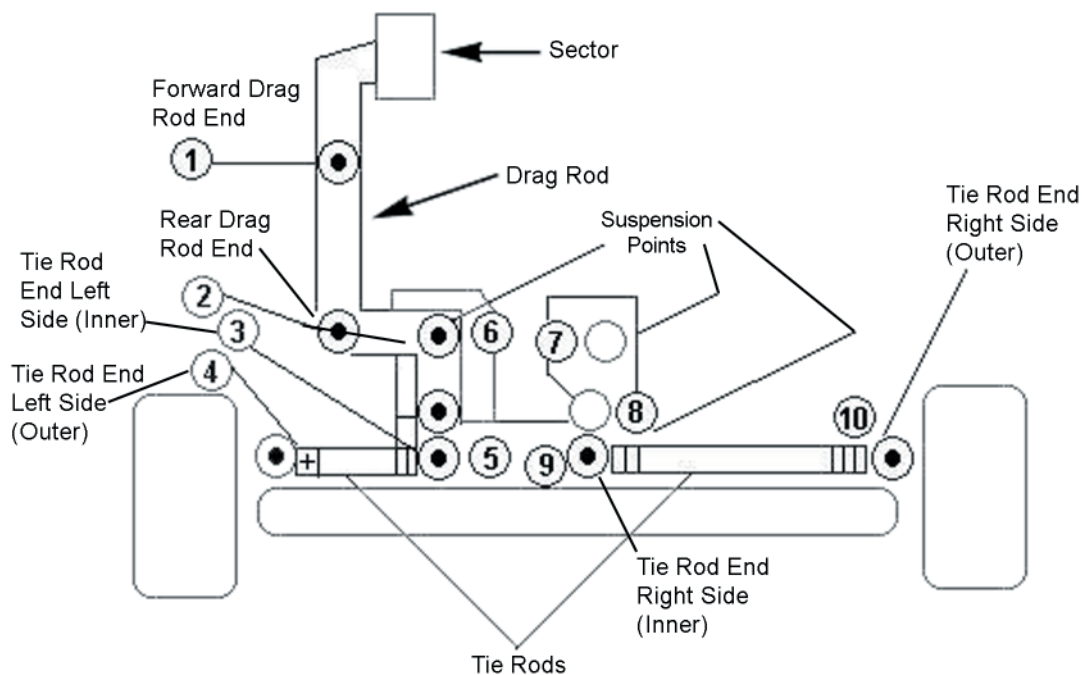


Belts for multiple groove pulleys must be replaced as matched sets. If only one belt is replaced, the belt will carry more load than the belts that are not replaced. The older belts are stretched. The additional load on the new belt could cause the belt to break.

- Drain the water and the sediment from fuel tanks on a daily basis in order to ensure that only clean fuel enters the fuel system.
- Inspect the wiring and the wiring harnesses for loose connections and for worn wires or frayed wires.
- Inspect the ground strap for a good connection and for good condition.
- Inspect the ECM to the cylinder head ground strap for a good connection and for good condition.
- Disconnect any battery chargers that are not protected against the current drain of the starting motor. Check the condition and the electrolyte level of the batteries, unless the engine is equipped with a maintenance free battery.
- Check the condition of the gauges. Replace any gauges that are cracked. Replace any gauge that can not be calibrated.

5-3.49 Lubrication Points



NOTE: There are also two universal joints on drive shaft to include in Lubrication Points.

5-3.50 Customer Service

5-3.50.1 Customer Assistance

USA and Canada

When a problem arises concerning the operation of an engine or concerning the service of an engine, the problem will normally be managed by the dealer in your area.

Your satisfaction is a primary concern to Caterpillar and to Coachworks. To get in touch with the Caterpillar Field Service Coordinator: 1-800-447-4986 or submit problem in writing to:

Caterpillar Inc.

Manager, Customer Service, Engine Division

Mossville Bldg AC

P.O. Box 610

Mossville, Illinois 61552-0610

5-4 PowerTech PTSMH20.0 Generator Maintenance/Service

5-4.1 Maintenance

CAUTION!!

To avoid personal injury:

- Be sure to conduct daily checks, periodic maintenance, refueling or cleaning on a level surface with the engine shut off and key removed.
- Before allowing other people to use the engine, explain how to operate, and have them read this manual before operation.
- When cleaning any parts, do not use gasoline but use regular cleanser.
- Always use proper tools, that are in good condition. Make sure you understand how to use them, before performing any service work.
- When installing, be sure to tighten all bolts to specified torque.
- Do not put any tools on the battery, or battery terminals may short out. Severe burns or fire could result. Detach the battery from the engine before maintenance.
- Do not touch muffler or exhaust pipes while they are hot; severe burns could result.

5-4.3 Service Intervals

Observe the following for service and maintenance.

The lubricating oil change intervals listed in the table below are for Classes CF, CE and CD lubricating oils of API classification with a low-sulfur fuel in use. If the CF-4 or CG-4 lubricating oil is used with a high-sulfur fuel, change the lubricating oil at shorter intervals than recommended in the table below depending on the operating condition.

No.	Check Point	Interval										
		First 50 Hours	Every 50 Hours	Every 100 Hours	Every 200 Hours	Every 400 Hours	Every 500 Hours	Every 800 Hours	Every 1500 Hours	Every 3000 Hours	Every 1 Year	Every 2 Years
1	Check of fuel pipes and clamp bands		○									
2	Change of engine oil	⊖			○							
3	Cleaning of air cleaner element			○								
4	Check of battery electrolyte level			○								
5	Check of fan belt tightness			○								
6	Check of radiator hoses and clamp bands				○							
7	Check of intake air line				○							
8	Replacement of oil filter cartridge	⊖				○						
9	Replacement of fuel filter cartridge					○						
10	Removal of sediment in fuel tank						○					
11	Cleaning of water jacket (radiator interior)						○					
12	Replacement of fan belt						○					
13	Check of valve clearance							○				
14	Replacement of air cleaner element										○	
15	Check of damage in electric wiring and loose connections										○	
16	Check of fuel injection nozzle injection pressure								○			
17	Check of turbo charger									○		
18	Check of injection pump									○		
19	Check of fuel injection timer									○		
20	Replacement of fuel pipes and clamp bands											○

Service Intervals - continued

No.	Check Point	Interval										
		First 50 Hours	Every 50 Hours	Every 100 Hours	Every 200 Hours	Every 400 Hours	Every 500 Hours	Every 800 Hours	Every 1500 Hours	Every 3000 Hours	Every 1 Year	Every 2 Years
21	Replacement of radiator hoses and clamp bands											○
22	Replacement of battery											○
23	Change of radiator coolant (L.L.C.)											○
24	Replacement of intake air line											○

IMPORTANT

- The jobs indicated by Θ must be done after the first 50 hours of operation.
- *1 Air cleaner should be cleaned more often in dusty conditions than in normal conditions.
- *2 After 6 times of cleaning.
- *3 Consult your local KUBOTA Dealer for this service.
- *4 Replace only if necessary.
- The items listed above (@ marked) are registered as emission related critical parts by KUBOTA in the U.S. EPA nonroad emission regulation. As the engine owner, you are responsible for the performance of the required maintenance on the engine according to the above instruction.



NOTE: Lubricating Oil - With the emission control now in effect, the CF-4 and CG-4 lubricating oils have been developed for use of a low-sulfur fuel on on-road vehicle engines. When an off-road vehicle engine runs on a high-sulfur fuel, it is advisable to employ the CF, CD or CE lubricating oil with a high total base number. If the CF-4 or CG-4 lubricating oil is used with a high-sulfur fuel, change the lubricating oil at shorter intervals.

Lubricating Oil Recommended when a low-sulfur or high-sulfur fuel is employed.

O: Recommended X: Not Recommended

Lubricating Oil Class	Fuel	Low-sulfur	High-sulfur	Remarks
	CF		O	O
CF-4		O	X	
CG-4		O	X	

5-4.4 Periodic Service**5-4.4.1 Fuel**

Fuel is flammable and can be dangerous. Be sure to handle with care.

CAUTION!!

To avoid personal injury:

- Do not mix gasoline or alcohol with diesel fuel. This mixture can cause an explosion.
- Be careful not to spill fuel during refueling. If fuel should spill, wipe it off at once, or it may cause a fire.
- Do not fail to stop the engine before refueling. Keep the engine away from the fire.
- Be sure to stop the engine while refueling or bleeding and when cleaning or changing fuel filter or fuel pipes. Do not smoke when working around the battery or when refueling.
- Check the above fuel systems in a well ventilated and wide open place.
- When fuel and lubricant are spilled, refuel after letting the engine cool off.
- Always keep spilled fuel and lubricant away from engine.

Fuel Level Check and Refueling

1. Check to see that the fuel level is above the lower limit of the fuel level gauge.
2. If the fuel is too low, add fuel to the upper limit. Do not overfill.

No. 2-D is a distillate fuel oil of lower volatility for engines in industrial and heavy mobile service. (SAE J313 JUN87)

Grade of Diesel Fuel Oil According to ASTM D975

Flash Point, °C (°F)	Water and Sediment, volume %	Carbon Residue on 10 percent Residuum, %	Ash, weight %
Min	Max	Max	Max
52 (125)	0.05	0.35	0.01

Distillation Temperatures, °C (°F) 90% Point		Viscosity Kenematic cSt or mm ² /s at 40°C		Viscosity Sayboit, SUS at 100°F		Sulfur weight %	Copper strip Corrosion	Cetane Number
Min	Max	Min	Max	Min	Max	Max	Max	Min
282 (540)	338 (640)	1.9	4.1	32.8	40.1	0.5	No. 3	40

The cetane number is required not to be less than 45

!!!IMPORTANT:

- Be sure to use a strainer when filling the fuel tank, or dirt or sand in the fuel may cause trouble in the fuel injection pump.
- For fuel, always use diesel fuel. Do not to use alternative fuel, its quality is unknown and it may be inferior in quality. Kerosene, which is very low in cetane rating, adversely affects the engine. Diesel fuel differs in grades depending on the temperature.
- Do not to let the fuel tank become empty, or air can enter the fuel system, necessitating bleeding before next engine start.

5-4.4.2 Air Bleeding the Fuel System

CAUTION!!

To avoid personal injury:

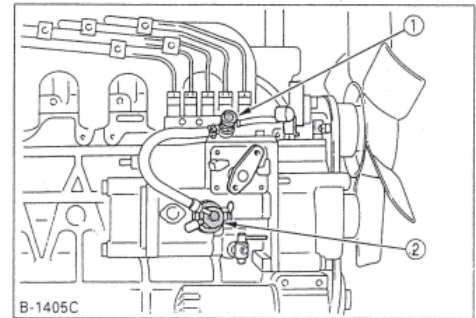
Do not bleed a hot engine, this could cause fuel to spill onto a hot exhaust manifold creating a danger of fire.

Air bleeding of the fuel system is required:

- After the fuel filter and pipes have been detached and refitted;
- After the fuel tank has become empty; or
- Before the engine is to be used after a long storage.

PROCEDURE:

1. Fill the fuel tank to the fullest extent. Open the fuel filter lever.
2. Open the air vent cock on top of the fuel injection pump.
3. Turn the engine, continue it for about 10 seconds, then stop it, or move the fuel feed pump lever by hand (optional).
4. Close the air vent cock on top of the fuel injection pump.



(1) Air vent cock
(2) Fuel feed pump

!!!IMPORTANT: Always keep the air vent cock on the fuel injection pump closed except when air is vented, or it may cause the engine to stop.

5-4.4.3 Checking the Fuel Pipes

CAUTION!!

To avoid personal injury:

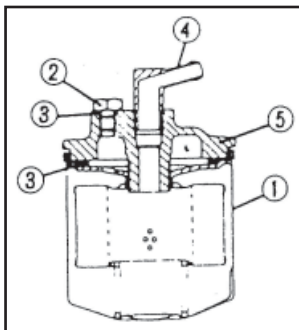
Check or replace the fuel pipes after stopping the engine. Broken fuel pipes can cause fires.

Check the fuel pipes every 50 hours of operation.

1. If the clamp band is loose, apply oil to the screw of the band, and tighten the band securely.
2. If the fuel pipes, made of rubber, become worn out, replace them and the clamp bands every two years.
3. If the fuel pipes and clamp bands are found worn or damaged before two years time, replace or repair them at once.
4. After replacement of the pipes and bands, air-bleed the fuel system.

!!!IMPORTANT: When the fuel pipes are not installed, plug them at both ends with clean cloth or paper to prevent dirt from entering. Dirt in the pipes can cause fuel injection pump malfunction.

5-4.4.4 Fuel Filter Cartridge Replacement



- (1) Fuel Filter Cartridge
- (2) Air Vent Plug
- (3) O Ring
- (4) Pipe Joint
- (5) Cover

1. Replace the fuel filter cartridge with a new one every 400 operating hours.
2. Apply fuel oil thinly over the gasket and tighten the cartridge into position by hand-tightening only.
3. Finally, vent the air.

!!!IMPORTANT: Replace the fuel filter cartridge periodically to prevent wear of the fuel injection pump plunger or the injection nozzle, due to dirt in the fuel.

5-4.5 Engine Oil

CAUTION!!

To avoid personal injury:

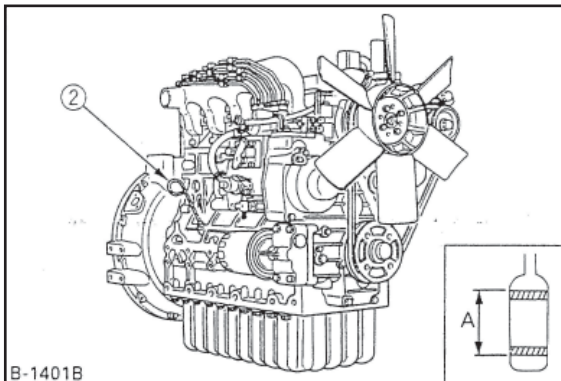
- Be sure to stop the engine before checking and changing the engine oil and the oil filter cartridge.
- Do not touch muffler or exhaust pipes while they are hot; Severe burns could result. Always stop the engine and allow it to cool before conducting inspections, maintenance, or for a cleaning procedure.
- Contact with engine oil can damage your skin. Put on gloves when using engine oil, if you come in contact with engine oil, wash it off immediately.



NOTE: Be sure to inspect the engine, locating it on a level place. If placed on gradients accurate oil quantity may not be measured.

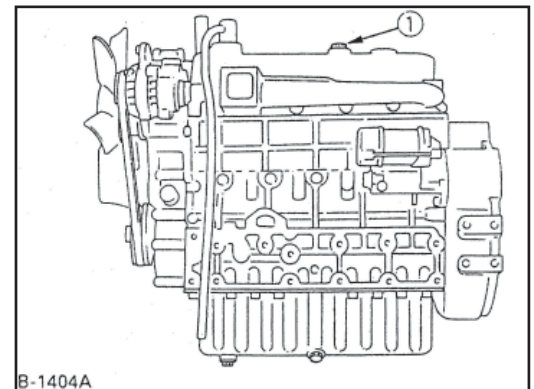
5-4.5.1 Checking Oil Level and Adding Engine Oil

1. Check the engine oil level before starting or more than 5 minutes after stopping the engine.
2. Remove the oil level gauge, wipe it clean and reinstall it.
3. Take the oil level gauge out again, and check the oil level.



(1) Oil filler plug
(2) Oil level gauge

[Lower end of oil level gauge]
(A) Engine oil level within this range is proper.



B-1404A

4. If the oil level is too low, remove the oil filter plug, and add new oil to the prescribed level.
5. After adding oil, wait more than 5 minutes and check the oil level again. It takes some time for the oil to drain down to the oil pan.
6. If the engine is operated with the oil level nearing the lower limit, oil may deteriorate quickly; keeping the oil level near the upper limit is recommended.

Engine oil quantity

Models	Oil Pan Depth	
	124mm (4.88 in.)	≈90mm (3.54 in.)
D1403-BG	7.0L	5.6L
D1703-BG	(1.85 U.S. gals.)	(4.48 U.S. gals.)
V1903-BG	9.5L	7.6L
V2203-BG	(2.51 U.S. gals.)	(2.01 U.S. gals.)
F2803-BG	12.0L (3.17 U.S. gals.)	-

≈90mm (3.54 in.) oil pan depth is optional.
Oil quantities shown are for standard oil pans.

!!!IMPORTANT: Engine oil should be MIL-L-2104C or have properties of API classification CD grades or higher. Change the type of engine oil according to the ambient temperature.

above 25°C (77°F)	SAE 30 or	SAE 10W-30 SAE 10W-40
0 to 25°C (32 to 77°F)	SAE 20 or	SAE 10W-30 SAE 10W-40
below 0°C (32°F)	SAE 10W or	SAE 10W-30 SAE 10W-40

When using oil of different brands from the previous one, be sure to drain all the previous oil before adding the new engine oil.

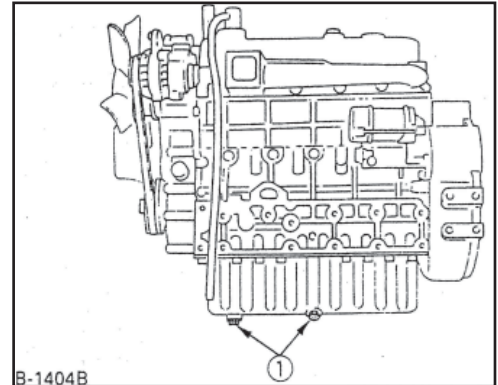
5-4.5.2 Changing Engine Oil

CAUTION!!

To avoid personal injury:

Be sure to stop the engine before draining engine oil.
When draining engine oil, place a container underneath the engine and dispose of it according to local regulations.
Do not drain oil after running the engine. Allow engine to cool down sufficiently.

1. Change oil after the initial 50 hours of operation and every 200 hours thereafter.
2. Remove the drain plug at the bottom of the engine, and drain all the old oil. Oil will drain easier when the oil is warm.
3. Add new engine oil up to the upper limit of the oil level gauge.



B-1404B

(1) Oil drain plug

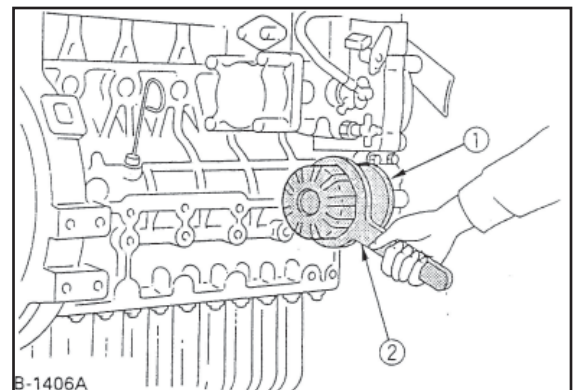
5-4.5.3 Replacing the Oil Filter Cartridge

CAUTION!!

To avoid personal injury:

- Be sure to stop the engine before changing the oil filter cartridge.
- Allow engine to cool down sufficiently. Oil can be hot and cause burns.

1. Replace the oil filter cartridge after every 400 hours of operation.
2. Remove the old oil filter cartridge with a filter wrench.
3. Apply a film of oil to the gasket for the new cartridge.
4. Screw in the cartridge by hand. When the gasket contacts the seal surface, tighten the cartridge enough by hand. Because, if you tighten the cartridge with a wrench, it will be tightened too much.
5. After the new cartridge has been replaced, the engine oil level normally decreases a little. Run the engine for a while and check for oil leaks through the seal before checking the engine oil level. Add oil if necessary.



B-1406A

- (1) Oil filter cartridge
(2) Remove with a filter wrench
(Tighten with your hand)



NOTE: Wipe off any oil sticking to the machine completely.

5-4.6 Radiator

Coolant will last for one day's work if filled all the way up before operation. Be sure to check the coolant level before every operation.

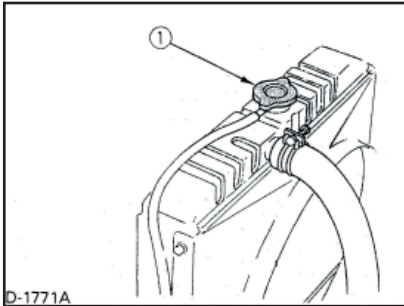
WARNING!!

To avoid personal injury:

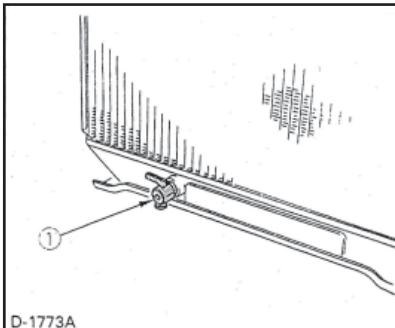
- Do not stop the engine suddenly. Stop it after about 5 minutes of unloaded idling.
- Work only after letting the engine and radiator cool off completely (more than 30 minutes after it has been stopped).
- Do not remove the radiator cap while coolant is hot. When cool to the touch, rotate cap to the first stop to allow excess pressure to escape. Then remove cap completely.

If overheats should occur, steam may gush out from the radiator or reserve tank; Severe burns could result.

5-4.6.1 Checking Coolant Level, Adding Coolant

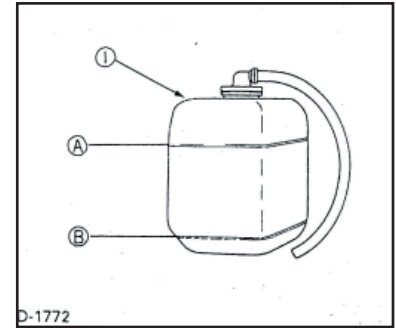


(1) Radiator pressure cap

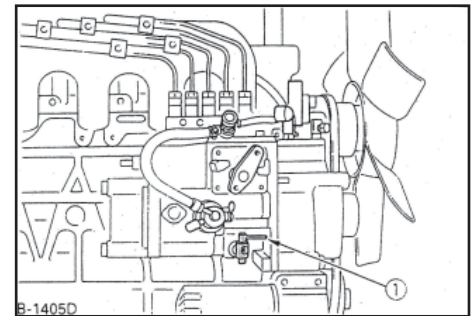


(1) Coolant drain cock

1. Remove the radiator cap after the engine has completely cooled, and check to see that coolant reaches the supply port.
2. If the radiator is provided with a reserve tank, check the coolant level of the reserve tank. When it is between the "FULL" and "LOW" marks, the coolant will last for one day's work.
3. When the coolant level drops due to evaporation, add water only up to the full level.
4. Check to see that two drain cocks; one is at the crankcase side and the other is at the lower part of the radiator as figures B-1405D and D-1773A show.



(1) Reserve tank (A) "FULL" (B) "LOW"



B-1405D

!!IMPORTANT:

- If the radiator cap has to be removed, follow the caution and securely retighten the cap.
- If coolant should leak, consult your local KUBOTA dealer.
- Make sure that muddy or sea water does not enter the radiator.
- Use clean, fresh water and 50% anti-freeze to fill the recovery tank.
- Do not refill reserve tank with coolant over the "FULL" level mark.
- Be sure to close the radiator cap securely. If the cap is loose or improperly closed, coolant may leak out and decrease quickly.
- When coolant is added, coolant level drops the first time the engine is started. Stop the engine, and add more coolant.

5-4.6.2 Changing Coolant

1. To drain coolant, always open both drain cocks and simultaneously open the radiator cap as well. With the radiator cap kept closed, a complete drain of water is impossible.
2. Remove the overflow pipe of the radiator pressure cap to drain the reserve tank.
3. Prescribed coolant volume (U.S. gallons)

Models	Quantity
D1403-BG	4.2L (1.11 US gals.)
D1703-BG	5.5L (1.45 US gals.)
V1903-BG	6.4L (1.69 US gals.)
V2203-BG	8.1L (2.14 US gals.)
F2803-BG	8.2L (2.17 US gals.)

NOTE: Coolant quantities shown are for standard radiators.

4. An improperly tightened radiator cap or a gap between the cap and the seat quickens loss of coolant.
5. Coolant (Radiator cleaner and anti-freeze)

Season	Coolant
Summer	Pure water and radiator cleaner
Winter (When temperature drops below 0°C (32°F) or all season	Pure water and anti-freeze (See "Anti-freeze" in RADIATOR section)

5-4.6.3 Remedies for Quick Decrease of Coolant

1. Check any dust and dirt between the radiator fins and tube. If any, remove them from the fins and the tube.
2. Check the tightness of the fan belt. If loose, tighten it securely.
3. Check the internal blockage in the radiator hose. If scale forms in the hose, clean with the scale inhibitor or its equivalent.

5-4.6.4 Checking Radiator Hoses and Clamp

CAUTION!!

To avoid personal injury:

Be sure to check radiator hoses and hose clamps periodically. If radiator hose is damaged or coolant leaks, overheats or severe burns could occur.

Check to see if radiator hoses are properly fixed every 200 hours of operation or 6 months, whichever comes first.

1. If hose clamps are loose or water leaks, tighten hose clamps securely.
 2. Replace hoses and tighten hose clamps securely, if radiator hoses are swollen, hardened or cracked.
- Replace hoses and hose clamps every 2 years, or earlier, if checked and found that hoses are swollen, hardened or cracked.

5-4.6.5 Precaution at Overheating

Take the following actions in the event the coolant temperature is nearly or more than the boiling point, what is called "Overheating". Take these actions if the engine's alarm buzzer sounds or the alarm lamp lights up.

1. Stop the engine operation in a safe place and keep the unloaded engine idling.
2. Do not stop the engine suddenly. Stop it after about 5 minutes of unloaded idling.
3. If the engine stalls within 5 minutes of running under no load, immediately leave and keep away from the machine. Do not open the hood or any other part.
4. Keep yourself and others well away from the engine for 10 minutes further or while the steam is blowing out.
5. Checking that there is no danger such as burns, eliminate the cause of overheating according to the manual, see "Troubleshooting" section. And then, start the engine again.

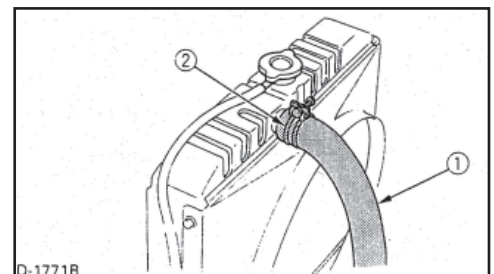
5-4.6.6 Cleaning Radiator Core (Outside)

If dust is between the fin and tube, wash it away with running water.

5-4.6.7 Cleaning the Radiator

Clean the cooling system of the engine every 500 hours. In addition, clean it before adding anti-freeze and before stopping use of anti-freeze.

!!!IMPORTANT: Do not clean radiator with firm tools such as spatulas or screwdrivers. They may damage specified fin or tube, and can cause coolant leaks or decrease cooling performance.



(1) Radiator hose
(2) Clamp band

5-4.6.8 Anti-freeze

CAUTION!!

To avoid personal injury:

- When using anti-freeze use protection such as rubber gloves.
- If you should drink anti-freeze, throw up at once and seek medical attention.
- When anti-freeze comes in contact with the skin or clothing, wash it off immediately.
- Do not mix different types of anti-freeze.
- Keep fire and children away from anti-freeze.
- Be mindful of the environment and ecology. Before draining any fluids, find out the correct way of disposing by checking with local codes.

Also, observe the relevant environmental protection regulations when disposing of oil, fuel, coolant, brake fluid, filters and batteries.

If coolant freezes, it can damage the cylinders and radiator. It is necessary, if the ambient temperature falls below 0 °C (32 °F), to remove coolant after operating or to add anti-freeze to coolant.

1. There are two types of anti-freeze available; use the permanent type (PT) for this engine.
2. Before adding anti-freeze for the first time, clean the radiator and engine interior by pouring fresh water, and draining it a few times.
3. The procedure for the mixing of water and anti-freeze can vary according to the type of anti-freeze being used and the ambient temperature. Refer to SAE J1034 standard, more specifically also to SAE J814c.
4. Mix the anti-freeze with water, and then pour into the radiator.

!!IMPORTANT: When the anti-freeze is mixed with water, the antifreeze mixing ratio must be less than 50%.

Vol % Anti-freeze	Freezing Point		Boiling Point [Ⓜ]	
	°C	°F	°C	°F
40	-24	-12	106	222
50	-37	-34	108	226

[Ⓜ]At 1.013 x 10⁵Pa (760mmHg) pressure (atmospheric). A higher boiling point is obtained by using a radiator pressure cap which permits the development of pressure within the cooling system.



NOTE:

- The above data represents industry standards that necessitate a minimum glycol content in the concentrated anti-freeze.
- When the coolant level drops due to evaporation, add water only to keep the anti-freeze mixing ratio less than 50%. In case of leakage, add anti-freeze and water in the specified mixing ratio before pouring into the radiator.
- Anti-freeze absorbs moisture. Keep unused anti-freeze in a tightly sealed container.
- Do not use radiator cleaning agents when anti-freeze has been added to the coolant. (Anti-freeze contains an anti-corrosive agent, which will react with the radiator cleaning agent forming sludge which will affect the engine parts.)

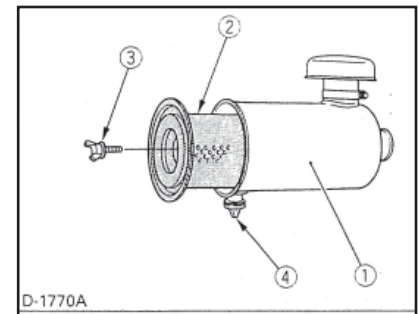
5-4.6.9 Radiator Cement

As the radiator is solidly constructed, there is little possibility of water leakage. Should this happen, however, radiator cement can easily fix it. If leakage is serious, contact your local KUBOTA dealer.

5-4.7 Air Cleaner

Since the air cleaner employed on this engine is a dry type, never apply oil to it.

1. Open the evacuator valve once a week under ordinary conditions - or daily when used in a dusty place. This will get rid of large particles of dust and dirt.
2. Wipe the inside air cleaner clean with cloth if it is dirty or wet.
3. Avoid touching the element except when cleaning.
4. When dry dust adheres to the element, blow with compressed air from the inside turning the element. Pressure of compressed air must be under 686kPa (7kgf/cm², 99psi).
5. When carbon or oil adheres to the element, soak the element in detergent for 15 minutes, then wash it several times in water, rinse with clean water and let dry naturally.
6. After the element is fully dried, inspect the inside of the element with a light, and check if it is damaged or not, (referring to the instructions on the label attached to the element.)
7. Replace the element every year or every 6 cleanings.



- (1) Air cleaner body
- (2) Element
- (3) Wing bolt
- (4) Evacuator valve

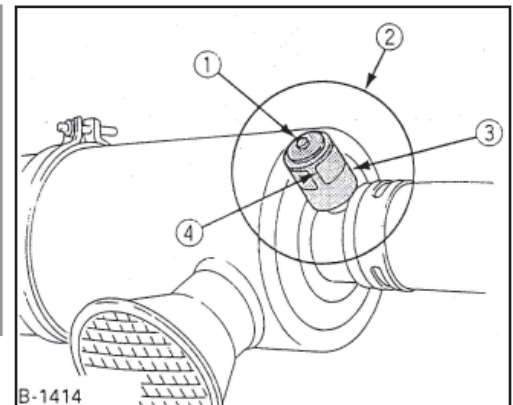
!!!IMPORTANT:

- **Make sure the wing bolt for the element is tight enough. If it is loose, dust and dirt may be sucked in, wearing down the cylinder liner and piston ring earlier, and thereby resulting in poor power output.**
- **Do not over service the air cleaner element. Over servicing may cause dirt to enter the engine causing premature wear. Use the dust indicator as a guide for when to service.**

5-4.7.1 Dust Indicator (optional)

If the red signal on the dust indicator attached to the air cleaner is visible, the air cleaner has reached the service level.

Clean the element immediately, and reset the signal with the "RESET" button.



- (1) "RESET" button
- (2) Dust indicator
- (3) Service level
- (4) Signal

5-4.8 Battery

Mishandling of the battery shortens the service life and adds to maintenance costs. To obtain the maximum performance and the longest life of the battery handle properly and with care.

CAUTION!!

To avoid personal injury:

- Be careful not to let the battery electrolyte contact your body or clothing.
- Wear eye protection and rubber gloves, since the diluted sulfuric acid solution burns skin and eats holes in clothing. Should this occur, immediately wash it off with running water and seek medical attention.

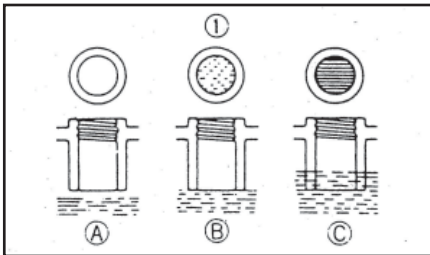
Engine starting will be more difficult, if the battery charge is low. Be careful to recharge before it gets too low.

5-4.8.1 Battery Charging

CAUTION!!

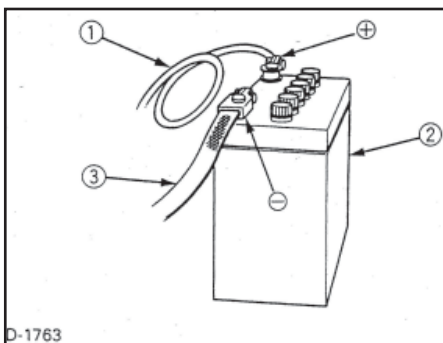
To avoid personal injury:

- When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery.
- When charging the battery, remove the battery vent plugs.
- When disconnecting the cable from the battery, start with the negative terminal, and when connecting them, start with the positive terminal first.
- DO NOT check the battery charge by placing a metal object across the terminals. Use a voltmeter or hydrometer.

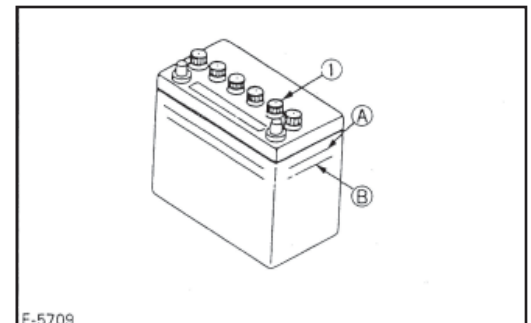


(1) Battery electrolyte level (A) "TOO LOW"
(B) "PROPER"
(C) "TOO HIGH"

1. Make sure each electrolyte level is at the bottom of vent wells, if necessary, add only distilled water in a well-ventilated place.
2. To slow charge the battery, connect the charger positive terminal to the battery positive terminal, and the negative to the negative, then recharge in the standard fashion.
3. Quick recharging charges the battery at a high rate in a short time. This is only for emergencies.
4. Recharge the battery as early as possible, or battery life will be extremely shortened.
5. When exchanging an old battery for a new one, use a battery of equal specifications.



D-1763
(1) Thick cable red (+) (2) Battery case
(3) Earth cable black (-)



F-5709
(1) Plug (A) "HIGHEST LEVEL"
(B) "LOWEST LEVEL"

!!!IMPORTANT:

- **Connect the charger positive terminal to the battery positive terminal, and negative to the negative.**
- **When disconnecting the cable from the battery, start with the negative terminal first. When connecting the cable to the battery, start with the positive terminal first. If reversed, the contact of tools on the battery may cause a short.**

5-4.8.2 Directions for Long Term Storage

1. When storing the engine for long periods of time, remove the battery, adjust the electrolyte to the proper level, and store in a dry and dark place.
2. The battery naturally discharges while it is stored. Recharge it once a month in summer, and every 2 months in winter.

5-4.9 Electric Wiring

CAUTION!!

To avoid personal injury:

Shorting of electric cable or wiring may cause a fire.

- Check to see if electric cables and wiring are swollen, hardened or cracked.
- Keep dust and water away from all power connections.
- Loose wiring terminal parts, make bad connections. Be sure to repair them before starting the engine.

Damaged wiring reduces the capacity of electrical parts. Change or repair damaged wiring immediately.

5-4.10 Fan Belt

5-4.10.1 Adjusting Fan Belt Tension

CAUTION!!

To avoid personal injury:

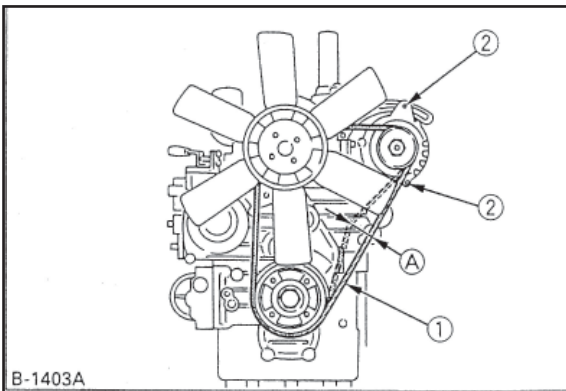
- Be sure to stop the engine and remove the key before checking the belt tension.
- Be sure to reinstall the detached safety shield after maintenance or checking.

Proper fan belt tension

A deflection of between 7 to 9 mm (0.28 to 0.35 in.) when the belt is pressed in the middle of the span.

1. Stop the engine and remove the key.
2. Apply moderate thumb pressure to belt between pulleys.
3. If tension is incorrect, loosen the alternator mounting bolts and, using a lever placed between the alternator and the engine block, pull the alternator out until the deflection of the belt falls within acceptable limits.
4. Replace fan belt if it is damaged.

!!!IMPORTANT: If belt is loose or damaged and the fan is damaged, it could result in overheating or insufficient charging. Correct or replace belt.



(1) Fan belt
(2) Bolt and nut

(A) 7 to 9 mm (0.28 to 0.35 in.)
(under load of 10 kgf (22.1 lbs.))

5-4.11 Troubleshooting

If the engine does not function properly, use the following chart to identify and correct the cause.

5-4.11.1 When it is Difficult to Start the Engine

Cause	Countermeasures
Fuel is thick and doesn't flow.	<ul style="list-style-type: none"> Check the fuel tank and fuel filter. Remove water, dirt and other impurities. As all fuel will be filtered by the filter, if there is water or other foreign matters on the filter, clean the filter with kerosene.
Air or water mixed in fuel system	<ul style="list-style-type: none"> If air is in the fuel filter or injection lines, the fuel pump will not work properly. To attain proper fuel injection pressure, check carefully for loosened fuel line coupling, loose cap nut, etc. Loosen joint bolt atop fuel filter and air vent screws of fuel injection pump to eliminate all the air in the fuel system.
Thick carbon deposits on orifice of injection nozzle.	<ul style="list-style-type: none"> This is caused when water or dirt is mixed in the fuel. Clean the nozzle injection piece, being careful not to damage the orifice. Check to see if nozzle is working properly or not. If not, install a new nozzle.
Valve clearance is wrong.	<ul style="list-style-type: none"> Adjust valve clearance to 0.145 to 0.185 mm (0.0057 to 0.0072 in.) when the engine is cold.
Leaking valves	<ul style="list-style-type: none"> Grind valves
Fuel injection timing is wrong	<ul style="list-style-type: none"> Adjust injection timing The injection timing 16.5° before top dead center.
Engine oil becomes thick in cold weather and engine cranks slow.	<ul style="list-style-type: none"> Change grade of oil according to the weather (temperature.)
Low compression	<ul style="list-style-type: none"> Bad valve or excessive wear of rings, pistons and liners cause insufficient compression. Replace with new parts.
Battery is discharged and the engine will not crank	<ul style="list-style-type: none"> Charge battery. In winter, always remove battery from machine, charge fully and keep indoors. Install in machine at time of use.



NOTE: If the cause of trouble cannot be found, contact your KUBOTA Dealer.

5-4.11.2 When Output is Insufficient

Cause	Countermeasures
Carbon stuck around orifice of nozzle piece	<ul style="list-style-type: none"> • Clean orifice and needle valve, being very careful not to damage the nozzle orifice. • Check nozzle to see if good. If not, replace with new parts.
Compression is insufficient. Leaking valves	<ul style="list-style-type: none"> • Bad valve and excessive wear of rings, pistons and liners cause insufficient compression. Replace with new parts. • Grind valves.
Fuel is insufficient	<ul style="list-style-type: none"> • Check fuel system.
Overheating of moving parts	<ul style="list-style-type: none"> • Check lubricating oil system. • Check to see if lubricating oil filter is working properly. • Filter element deposited with impurities would cause poor lubrication. Change element. • Check the clearance of bearing are within factory specs. • Check injection timing.
Valve clearance is wrong.	<ul style="list-style-type: none"> • Adjust to proper valve clearance of 0.145 to 0.185 mm (0.0057 to 0.0072 in.) with engine cold.
Air cleaner is dirty	<ul style="list-style-type: none"> • Clean the element every 100 hours of operation.
Fuel injection pressure is wrong.	<ul style="list-style-type: none"> • Adjust to proper pressure. 13.7 Mpa (140kgf/cm², 1991psi)
Injection pump wear	<ul style="list-style-type: none"> • Do not use poor quality fuel as it will cause wear of the pump. Only use No. 2-D diesel fuel. • Check the fuel injection pump element and delivery valve assembly and replace as necessary.

5-4.11.3 When Engine Suddenly Stops

Cause	Countermeasures
Lack of fuel	<ul style="list-style-type: none"> • Check the fuel tank and refill the fuel, if necessary. • Also check the fuel system for air or leaks.
Bad nozzle	<ul style="list-style-type: none"> • If necessary, replace with a new nozzle.
Moving parts are overheated due to shortage of lubrication oil or improper lubrication	<ul style="list-style-type: none"> • Check amount of engine oil with oil level gauge. • Check lubricating oil system. • At every 2 times of oil change, oil filter cartridge should be replaced. • Check to see if the engine bearing clearances is within factory specs.



NOTE: When the engine has suddenly stopped, decompress the engine by the decomp and turn the engine lightly by pulling on the fan belt. If the engine turns easily without abnormalities, the cause of the trouble is usually lack of fuel or bad nozzle.

5-4.11.4 When Color of Exhaust is Especially Bad

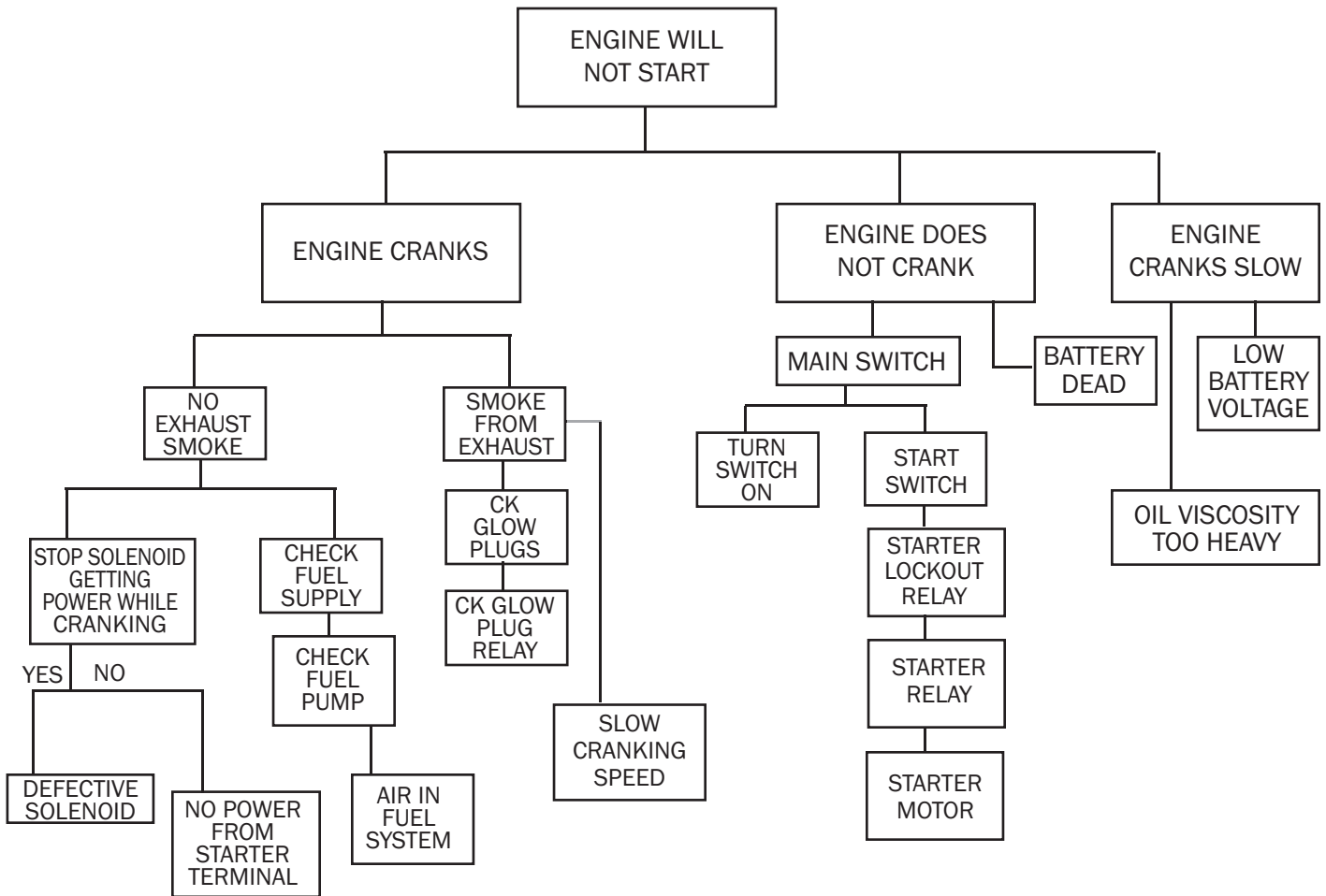
Cause	Countermeasures
Fuel governing device bad	<ul style="list-style-type: none"> • Contact dealer for repairs.
Fuel is of extremely poor quality.	<ul style="list-style-type: none"> • Select good quality fuel Use No. 2-D diesel fuel only.
Nozzle is bad	<ul style="list-style-type: none"> • If necessary, replace with new nozzle.
Combustion is incomplete	<ul style="list-style-type: none"> • Cause is poor atomization, improper injection timing, etc. Because of trouble in injection system or in poor valve adjustment, or compression leakage, poor compression, etc. Check for the cause.

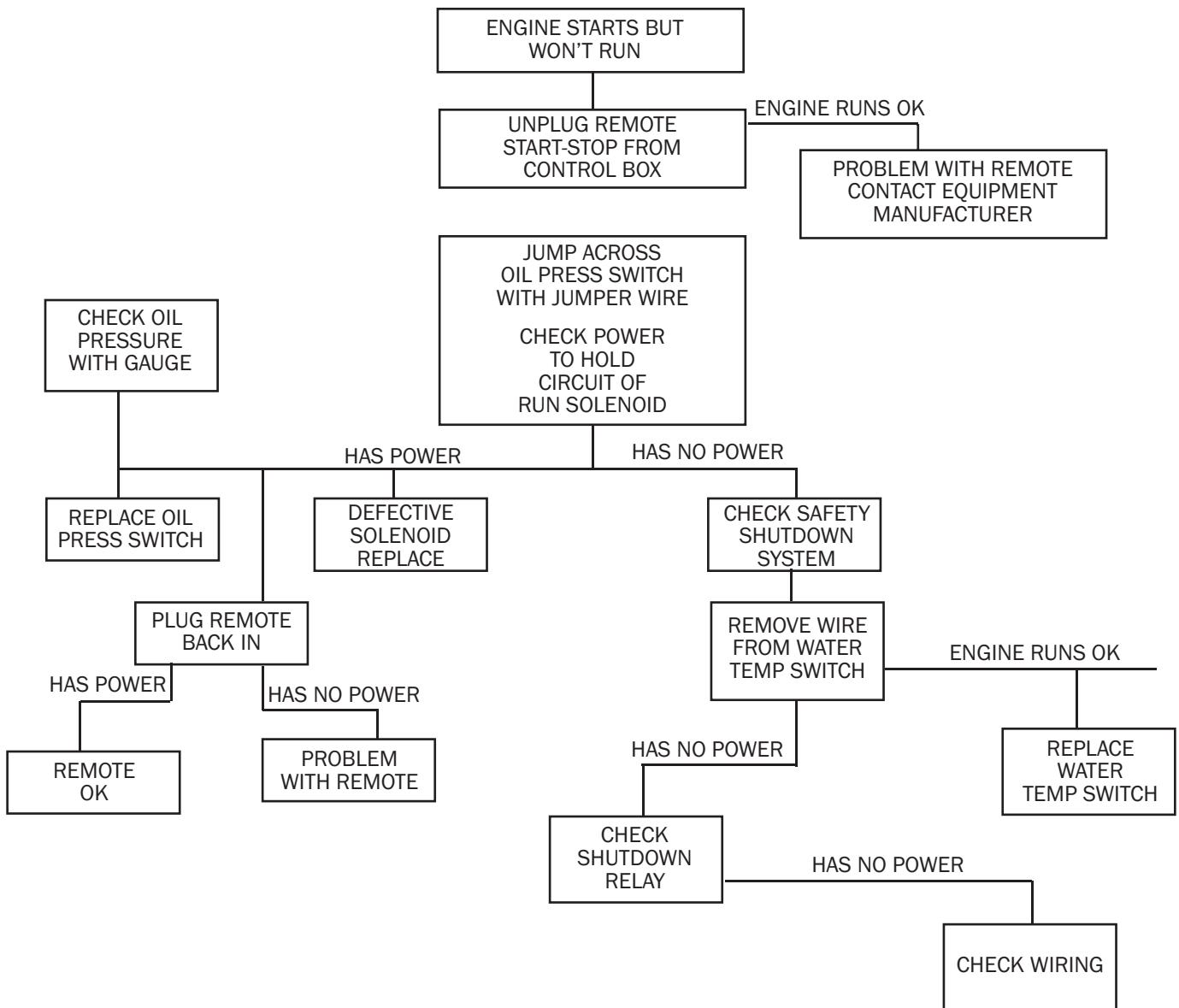
5-4.11.5 When Engine Must be Stopped Immediately

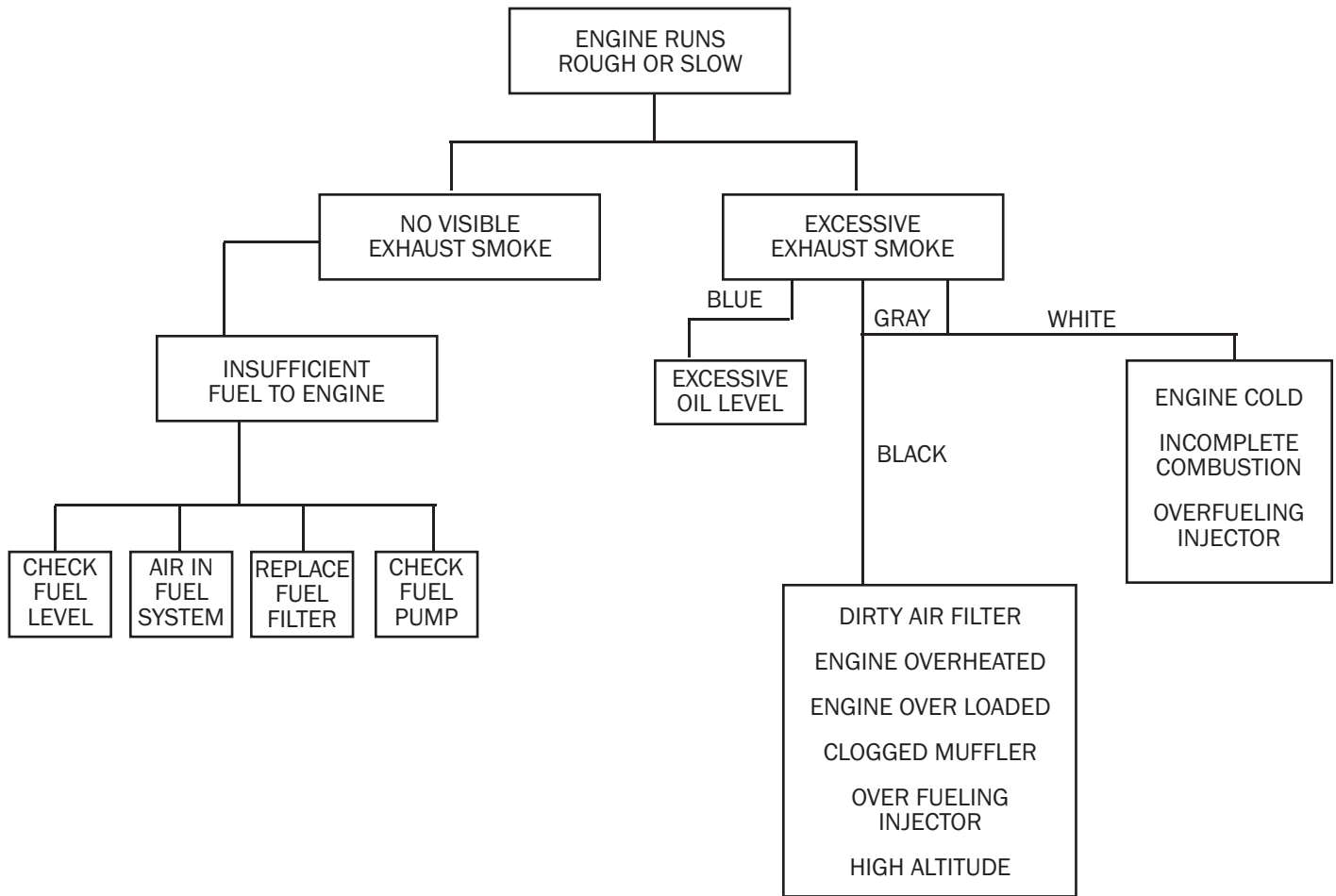
Cause	Countermeasures
Engine revolution suddenly decreases or increases.	<ul style="list-style-type: none"> • Check the adjustments, injection timing and the fuel system.
Unusual sound is heard suddenly	<ul style="list-style-type: none"> • Check all moving parts carefully.
Color of exhaust suddenly turns dark	<ul style="list-style-type: none"> • Check the fuel injection system, especially the fuel injection nozzle.
Bearing parts are overheated.	<ul style="list-style-type: none"> • Check the lubricating system.
Oil lamp lights up during operation	<ul style="list-style-type: none"> • Check lubricating system. • Check if the engine bearing clearances are within factory specs. • Check the function of the relieve valve in the lubricating system. • Check pressure switch. • Check filter base gasket.

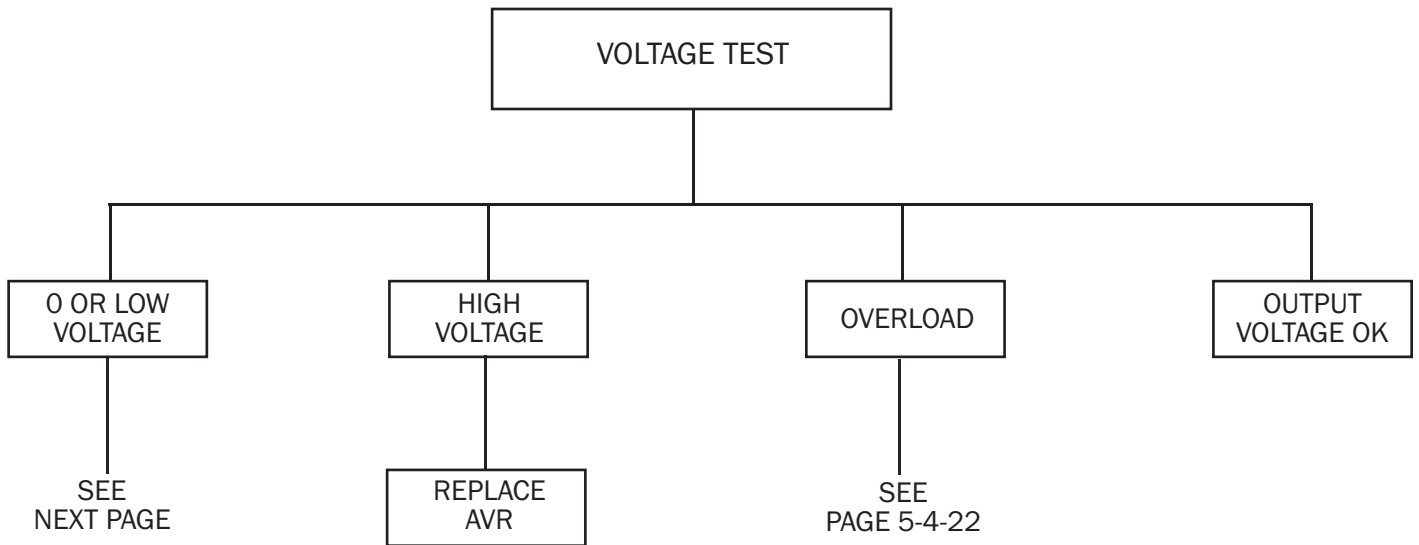
5-4.11.6 When Engine Overheats

Cause	Countermeasures
Engine oil insufficient.	<ul style="list-style-type: none"> • Check oil level. Replenish oil as required.
Fan belt broken or elongated	<ul style="list-style-type: none"> • Change belt or adjust belt tension.
Coolant insufficient	<ul style="list-style-type: none"> • Replenish coolant.
Excessive concentration of antifreeze	<ul style="list-style-type: none"> • Add water only or change to coolant with the specified mixing ratio.
Radiator net or radiator fin clogged with dust	<ul style="list-style-type: none"> • Clean net or fin carefully.
Inside of radiator or coolant flow route corroded	<ul style="list-style-type: none"> • Clean or replace radiator and parts.
Fan or radiator or radiator cap defective	<ul style="list-style-type: none"> • Replace defective part.
Thermostat defective	<ul style="list-style-type: none"> • Check thermostat and replace if necessary.
Temperature gauge or sensor defective	<ul style="list-style-type: none"> • Check temperature with thermometer and replace if necessary.
Overload running	<ul style="list-style-type: none"> • Reduce load.
Head gasket defective or water leakage	<ul style="list-style-type: none"> • Replace parts.
Incorrect injection timing	<ul style="list-style-type: none"> • Adjust to proper timing.
Unsuitable fuel used	<ul style="list-style-type: none"> • Use the specified fuel.

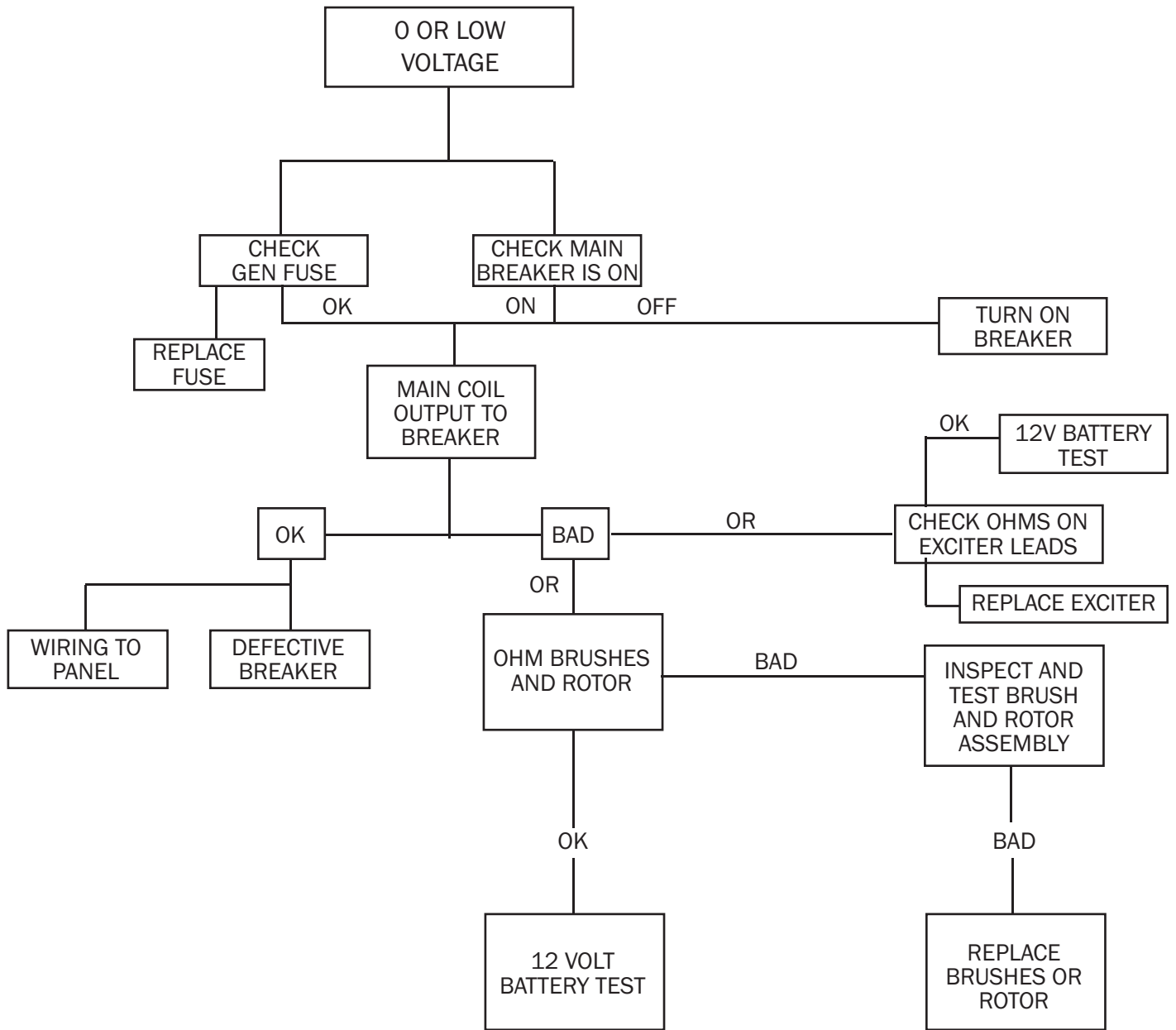


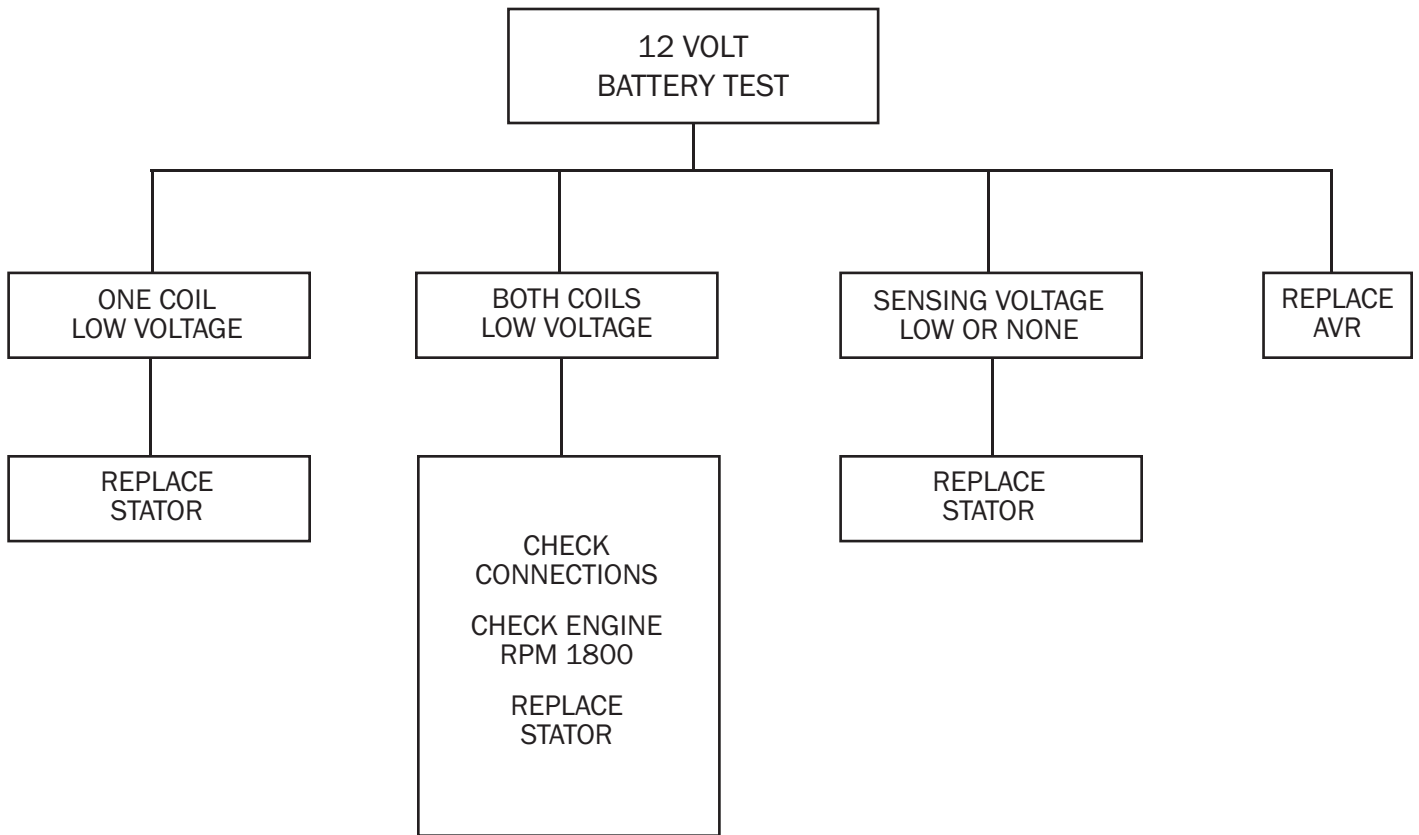




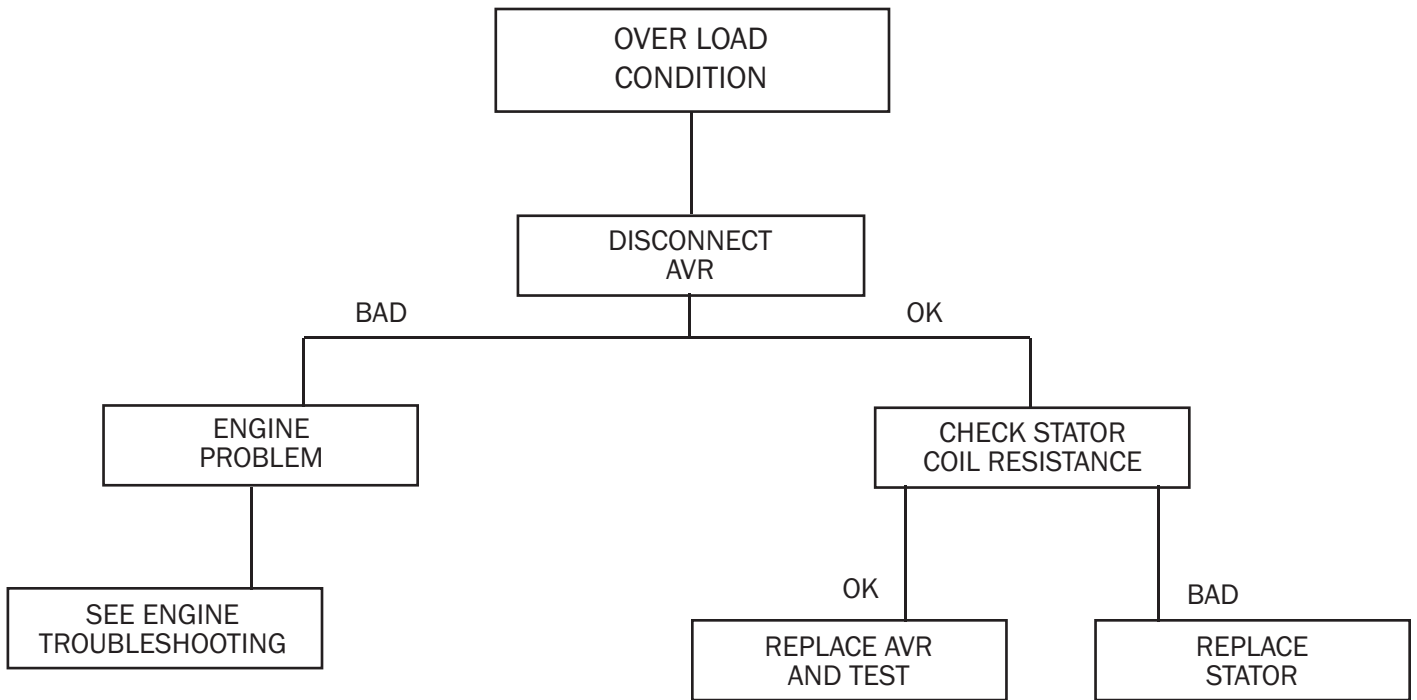


+GENTS1





GENTS3



SPECIFICATIONS VERTICAL, WATER COOLED 4 CYCLE DIESEL

POWER TECHNOLOGY	15KW	TURBOCHARGED 17.5-20-25 KW	NATURALLY ASPIRATED 17.5-20 KW
MODEL	V-1903-BG	V-2003-T	V-2203-BG
NUMBER OF CYLINDERS	4	SAME	SAME
BORE AND STROKE	80 x 92.4 (3.15 x 3.64)	83 x 92.4 (3.27 x 3.64)	87 x 92.4 (3.43 x 3.64)
TOTAL (CU. IN.) DISPLACEMENT	113.32	121.99	134.07
COMBUSTION CHAMBER	SPHERICAL TYPE (E-TVCS)	SAME	SAME
SAE NET CONTINUOUS HP/MIN (RPM)	23.0/1800	33.0/1800	27.1/1800
SAE STANDBY HP/MIN (RPM)	26.0/1800	42.0/1800	30.6/1800
ORDER OF FIRING	1-3-4-2	SAME	SAME
DIRECTION OF ROTATION	COUNTER CLOCKWISE (VIEWED FROM FLYWHEEL SIDE)	SAME	SAME
COMPRESSION RATIO	23:1	22	23:1
FUEL	DIESEL FUL OIL NO. 2-D	SAME	SAME
LUBRICATION (API CLASSIFICATION)	ABOVE CD GRADE	SAME	SAME
DIMENSIONS (LENGTH x WIDTH x HEIGHT)	25.58 x 18.98 x 25.03	26.26 x 20.47 x 26.69	25.58 x 18.98 x 25.03
STARTING SYS.	CELL STARTER (WITH GLOW PLUG)	SAME	SAME
STARTING MOTOR	12V 1.4 KW	SAME	SAME
CHARGING GENERATOR	45 AMP	40 AMP	45 AMP

6-1 Tire/Wheel Change Procedures

6-1.1 Tire/Wheel Change Procedure

The wheel/tire assemblies used on your coach are heavy-duty truck-type. They are heavy and may be difficult to handle. If at all possible, changes should be accomplished by a service station equipped to handle truck equipment. However, if a situation arises where no service facilities are available, the following procedures may be used.

CAUTION!!

Severe injury or death may result. DO NOT use the leveling system for changing tires or working under the vehicle. Keep the rear wheels in firm contact with the ground with the parking brake set. With the leveling jacks extended, there is a possibility the vehicle may move either toward the front or the rear.



NOTE: Jack and lug wrench are not furnished with your coach. An outside drive axle wheel may be used to replace front or rear wheel until permanent replacement can be made. Road speed must not exceed 40 mph.

6-1.1.1 Front Axle Wheels

1. Drive coach out of traffic lane onto a level surface capable of supporting jack.
2. Turn on hazard flasher and apply parking brakes before leaving coach.
3. Turn off ignition and set transmission selector to Neutral (N) position.
4. Remove white plastic wheel saver from road side rear luggage compartment.
5. Place wheel chocks against front and rear of tires on opposite side.
6. Place jack under axle and raise slightly until securely in place.

CAUTION!!

Bumpers are not designed for lifting and/or towing of the vehicle.

7. Pull off lug nut covers.
8. Install wheel saver.



NOTE: It is recommended that the wheel saver be used when loosening or torquing lug nuts.

9. Loosen lug nuts slightly, then jack up coach until tire is clear of ground. Solidly support the vehicle under the main frame rails with jack stands or blocks before working under or around the coach.



NOTE: Lug nuts on right side of coach are right hand threaded (turn counter-clockwise to loosen, clockwise to tighten); lug nuts on driver's side of coach are left hand threaded (turn clockwise to loosen, counter-clockwise to tighten).

10. Remove lug nuts and wheel assembly.
11. Install spare and replace lug nuts. Tighten progressively in the sequence shown on lug nut tightening sequence diagram, starting with #1 and proceeding to #10. Final torque will be 450 to 500 foot-pounds. Wheel must be on the ground for final torque.
12. Snap front hub cover into front wheel opening after front lug nuts have been properly torqued.
13. Place lug nut covers on all lug nuts. Make certain that these nut covers fit snugly. This is accomplished by squeezing the dimpled sides together before installing.
14. Lower coach to ground and remove jack and handle.
15. Replace wheel saver, lug wrench, jack and handles in storage compartment and tie down to prevent road noise. Return damaged wheel/tire assembly to holder and have it repaired as soon as possible.
16. Remove and stow wheel chocks.
17. Turn off hazard flasher before returning to traffic.

6-1.1.2 Drive Axle Dual Wheels

1. Repeat steps 1 through 10, Front Axle Wheels.
2. Loosen inner lug nuts (studs with square heads), if inner wheel is to be replaced.
3. Remove outer lug nuts from the (5) studs which have lock rings and slide hub cover over remaining lug nuts.
4. Remove the (5) remaining lug nuts and wheel.
5. Remove inner lug nuts and inner wheel, if inner wheel is to be replaced.
6. Install replacement wheel and inner lug nuts. Tighten progressively, in the sequence shown on lug nut tightening diagram, starting with #1 and proceeding with #10. Final torque should be between 450 and 500 foot-pounds.
7. Install outer wheel (or replacement wheel) and lug nuts over inner lug nuts marked 1, 3, 7, 9 and 6. Torque nuts in the following sequence, 1, 7, 6, 3 and 9 to between 450 and 500 foot pounds.
8. Install hub cover over the (5) lug nuts holding wheel to hub. Place lock rings and lug nuts on remaining inner lug nuts 10, 5, 2, 4 and 8.
9. Replace wheel saver.
10. Torque nuts in the following sequence 10, 2, 8, 5 and 4 to between 450 and 500 foot-pounds. Wheel must be on the ground for final torque.
11. Return to step 13 of Front Axle Wheels and continue.



NOTE: When checking torque on dual wheels loosen all outside lug nuts. Check torque on inner lug nuts (studs with square heads) for torque value shown above, then torque outer lug nuts to value shown above.

6-1.2 Tire Inflation – Towing – Trailer

6-1.2.1 Tire Inflation

Under-inflation causes needless tire wear and promotes excessive fuel consumption. Check tire pressures on a regular basis. The Federal Certification Label shows the cold tire inflation pressures necessary to support the Gross Axle Weight Ratings. These pressures can be reduced to greatly improve the ride quality after the actual axle weights have been determined (see [Vehicle Loading](#) in the Introduction section).

The chart below is taken from the Michelin Tire Data Book and shows the recommended tire inflation pressures for various axle weights. If any axle weight is on the borderline, always use the higher pressure. Be sure weight is distributed evenly side to side.

LOADS PER AXLE (lbs.) AT DIFFERENT PRESSURES

2 TIRES: SINGLE (S) 4 TIRES: DUAL (D)

INFLATIONS PRESSURE (psi)

		MICHELIN SIZE - 12r-22.5					MAX. SPEED - 65 MPH					
		psi	70	75	80	85	90	95	100	105	110	115
lbs.	S		9,410	9,980	10,560	11,140	11,740	12,310	12,910	13,480	14,060	14,780
	d		16,840	17,860	18,960	20,030	21,130	22,190	23,220	24,220	25,220	26,440

In addition, a tire inflation information plate is located inside the road side luggage compartment near the air gauge and hose. These are normal pressures as long as the axle weights are not in excess of those shown.

6-1.3.2 Towing

Two towing eyes are provided behind the upper part of the generator door. Remove generator panel for access.

CAUTION!!

Do not tow a vehicle equipped with Allison automatic transmission unless the drive shaft has been removed, or the rear wheels raised from the ground. Do not attempt to tow unit by front axle or cross member. Damage to wiring and/or air lines can result because of proximity of these items to front cross member. Do not tow with generator tray extended. Do not tow by the bumpers. Air pressure is required to release brakes.

6-1-3.3 Trailer Hitch Capacity

The Receiver Type Hitch and Drawbar are rated for a 10,000 lb. maximum towing capacity and a 1,000 lb. maximum tongue weight capacity.

Standard equipment includes a 2" hitch ball with a 1" shank rated for a 5,000 lb. maximum towing capacity and 500 lb. maximum tongue weight. Hitch ball nut must be torqued to 200 ft. lb.



NOTE: For more towing capacity, we offer an optional 2 5/16" hitch ball with a 1 1/4" shank rated for a 10,000 lb. maximum towing capacity and a 1,000 lb. maximum tongue weight. Hitch ball nut must be torqued to 200 ft. lb.

7-1 Interior/Exterior Care

7-1.1 Cabinets

The 450 LXi comes with several high quality cabinets. These are finished with a nitro-cellulose lacquer. Select a non-alcohol based cleaner for cleaning cabinets. Cleaners recommended for cleaning cabinets are Pledge, Endust, etc.

!!IMPORTANT: Do not use any alcohol based cleaners. They will dull and strip the finish of the wood.

7-1.2 Countertops

7-1.2.1 Kitchen Countertops

The countertops are made of Centura solid surfacing material with decorative bullnose edge. Bottom row of bullnose edge is an accent color. Use cleaning agents recommended for Centura or Corian countertops.



NOTE: Proper care of all countertops is the owner's responsibility. Scratches will occur if proper care is not implemented. Use cleaners and cleaning materials only recommended for these types of countertops. For example, using a scrub brushes or abrasive cleaners not recommended for this type of countertop could cause unsightly scratches.



NOTE: Chipping of countertops is not covered under the warranty. Abrasive cleaners can cause chipping. Please take special care to avoid the chipping of countertops.

7-1.2.2 Bathroom Vanity

The standard vanity top and bowl are a molded one-piece Thermolite material. A combination chrome/brass single level faucet is standard. This countertop can be cleaned with any non-abrasive cleaner designed for this type of vanity. Cleaners that are used for the kitchen countertops can be used for the vanity counters as well.



NOTE: Proper care of countertops is the owner's responsibility. Scratches will occur if proper care is not implemented. Use cleaners and cleaning materials only recommended for these types of countertops. For example, using a scrub brushes or abrasive cleaners not recommended for this countertop could cause unsightly scratches.

7-1.3 Carpet

Carpet is standard for all areas of the coach except the bathroom and kitchen. In addition loose carpet mats are included to be used on the stops. Bathroom and kitchen areas have a laminated wood or tile look floor with acoustical padding. Carpets can be cleaned with any standard carpet cleaners.

7-1.4 Wood Floors

Use any cleaner recommended for cleaning of wood laminate floors.

7-1.5 Sofa

A 78" Villa sleeper sofa is standard. Sofa is covered in fabric. Includes two throw pillows and two arm covers. Sofa can be cleaned with any standard sofa cleaner such as Woolite, etc.

7-1.6 Tables

Living room tables are oak wood with Centura material on the counter top to match those throughout the coach. Clean wood area with any standard furniture polish.

7-1.7 Window Shades

Shades should be kept in the closed or up position when not in use to maintain pleat retention and minimize dirt and soil build-up. Do not store shades in the down position. This may cause some loss of pleat retention if the shades are not operated on a consistent basis.

Shades can be easily cared for by simply dusting or using a vacuum cleaner attachment. Do not use spot remover, household cleaners or detergents to remove soiled spots, as these may cause damage or fading to the fabric.



NOTE: If you store your coach for an extended period of time, store shades in the up position and cover your windows with additional protection such as cardboard.

7-1.8 Exterior Paint

The exterior of the coach can be cleaned with the same non-abrasive cleaners used to clean your automobile.

7-1.9 Polished Wheels

The polished wheels can be cleaned with any cleaner designed to clean automotive polished aluminum wheels.

7-1.10 Glass

Use standard glass cleaner for cleaning windows on the coach.

7-1.11 Awnings

There are two kinds of awnings supplied with your coach. A automatic awning manufactured by Girard R.V. Products and a manual type manufactured by Zip Dee. Both awnings supplied with your coach are constructed of 100% acrylic fabric that is weatherproof, permeable to air and resistant to mildew, rotting and fading.

Acrylic fabric should be cleaned regularly before substances such as dirt, leaves, etc. are allowed to accumulate on, and become embedded in the fabric. The fabric can be cleaned without being removed from the awning. Simply brush off any loose dirt, leaves, etc. Hose down and clean with cloth and mild solution of natural soap in lukewarm water. Rinse thoroughly to remove soap. **DO NOT USE DETERGENTS.** Allow to air dry, preferably on a warm sunny day. Should you have to retract the awning when the fabric is wet, it should be extended at the first opportunity to finish air drying.



IMPORTANT CUSTOMER NOTE: The procedures and products recommended here are for the standard products that come with the coach. If customer selects any optional "specialty" products, please follow the cleaning and care instructions for that particular product to ensure the long life of product. Blue Bird Coachworks is not responsible for scratches, fading, or chipping, etc. resulting from improper care and maintenance procedures. It is the customer's responsibility to know what the products are made of and what they can be safely cleaned with. If unsure, check with the proper personnel upon taking delivery of your coach.

8-1 Miscellaneous Specifications

The various miscellaneous specifications of your new coach are listed below. For anything that is not listed here, feel free to contact your Sales Representative for full details. If options are selected from standard model, specifications may vary.

8-1-1 Weight Specifications

Gross Vehicle Weight Rating	52,000 lbs.
Front Gross Axle Weight Rating	16,000 lbs.
Curb	46,550 lbs. (depending on options)
Rear Gross Axle Weight Rating	23,000 lbs.
Tag Gross Axle Weight Rating	13,000 lbs.
Towing Capacity	18,500 lbs.

8-1-2 Measurement Specifications

Wheelbase	296"
Overall Length	44'-0"
Front Overhang	85"
Rear Overhang	99"
Floor Height	48"
Interior Height	83"
Height to Top of KVH Dome	151"
Interior Width	95"
Exterior Width	102"
Luggage Compartment Volume	235 cubic feet
Cargo Carrying Capacity	3,800 lbs. (depending on options)
Angle of Approach	7.97 deg.

8-1-3 Tank Capacity Specifications

Fresh Water	120 gallons
Grey Water	70 gallons
Black Water	70 gallons
Diesel Fuel	200 gallons

9-1 Checklists

On the next several pages you will find helpful checklists that will cover the next several trips you take along with a place to use as a journal to write noteworthy comments about where you stayed or what you did for future reference. If more pages are needed these pages may be xeroxed to use over and over again on future trips.

Trip _____ Date _____

Pre-Trip Checklist - For Residence	Packed in Coach
Store Valuables in a Safe Place	
Arrange for Pet Care	
Cover All Food to Keep Out Rodents and Insects	
Store Oil, Gasoline, Matches, etc. properly	
Suspend Deliveries such as newspapers, magazines, etc.	
Arrange with Post Office to Hold Mail	
Lock Windows and Doors Securely	
Leave Key with Neighbor or Relative and Advise Them of your itinerary	
Connect Timers to Several Outside and Inside Lights	
Arrange for Lawn Care	
Things to Take Along with You on Your Trip	
Supply of Prescription and Non-Prescription Medicines, (sunscreen, aspirin, etc.)	
Camera and Film Supply	
Heating Pads, Ice Bags, First Aid Materials, etc.	
Stationery, Envelopes and Stamps	
Telephone Number List	
Special Pet Supplies (medicines, shampoos, grooming supplies, etc.)	
Reading Material	
Extra Toilet Chemicals and Toilet Articles	
Spare Belts for Engine-Operated Equipment	
Spare Parts for Generator; Suggested Spare Include Oil Filter, Fuel Pump, Air Filter, Solenoid	
Five quarts of approved motor oil.	
A professional-type double-action tire pressure gauge. (included in coach)	
The following Emergency Equipment is advised to have on hand:	
First-Aid Kit	
Emergency Highway Flares	
Flashlight or Lantern (with extra batteries)	
Tool Kit	
Replacement Lamp Assortment	
Replacement Fuse and Breaker Assortment	
Trouble Light with a Long Cord	

CHECKLISTS Continued	
Pre-Trip Checklist - For Coach - Outside	Packed in Coach
Disconnect and Stow; Electrical Cord	
Sewer Hose (flush out)	
Water Hose	
Check exterior lights for proper operation	
Check wheel lug nuts for tightness (See Tire/Wheel Change Procedure)	
Check tires for correct pressure (See Tire Inflation)	
Check that all external compartments and filter openings are properly closed and/or locked	
Check that items stored on exterior coach are secured. (Be sure these items present no clearance problems)	
Check that there are no obstacles to avoid above or below coach. Be sure that there is sufficient clearance front and rear.	
Automotive Systems	
Check Fluid Levels are Normal: Oil	
Power Steering	
Engine Coolant	
Windshield Washer Solvent	
Transmission	
Check Generator Oil Level	
Coolant Level	
Battery Condition	
Check Turn Signals	
Emergency Flashers	
Brake Lights	
Backup Lights	
Check Headlights (high and low beam)	
Check Horn	
Start Engine and Check Gauges for Signs of Trouble	
Check that Brakes (foot and parking) are working properly	
<p>Note: If the trip you are planning will take the coach well past suggested maintenance intervals, it is advisable to perform these procedures before leaving. This may avoid unscheduled stops or interruptions during your trip.</p>	

CHECKLISTS Continued	
Pre-Trip Checklist - For Coach - Inside	Done
Close windows and vents	
Check that cabinet doors and drawers are secured	
Check that refrigerator door latch is in locked position	
Check that no heavy item is stored in an overhead cabinet	
Store large items in base cabinets	
Check that all doors are secured and latched	
Check that countertops, range top, table tops and shelved are clear of unsecure items	
Check that the shower latch is locked	
Turn off interior lights, check that entrance step is retracted. Secure and lock the entrance door.	
Adjust exterior mirrors	
WARNING: Mirrors provide needed additional driver visibility. To be effectively used, mirrors must be properly adjusted for each driver and the driver must be aware of the limitations on viewing area that exists even when mirrors are properly used.	
And Before Driving Away. . .	
Check operation of appliances and special equipment	
Check that fire extinguishers are fully charged.	
Check operation of interior and exterior lighting.	
Start generator and check 120 VAC system and wall outlets.	
Adjust driver's seat so that all controls are within easy reach	
Make sure that seat is locked in position. Do not adjust driver's seat swivel or fore/aft mechanism while vehicle is moving or the seat could move unexpectedly, causing a loss of control.	
Check that front passenger's seat is locked in position.	
Fasten seat belts. Belts should be placed as low as possible around the hips. This places the load of the body on the strong hip bone structure instead of around the soft abdominal area and prevents sliding in case of accident.	
CAUTION: Child restraint systems are designed to be secured in vehicle seats by lap belts or the lap belt portion of a lap-shoulder belt. Children could be endangered in a crash if their child restraints are not properly secured in the vehicle.	
Check that warning lights are lit when the ignition key is turned to the ON or START position.	

Trip _____ Date _____

Pre-Trip Checklist - For Residence	Packed in Coach
Store Valuables in a Safe Place	
Arrange for Pet Care	
Cover All Food to Keep Out Rodents and Insects	
Store Oil, Gasoline, Matches, etc. properly	
Suspend Deliveries such as newspapers, magazines, etc.	
Arrange with Post Office to Hold Mail	
Lock Windows and Doors Securely	
Leave Key with Neighbor or Relative and Advise Them of your itinerary	
Connect Timers to Several Outside and Inside Lights	
Arrange for Lawn Care	
Things to Take Along with You on Your Trip	
Supply of Prescription and Non-Prescription Medicines, (sunscreen, aspirin, etc.)	
Camera and Film Supply	
Heating Pads, Ice Bags, First Aid Materials, etc.	
Stationery, Envelopes and Stamps	
Telephone Number List	
Special Pet Supplies (medicines, shampoos, grooming supplies, etc.)	
Reading Material	
Extra Toilet Chemicals and Toilet Articles	
Spare Belts for Engine-Operated Equipment	
Spare Parts for Generator; Suggested Spare Include Oil Filter, Fuel Pump, Air Filter, Solenoid	
Five quarts of approved motor oil.	
A professional-type double-action tire pressure gauge. (included in coach)	
The following Emergency Equipment is advised to have on hand:	
First-Aid Kit	
Emergency Highway Flares	
Flashlight or Lantern (with extra batteries)	
Tool Kit	
Replacement Lamp Assortment	
Replacement Fuse and Breaker Assortment	
Trouble Light with a Long Cord	

CHECKLISTS Continued	
Pre-Trip Checklist - For Coach - Outside	Packed in Coach
Disconnect and Stow; Electrical Cord	
Sewer Hose (flush out)	
Water Hose	
Check exterior lights for proper operation	
Check wheel lug nuts for tightness (See Tire/Wheel Change Procedure)	
Check tires for correct pressure (See Tire Inflation)	
Check that all external compartments and filter openings are properly closed and/or locked	
Check that items stored on exterior coach are secured. (Be sure these items present no clearance problems)	
Check that there are no obstacles to avoid above or below coach. Be sure that there is sufficient clearance front and rear.	
Automotive Systems	
Check Fluid Levels are Normal: Oil	
Power Steering	
Engine Coolant	
Windshield Washer Solvent	
Transmission	
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Coolant Level	
Battery Condition	
Check Turn Signals	
Emergency Flashers	
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Connect Timers to Several Outside and Inside Lights	
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Things to Take Along with You on Your Trip	
Supply of Prescription and Non-Prescription Medicines, (sunscreen, aspirin, etc.)	
Camera and Film Supply	
Heating Pads, Ice Bags, First Aid Materials, etc.	
Stationery, Envelopes and Stamps	
Telephone Number List	
Special Pet Supplies (medicines, shampoos, grooming supplies, etc.)	
Reading Material	
Extra Toilet Chemicals and Toilet Articles	
Spare Belts for Engine-Operated Equipment	
Spare Parts for Generator; Suggested Spare Include Oil Filter, Fuel Pump, Air Filter, Solenoid	
Five quarts of approved motor oil.	
A professional-type double-action tire pressure gauge. (included in coach)	
The following Emergency Equipment is advised to have on hand:	
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Engine Coolant	
Windshield Washer Solvent	
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Coolant Level	
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Emergency Flashers	
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10-1 Authorized Service Centers

Authorized Blue Bird Coachworks Dealers and Service Centers

Blue Bird Coachworks

One Wanderlodge Way • P.O. Box 1259
Fort Valley, GA 31030
478-822-2400

Factory Sales – 478-822-2407 – Ronnie Lamb
Factory Service – 800-992-6337 – Mike Burkett and Kenny Rodgers
Product Technical Support – 800-992-6337 – Russell Borders and Bennie Collier
Factory Parts Sales – 800-495-7787 – Earl Davis and Ray Horne

Sales and Service

HOLLAND MOTOR HOMES

www.holland-motorhomes.com

670 East 16th Street
Holland, MI 49423
(800) 221-7197 - Phone
(616) 396-1391 - Fax
GM / Sales Mgr.: John Dykstra
Service Mgr.: Mike Meulenberg

HOLLAND MOTOR HOMES

www.hollandmotorhomes.com

7490 Copley Park Place
San Diego, CA 92111
(800) 961-4464 - Phone
(858) 874-8484 - Fax
GM / Sales Mgr.: John Dykstra
Service Mgr.: Mike Meulenberg

PARLIAMENT COACH CORPORATION

www.parliamentcoach.com

13790 B Roosevelt Blvd.
Clearwater, FL 33762
(888) 571-5755 - Phone
(727) 561-0227 - Fax
Owner: Harvey Mitchell
Present / GM: Steve Mitchell
Service Mgr.: Rick May

SHOREWOOD RV CENTER

www.shorewoodrv.com

8390 Highway 10 NW
Anoka, MN 55303
(800) 784-2505 - Phone
(763) 506-0415 - Fax
Sales Mgr.: Tim Paulson
Service Mgr.: Terry Morical

MOTOR HOME SPECIALIST

www.mhsrv.com

5411 S. I-35 W
Alvarado, TX 76009
(800) 335-6054 - Phone
(817) 783-6395 - Fax
Sales Mgr.: Robert Brake
Service Mgr.: Terry Humphries

Authorized Blue Bird Coachworks Service Centers

Full Service and Parts Only

Miller's RV

12912 Florida Boulevard • Baton Rouge, LA 70815
(504) 275-2940 • Fax: (504) 275-6807
Service – Doug Miller

Authorized Blue Bird Coachworks Service Centers

Detroit Diesel – Allison And Associate DD-A Distributors

Chassis Service and Chassis Parts Only

ALABAMA

Birmingham

William Detroit Diesel -
Allison Southeast, Inc.
1160 Bankhead Hwy., West
P.O. Box 12566
Birmingham, AL 35202
Phone: 800-365-3780

ALASKA

Anchorage

Pacific Detroit Diesel -
Allison Co.
8001 Petersburg Street
Anchorage, AK 99507
Phone: 907-522-3434

ARIZONA

Phoenix

Williams Detroit Diesel -
Allison Southwest, Inc.
2602 S. 19th Ave.
(Zip 85009)
P.O. Box 3618
Phoenix, AZ 85030
Phone: 800-944-7375

Tucson

Williams Detroit Diesel -
Allison Southwest, Inc.
1375 W. Glenn
Tucson, AZ 85705
Phone: 800-624-8331

ARKANSAS

Little Rock

United Engines, Inc.
9401 I-30 (Zip 72209)
P.O. Box 192720
Little Rock, AR 72219
Phone: 501-562-5565

CALIFORNIA

Bakersfield

Valley Detroit Diesel - Allison, Inc.
4000 Rosedale Hwy.
(Zip 93308)
P.O. Box 1848
Bakersfield, CA 93303
Phone: 805-325-9001

City of Industry

Valley Detroit Diesel - Allison, Inc.
13644 E. Nelson Ave.
City of Industry, CA 91746
Phone: 818-333-1243

Fresno

Valley Detroit Diesel - Allison, Inc.
2935 S. Orange Ave.
Fresno, CA 93725
Phone: 209-486-6900

Mira Loma

Valley Detroit Diesel - Allison, Inc.
11300 Inland Avenue
Mira Loma, CA 91752
Phone: 909-681-9283

San Diego

Valley Detroit Diesel - Allison, Inc.
5725 Eastgate Drive
San Diego, CA 92121
Phone: 619-447-2492

San Leandro

Sierra Detroit Diesel - Allison, Inc.
1755 Adams Avenue
San Leandro, CA 94577
Phone: 510-635-8991

West Sacramento

Sierra Detroit Diesel - Allison, Inc.
855 Stillwater Road
West Sacramento,
CA 95691
Phone: 916-372-5078

COLORADO

Commerce City

Stewart & Stevenson Power, Inc.
5840 Dahlia Street (Denver)
P.O. Box 220
Commerce City, CO 80022
Phone: 303-287-7441

CONNECTICUT

Middletown

Atlantic Detroit Diesel - Allison, Inc.
300 Smith Street
P.O. Box 2781
Middletown, CT 06457
Phone: 203-632-0218

Noank

Atlantic Detroit Diesel - Allison, Inc.
Noank Shipyard
Pearl Street
Noank, CT 06340
Phone: 203-536-6726

FLORIDA

Ft. Myers

Florida Detroit Diesel - Allison, Inc.
2305 Rockfille Road
Ft. Myers, FL 33916
Phone: 813-332-3100

Ft. Pierce

Florida Detroit Diesel - Allison, Inc.
3885 Selvitz Road
Ft. Pierce, FL 34954
Phone: 407-464-6006

FLORIDA cont.**Jacksonville**

Florida Detroit Diesel - Allison North, Inc.
5040 University Blvd. West
(Zip 32216)
Jacksonville, FL 32245-6595
Phone: 904-737-7330

Miami

Florida Detroit Diesel - Allison, Inc.
2277 N.W. 14th Street
(Zip: 33125)
P.O. Box 350010
Miami, FL 33195
Phone: 305-638-5300

Ocala

Florida Detroit Diesel - Allison North Inc.
224 S. W. 52nd Ave.
Ocala, FL 32674
Phone: 904-237-7977

Orlando

Florida Detroit Diesel - Allison North, Inc.
6850 Presidents Drive
Orlando, FL 32809
Phone: 407-888-1700

Tampa

Florida Detroit Diesel - Allison North, Inc.
8411 Adamo Drive
Tampa, FL 33619
Phone: 813-621-5651

GEORGIA**Albany**

Williams Detroit Diesel - Allison Southeast, Inc.
1803 West Oakridge Drive
Albany, GA 31707
Phone: 800-736-1952

Atlanta

Williams Detroit Diesel -
Allison Southeast, Inc.
2849 Moreland Ave. S.E.
P.O. Box 12537
Atlanta, GA 30315
Phone: 800-545-7116

Ringgold

Covington Detroit Diesel
102 Gateway Avenue
P.O. Box 1088
Ringgold, GA 30736
Phone: 706-965-7000

Savannah

Williams Detroit Diesel -
Allison Southeast, Inc.
14 West Gate Blvd.
P.O. Box 23209
Savannah, GA 31405
Phone: 800-283-9332

IDAHO**Boise**

Smith Detroit Diesel - Allison, Inc.
4045 Transport Street
P.O. Box 5715
Boise, ID 83705
Phone: 208-345-1500

ILLINOIS**Addison**

Inland Detroit Diesel - Allison, Inc.
500 S. Lombard Road
(Chicago)
Addison, IL 60101
Phone: 708-620-2000

Rock Island

Interstate Detroit Diesel, Inc.
3806 78th Ave., West
Rock Island, IL 61201
Phone: 309-787-4601

INDIANA**Fort Wayne**

Clarke Detroit Diesel - Allison, Inc.
2610 Independence Drive
Fort Wayne, IN 46825
Phone: 219-482-9185

Gary

Inland Detroit Diesel - Allison, Inc.
2601 E. 15th Street
Gary, IN 46401
Phone: 219-882-0421

Indianapolis

Clarke Detroit Diesel - Allison, Inc.
1340 Terminal Road
Indianapolis, IN 46217
Phone: 317-783-6651

IOWA**Des Moines**

Interstate Detroit Diesel, Inc.
Interstate Hwys. 80 & 35 at
2nd Avenue
P.O. Box 4007
Des Moines, IA 50333
Phone: 515-286-4800

KANSAS**Colby**

Central Detroit Diesel - Allison, Inc.
1920 Thielen Ave.
P.O. Box 445
Colby, KS 67701
Phone: 913-462-8211

Great Bend

Central Detroit Diesel - Allison, Inc.
625 E. 10th Street
P.O. Box 691
Great Bend, KS 67530
Phone: 316-792-1361

Liberal

Central Detroit Diesel - Allison, Inc.
East Hwy. 54
P.O. Box 177
Liberal, KS 67901
Phone: 316-624-7274

Salina

Central Detroit Diesel - Allison, Inc.
1944-B N. 9th Street
P.O. Box 1271
Salina, KS 67401
Phone: 913-825-8291

Wichita

Central Detroit Diesel -
Allison, Inc.
4501 W. Irving
Wichita, KS 67201
Phone: 316-943-1231

KENTUCKY**Henderson**

Clarke Detroit Diesel - Allison, Inc.
751 U.S. 41 South
Henderson, KY 42420
Phone: 502-827-4600

Lost Creek

Western Brance Diesel, Inc.
14701 Highway 15 South
Lost Creek, KY 41348
Phone: 606-666-4981

Louisville

Clarke Detroit Diesel - Allison, Inc.
2697 Gassland Avenue
Louisville, KY 40299
Phone: 502-491-2021

LOUISIANA**Harvey**

Stewart & Stevenson Services, Inc.
1401 Destrehan Ave.
P.O. Box 8
Harvey, LA 70059
Phone: 504-347-4326

Shreveport

United Engines, Inc.
7255 Greenwood Road
P.O. Box 37270
Shreveport, LA 71133
Phone: 318-635-8022

MAINE**Portland**

New England Detroit Diesel - Allison, Inc.
432 Warren Avenue
Portland, ME 04103
Phone: 207-797-5950
Fax: 207-797-5953

MARYLAND**Baltimore**

Johnson & Towers, Inc.
500 Wilson Point Road
Baltimore, MD 21220
Phone: 410-687-0500

Beltsville

Johnson & Towers, Inc.
6861 Distribution Drive
Beltsville, MD 20705
Phone: 301-937-8700

MASSACHUSETTS**Wakefield**

New England Detroit Diesel Allison, Inc.
90 Bay State Road
(Boston)
Wakefield, MA 01880
Phone: 617-246-1810

MICHIGAN**Dearborn**

Williams Detroit Diesel -
Allison Midwest, Inc.
4000 Stecker Avenue
Dearborn, MI 48126-6150
Phone: 313-584-6150
(24 Hr.)

Grand Rapids

Williams Detroit Diesel -
Allison Midwest, Inc.
2940 Clydon Ave. S.W.
Grand Rapids, MI 49509
Phone: 800-701-9993

Iron Mountain

Inland Diesel, Inc.
600 Industrial Park Drive
Iron Mountain, MI 49801
Phone: 906-774-9707

Saginaw

Williams Detroit Diesel -
Allison Midwest, Inc.
715 S. Outer Drive
Saginaw, MI 48601
Phone: 800-906-4235

MINNESOTA**Minneapolis**

Interstate Detroit Diesel, Inc.
2501 E. 80th Street
Minneapolis, MN 55425
Phone: 612-854-5511

Virginia

Interstate Detroit Diesel, Inc.
1921 16th Ave., West
Virginia, MN 55792
Phone: 218-749-4484

MISSISSIPPI**Jackson**

Clarke Detroit Diesel - Allison
620 Hwy. 49 South
(Zip: 39218)
P.O. Box 6274
Jackson, MS 39288
Phone: 601-932-2424

MISSOURI**Liberty**

Central Detroit Diesel - Allison, Inc.
9200 Liberty Drive
P.O. Box 490
Liberty, MO 64068
Phone: 816-781-8070

St. Louis

Clarke Detroit Diesel - Allison, Inc.
1424 Ashby Road
P.O. Box 21593
St. Louis, MO 83132
Phone: 314-429-2131

MONTANA**Billings**

Interstate Detroit Diesel, Inc.
1140 Main
P.O. Box 30518
Billings, MT 59107
Phone: 406-252-4191

Missoula

Interstate Detroit Diesel, Inc.
3757 N. Reserve Street
P.O. Box 8125
Missoula, MT 59807
Phone: 406-728-7600

NEBRASKA**Omaha**

Interstate Detroit Diesel, Inc.
6969 S. 107th Street
Omaha, NE 68128
Phone: 402-331-4104

NEVADA**Battle Mountain**

Smith Detroit Diesel - Allison, Inc.
680 W. Front Street
P.O. Box 1288
Battle Mountain, NV 89820
Phone: 702-635-5477

Elko

Smith Detroit Diesel - Allison, Inc.
4900 E. Idaho
Elko, NV 89801
Phone: 702-738-7154

North Las Vegas

Williams Detroit Diesel -
Allison Southwest, Inc.
2680 Losee Road
North Las Vegas, NV 89030
Phone: 702-399-1890

Sparks

Smith Detroit Diesel - Allison, Inc.
8 Glendale Avenue
P.O. Box 1167
Sparks, NV 89431
Phone: 702-359-1713

NEW JERSEY**Lodi**

Atlantic Detroit Diesel -
180 Route 17 South
P.O. Box 950
Lodi, NJ 07644
Phone: 201-489-5800 NJ
Phone: 212-665-1500 NY

Mount Laurel

Johnson & Towers, Inc.
2021 Briggs Road
P.O. Box 4000
Mount Laurel, NJ 08054
Phone: 609-234-6990

Piscataway

Atlantic Detroit Diesel - Allison, Inc.
169 Old New Brunswick Rd.
Piscataway, NJ 08854
Phone: 908-752-7100

Pleasantville

Johnson & Towers, Inc.
740 Delilah Road
(Rear Bldg.)
Pleasantville, NJ 08232
Phone: 609-272-1415

NEW MEXICO**Albuquerque**

Stewart & Stevenson Power, Inc.
2929 Vassar Drive N.E.
Albuquerque, NM 87107
Phone: 505-881-3511

Farmington

Stewart & Stevenson Power, Inc.
1515 West Murray Drive
Farmington, NM 87401
Phone: 505-325-5071

NEW YORK**Albany**

Atlantic Detroit Diesel - Allison, Inc.
17 Commercial Avenue
Albany, NY 12205
Phone: 518-438-5961

Buffalo

Penn Detroit Diesel - Allison, Inc.
350 Bailey Avenue
Buffalo, NY 14210
Phone: 716-823-7242

Ronkonkoma, Long Island

Atlantic Detroit Diesel - Allison, Inc.
3025 Veterans Memorial Hwy.
Ronkonkoma, Long Island,
NY 11779
Phone: 516-981-5800

Syracuse

Penn Detroit Diesel - Allison, Inc.
7044 Interstate Island Rd.
Syracuse, NY 13209
Phone: 315-451-3840

NORTH CAROLINA**Charlotte**

Covington Detroit Diesel -
1815 Starita Road
P.O. Box 26653
Charlotte, NC 28213
Phone: 704-596-8000

Greensboro

Covington Detroit Diesel -
6200 Swiggett Road
P.O. Box 18949
Greensboro, NC 27419-8949
Phone: 910-292-9240

Morehead City

Covington Detroit Diesel -
210 Arendell Street
Morehead City, NC 28557
Phone: 919-726-9881

New Bern

Covington Detroit Diesel -
U.S. Hwy. 17 South
P.O. Box 12626
New Bern, NC 28560
Phone: 919-638-3161

Wilmington

Covington Detroit Diesel
6725 Netherlands Drive
Wilmington, NC 28405
Phone: 919-392-7220

NORTH DAKOTA**Bismarck**

Interstate Detroit Diesel, Inc.
3801 Commerce Drive
Bismarck, ND 58501
Phone: 701-258-2303

Fargo

Interstate Detroit Diesel, Inc.
3902 12th Ave. North
Fargo, ND 58102
Phone: 701-282-6558

Grand Forks

Interstate Detroit Diesel, Inc.
1003 South 48th St.
Grand Forks, ND 58201
Phone: 701-746-0354

Williston

Interstate Detroit Diesel, Inc.
3805 4th Avenue West
P.O. Box 880
Williston, ND 58801
Phone: 701-572-2000

OHIO**Akron**

Williams Detroit Diesel - Allison Midwest, Inc.
1395 Triplett Blvd.
Akron, OH 44306
Phone: 216-794-1535

Brunswick

Williams Detroit Diesel - Allison Midwest, Inc.
1176 Industrial Pwky. N
Brunswick, OH 44212-2342
Phone: 216-225-7751

Canton

Western Branch Diesel, Inc.
1616 Metric Ave., S.W.
Canton, OH 44706
Phone: 216-454-8800

Cincinnati

Clarke Detroit Diesel - Allison, Inc.
3133 E. Kemper Rd.
(Sharonville)
Cincinnati, OH 45241
Phone: 513-771-2200

Hubbard

Williams Detroit Diesel - Allison Midwest, Inc.
7125 Masury Rd. Southeast
(Youngstown)
P.O. Box 71
Hubbard, OH 44425
Phone: 216-534-1161

Lemoyne

Williams Detroit Diesel - Allison Midwest, Inc.
3325 Libby Road (Toledo)
P.O. Box 427
Lemoyne, OH 43441
Phone: 419-837-5067

OHIO Cont.**Wintersville**

Western Branch Diesel, Inc.
286 Luray Drive
(Steubenville)
P.O. Box 2069
Wintersville, OH 43952
Phone: 614-264-7121

OKLAHOMA**Oklahoma City**

United Engines, Inc.
5555 W. Reno Street
(Zip 73127)
P.O. Box 75079
Oklahoma City, OK 73147
Phone: 405-947-3321

Tulsa

United Engines, Inc.
7454 E. 41st Street
Tulsa, OK 74145
Phone: 918-627-8080

Woodward

Central Detroit Diesel - Allison, Inc.
U.S. Hwy. 270 N.W.
P.O. Box 1145
Woodward, OK 73802
Phone: 405-256-6014

OREGON**Medford**

Pacific Detroit Diesel - Allison Co.
1493 Kingsley Drive
Medford, OR 97504
Phone: 503-779-4622

Portland

Pacific Detroit Diesel - Allison Co.
5061 N. Lagoon Ave.
Swan Island
Portland, OR 97217-7694
Phone: 503-283-0505

Springfield

Pacific Detroit Diesel - Allison Co.
3436 Olympic Street
Springfield, OR 97477
Phone: 503-746-1661

PENNSYLVANIA**Bedford**

Penn Detroit Diesel - Allison, Inc.
Route 220 North
P.O. Box 147
Bedford, PA 15522
Phone: 814-623-6171

Fleetwood

Penn Detroit Diesel - Allison, Inc.
Route 222
P.O. Box 187
Fleetwood, PA 19522
Phone: 215-944-0451

Philadelphia

Penn Detroit Diesel - Allison, Inc.
8330 State Road
Philadelphia, PA 19136-2996
Phone: 215-335-0500

York Haven

Penn Detroit Diesel - Allison, Inc.
Sipe Rd., R.D. 1
(Exit 13 - I-83)
York Haven, PA 17370
Phone: 717-938-5141

Zelienople

Penn Detroit Diesel - Allison, Inc.
11 Progress Road
(U.S. Hwy. 19th North)
(Pittsburgh)
Zelienople, PA 16063
Phone: 412-776-3237

SOUTH CAROLINA**Greer**

Williams Detroit Diesel -
Allison Southeast, Inc.
1835 S. Highway 101
Greer, SC 29651
Phone: 803-877-0935

West Columbia

Williams Detroit Diesel -
Allison Southeast, Inc.
2610 Augusta Hwy.
(U.S. 1 7 I-26)
West Columbia, SC 29169
Phone: 800-452-8479

SOUTH DAKOTA**Rapid City**

Interstate Detroit Diesel, Inc.
1947 Deadwood Ave.
P.O. Box 508
Rapid City, SD 57709
Phone: 605-348-0374

TENNESSEE**Kingsport**

Covington Detroit Diesel
Hwy. 137 & Rock
Springs Rd.
P.O. Box 5417
Kingsport, TN 37663
Phone: 615-349-6141

Knoxville

Covington Detroit Diesel
1500 Breda Drive
(Zip 37918)
P.O. Box 18560
Knoxville, TN 37928
Phone: 615-689-3722

Memphis

Clarke Detroit Diesel - Allison
3070 Sandbrook St.
(Zip 38116)
P.O. Box 16260
Memphis, TN 38186-0260
Phone: 901-396-7320

Nashville

Covington Detroit Diesel
80 Cleveland Street
Nashville, TN 37210
Phone: 615-262-4141

TEXAS**Amarillo**

Stewart & Stevenson Power, Inc.
I-10 at Pullman Road
P.O. box 31986
Amarillo, TX 79120-1986
Phone: 806-335-2828

Beaumont

Stewart & Stevenson Services, Inc.
U.S. Hwy. 69 South
& Beauxart Garden Rd.
Route 4, Box 89
Beaumont, TX 77705
Phone: 409-727-1436 (24 Hr.)

Corpus Christi

Stewart & Stevenson Services, Inc.
6530 Agnes St.
P.O. Box 4975
Corpus Christi, TX 78469-4975
Phone: 512-289-5350 (24 Hr.)

TEXAS Cont.**Dallas**

Stewart & Stevenson Services, Inc.
3919 Irving Blvd.
P.O. Box 560343
Dallas, TX 75356-0343
Phone: 214-631-5370
(24 Hr.)

Houston

Stewart & Stevenson Services, Inc.
2707 N. Loop West
P.O. Box 1637
Houston, TX 77251-1637
Phone: 713-868-7700

Houston

Stewart & Stevenson Services, Inc.
8631 E. Freeway
Houston TX 77029
Phone: 713-671-6220

Lubbock

Stewart & Stevenson Power, Inc.
2000 Station Hwy.
P.O. Box 2529
Lubbock, TX 79408
Phone: 806-745-4224

Odessa

Stewart & Stevenson Power, Inc.
11120 W. Hwy. 80 East
(Zip 79765)
P.O. Box 2848
Odessa, TX 79760
Phone: 915-563-4800

San Antonio

Stewart & Stevenson Services, Inc.
5717 I-10 East
P.O. Box 201330
San Antonio, TX 78220-8330
Phone: 210-662-1000

Wichita Falls

Stewart & Stevenson Services, Inc.
2301 Central Freeway East
(Zip 76302)
P.O. Box 839
Wichita Falls, TX 76307-0839
Phone: 817-322-5227

UTAH**Salt Lake City**

Smith Detroit Diesel - Allison, Inc.
250 W. 3900 S.
(Zip 84107)
P.O. Box 27527
Salt Lake City, UT 84127
Phone: 801-262-2831

Vernal

Smith Detroit Diesel - Allison, Inc.
U.S. Hwy. 40 East
P.O. Box 1122
Vernal, UT 84078
Phone: 801-789-1860

VIRGINIA**Portsmouth**

Western Branch Diesel, Inc.
3504 Shipwright Street
(Zip 23703)
P.O. Box 7788
Portsmouth, VA 23707-0788
Phone: 804-484-6230

Richmond

Western Branch Diesel, Inc.
(I-95 North at Atlee Road)
(Ashland, VA 23005)
P.O. Box 9730
Richmond, VA 23228
Phone: 804-550-2816

Roanoke

Western Branch Diesel, Inc.
4546 Thirlane Road,
Northwest
Roanoke, VA 24019
Phone: 703-362-1608

Springfield

Western Branch Diesel, Inc.
8102 Alban Road
Springfield, VA 22150
Phone: 703-569-5650

WASHINGTON**Kent**

Pacific Detroit Diesel - Allison, Co.
7215 S. 228th Street
Kent, WA 98032
Phone: 206-854-0505

Pasco

Spokane Detroit Diesel Allison
1810 E. James
Pasco, WA 99301
Phone: 509-547-1611

Spokane

Spokane Detroit Diesel Allison
6615 E. Mallon Street
(Zip 99212)
P.O. Box 3167
Terminal Annex
Spokane, WA 99220
Phone: 509-535-3663

WEST VIRGINIA**South Charleston**

Western Branch Diesel, Inc.
3100 MacCorkle Ave., SW
P.O. Box 8245
South Charleston, WV
25303-8245
Phone: 304-744-1511
(24 Hr.)

WISCONSIN**Butler**

Inland Diesel, Inc.
13015 W. Custer Avenue
(Milwaukee)
P.O. Box 916
Butler, WI 53007-0916
Phone: 414-781-7100

WYOMING**Casper**

Stewart & Associates
Power, Inc.
1850 East "F" Street
Casper, WY 82601
Phone: 307-234-6975

Gillette

Interstate Detroit Diesel, Inc.
210 Limestone Avenue
P.O. Box 1355
Gillette, WY 82716
Phone: 307-682-8596

Rock Springs

Smith Detroit Diesel -
Allison, Inc.
20 Bowker Road
(Zip 82901)
P.O. Box 1868
Rock Springs, WY 82902
Phone: 307-382-4330

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