Parts book for a complete listing and description of parts of the Meritor EX225H brakes. This manual can be downloaded from Meritor.com from their Literature on Demand section.



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### **3-13. CUMMINS ENGINE LUBRICATION AND MAINTENANCE**

#### **GENERAL INFORMATION**

Preventative maintenance is essential in keeping your engine in peak running condition.

By utilizing the Check Lists and Maintenance Logs in this manual, they will help you to make sure that your engine stays in service.

Cummins QuickServe Online is your source for maintenance and diagnostics information about your Cummins engine. After you register using your engine serial number, you will have access to Parts content and Service documents that are specific to your engine serial number or engine family. QuickServe Online is your complete reference for Cummins parts and service information on the Internet. To get started, go to the “Create an Account” at the web site <https://quickserv.cummins.com>.

The following are engine areas that you should pay special attention to located in the above online manual:

1. Air Cleaner
2. Air Intake
3. Air Cooler
4. Charge-Air Piping and Hoses
5. Compressor Lines
6. Coolant Filter
7. Coolant Level
8. Cooling System
9. Crankcase Breather Element
10. Crankcase Breather Tube
11. Damper
12. Diesel Exhaust Fluid
13. Diesel Particulate Filter (DPF)
14. DEF Dosing Unit Filter
15. Engine Brake
16. Engine Cleaning
17. Exhaust Piping
18. Fan Hub
19. Fan
20. Fuel PSI Filter
21. Fuel Return Filter
22. Fuel-Water Separator
23. Oil Changes
24. Oil Level
25. Poly Vee Belt
26. Radiator

### 3-14. TRANSMISSION SYSTEM

#### MANUALLY CHECKING THE TRANSMISSION FLUID LEVEL

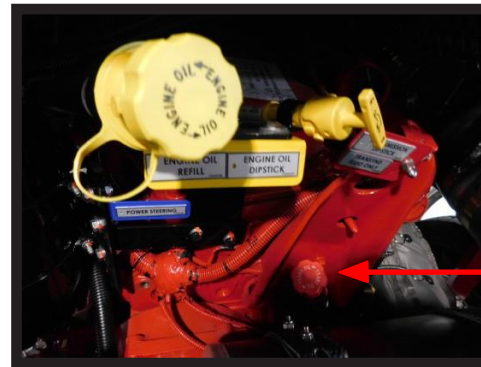
Be sure the transmission fluid has reached an operating temperature of 160° - 200° F

Park the apparatus on a level surface, apply the parking brake, and shift the transmission into N (Neutral).

The transmission oil dipstick is in the rear of the cab by opening the access door.



*Access Door in rear of cab*



*Transmission Dipstick*

- STEP 1:** Clean the area around the dipstick so no dirt or debris enters the transmission fluid.
- STEP 2:** Start the engine and run the engine at idle at approximately 700 rpm.
- STEP 3:** Pull the dipstick out and wipe the dipstick clean of fluid with a clean rag or toweling.
- STEP 4:** Reinsert the cleaned dipstick, re-pull the dipstick out and check the fluid level. The safe operating level is anywhere within the hot run band on the dipstick.
- STEP 5:** If the level is not within this band, add or drain fluid as necessary to bring the level within the hot run band.



Whenever checking transmission fluid level, the transmission shift selector must be in N (Neutral), the parking brake and the auxiliary front brake applied.

**NOTE:** A transmission fluid “cold check” can be made in lieu of the “hot check” to determine if the transmission has enough fluid to be operated safely until the proper “hot check” can be made. To do this, remove the transmission fluid dipstick and be sure that the static fluid level is near the “hot run” mark on the dipstick. It is important that the fluid level be at or near the “hot run” mark because the fluid level will drop.

<b>3-15. TIRES</b>
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The tires installed on your apparatus are as follows:

Front Tires	425/65R22.5	22,800 LBS @ 120 PSI, 75 INTERMITTENT Max Speed, MPH
Inter Tires	315/80R22.5	33,080 LBS @ 130 PSI, 75 (DUAL) INTERMITTENT Max Speed, MPH
Rear Tires	315/80R22.5	33,080 LBS @ 130 PSI, 75 (DUAL) INTERMITTENT Max Speed, MPH

**GENERAL TIRE INFORMATION**

**Over Inflation**

Over inflation imposes excessive strain on the tire cords, weakening their resistance to impact. This could cause tire rupture and blowouts.

**Under Inflation**

Under inflation is the principal enemy of tire life and one of the primary causes of tire failure. Increased flexing due to under inflation causes heating, reduced strength, breakdown, and possible separation of the tire components. Under inflation also increases the rolling resistance of the tire which increases fuel consumption and reduces tread life.

**Unequal Inflation**

Unequal inflation on a set of dual tires causes more of the load to be absorbed by one tire than the other. This overload condition may cause an overheat condition leading to premature failure of one or both tires.

**NOTE:** Inflation pressures should always be checked when tires are cold. Never bleed air from tires when hot to relieve normal pressure buildup.

**See the needed tire pressure for your tires in the Lubrication Chart, located in the Parts Book Drawings of your electronic manual, and on the Lubrication Chart located on the inside of the driver's side door.**

### **3-16. GENERAL TIRE MAINTENANCE ROUTINES**

Your tires need to be inspected daily for proper pressure, any cuts or damage to the tires, uneven tread wear. These inspection points are part of your Daily Checklist items.

#### **REPLACEMENT CRITERIA**

- Tires shall be replaced when tread depth is at or less than 4/32" measured at any point on a major tread groove. The measurements shall NOT be made where the tie bars, humps, or fillets are located.
- Tires showing evidence of the tread separating from the tire case must be replaced as soon as possible.
- Tires showing ANY exposed fabric through tread or sidewall area are to be replaced immediately.

#### **INFORMATION REQUIRED FOR TIRE REPLACEMENT**

When calling for apparatus tire replacements, the following information may be required to determine the closest replacement match:

- Tire size
- Tire location
- Axle weight



### 4-1. WARRANTY COMPLIANCE

The warranty is assured by Seagrave Fire Apparatus, LLC. Any repairs required during this warranty must be completed by a Seagrave Authorized dealer or Seagrave Approved repair facility. All warranty requests must be properly submitted and approved by Seagrave Service before the work is completed. In the event an emergency repair is needed, verbal approval from Seagrave Management is acceptable.

Warranty does not apply in case of:

- normal wear and tear
- abuse
- damage caused by failure in maintenance
- damage caused by repairs executed by unauthorized personnel
- damage caused by natural influences that the product wasn't designed for

Seagrave Fire Apparatus, LLC strongly recommends fully reviewing your Maintenance Manual, Operations Manual and Warranty Certificates.

### 4-2. WARRANTY AND CERTIFICATION INFORMATION

Your specific warranty and certification information has been included in the electronic manual that you received with your apparatus. The electronic copy is in the larger red manual binder with plastic zip pockets in it.

Please refer to the "CERTIFICATES AND WARRANTIES" section of the electronic manual for your specific warranties. A listing is below for your convenience.

- Aerial Certification Form - Badger
- Aerial Performance Certificate - Badger
- Apparatus Construction Details
- Apparatus Weights
- Emergency Lights Certificate of Compliance
- Engine Installation Approval - Cummins
- Engine Performance Curve - Cummins
- Final Alignment Report
- Fixed Power Source Certificate - Badger
- Load Analysis
- Low Voltage Electrical Certification
- Original Equipment Manufacturer Summary
- Siren Certificate of Compliance - Federal Signal
- Siren Certificate of Compliance - Whelen
- Slip Resistance Certificate - Alcoa
- Statement of Exceptions



## SECTION 4 TRUCK SPECIFIC INFORMATION

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LIMITED SEAGRAVE WARRANTY - 2 Year SFA Base  
LIMITED SEAGRAVE WARRANTY - Aerial, Structural  
LIMITED SEAGRAVE WARRANTY - Body, Structural  
LIMITED SEAGRAVE WARRANTY - Cab, Structural  
LIMITED SEAGRAVE WARRANTY - Chassis Frame Rail & Crossmember, Structural  
LIMITED SEAGRAVE WARRANTY - Paint/Corrosion  
WARRANTY - Allison  
WARRANTY - Arvin Meritor  
WARRANTY - Cummins Engine  
WARRANTY - Onan Generator  
WARRANTY - RH Sheppard, Steering





**SECTION 4**  
**TRUCK SPECIFIC INFORMATION**

**4-3. LUBRICATION CHART**

**LUBRICATION CHART**

SO# 56223 Rockville Vol. Fire Department Inc.  
Rockville, MD

LUBRICANT REQUIRED		FLUIDS	CAPACITY
ENGINE OIL		SAE 15W40 API CK-4	44 QTS
ENGINE COOLANT		50% ANTIFREEZE	64 QTS
CHASSIS TRANSMISSION FLUID		TRANSYND ATF	47 QTS
DRIVE AXLE FLUID		SAE 80W90	15/20 QTS
A/C REFRIGERANT		R134A	4 LB, 12 OZ
A/C COMPRESSOR OIL		PAG 46	16.9 FL OZ
POWER STEERING FLUID		DEXRON III ATF	4 QTS
CAB TILT FLUID		DEXRON III ATF	5 QTS
FUEL		ULTRA LOW SULFUR DIESEL	85 GAL
DIESEL EXHAUST FLUID		32.5% UREA WATER SOLUTION	10 GAL
WINDSHIELD WASHER FLUID		WINDSHIELD WASHER FLUID	4 QTS
AUTO LUBE SYSTEM		HLGI 000 GREASE	2.85 QTS
GENERATOR SYSTEM OIL		ISO 46	5 GAL
AERIAL HYDRAULIC FLUID		ISO GRADE 22	70 GAL
FRONT TIRES	425/65R22.5	22,800 LBS @ 120 PSI, 75 INTERMITTENT Max Speed, MPH	
REAR TIRES	315/80R22.5	33,080 LBS @ 130 PSI, 75 (Dual) INTERMITTENT Max Speed, MPH	
INTER TIRES	315/80R22.5	33,080 LBS @ 130 PSI, 75 (Dual) INTERMITTENT Max Speed, MPH	
AMBIENT OPERATING TEMP		-20°F TO 110°F	
CHASSIS PAINT EXT. COLOR(S)		PPG 914728 WHITE DELFLEET PPG 975723 RED DELFLEET PPG 35913 - SILVER BLUE METALLIC	



**SECTION 4**  
**TRUCK SPECIFIC INFORMATION**

**4-4. FILTER AND BELT CHART**

**FILTERS & BELTS CHART**

SO#56223 Rockville Vol. Fire Department Inc.  
Rockville, MD

DESCRIPTION	SEAGRAVE Part #	MFGR	MFG R PART#	OTHER VENDOR REPLACEMENT PART #
AC Belt	P3427505	Cummins Dayco Products	3288464 5080670	
Alternator-Fan Belt	P3425793	Dayco Products	5100880	
Engine Air Cleaner	P3424839	Donaldson Powercore	P605535	Element: SFA # P1997031
Engine Fuel Filter	Comes on Engine	Fleetguard	FF2299	
Engine Coolant Filter	Comes on Engine	Fleetguard	WF2114	
Engine Oil Filter	Comes on Engine	Fleetguard	LF2084	
Engine Fuel Water Separator	P2598930	Parker	Racor 490	
Power Steering (In Reservoir)	446785-01	Fleetguard	83804E	
Transmission Internal Filter	29548988	Allison	29548988 (Includes both filters, seals & gaskets)	
Cab Front Heater & Defroster Air Filter	P3427742	Badger Truck	BT8-1038	
Overhead EC Evaporator Air Filter	P3427730	Badger Truck	BT8-1213	
Crew Heater Air Filter	P3425792	Badger Truck	BT8-1007	
Hydraulic High Pressure Filter Element	P2067900	Parker	932669Q	
Platform Leveling High Pressure Filter	P3429901	Parker	SF014G03 BTUBA2	





SEAGRAVE FIRE APPARATUS, LLC  
 105 E. 12th Street  
 Clintonville, WI 54929-1590

**AERIALSCOPE 95'**  
**MANUFACTURER RECORD OF**  
**AUTOMOTIVE FIRE APPARATUS CONSTRUCTION DETAILS**

Owner: Rockville Volunteer Fire Department Incorporated		
Fire Chief/ Responsible Officer: James Vagonis		
Address: 380 Hungerford Drive		
City: Rockville	State: MD	Zip Code: 20850
Apparatus Manufacturer: Seagrave Fire Apparatus, LLC		
Model: TV0HCS	S.O.: 56223	

Chassis Manufacturer: Seagrave Fire Apparatus, LLC		
Model: TV0HCS	Serial No.: 1F9FM38T8KCST2008	
GAWR Front Axles: 22,800 lbs.	GAWR Rear Axles: 28,600 ea. lbs.	
Front Tire Size: 425/65R22.5	Rated Capacity Total: 22,800 lbs.	
Rear Tire Size: 315/80R22.5	Rated Capacity Total: 33,080 lbs.	
Driving Axles Ratio: 6.14	<b>GVWR Total: 80,000 lbs.</b>	
Chassis Weight Distribution with Manufacturer Mounted Equip. and Water* Front:		21,020 lbs.
Chassis Weight Distribution with Manufacturer Mounted Equip. and Water* Rear:		50,200 lbs.
Chassis Weight Distribution with Manufacturer Mounted Equip. and Water* Total:		71,220 lbs.

\* Weight distribution with water applies only if this apparatus is equipped with a water tank.

Ambient Operating Temperature: -20 degrees F to 110 degrees F		
Engine Manufacturer: Cummins		
Model: ISX12	Serial No.: 40014593	
No. of Cylinders: 6	Bore: 5.11	Stroke: 5.91
Displacement: 729 cu. in.	Compression Ratio: 16.6:1	
Rated Horsepower: 500 @ 1,800 rpm	Governed Speed: 2,300 Rpm	
Type of Fuel: Diesel	Fuel Tank Capacity: 85 Gallons	
Electrical System Voltage: 12 volts	Alternator Output: 430 Amps	
Battery Make: Champion	Model: Group 31	Capacity: 950 CCA
Generator Make: Onan	Model: 6RBAB-2010D	Serial No.: K180455265
Light Tower Make: NA	Serial No.:	NA



SEAGRAVE FIRE APPARATUS, LLC  
105 E. 12th Street  
Clintonville, WI 54929-1590

Transmission Manufacturer: Allison	Model: 4000EVS	
Transmission Serial No.: 6610537915	Transmission Type: Automatic	
PTO Make: Muncie	PTO Model: CS24-A1007-H3CX	PTO Serial No: 01466942001
Transmission PTO Gear Ratio	1.44	
Telma Retarder Model No: NA	Telma Serial No: NA	

Pump to Drive Through Transmission? (Yes or No):	N/A	
Pump Manufacturer:	N/A	
Model: N/A	Rated Capacity: N/A GPM	
Serial No.: N/A	No. of Stages: N/A	Impeller Diameter: N/A in.

Pump Transmission Manufacturer:	N/A
Model: N/A	Serial No.: N/A
Engine to Pump Gear Ratio: N/A	Transmission Gear Ratio Used: NA
Priming Device Type: N/A	
Relief Valve?: N/A	Pressure Governor?: N/A
Maximum Discharge Pressure Capability Rating: N/A	

Auxiliary Pump Manufacturer: N/A	Model: N/A	
Serial No.: N/A	No. of Stages: N/A	Impeller Diameter: N/A in.

Water Tank Capacity: N/A Gallons	Serial No.: N/A
Foam Tank Capacity: N/A Gallons	

Aerial Device Manufacturer: Seagrave fire Apparatus, LLC	
Type: Aerialscope	
Model No.: 95', 1,000#	S.O.: 56223
Rated Vertical Height: 95 ft.	Rated Horizontal Reach: 84 ft.
Aerial Rated Capacity: 1,000 lbs.	Aerial Device: Non-Insulating
Aerial Electrical Control System Voltage: 12 VDC	Aerial Maximum Hydraulic Pressure: 3000 PSI
Aerial Design Voltage: 12 VDC	Aerial Qualification Voltage: Not applicable: non-insulating

Paint Numbers: PPG 975723 Red Delfleet, PPG 914728 White DelFleet
Aerial Paint No. PPG 35913 - Silver Blue Metallic







SEAGRAVE FIRE APPARATUS, LLC  
 105 E. 12th Street  
 Clintonville, WI 54929-1590

Maximum rotation gear train backlash	0.3	in.
Measurement location:	Under rear of turntable	
Maximum rotation bearing inner to outer race clearance:	0.03	
Measurement location:	Under rear of turntable	
Maximum elevation cylinder drift:	0.5	in.
Measurement location:	At elevation cylinders	
Maximum extension cylinder drift:	0.75	in.
Measurement location:	At elevation cylinders	
“High Idle” engine speed:	1425	Rpm
Hydraulic system relief pressure:	3,000	Psig
Maximum stabilizer cylinder drift:	0.25	in.
Boom/ Ladder section maximum twist:	1"@tip of fly	in.
Rated water system pressure:	250	Psig
Water system relief valve setting:	240	Psig
Rated water system flow:	1,000	Gpm
Aerial/ Transmission interlock?:	Yes	Engine speed interlock?: Yes
Breathing air system?:	No	Air cylinder regulator pressure setting: N/A psig

Seagrave Fire Apparatus certifies that all the above information is correct.

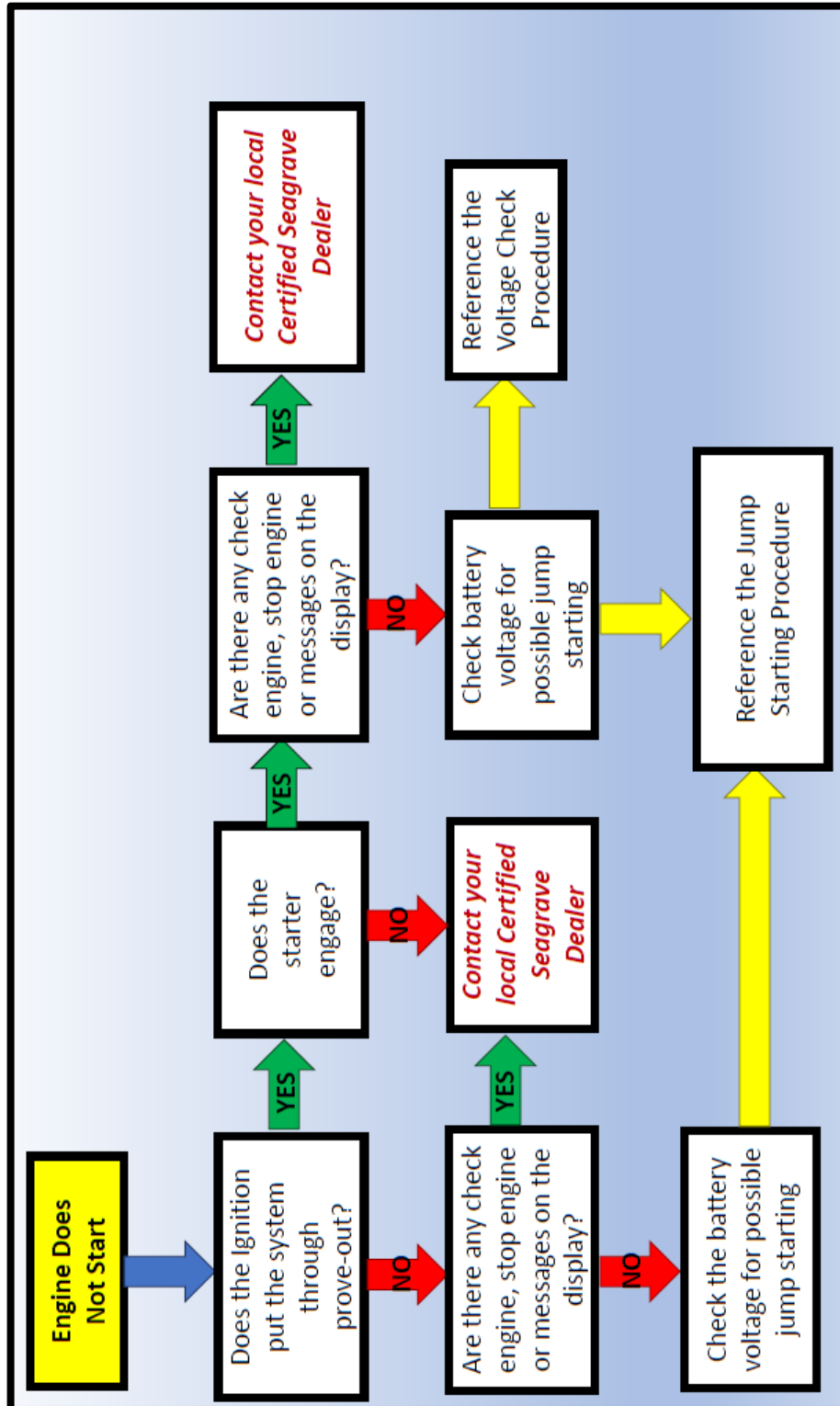
VP and Chief Operating Officer

Date

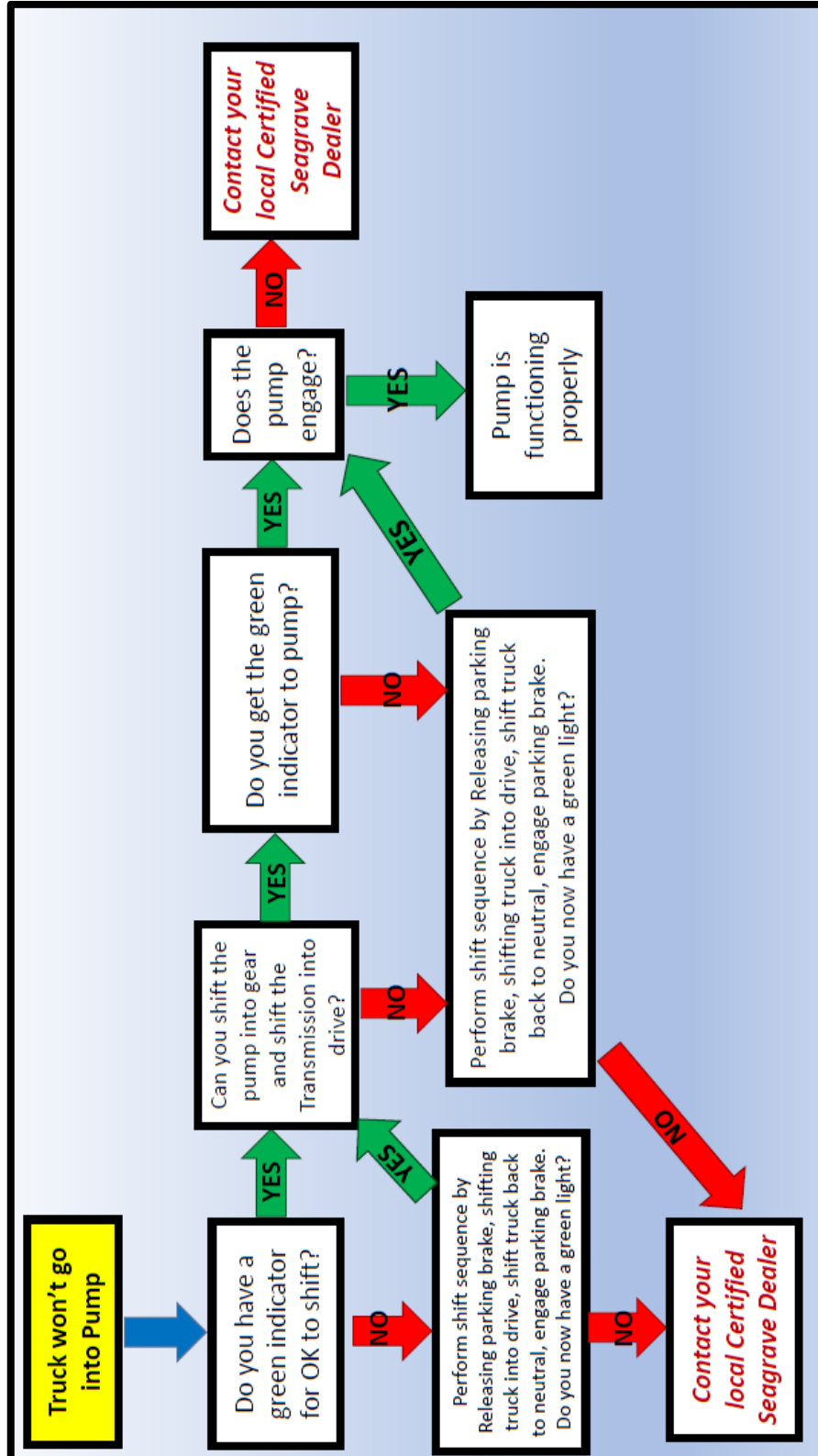


**5-1. TROUBLESHOOTING FLOW CHARTS**

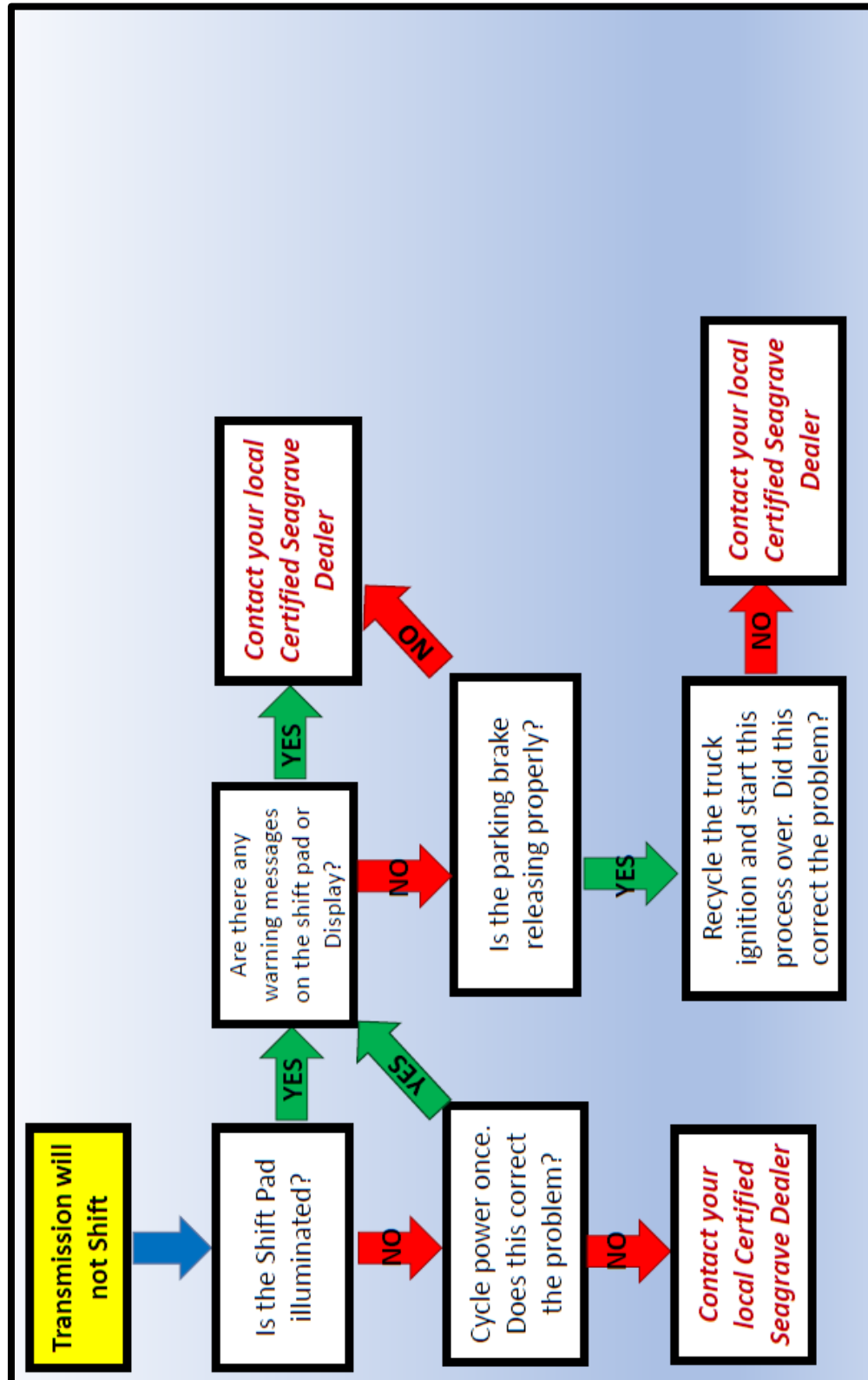
**ENGINE DOES NOT START**



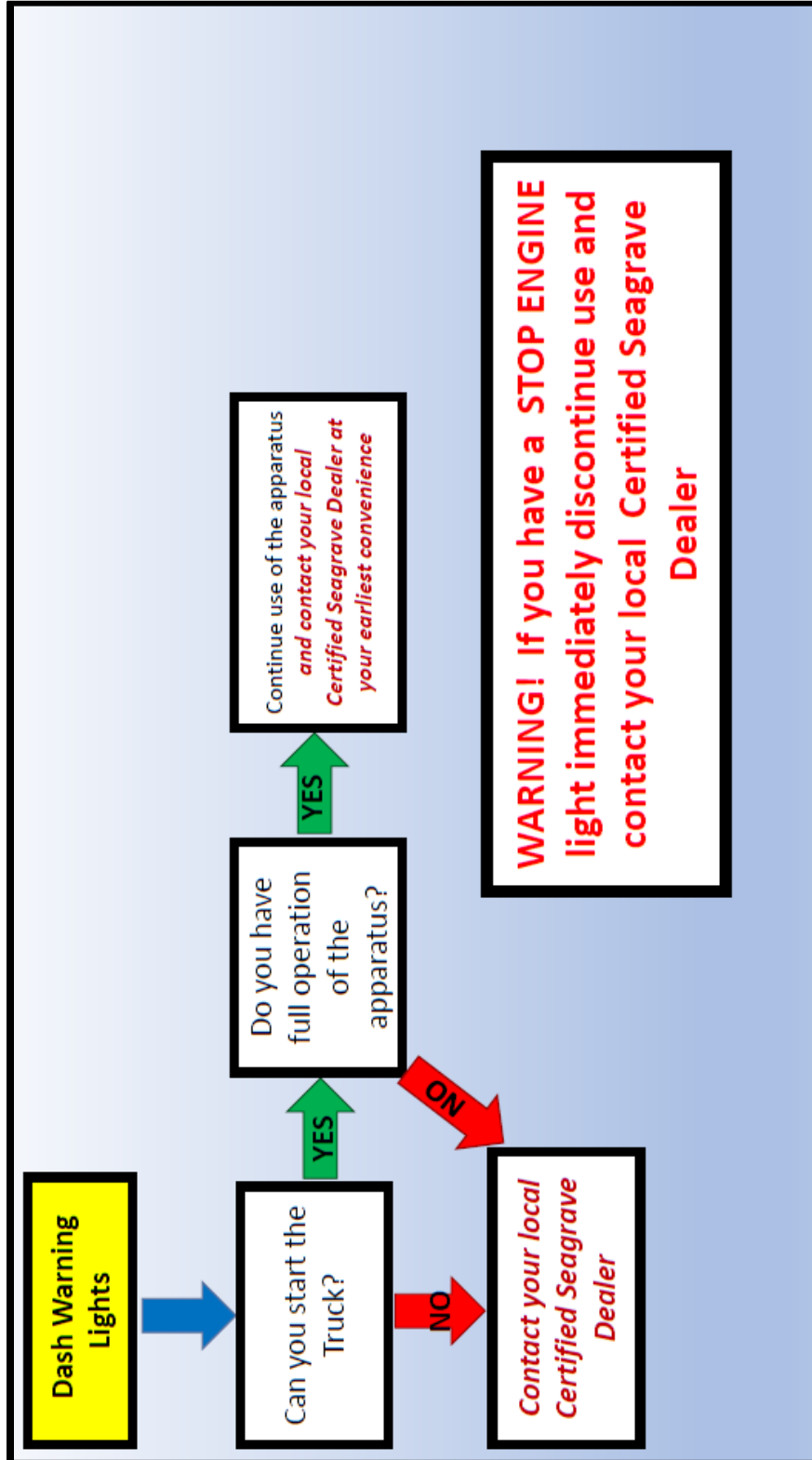
**TRUCK WON'T GO INTO PUMP**



**TRANSMISSION WILL NOT SHIFT**



DASH WARNING LIGHTS



**START UP ALARMS**

