Table of Contents

Table of Contents

Table of Contents

Introduction

CALIFORNIA Proposition 65 Warning

WARNING: Engine exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. In addition, certain fluids contained in vehicles and certain products of component wear contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

CONGRATULATIONS

Congratulations on acquiring your new Ford. Please take the time to get well acquainted with your vehicle by reading this handbook. The more you know and understand about your vehicle, the greater the safety and pleasure you will derive from driving it.

For more information on Ford Motor Company and its products visit the following website:

- In the United States: www.ford.com
- In Canada: www.ford.ca
- In Mexico: www.ford.com.mx
- In Australia: www.ford.com.au

Additional owner information is given in separate publications.

Introduction

This *Owner's Guide* describes every option and model variant available and therefore some of the items covered may not apply to your particular vehicle. Furthermore, due to printing cycles it may describe options before they are generally available.

Remember to pass on the *Owner's Guide* when reselling the vehicle. It is an integral part of the vehicle.

SAFETY AND ENVIRONMENT PROTECTION

Warning symbols in this guide

How can you reduce the risk of personal injury and prevent possible damage to others, your vehicle and its equipment? In this guide, answers to such questions are contained in comments highlighted by the warning triangle symbol. These comments should be read and observed.

Warning symbols on your vehicle

When you see this symbol, it is imperative that you consult the relevant section of this guide before touching or attempting adjustment of any kind.

Introduction

Protecting the environment

We must all play our part in protecting the environment. Correct vehicle usage and the authorized disposal of waste cleaning and lubrication materials are significant steps towards this aim. Information in this respect is highlighted in this guide with the tree symbol.

SPECIAL NOTICES

New Truck Limited Warranty

For a detailed description of what is covered and what is not covered by your vehicle's New Truck Limited Warranty, refer to the *Warranty Guide* that is provided to you along with your *Owner's Guide*.

Special instructions

For your added safety, your vehicle is fitted with sophisticated electronic controls.

Service Data Recording

Service data recorders in your vehicle are capable of collecting and storing diagnostic information about your vehicle. This potentially includes information about the performance or status of various systems and modules in the vehicle, such as engine, throttle, steering or brake systems. In order to properly diagnose and service your vehicle, Ford Motor Company, Ford of Canada, and service and repair facilities may access vehicle diagnostic information through a direct connection to your vehicle when diagnosing or servicing your vehicle.

Cell phone use

The use of Mobile Communications Equipment has become increasingly important in the conduct of business and personal affairs. However, drivers must not compromise their own or others' safety when using such equipment. Mobile Communications can enhance personal safety and security when appropriately used, particularly in emergency situations. Safety must be paramount when using mobile communications equipment to avoid negating these benefits.

Mobile Communication Equipment includes, but is not limited to cellular phones, pagers, portable email devices, in-vehicle communications systems, telematics devices and portable two-way radios.

A driver's first responsibility is the safe operation of the vehicle. The most important thing you can do to prevent a crash is to avoid distractions and pay attention to the road. Wait until it is safe to operate Mobile Communications Equipment.

VEHICLE SYMBOL GLOSSARY

These are some of the symbols you may see on your vehicle.

Vehicle Symbol Glossary

Safety Alert		See Owner's Guide	
Fasten Safety Belt		Air Bag-Front	
Air Bag-Side		Child Seat	
Child Seat Installation Warning		Child Seat Lower Anchor	
Child Seat Tether Anchor		Brake System	
Anti-Lock Brake System		Brake Fluid - Non-Petroleum Based	
Powertrain Malfunction		Speed Control	
Master Lighting Switch		Hazard Warning Flasher	
Fog Lamps-Front		Fuse Compartment	
Fuel Pump Reset		Windshield Wash/Wipe	
Windshield Defrost/Demist		Rear Window Defrost/Demist	

Vehicle Symbol Glossary

Power Windows Front/Rear		Power Window Lockout	
Child Safety Door Lock/Unlock		Interior Luggage Compartment Release Symbol	
Panic Alarm		Engine Oil	
Engine Coolant		Engine Coolant Temperature	
Do Not Open When Hot		Battery	
Avoid Smoking, Flames, or Sparks		Battery Acid	
Explosive Gas		Fan Warning	
Power Steering Fluid		Maintain Correct Fluid Level	
Emission System		Engine Air Filter	
Passenger Compartment Air Filter		Jack	
Check Fuel Cap		Low Tire Pressure Warning	

FEDERAL HIGHWAY ADMINISTRATION REGULATION

Regulations such as those issued by the Federal Highway Administration or issued pursuant to the Occupational Safety and Health Act (OSHA), and/or state and local laws and regulations may require additional equipment for the way you intend to use the vehicle. It is the responsibility of the registered owner to determine the applicability of such laws and regulations to your intended use for the vehicle, and to arrange for the installation of required equipment. Your dealer has information about the availability of equipment which may be ordered for your vehicle.

ENTERING, EXITING AND/OR CLIMBING ON THIS VEHICLE

You must be careful and deliberate to minimize the possibility of personal injury from a slip and fall when entering, exiting and/or climbing on this vehicle. Always use the steps and assist handles before climbing. Do not skip any steps or assist handles. Use three point contact at all times with at least two feet and one hand or two hands and one foot firmly placed during all phases of entering, exiting and/or climbing. Always keep your shoe soles and hands clean. Keep the steps and assist handles free of snow, ice, oil, grease, substances or debris. Be sure to use extra care in bad weather. Avoid wearing thick gloves. Always perform trailer hook-up while standing on the ground.

Do not carry items while entering, exiting, and/or climbing. Make sure you keep a firm grip. Always FACE the VEHICLE STEP and HANDLE SYSTEM while climbing up and down. Do not climb behind the cab unless you have three point contact with a step and handle system at all times.

Vehicle Inspection Guide

To be sure your vehicle is ready to operate, conduct a pre-trip inspection at the beginning of each work period. Follow the steps listed in this section to ensure a proper vehicle inspection procedure. The pages in this section may be produced locally and used on a regular basis.

VEHICLE INSPECTION INFORMATION

Note: Always make sure the parking brake is applied before starting the engine.

Engine compartment (with engine stopped)	
Belts (Fan, alternator, water pump and A/C compressor):	Check for glazing, fraying or cracking. There should be no more than five - seven cracks per rib per inch (2.5 cm).
Any leaks:	Check for signs of fluid puddles, dripping fluid on the ground under the engine or the underside of the engine.
HVAC air inlet:	Check for debris, leaves, etc. that may have collected on the HVAC air inlet grille or inside the exterior module as this may cause reduced system performance.
HVAC fresh air filter (if equipped):	Periodically check the HVAC fresh air filter for cleanliness.

Exercise great caution when working on vehicle equipped with an automatic fan clutch. The fan starts in motion only after the engine coolant reaches a predetermined temperature or the refrigerant pressure (if equipped with air conditioning) reaches a predetermined setting. The fan will start at these points with no advance warning. Never reach near, or permit objects to protrude into the fan blade radius while the engine is running, as this could result in vehicle damage, personal injury or death.

Engine starting (parking brake applied)	
Safety/Emergency equipment:	Prior to entering the cab, verify that the vehicle is equipped with spare electrical fuses (if used), three red reflective triangles, a properly charged and rated fire extinguisher and wheel chocks. Walk around the vehicle and check that all steps and grab handles, inside and out as well as behind, are tight and clean. Use extreme caution and a three-point stance at all times. Check door latches for positive closing, latching and locking.
Starting the engine:	Verify the parking brake is set and the transmission is in P (Park). When the WAIT TO START indicator light in the instrument cluster turns off, turn the key to START.
Accelerator:	With the engine running and the transmission in P (Park), depress the accelerator and verify that it operates smoothly without any binding or irregular feel. Remove your foot from the pedal and make sure the engine returns to idle speed immediately.
Steering linkage free play:	Check for excessive free play in the steering linkages. The steering wheel should have less than two inches (five centimeters) of free play at rim of steering wheel.
Brake check:	Pump the brake pedal three times, then apply firm pressure to the pedal and hold it for five seconds. Once applied, the pedal should not move; if it does, there may be a leak or another problem. Do not drive the vehicle until the problem is fixed.
Parking brake:	Check that the parking brake will hold the vehicle by gently trying to pull forward with the parking brake applied.

Engine starting (parking brake applied)	
Transmission fluid:	With the engine idling at normal operating temperature and the parking brake applied, check the automatic transmission fluid. If fluid needs to be added, refer to *Transmission fluid* in the *Maintenance and Specifications* chapter.

Front of vehicle	
Lights:	Make sure all exterior lights illuminate and are clean. Make sure headlights function on both high and low beams. Make sure reflectors are clean and unbroken and of proper color (red on rear, amber elsewhere). Make sure the running lights are also clean and unbroken.
Steering gear:	Look for missing or loose fasteners, power steering fluid leaks and damage to power steering hoses.
Steering linkage:	Make sure connecting links, arms and rods are not worn or cracked; joints, sockets and boot seals are not worn or loose and that there are no loose or missing cotter keys, nuts or bolts.
Tow hooks:	Front tow hooks should be inspected for damage or loose mounting. This is particularly important on vehicles where tow hooks are frequently used.

Front suspension	
Spring:	Inspect for missing, broken or shifted leaves or leaves that are in contact, or nearly contacting a tire, rim, brake drum, frame or body components.
Spring mount:	Inspect spring hangers, bolts, bushings, axle mounting bolts and nuts for cracks, breaks, wear, damage and tightness.

Front suspension	
Torsion bar, Shock absorber:	Make sure torsion arm is not cracked, broken or missing. Inspect for cracks, leaks and missing or broken bolts or bushings.

Note: Never apply grease to spring pads.

Do not operate the vehicle if any suspension conditions listed in the *Front suspension* chart are evident. Loss of steering or suspension could result in property damage, personal injury or death.

Front brakes	
Hoses:	Check for cracked, worn or frayed hoses. Make sure all couplings are secured.

Front wheels	
Rims:	Check for damaged or bent rims. Rims should not have welding repairs and no rust trails that indicate it is loose on the wheel.
Lug nuts:	Make sure all lug nuts are present and not loose (look for rust trails around the lug nuts). There should be no cracks radiating from the lug bolt holes or distortion of the bolt holes.
Hub oil seal:	Check wheel hub oil seal for leaks, and if sight glass is present, check to see that the oil level is adequate.
Oil-lubricated front wheel bearing:	If the hubcap has a transparent window, check for proper lubrication level. If the hubcap does not have a transparent window, remove the rubber fill-plug and check for proper level.

If a wheel must be changed, obtain expert tire service help. Mounting and dismounting of tires should only be performed by a qualified technician using necessary safety procedures and equipment, otherwise the result could be property damage, personal injury or death.

Driver area	
Engine oil:	Use the engine oil dipstick to verify that the engine oil level is in the operating range.
Engine coolant:	Look through the see-through level indicators on the reservoir and make sure the fluid is in the proper operating range as marked on the reservoir. **Do not remove pressure cap until the coolant has cooled.**
Power steering fluid:	Verify that the fluid level is between the ADD and FULL marks on the reservoir.
Windshield washer fluid:	Make sure the reservoir is full.
Brake fluid:	Make sure the fluid level is between the MIN/MAX lines as marked on the reservoir.
Fuel tank:	Make sure the fuel tank(s) and cap(s) are secure. Make sure there is no damage to the tank(s) and no leaks from the tank(s).

Underbody of vehicle	
Driveshaft:	Make sure that the driveshaft is not bent or cracked. Ensure all driveshaft couplings are secure.
Exhaust system:	Make sure the outside visible parts are securely mounted. Make sure there are no cracks, holes or severe dents.
Frame:	Check for cracks or bends in longitudinal frame members. Make sure there are no loose, cracked, bent, broken or missing crossmembers or crossmember fasteners.

Maintain adequate clearance between all parts of the exhaust system and all hoses, wires and lines for engine cooling, brake system, fuel system, power steering system and electrical system. Heat damage to hoses, wires or lines may cause vehicle malfunction that could result in property damage, personal injury or death.

Rear of vehicle	
Electrical lines:	Make sure electrical lines are not tangled, crimped or pinched or being dragged against any truck parts. Electrical line insulation should not be cut, cracked, chafed or worn. None of the electrical lines should be spliced or taped. Check for corrosion on pins and in electrical sockets to ensure continuity and reduced heat build-up potential.
Turn signals/Brake lights:	Make sure both brake lights illuminate when the brake pedal is applied and each turn signal flashes. Make sure that the four-way flashers work properly.
Lights, reflectors:	Make sure all exterior lights illuminate and are clean. Make sure reflectors are clean and unbroken and of proper color (red on rear, amber elsewhere). Make sure the running lights are also clean and unbroken. Rear running lights must be checked separately from turn signal, flasher and brake lights.

Rear springs	
Springs:	Check for broken or shifted leaves or leaves that are in contact, or nearly contacting a tire, rim, brake drum, frame or body components. Check for missing or broken leaves in the leaf spring.
Spring mounts:	Check for cracked or broken spring hangers, broken, missing or loose bolts, missing or damaged bushings, broken, loose or missing axle mounting parts.
Shocks absorber:	Check the shock absorber for cracks or leaks; there should be no missing or broken mounting bolts or worn bushings.

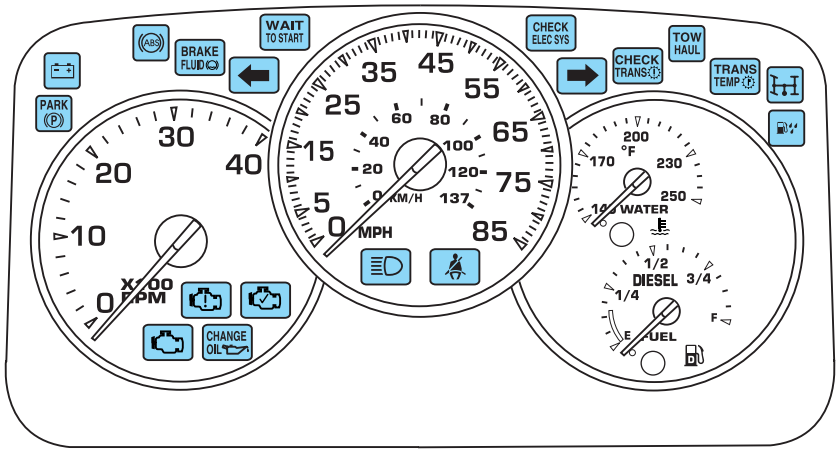
Rear brakes	
Hoses:	Check for cracked, worn or frayed hoses. Make sure all couplings are secured.

Rear wheels	
Spacers:	Make sure dual wheels are evenly separated and that tires are not touching one another.
Rims:	Check for damaged or bent rims. Rims should not have welding repairs and no rust trails that indicate it is loose on the wheel.
Lug nuts:	Make sure all lug nuts are present and not loose (look for rust trails around the lug nuts). There should be no cracks radiating from the lug bolt holes or distortion of the bolt holes.

Transmission

Check the transmission fluid level and shift linkage for proper operation.

WARNING LIGHTS AND CHIMES



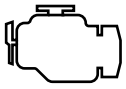
Warning lights and gauges can alert you to a vehicle condition that may become serious enough to cause expensive repairs. A warning light may illuminate when a problem exists with one of your vehicle's functions. Many lights will illuminate when you start your vehicle to make sure the bulb works. If any light remains on after starting the vehicle, have the respective system inspected immediately.

Note: The instrument cluster will self-test when the ignition is turned on. During this self-test you may hear an audio buzz and/or the gauges will sweep. This is normal operation

Stop engine: If this red warning light illuminates while driving, the vehicle's cooling system may be overheating or the engine oil pressure may be dangerously low. An audible tone will also sound when this light is illuminated. Safely pull off the road as soon as possible and stop the engine. Continuing to drive while this light is illuminated may result in extensive engine damage. Contact your dealership or authorized service center as soon as possible.

Malfunction Indicator Light (MIL): This amber warning light will illuminate to display any emissions-related issues. Contact your dealership or authorized service center as soon as possible.

Warn engine: If this amber warning light illuminates while driving, a problem in the electronic engine controls has been detected. Contact your dealership or authorized service center as soon as possible.



Wait to start: With the key in the ON position, this amber light will illuminate if the glow plug heat is necessary as a starting aid. Wait until the light goes off before starting. The light should always illuminate briefly, when the ignition key is in the ON position. Refer to *Starting the engine* and *Cold weather operation* in the *Driving* chapter. After the engine starts, the light should remain off. The light should always illuminate at least momentarily when the engine is cold and the ignition is turned to ON. If it does not illuminate, the glow plug system should be checked and repaired promptly to avoid difficulty in cold starting.

WAIT
TO START

To reduce the risk of death or personal linjury and the potential for damage to the engine, do not use volatile starting aids such as ether, propane or gasoline in the air intake system. The glow plugs will ignite any of the vapors.

Water in fuel: During refueling, it is possible for water-contaminated diesel fuel to be pumped into your tank. Your vehicle fuel system is equipped with a fuel filter/water separator to remove water from the fuel. The amber WATER IN FUEL light will illuminate when the HFCM has a significant quantity of water in it.

If the light illuminates when the engine is running, stop the vehicle as soon as safely possible, shut off the engine, then drain the HFCM. Refer to *Fuel filter/water separator* in the *Maintenance and Specifications* section for the drain procedure. Allowing water to stay in the system could result in extensive damage to, or failure of, the fuel injection system.

Do not drain water separator while engine is running. Fuel may ignite if separator is drained while engine is running or vehicle is moving.

Brake fluid: This red light illuminates when the brake fluid is low. An audible tone will also sound when this light is illuminated. Check the brake master cylinder reservoir to make sure the fluid level is OK, add if necessary (refer to *Brake fluid* in the *Maintenance and Specifications* chapter for proper checking and adding procedure). If the level is OK, but the light stays illuminated, do not drive the vehicle as loss of braking ability may occur. Have the vehicle towed to your local dealership or authorized service center.

Driving a vehicle with the brake fluid warning light on is dangerous. A significant decrease in braking performance may occur. It will take you longer to stop the vehicle. Have the vehicle checked by your dealer immediately.

Parking brake warning: This red light illuminates when the parking brake is engaged.

Anti-lock brake system: This amber light momentarily illuminates when the ignition is in the ON position. If the light stays illuminated or continues to flash, a malfunction has been detected; have the system serviced immediately. Normal braking is still functional unless the brake fluid warning light also is illuminated. If the ABS light is not functioning, the trip odometer display will show “No ABS Ind”.

Check trans: This amber light momentarily illuminates when the ignition is in the ON position. If this light stays illuminated, a problem has been detected and the shift pattern may be in default operation (starts in 5th gear or Drive). Operating limitations may be placed on the transmission upshifting and downshifting patterns. Have the system serviced immediately as transmission damage may occur.

Safety belt: This red light illuminates to remind you to fasten your safety belt. A chime will also sound to remind you to fasten your safety belt.

Trans temp: This red light momentarily illuminates when the ignition is in the ON position. This light will stay illuminated when the transmission temperature is too high. An audible tone will also sound when this light is illuminated. Normal transmission fluid temerature operating temperature is 70°F–248°F (21°C–120°C). Fluid temperatures above 275°F (135°C) can cause transmission fluid to break down and result in internal component damage. Have the system serviced immediately.

Check electrical system: This amber light will momentarily illuminate when the ignition is in the ON position. If this light stays illuminated, there is a communication problem between the cluster and an electrical module. A message will be displayed on the trip odometer.

Change oil: This amber light will momentarily illuminate when the ignition is in the ON position. If activated, this light illuminates when the engine oil life is low and requires changing.

To reset the indicator, perform the following (this procedure must be completed within 12 seconds from starting it):

1. Set the parking brake, then turn the ignition to ON.

2. Press and release the Cruise RPM and Resume + buttons simultaneously four (4) times within 6 seconds.

3. Press and hold the Cruise RPM and Resume + buttons for three (3) seconds.

4. Release cruise buttons.

Tow/Haul: This green light illuminates when the Tow/Haul feature has been activated. Refer to the *Driving* chapter for transmission function and operation.

Instrument Cluster

PTO enable: This amber light illuminates when power take-off (PTO) mode is being used.

Charging system: This red light illuminates when the battery is not charging properly.

Turn signal: The(se) green light(s) illuminates when the left or right turn signal or the hazard lights are turned on. If the indicator(s) stay(s) on or flash(es) faster, check for a burned out bulb.

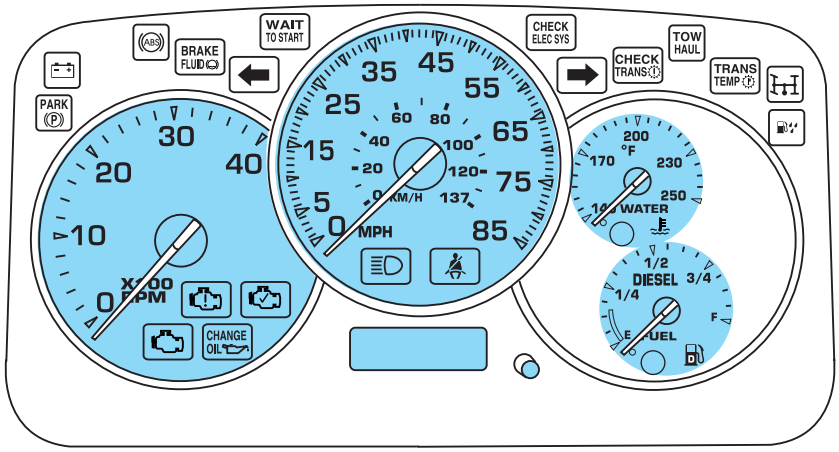
High beams: This blue light illuminates when the high beam headlamps are turned on.

Safety belt not fastened warning chime: Sounds for five seconds each time the ignition is turned to the ON position and the safety belt is not fastened.

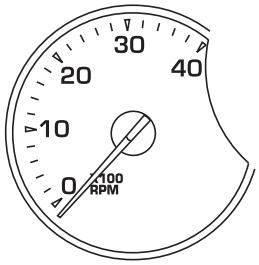
Key-in-ignition warning chime (if equipped): Sounds when the key is left in the ignition (in the ON or ACC position) and either door is opened. The trip odometer display will show “Key In IGN”.

Headlamps on warning chime: Sounds when the headlamps or parking lamps are on, the ignition is off (the key is not in the ignition) and the driver’s door is opened. The trip odometer display will show “Lights ON”.

GAUGES

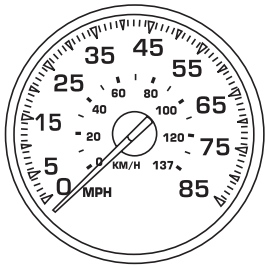


Tachometer: Indicates the engine speed in revolutions per minute. Driving with your tachometer pointer continuously at the top of the scale may damage the engine. If there is an electrical problem between the gauge and the engine control module, the gauge pointer will fall below the “0” position and rest on the pointer stop.



Speedometer: Indicates the current vehicle speed. If there is an electrical problem between the gauge and the engine control module, the gauge pointer will fall below the “0” position and rest on the pointer stop.

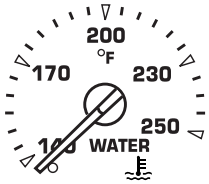
Note: This vehicle’s speed is limited to 75 mph (120 km/h).



Odometer/Trip odometer: The odometer registers the total miles (kilometers) of the vehicle.

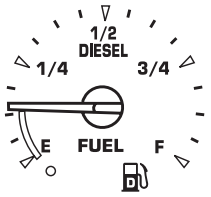
The trip odometer registers the miles (kilometers) of individual journeys. There are two modes for the trip odometer, Trip 1 and Trip 2. Pressing Select/Reset for less than two seconds will switch between Trip 1 and Trip 2. Pressing and holding Select/Reset for longer than two seconds will clear the trip odometer for the setting it is on (Trip 1 or Trip 2).

Engine coolant temperature gauge: Indicates engine coolant temperature. Readings above 230°F (110°C) indicate the engine may be overheating; a red warning light will illuminate on the gauge indicating this condition.



If there is an electrical problem between the gauge and the engine control module, the gauge pointer will drop to the six o'clock position and the red warning light will flash.

Never remove the coolant reservoir cap while the engine is running or hot.



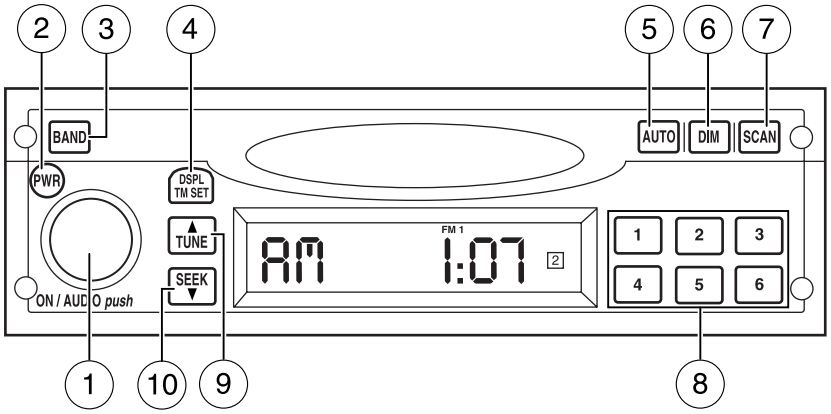
Fuel gauge: Indicates approximately how much fuel is left in the fuel tank (when the ignition is in the ON position). If your vehicle is equipped with dual fuel tanks, the engine will draw fuel from the passenger-side fuel tank only. With dual fuel tanks, the vehicle will be equipped with a fuel transfer pump system that will draw fuel from the driver-side fuel tank and send fuel to the passenger-side fuel tank. The passenger-side fuel tank must have fuel in it at all times otherwise the vehicle may stall and may be difficult to re-start. The fuel gauge reads the fuel level only from the passenger-side fuel tank. Ensure only the proper type diesel fuel is added to the fuel tank(s).

When the fuel level reaches ⅛ full, a red warning light on the fuel gauge will illuminate and an audible alarm will sound. This warning light will stay on until the tank(s) is filled above ⅛ full.

If there is an electrical problem between the gauge and the engine control module, the gauge pointer will drop to the six o'clock position and the red warning light will flash.

AUDIO SYSTEMS

AM/FM Stereo (if equipped)



1. **ON/AUDIO:** Press to turn the radio on/off and turn to adjust the volume.

2. **PWR:** Press to turn the radio on and off.

3. **BAND:** Press to alternate between AM, FM1, FM2 and Weatherband.

4. **DSPL TM SET:** Press to display the time or to set the clock.

To set the clock:

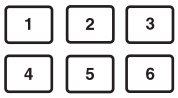
- Turn the ignition on.
- Press and hold the DSPL TM SET button until the hours digits flash, then press either the TUNE or SEEK buttons to set the hour.
- Press the DSPL TM SET button again and the minutes digits will flash. Press either the TUNE or SEEK buttons to set the minutes.
- After five seconds, the display will show the time.

5. **AUTO:** Press to automatically set the strongest stations to presets.

6. **DIM:** Press to adjust the brightness of the radio display.

7. **SCAN:** Press to search the current band for all listenable stations. Press again to stop the scan.

8. **Memory preset buttons (1–6):** To set a station: Select frequency band AM/FM; tune to a station, press and hold a preset button until sound returns.

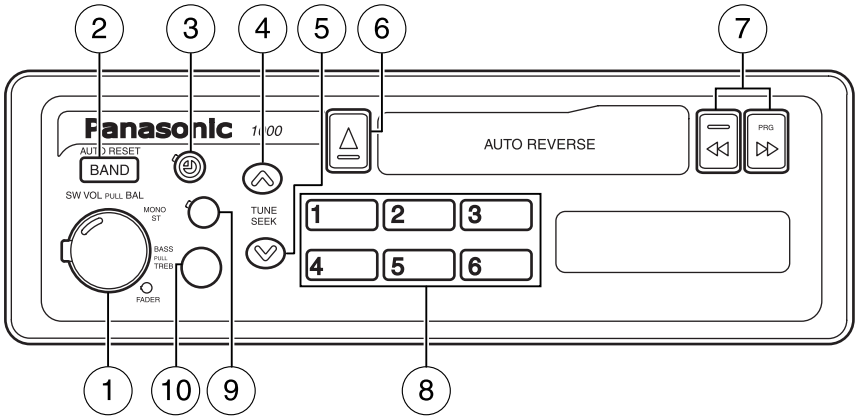


For the TUNE and SEEK buttons, press and hold both TUNE and BAND for two seconds to switch between manual tune and seek modes. The display will show either “MANUAL” or “SEEK” to indicate the mode.

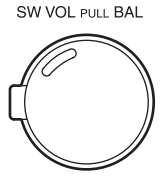
9. **TUNE:** Press to manually change radio frequency up or down.

10. **SEEK:** Press to find the next strong station up or down the frequency band.

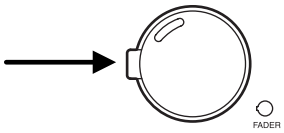
AM/FM Stereo/Cassette (if equipped)



1. **VOLUME/BALANCE:**
Turn clockwise to turn the radio on and raise the volume; turn counterclockwise to lower the volume and turn the radio off. Pull the control out and turn left or right to adjust the balance between the left and right speakers.



FADER: Pull the VOL control out and turn to shift sound to the rear/front speakers.



2. **BAND:** Press to select AM, FM1, FM2 and FM3.

3. **Clock**

Setting the clock:

To set the clock for the first time (or after the battery has been disconnected, then reconnected) follow this procedure:

- Press the clock button; “Adj” will show on the display. Press and hold the button again for more than two seconds; “12” will blink indicating the time setting mode has been activated.
- To set the hour, press TUNE ∧ or ∨ .
- To set the minutes, press the clock button again, then press TUNE ∧ or ∨ .
- When the time has been set, press the clock button again.

If you need to reset the time, press and hold the clock button for more than two seconds to activate the time setting mode, then follow Steps 2 through 4 as shown under *Setting the clock*.

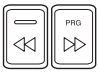
Press the clock button to alternate between radio, tape and clock modes.

4. **TUNE:** Press ∧ or ∨ to manually go up or down the radio frequency.

5. **SEEK:** Press and hold (for more than ½ second) ∧ or ∨ ; the radio will automatically stop at the next radio station.

6. ⏏ **:** Press to eject the cassette.

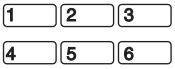
7. ◀◀ / ▶▶ :



When the program indicator lights ▲ , press ◀◀ to rewind or ▶▶ to fast forward.
When the program indicator lights ▼ , press ◀◀ to fast forward or ▶▶ to rewind.
To stop rewind or fast forward, press the button that is not in use.

Changing cassette sides: Press ◀◀ and ▶▶ at the same time. The program indicator (▲ /▼) will change directions.

8. **Memory preset buttons (1–6):**

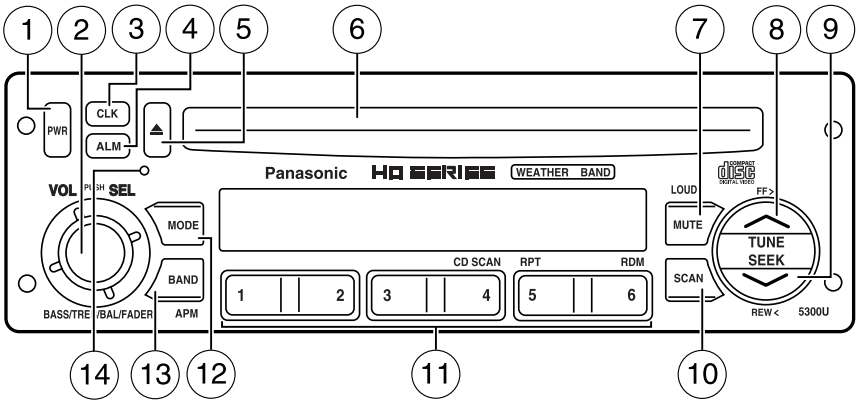


To manually set a station: Select frequency band AM/FM1/FM2/FM3; tune to a station, press and hold a preset button until the display blinks.
To automatically set a station: press BAND for more than two seconds; the six strongest stations wil be automatically set in the six memory preset buttons.

9. **MONO/ST:** Press for monaural reception in case a lot of interference is present in an FM stereo sgignal or to improve the listening quality of weak FM broadcasts.

10. **BASS/TREBLE:**
Turn to adjust the amount of bass output.
Pull the control out fully (to lock it) and turn to adjust the amount of treble output. After adjusting the treble, push the control back in.

AM/FM Stereo/CD (if equipped)



1. **PWR:** Press to turn the audio system on or off.

2. **VOL BASS/TREB/BAL/FADER:** Pressing the control (SEL) will switch between Bass, Treble, Balance and Fade.
Volume: Turning the control left or right will adjust the volume level.
Bass: Increase or decrease bass by turning the control left or right.

Treble: Increase or decrease treble by turning the control left or right.
Balance: Adjust the audio between left and right speakers.
Fader: Adjust the audio between front and rear speakers.

3. **CLK:** Press to see the time or to set the clock.

To set the clock: Press and hold CLK to set the time. The display will flash indicating time setting mode is activated. Press ∨ to set the hour and ∧ to set the minute. (Press and hold ∨ or ∧ to change the numbers rapidly.) Once the time has been set, release CLK. If the time has not been stored in the radio, “SET” will be displayed.

4. **ALM:** Press and hold ALM to set the alarm. The display will flash indicating alarm time setting mode is activated. Press ∨ to set the hour and ∧ to set the minute. (Press and hold ∨ or ∧ to change the numbers rapidly.) Once the alarm time has been set, release ALM. If the alarm time has not been stored in the radio, “AM 12:00” will be displayed.

The alarm is turned on or off each time ALM is pressed. When the alarm is on, the alarm will sound for 90 seconds at the set alarm time. To turn the alarm off while it is sounding, press ALM.

You can also select alarm volume by selecting ALARM VOL 1 or ALARM VOL 2 when pressing ALM. The volume for ALARM VOL 2 is higher than ALARM VOL 1, which is the default setting.

5. ⏏ **:** Press to eject a CD. “EJ” will display while the disc is being ejected.

6. **CD door:** Insert a CD into the CD door. “LOAD” wil be diisplayed until the CD is fully loaded.

7. **MUTE:** Press to mute the playing media; press again to cancel. Press and hold for more than two seconds to enhance enhance bass and treble tones when listening at low or medium volume. Press and hold for more than two seconds to deactivate this feature when listening at higher volumes.

8. **TUNE** ∧ /∨ **:**

In radio mode: Press to manually go up or down the radio frequency.

In CD mode: Press once to go to the beginning of the current track; press twice to go to the previous next track.

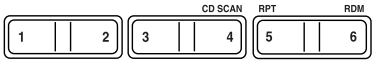
9. **SEEK^ /v :**

In radio mode: Press and hold for more than ½ second to have the radio automatically search for the next strongest radio station.

In CD mode: Press and hold for more than ½ second to actiavte fast forward or reverse. Release to resume normal CD play.

10. **SCAN:** Press SCAN and each station will be scanned sequentially and the display will blink for five seconds. Press SCAN again to stop scanning and the last station will continue to broadcast.

11. **Radio preset stations 1–6:** Press BAND to select the frequency band.



Automatic preset: Stores the strongest stations as stored by the SCAN function.
Manual preset: Press TUNE/SEEK to manually find a station to be stored and pressing and holding one of the preset station buttons until the display blinks once.

In CD mode: press preset 4 to hear the first 10 seconds of each CD track. Press preset 4 to select a track.
Press preset 5 to repeat the current CD track. Press again to turn the repeat function off.
Press preset 6 to randomly play tracks on the CD. Press again to play the CD tracks in order.

12. **MODE:** Switches between radio and CD.

13. **BAND:** Switches between AM, FM, FM2 and WB (Weather Band).
APM: Press BAND for more than two seconds to activate Auto Preset Memory; this will automatically store the six strongest stations into memory preset 1 through 6.

Note: During APM activity

- When APM is active, only FM2 is available for FM stations.
- APM does not work in Weather Band mode.
- When selecting APM, any existing preset stations will be erased in favor of the automatically selected stations.

14. If the radio does not respond when any of the buttons are pressed, press this reset using a small pointed object such as a pencil point, or similar object. Pressing the reset will erase all preset radio stations, clock and alarm settings. If resetting the radio does not restore normal oeration, have your vehicle inspected by your dealer or a qualified technician.

GENERAL AUDIO INFORMATION

Radio frequencies

AM and FM frequencies are established by the Federal Communications Commission (FCC) and the Canadian Radio and Telecommunications Commission (CRTC). Those frequencies are:

AM - 530, 540–1700, 1710 kHz

FM- 87.7, 87.9–107.7, 107.9 MHz

Radio reception factors

There are three factors that can effect radio reception:

- Distance/strength: The further you travel from an FM station, the weaker the signal and the weaker the reception.
- Terrain: Hills, mountains, tall buildings, power lines, electric fences, traffic lights and thunderstorms can interfere with your reception.
- Station overload: When you pass a broadcast tower, a stronger signal may overtake a weaker one and play while the weak station frequency is displayed.

Cassette/player care

Do:

- Use only cassettes that are 90 minutes long or less.

- Tighten very loose tapes by inserting a finger or pencil into the hole and turning the hub.
- Remove loose labels before inserting tapes.
- Allow tapes which have been subjected to extreme heat, humidity or cold to reach a moderate temperature before playing.
- Clean the cassette player head with a cassette cleaning cartridge after 10–12 hours of play to maintain good sound/operation.

Don't:

- Expose tapes to direct sunlight, extreme humidity, heat or cold.
- Leave tapes in the cassette player for a long time when not being played.

CD/CD player care

Do:

- Handle discs by their edges only. Never touch the playing surface.
- Inspect discs before playing. Clean only with an approved CD cleaner and wipe from the center out.

Don't:

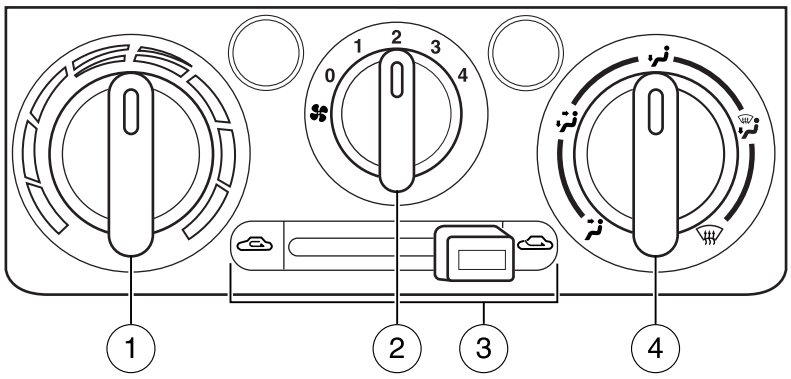
- Expose discs to direct sunlight or heat sources for extended periods of time.
- Clean using a circular motion.

CD units are designed to play commercially pressed 4.75 inch (12 cm) audio compact discs only. Due to technical incompatibility, certain recordable and re-recordable compact discs may not function correctly when used in Ford CD players. Irregular shaped CDs, CDs with a scratch protection film attached, and CDs with homemade paper (adhesive) labels should not be inserted into the CD player. The label may peel and cause the CD to become jammed. It is recommended that homemade CDs be identified with permanent felt tip marker rather than adhesive labels. Ball point pens may damage CDs. Please contact your dealer for further information.

Audio system warranty and service

Refer to the *Warranty Guide* for audio system warranty information. If service is necessary, see your dealer or qualified technician.

HEATER ONLY SYSTEM (IF EQUIPPED)



1. **Temperature selection:** Controls the temperature of the airflow in the vehicle.

2. **Fan speed adjustment:** Controls the volume of air circulated in the vehicle.

3. / **:** Used to manually enable or disable recirculated air operation. When activated (control moved all the way to the left), may help reduce undesired outside odors from reaching the interior of the vehicle. To reduce humidity inside the vehicle, turn off (control moved all the way to the right).

4. **Air flow selections:** Controls the direction of the airflow in the vehicle. See the following for a brief description on each control.

: Distributes outside air through the instrument panel vents.

: Distributes outside air through the instrument panel vents and the floor vents.

: Distributes outside air through the floor vents.

: Distributes outside air through the windshield defroster vents and floor vents.

: Distributes outside air through the windshield defroster vents.

Operating tips

- To reduce fog build up on the windshield during humid weather, place the air flow selector in the position.
- To reduce humidity build up inside the vehicle: do not drive with the recirculated air selector in the position.
- Under normal weather conditions, do not leave the recirculated air selector in when the vehicle is parked. This allows the vehicle to “breathe” using the outside air inlet vents.
- Remove any snow, ice or leaves from the air intake area at the base of the windshield.

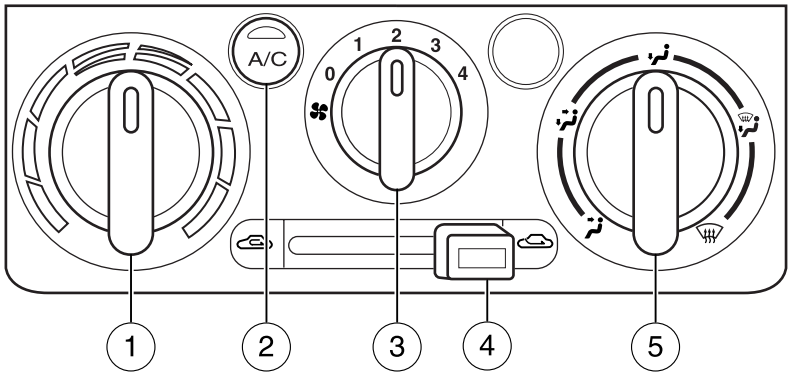
To aid in side window defogging/demisting in cold weather:

1. Select
2. Set the temperature control to full heat
3. Set the fan speed to its highest setting
4. Direct the outer instrument panel vents towards the side windows

To increase airflow to the outer instrument panel vents, close the vents located in the middle of the instrument panel.

Do not place objects on top of the instrument panel as these objects may become projectiles in a collision or sudden stop.

MANUAL HEATING AND AIR CONDITIONING SYSTEM (IF EQUIPPED)



1. **Temperature selection:** Controls the temperature of the airflow in the vehicle.

2. **A/C:** Uses outside air to cool the vehicle. Air flows from the instrument panel vents only.

3. **Fan speed adjustment:** Controls the volume of air circulated in the vehicle.

4. / **:** Used to manually enable or disable recirculated air operation. When activated (control moved all the way to the left), recirculates air in the cabin thereby reducing the amount of time to cool down the interior of the vehicle when used with the A/C control (air flows from the instrument panel vents only). May also help reduce undesired outside odors from reaching the interior of the vehicle. To reduce humidity inside the vehicle, turn recirculation off (control moved all the way to the right).

5. **Air flow selections:** Controls the direction of the airflow in the vehicle. See the following for a brief description on each control.

: Distributes outside air through the instrument panel vents.

: Distributes outside air through the instrument panel vents and the floor vents.

: Distributes outside air through the floor vents.

: Distributes outside air through the windshield defroster vents and floor vents.

: Distributes outside air through the windshield defroster vents.

Operating tips

- To reduce fog build up on the windshield during humid weather, place the air flow selector in the position.
- To reduce humidity build up inside the vehicle: do not drive with the recirculated air selector in the position.
- Under normal weather conditions, do not leave the recirculated air selector in when the vehicle is parked. This allows the vehicle to "breathe" using the outside air inlet vents.
- Remove any snow, ice or leaves from the air intake area at the base of the windshield.

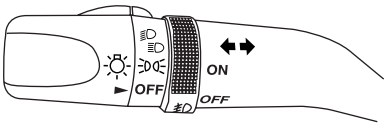
To aid in side window defogging/demisting in cold weather:

1. Select
2. Press A/C
3. Modulate the temperature control to maintain comfort.
4. Set the fan speed to its highest setting
5. Direct the outer instrument panel vents towards the side windows

To increase airflow to the outer instrument panel vents, close the vents located in the middle of the instrument panel.

Do not place objects on top of the instrument panel as these objects may become projectiles in a collision or sudden stop.

HEADLAMP CONTROL

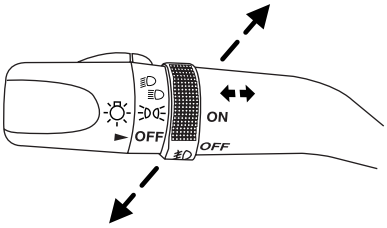


OFF: Turns the lamps off.

: Turns on the parking lamps, instrument panel lamps, license plate lamps and tail lamps.

: Turns the headlamps on.

High beams/Flash-to-pass



: To turn on the high beams, push the lever away from you. Pull the lever towards you to deactivate.

For flash-to-pass operation, pull the lever toward you slightly to activate and release to deactivate.

Daytime Running Lamps (DRL) (if equipped)

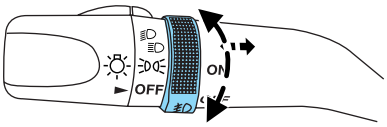
Turns the headlamps on with a reduced output.

To activate:

- the ignition must be in the ON position and
- the headlamp control is in the OFF or (parking lamp) position.

Always remember to turn on your headlamps at dusk or during inclement weather. The Daytime Running Lamp (DRL) system does not activate your tail lamps and generally may not provide adequate lighting during these conditions. Failure to activate your headlamps under these conditions may result in a collision.

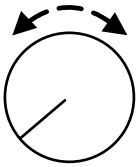
Fog lamps



Turn the ring on the headlamp control to turn the fog lamps on and off.

Note: The fog lamps will only operate with the low beam headlamps activated. When the highbeams are activated, the foglamps will not operate.

PANEL DIMMER CONTROL



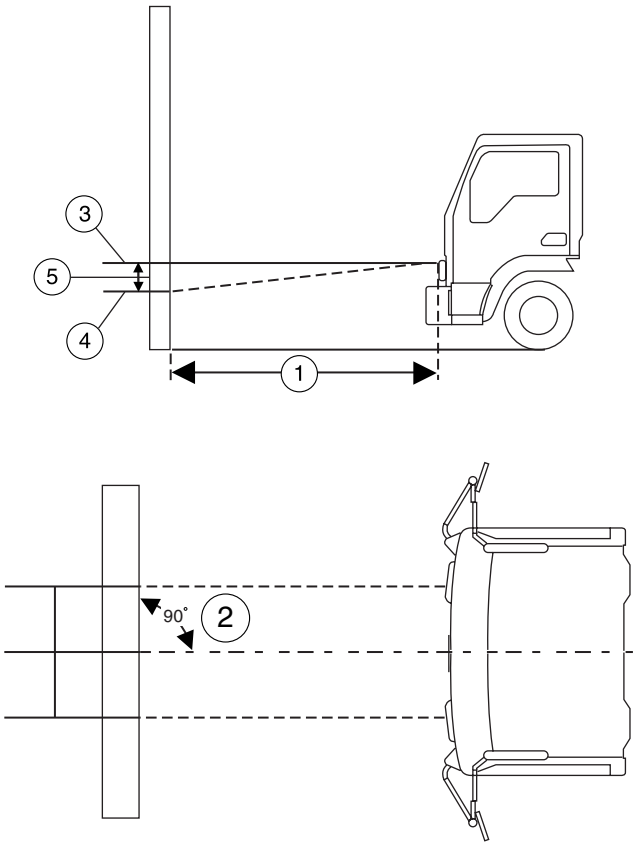
The panel dimmer control is located to the left of the steering wheel on the bottom edge of the instrument panel. Use the dimmer to adjust the brightness of the instrument panel and all applicable switches in the vehicle during headlamp and parklamp operation.

AIMING THE HEADLAMPS

Place the vehicle with the following conditions:

1. The area around the headlamp is not deformed.
2. The unloaded vehicle is parked on a flat level surface.
3. Tire inflation pressure is at the specified value.
4. The vehicle is in a state ready for driving (with a full tank of fuel, oil level, and coolant).
5. The vehicle has been bounced several times.

Checking headlamp aim



1. Prepare a thick white paper.
2. Stand the paper perpendicular to the ground at a position 9.84 ft. (3 m) (#1 in the illustration) away from the headlamps.
3. Ensure that the centerline of the vehicle and the paper face forms a 90° angle (#2 in the illustration).

4. Draw a horizontal line (#3 in the illustration) on the paper at the same height from ground as the headlamp bulb center, which is marked on the headlamp lens by a 2 mm x 2 mm square.

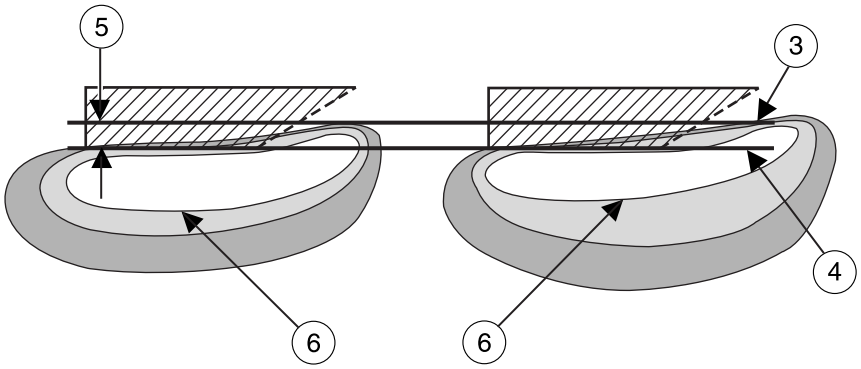
5. Draw a horizontal line (#4 in the illustration) parallel to the headlamp bulb center line (#3 in the illustration) but 0.82 inches (20.9 mm) (#5 in the illustration) below it.

6. Take appropriate measures to prevent any influence of other lights.

7. Start the engine.

8. Turn the low beam of the headlamps on.

9. On the paper, observe the portion of the light pattern with a distinct area of higher intensity light. Check that the top edge of this high intensity area is at the horizontal reference line (#4 in illustration) and below the cross-hatched area shown in the illustration. If it isn't, adjust the headlamps in the vertical direction.



Use this illustration to check the headlamp aim pattern as it should appear on the paper.

3. Horizontal line at headlamp bulb center.

4. Horizontal lines for headlamps, 0.82 inch (20.9 mm) below bulb center.

5. 0.82 inch (20.9 mm).

6. High intensity area of light pattern.

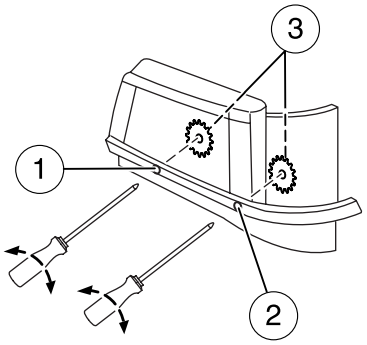
Adjusting the headlamp aim

IMPORTANT: Both the inboard and outboard vertical aim screws must be turned the same amount in the same direction. Do **NOT** turn the screws different amounts or in different directions.

Note: Do not finish the aiming procedure by turning the screws in the counterclockwise screwdriver direction. If you are adjusting in the counterclockwise screwdriver direction, overshoot the adjustment by one full turn and then turn the screwdriver clockwise one full turn, so you finish the adjustment in the clockwise direction and still line up with the vertical aiming line. This applies to both screws.

1. Use a #2 Phillips screwdriver with at least a six inch (150 mm) long shaft.

2. Insert the screwdriver in the inboard aiming hole (#1 in the illustration) until it engages the gear at the back of the headlamp (#3 in the illustration). **Always** start with the inboard aiming screw.



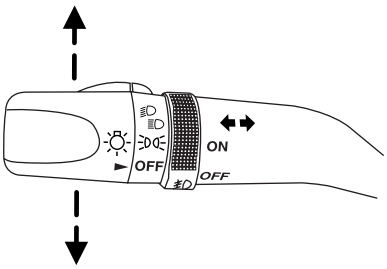
3. Turn the screwdriver in the counterclockwise direction to move the headlamp aim upward or in the clockwise direction to move the headlamp aim downward, **while counting the number of turns made.** Continue turning this screw until the vertical aim is properly adjusted, but make sure you finish in the clockwise screwdriver direction. If you are adjusting in the counterclockwise screwdriver movement, overshoot the adjustment by one full turn and then turn it clockwise one full turn, so you finish the adjustment in the clockwise direction and still line up with the vertical aiming line.

4. Insert the screwdriver in the outboard aiming hole (#2 in the illustration) until it engages the gear at the back of the headlamp (#3 in the illustration).

5. Turn the screwdriver the same number of turns in the same direction as was done in the inboard aiming hole, but make sure you finish in the clockwise screwdriver direction. If you are adjusting in the counterclockwise screwdriver direction overshoot the adjustment by one full turn and then turn it back one full turn, so you finish the adjustment in the clockwise direction and still line up with the vertical aiming line. **Do NOT turn this outboard screw in a different direction or a different amount than was done with the inboard aiming screw.**

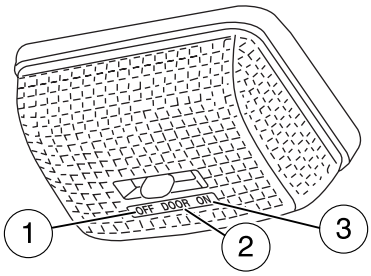
TURN SIGNAL CONTROL

- Push down to activate the left turn signal.
- Push up to activate the right turn signal.



INTERIOR LAMPS

1. **OFF:** Light always off.
2. **DOOR:** Light turns on when either door is open.
3. **ON:** Light always on.



BULB INSPECTION AND REPLACEMENT

Bulb inspection

It is a good safety practice to check operation of headlamps, parking lamps, turn signals, clearance and marker lamps, instrument panel and control lamps each day.

Using the right bulbs

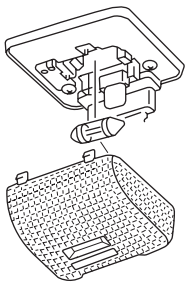
Function	Number of bulbs	Trade number
Headlamps	2	9007LL
Front turn signal lamps	2	1157NA
Front sidemarker/Park lamps	2	168

Function	Number of bulbs	Trade number
Front clearance and identification lamps	5	194
Fog lamps	2	64151
Rear turn signal lamps	2	Truck-lite 45201Y
Back-up lamps	2	Truck–lite 45202R
Rear stop/tail lamps	2	Truck–lite 45204
To replace all instrument panel lights - see your dealer		

Bulb replacement

Dome lamp

To replace the dome lamp, pull the lamp cover off by disengaging the tabs and pulling the cover down; pull the bulb down to remove it. Replace the bulb and cover.



Replacing headlamp and fog lamp bulbs

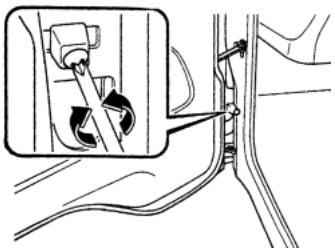
Handle a halogen headlamp bulb carefully and keep out of children's reach. Grasp the bulb only by its plastic base and do not touch the glass. The oil from your hand could cause the bulb to break the next time the headlamps are operated.

The headlamp and fog lamp bulbs can be replaced without removing the headlight assemblies, just by tilting the cab (refer to *Tilting the cab* in the *Maintenance and Specifications* chapter) and reaching in the back of the headlamp assemblies to remove the bulbs. If you find replacing the headlamp or fog lamp bulbs too difficult without removing the headlamp assemblies, see the following procedure.

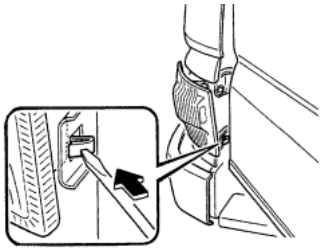
To remove the headlamp bulbs:

1. Make sure headlamp switch is in the OFF position.

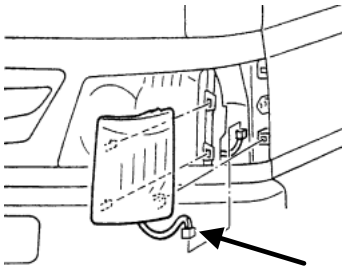
2. Open the door and, from inside the vehicle, remove the screw from the front turn signal/parking light assembly by inserting a screwdriver through the gap in the opened door.



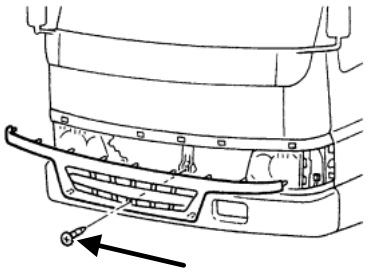
3. With the door still open, go around the door to the light assembly and insert a blunt object such as a screwdriver through the gap in the door and push the clip to release the front turn signal/parking lamp assembly.



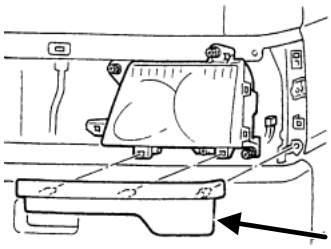
4. Detach the electrical connector from the assembly.



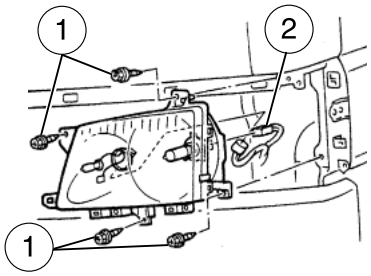
5. Remove the grille screw, then the grille.



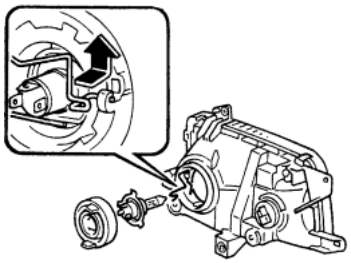
6. Remove the bezel from the vehicle.



7. Remove the screws (1) from the headlight, then disconnect the electrical connectors (2).



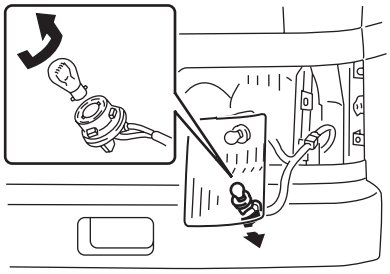
8. Pull off the sealing cover, unhook the bulb spring, then carefully remove the headlight bulb from the socket by pulling it straight back. Replace the bulb, then install the components in the reverse order of removal.



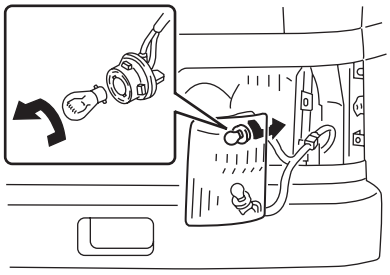
Replacing front parking lamp/turn signal lamps

To replace the front parking lamp/turn signal lamps, refer to Steps 1 through 3 in the *Replacing headlamp bulbs* procedure.

- Front parking lamp



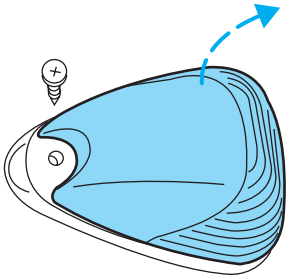
- Front turn signal lamp



Replacing front clearance and identification lamp bulbs

To change the cab marker bulbs:

1. Make sure the headlamp control is in the OFF position and then remove the screw and lens from the lamp assembly.

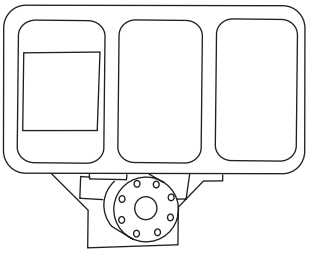


2. Carefully pull the bulb straight out of the socket and push in the new bulb.

3. Install lens on lamp assembly with screw.

Replacing brake/tail/rear turn signal/back-up lamp bulbs

The brake/tail/turn signal/back-up lamp bulbs are located in the same portion of the rear lamp assembly. Follow the same steps to replace any of these bulbs:

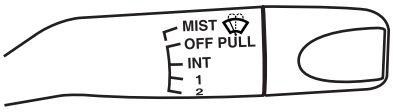


1. Make sure the headlamp and turn signal controls are in the OFF position and then remove the trim cover around the bulb to be replaced.

2. Carefully pull the bulb out, unplug the bulb and plug in the new bulb.

3. Install the trim cover on the lamp assembly.

WINDSHIELD WIPER/WASHER CONTROLS



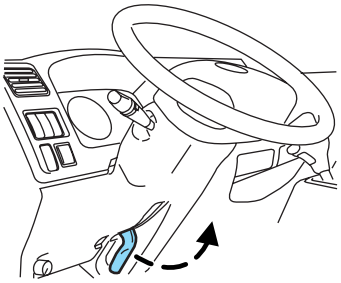
- **MIST:** For a single wipe (without washer), push the control up once.
- **OFF:** Wipers off.
- **INT:** Interval wiper operation.
- **1:** Low-speed wiper operation.
- **2:** High-speed wiper operation

: Pull the control toward you to activate washer. Pull and hold for a longer wash cycle.

Note: Do not operate the washer for more than 10 seconds as damage to the washer motor may occur.

TILT/TELESCOPE STEERING

Pull the tilt steering control toward you to move the steering wheel up or down, or to push/pull the steering wheel toward/away from you. Push the control back down fully to lock the steering wheel in position.



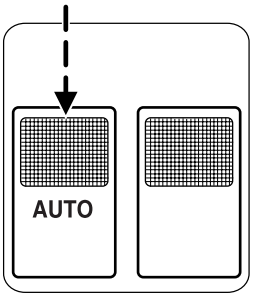
Never adjust the steering wheel when the vehicle is moving.

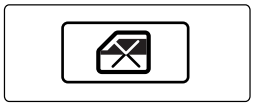
POWER WINDOWS (IF EQUIPPED)

Do not leave children unattended in the vehicle and do not let children play with the power windows. They may seriously injure themselves.

When closing the power windows, you should verify they are free of obstructions and ensure that children and/or pets are not in the proximity of the window openings.

- Push the switches down to open the windows and pull the switches up to close the windows.
- **One-touch down driver's window:** To open the driver window without holding the control, press the control marked AUTO completely down and release quickly. The driver's window will open fully. To stop the window partway down, pull the control up, then release it.





Window lock (if equipped)

The window lock feature prevents the power windows from operating for both driver and passenger.

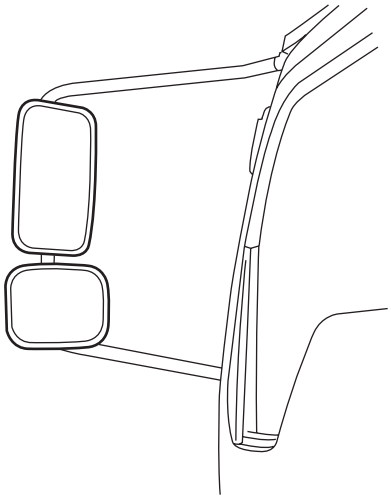
To prevent power window operation, press the control down. Press the control again to restore the window controls.

MIRRORS

With the doors closed, move the mirrors to maximize rear viewing area by adjusting the mirrors left or right as required.

Adjust the auxiliary convex mirrors. Convex mirrors are a ball-stud design for precise adjustment to maximize viewing area.

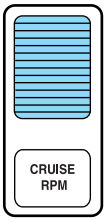
The mirror arms can be manually folded forward or backwards for narrow spaces like driving through an automatic car wash or backing out of a garage with the trailer tow mirror. The mirrors also can be folded forward, in front of the vehicle, to fit within the cab width.



SPEED CONTROL (IF EQUIPPED)

To turn speed control on

Press the top portion of the control. If the vehicle is moving, speed control will be enabled; if the vehicle is stationary, engine RPM can be controlled.



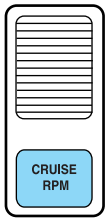
Do not use the speed control in heavy traffic or on roads that are winding, slippery, or unpaved.

Do not shift the gearshift lever into N (Neutral) with the speed control on.

To turn speed control off

Press CRUISE RPM or turn off the ignition.

Once speed control is switched off, the previously programmed engine RPM will be erased.

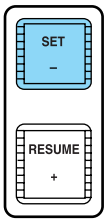


Do not use the speed control in heavy traffic or on roads that are winding, slippery, or unpaved.

To set a speed

Turn the speed control on.

Press SET -. If the vehicle is moving, this will set the vehicle speed. If the vehicle is stationary, this will set the vehicle idle RPM.



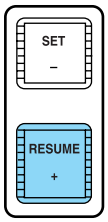
If you drive up or down a steep hill, your vehicle speed may vary momentarily slower or faster than the set speed; this is normal.

Speed control cannot reduce the vehicle speed if it increases above the set speed on a downhill. If your vehicle speed is faster than the set speed while driving on a downhill, you may want to shift to the next lower gear or apply the brakes to reduce your vehicle speed.

If the vehicle speed falls below 35 mph (56 km/h) or engine RPM falls below 1,000 RPM, your speed control will disengage; this is normal. Pressing RESUME + will re-engage it.

Do not use the speed control in heavy traffic or on roads that are winding, slippery, or unpaved.

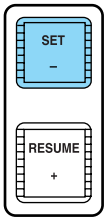
To set a higher set speed



Press and hold RESUME +. If the vehicle is moving, this will increase vehicle speed; if the vehicle is stationary, this will increase engine RPM. Release the control when the desired vehicle speed/engine RPM is reached.

Press and release RESUME + to operate the tap-up function. Each press will increase the set speed by 1 mph (1.6 km/h) or engine RPM in idle mode.

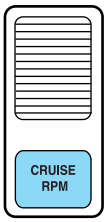
To set a lower set speed



Press and hold SET -. If the vehicle is moving, this will decrease vehicle speed; if the vehicle is stationary, this will decrease engine RPM. Release the control when the desired vehicle speed/engine RPM is reached.

Press and release SET - to operate the tap-down function. Each press will decrease the set speed in increments of 1 mph (1.6 km/h) or engine RPM in idle mode.

To disengage speed control

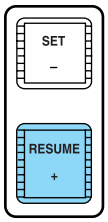


Depress the brake pedal or press CRUISE RPM. Disengaging the speed control will not erase the previously programmed set speed or engine RPM.

Turning off the ignition will erase the previously programmed set speed or engine RPM.

To return to a previously set speed

Press RESUME +. For RESUME + to operate, the vehicle speed must be above 35 mph (56 km/h) or engine speed must be above 1,000 RPM.



KEYS

The key operates all locks on your vehicle. In case of loss, replacement keys are available from your dealer.

You should always carry a second key with you in a safe place in case you require it in an emergency.

POWER DOOR LOCKS (IF EQUIPPED)

Both doors lock and unlock automatically when the driver's door is locked or unlocked with a key.

Both doors lock automatically when the driver's door lock button is pushed down and unlock when it is pulled up.

REMOTE ENTRY SYSTEM (IF EQUIPPED)

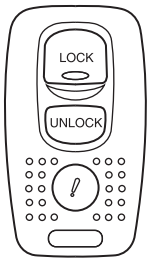
This device complies with part 15 of the FCC rules and with RS-210 of Industry Canada. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The typical operating range for your remote entry transmitter is approximately 33 feet (10 meters). A decrease in operating range could be caused by:

- weather conditions,
- nearby radio towers,
- structures around the vehicle, or
- other vehicles parked next to your vehicle.

Your vehicle has an all-door remote entry system.



The all-door remote entry system allows you to:

- lock or unlock both vehicle doors without a key.
- activate the panic alarm.

The remote entry features only operate with the ignition in the 1 (LOCK) position.

If there are problems with the remote entry system, make sure to take **ALL remote entry transmitters** with you to the dealership in order to aid in troubleshooting the problem.

Unlocking the doors

1. Press UNLOCK to unlock the driver's door.
2. Press UNLOCK again within three seconds to unlock both doors.

Note: The vehicle doors may be unlocked by using the remote entry transmitter, however, in the event of a low battery charge, the door can be manually unlocked and opened by inserting the key into the driver's door lock cylinder and turning counter clockwise.

Locking the doors

Press LOCK once to lock both doors. Pressing LOCK a second time will sound the horn to confirm the doors are locked.

Sounding a panic alarm

Press "!" to activate the alarm. Press "!" again, or turn the ignition to the 3 (ON) position to deactivate.

Note: The panic alarm will only operate when the ignition is in the 1 (LOCK) position.

Replacing the battery

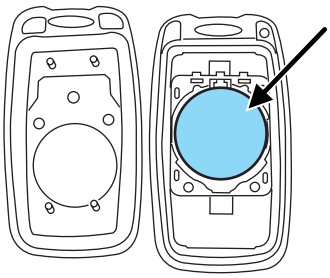
The remote entry transmitter uses one button type three-volt lithium battery CR2025 or equivalent.

To replace the battery:

1. Twist a thin coin between the two halves of the remote entry transmitter near the key ring. DO NOT TAKE THE RUBBER COVER AND CIRCUIT BOARD OFF THE FRONT HOUSING OF THE REMOTE ENTRY TRANSMITTER.

2. Do not wipe off any grease on the battery terminals on the back surface of the circuit board.

3. Remove the old battery. **Note:** Please refer to local regulations when disposing of transmitter batteries.



4. Insert the new battery. Refer to the diagram inside the remote entry transmitter for the correct orientation of the battery. Press the battery down to ensure that the battery is fully seated in the battery housing cavity.

5. Snap the two halves back together.

Note: Replacement of the battery will **not** cause the remote transmitter to become deprogrammed from your vehicle. The remote transmitter should operate normally after battery replacement.

Replacing lost remote entry transmitters

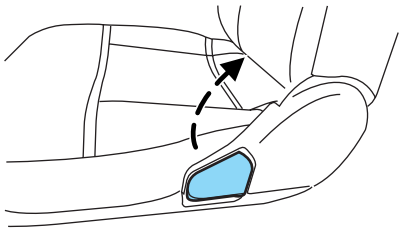
If you would like to have your remote entry transmitter reprogrammed because you lost one, or would like to buy additional remote entry transmitters, take **all remote entry transmitters** to your authorized dealer for reprogramming.

SEATING

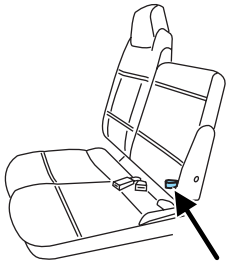
40/20/40 split bench seat

The driver seat can be adjusted forward or backward by lifting the lever located under the seat.

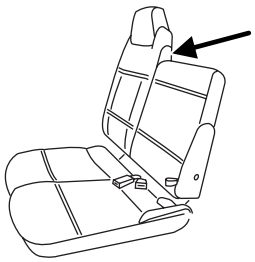
Pull the lever to flip the driver seat forward. When pushing the seat back to its upright position, make sure it latches securely.



Pull the center seat down while pulling the loop to flip the seat down. When pushing the seat back to its upright position, make sure it latches securely.



Pull the right-hand passenger seatback down while pulling the latch handle to flip the seatback down flat. When pushing the seatback to its upright position, make sure it latches securely.



Before returning the seatback to its original position, make sure that cargo or any objects are not trapped underneath the seatback. After returning the seatback to its original position, pull on the seatback to ensure that it has fully latched. An unlatched seat may become dangerous in the event of a sudden stop or collision.

SAFETY RESTRAINTS

Safety restraints precautions

Always drive and ride with your seatback upright and the lap belt snug and low across the hips.

To reduce the risk of injury, make sure children sit where they can be properly restrained.

All occupants of the vehicle, including the driver, should always properly wear their safety belts.

Never let a passenger hold a child on his or her lap while the vehicle is moving. The passenger cannot protect the child from injury in a collision.

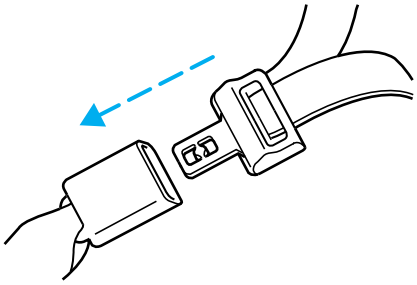
It is extremely dangerous to ride in a cargo area, inside or outside of a vehicle. In a collision, people riding in these areas are more likely to be seriously injured or killed. Do not allow people to ride in any area of your vehicle that is not equipped with seats and safety belts. Be sure everyone in your vehicle is in a seat and using a safety belt properly.

In a rollover crash, an unbelted person is significantly more likely to die than a person wearing a safety belt.

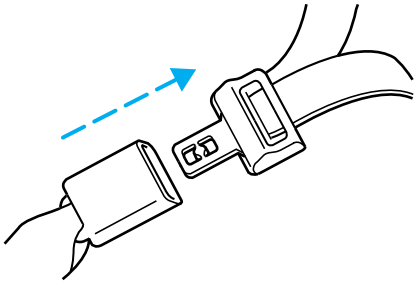
Each seating position in your vehicle has a specific safety belt assembly which is made up of one buckle and one tongue that are designed to be used as a pair. 1) Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. 2) Never swing the safety belt around your neck over the inside shoulder. 3) Never use a single belt for more than one person.

Combination lap and shoulder belts

1. Insert the belt tongue into the proper buckle (the buckle closest to the direction the tongue is coming from) until you hear a snap and feel it latch. Make sure the tongue is securely fastened in the buckle.



2. To unfasten, push the release button and remove the tongue from the buckle.



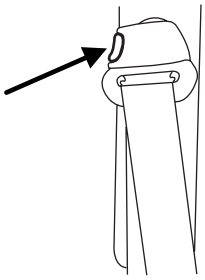
The front outboard safety restraints in the vehicle are combination lap and shoulder belts. The passenger outboard safety belt has vehicle sensitive emergency locking retractors.

Vehicle sensitive retractor

The vehicle sensitive retractor allows free shoulder belt length adjustment to your movements and locks in response to vehicle

movement. For example, if the driver brakes suddenly or turns a corner sharply, or the vehicle receives an impact of approximately 5 mph (8 km/h) or more, the combination safety belts will lock to help reduce forward movement of the driver and passengers.

Front safety belt height adjustment



Vehicles have safety belt height adjustments for the driver. Adjust the height of the shoulder belt so the belt rests across the middle of your shoulder.

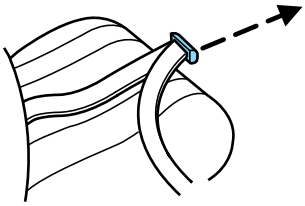
To lower the shoulder belt height, push the button and slide the height adjuster down. To raise the height of the shoulder belt, slide the height adjuster up. Pull down on the height adjuster to make sure it is locked in place.

Position the safety belt height adjuster so that the belt rests across the middle of your shoulder. Failure to adjust the safety belt properly could reduce the effectiveness of the seat belt and increase the risk of injury in a collision.

Lap belts

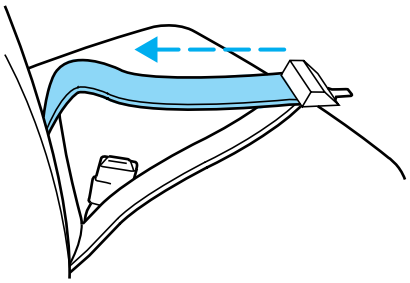
The front center lap belt does not adjust automatically.

The lap belt should fit snugly and as low as possible around the hips, not across the waist.



Insert the tongue into the correct buckle (the buckle closest to the direction the tongue is coming from). To lengthen the belt, turn the tongue at a right angle to the belt and pull across your lap until it reaches the buckle. To tighten the belt, pull the loose end of the belt through the tongue until it fits snugly across the hips.

Shorten and fasten the belt when not in use.



Safety belt warning light and indicator chime

The safety belt warning light illuminates in the instrument cluster and a chime sounds to remind the occupants to fasten their safety belts.

Conditions of operation

If...	Then...
The driver's safety belt is not buckled before the ignition switch is turned to the ON position...	The safety belt warning light illuminates and the warning chime sounds 4-8 seconds.
The driver's safety belt is buckled while the indicator light is illuminated and the warning chime is sounding...	The safety belt warning light and warning chime turn off.
The driver's safety belt is buckled before the ignition switch is turned to the ON position...	The safety belt warning light and indicator chime remain off.

Safety belt extension assembly

If the safety belt is too short when fully extended, there is an eight inch (20 cm) safety belt extension assembly that can be added (part number 611C22). This assembly can be obtained from your dealer at no cost.

Use only extensions manufactured by the same supplier as the safety belt. Manufacturer identification is located at the end of the webbing on the label. Also, use the safety belt extension only if the safety belt is too short for you when fully extended.

Do not use extensions to change the fit of the shoulder belt across the torso.

Safety belt maintenance

Inspect the safety belt systems periodically to make sure they work properly and are not damaged. Inspect the safety belts to make sure there are no nicks, tears or cuts. Replace if necessary. All safety belt assemblies, including retractors, buckles, front seat belt buckle assemblies, buckle support assemblies (slide bar-if equipped), shoulder belt height adjusters (if equipped), shoulder belt guide on seatback (if equipped), child safety seat tether anchors, and attaching hardware, should be inspected after a collision.

Ford Motor Company recommends that all safety belt assemblies used in vehicles involved in a collision be inspected for proper function and replaced, if necessary. Safety belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.

Failure to inspect and if necessary replace the safety belt assembly under the above conditions could result in severe personal injuries in the event of a collision.

Refer to *Interior* in the *Cleaning* chapter.

SAFETY RESTRAINTS FOR CHILDREN

Important child restraint precautions

You are required by law to use safety restraints for children in the U.S. and Canada. If small children (generally children who are four years old or younger and who weigh 40 lb. [18 kg] or less) ride in your vehicle, you must put them in safety seats made especially for children. Many states require that children use approved booster seats until they are eight years old. Check your local and state or provincial laws for specific requirements regarding the safety of children in your vehicle.

Never let a passenger hold a child on his or her lap while the vehicle is moving. The passenger cannot protect the child from injury in a collision.

Always follow the instructions and warnings that come with any infant or child restraint you might use.

Children and safety belts

If the child is the proper size, restrain the child in a safety seat.

Children who are too large for child safety seats (as specified by your child safety seat manufacturer) should always wear safety belts.

Follow all the important safety restraint precautions that apply to adult passengers in your vehicle.

If the shoulder belt portion of a combination lap and shoulder belt can be positioned so it does not cross or rest in front of the child's face or neck, the child should wear the lap and shoulder belt. Moving the child closer to the center of the vehicle may help provide a good shoulder belt fit.

Do not leave children, unreliable adults, or pets unattended in your vehicle.

Safety belts and seats can become hot in a vehicle that has been closed up in sunny weather; they could burn a small child. Check seat covers and buckles before you place a child anywhere near them.

Child booster seats

Children outgrow a typical convertible or toddler seat when they weigh 40 pounds and are around 4 years of age. Although the lap/shoulder belt will provide some protection, these children are still too small for lap/shoulder belts to fit properly, which could increase the risk of serious injury.

To improve the fit of both the lap and shoulder belt on children who have outgrown child safety seats, Ford Motor Company recommends use of a belt-positioning booster.

Booster seats position a child so that safety belts fit better. They lift the child up so that the lap belt rests low across the hips and the knees bend comfortably. Booster seats also make the shoulder belt fit better and more comfortably for growing children.

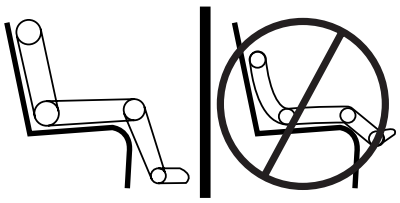
When children should use booster seats

Children need to use booster seats from the time they outgrow the toddler seat until they are big enough for the vehicle seat and

lap/shoulder belt to fit properly. Generally this is when they weigh about 80 lb. (36 kg) (about 8 to 12 years old).

Booster seats should be used until you can answer YES to ALL of these questions:

- Can the child sit all the way back against the vehicle seat back with knees bent comfortably at the edge of the seat without slouching?



- Does the lap belt rest low across the hips?
- Is the shoulder belt centered on the shoulder and chest?
- Can the child stay seated like this for the whole trip?

Types of booster seats

There are two types of belt-positioning booster seats:

- Those that are backless.

If your backless booster seat has a removable shield, remove the shield and use the lap/shoulder belt. If a seating position has a low seat back and no head restraint, a backless booster seat may place your child's head (top of ear level) above the top of the seat. In this case, move the backless booster to another seating position with a higher seat back and lap/shoulder belts.

- Those with a high back.

  If, with a backless booster seat, you cannot find a seating position that adequately supports your child's head, a high back booster seat would be a better choice.

Both can be used in any vehicle in a seating position equipped with lap/shoulder belts if your child is over 40 lbs (18 kg).

The shoulder belt should cross the chest, resting snugly on the center of the shoulder. The lap belt should rest low and snug across the hips, never up high across the stomach.

If the booster seat slides on the vehicle seat, placing a rubberized mesh sold as shelf or carpet liner under the booster seat may improve this condition.

The importance of shoulder belts

Using a booster without a shoulder belt increases the risk of a child's head hitting a hard surface in a collision. For this reason, you should never use a booster seat with a lap belt only. It is best to use a booster seat with lap/shoulder belts in the back seat- the safest place for children to ride.

Follow all instructions provided by the manufacturer of the booster seat.

Never put the shoulder belt under a child's arm or behind the back because it eliminates the protection for the upper part of the body and may increase the risk of injury or death in a collision.

Never use pillows, books, or towels to boost a child. They can slide around and increase the likelihood of injury or death in a collision.

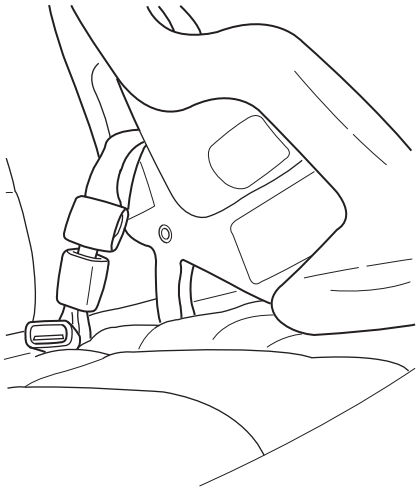
SAFETY SEATS FOR CHILDREN

Child and infant or child safety seats

Use a safety seat that is recommended for the size and weight of the child. Carefully follow all of the manufacturer's instructions with the safety seat you put in your vehicle. If you do not install and use the safety seat properly, the child may be injured in a sudden stop or collision.

When installing a child safety seat:

- Use the correct safety belt buckle for that seating position.
- Insert the belt tongue into the proper buckle until you hear a snap and feel it latch. Make sure the tongue is securely fastened in the buckle.
- Keep the buckle release button pointing up and away from the safety seat, with the tongue between the child seat and the release button, to prevent accidental unbuckling.

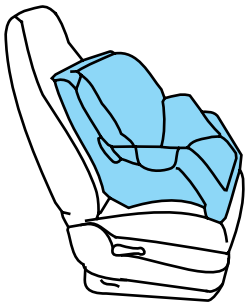


- Place seat back in upright position.

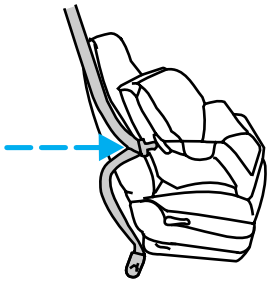
Carefully follow all of the manufacturer's instructions included with the safety seat you put in your vehicle. If you do not install and use the safety seat properly, the child may be injured in a sudden stop or collision.

Installing child safety seats with combination lap and shoulder belts

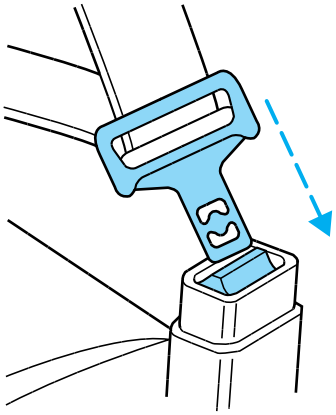
1. Position the child safety seat in a seat with a combination lap and shoulder belt.



2. While holding the shoulder and lap belt portions together, route the tongue through the child seat according to the child seat manufacturer's instructions. Be sure the belt webbing is not twisted.

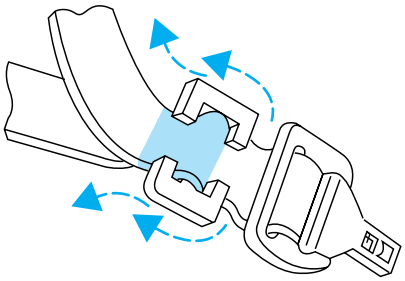


3. Buckle the seat belt. Push down on the child seat and pull on the shoulder portion of the belt to snug the lap belt. Hold the lap and shoulder belts next to the tongue and unbuckle the belt.



4. Install a locking clip over both lap and shoulder belt portions next to the sliding tongue. Buckle the belt.

Note: Obtain the locking clip kit (part number FO3Z-5461248–A) at no charge from an authorized Ford or Lincoln Mercury dealer.



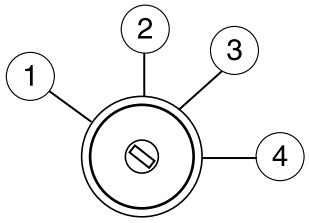
5. Before placing the child in the seat, forcibly tilt the seat forward and back to make sure the seat is securely held in place. To check this, grab the seat at the belt path and attempt to move it side to side and forward and back. There should be no more than one inch of movement for proper installation.

6. If the child seat is not tight enough, unbuckle the seat belt, move the tongue and locking clip to shorten the lap portion and push down hard on the child seat while you buckle the belt.

7. Check to make sure the child seat is properly secured before each use.

STARTING

Positions of the ignition



1. LOCK, shuts off the engine and all accessories, locks the steering wheel, gearshift lever and allows key removal.

2. ACC, allows the electrical accessories such as the radio to operate while the engine is not running. This position also unlocks the steering wheel.

3. ON, all electrical circuits operational. Warning lights illuminated. Key position when driving.

4. START, cranks the engine. Release the key as soon as the engine starts.

Starting the engine

Diesel engine vapors are combustible. Do not operate the engine in an enclosed area. These vapors can be sucked through the air intake system and cause an explosion which may result in severe bodily injury and extensive property damage.

Note: When starting the engine, do not press the accelerator as engine damage may result.

1. Ensure headlamps and all accessories are turned off, the parking brake is applied and the transmission is in the P (Park) position.

2. Turn the key to ON, but do not start the engine. In cooler weather, the air intake heater may activate the WAIT TO START light in the instrument cluster.

If the WAIT TO START light illuminates, **do not** crank the engine until the light goes off.

If equipped with an air intake heater, DO NOT use ether or any other starting fluids. The use of starting fluids (ether) in an engine equipped with an air intake heater could cause an explosion and result in property damage and/or personal injury.

3. When the WAIT TO START light turns off, turn the key to START; when the engine starts, release the key

If the engine does not start within 20 seconds of cranking, release the key and allow two or three minutes for the starter to cool before trying again. Excessive cranking may damage the starter and/or engine.

After the engine starts:

- Idle the engine for at least five minutes before operating with a full load.
- Try to limit engine idle to 10 minutes. Excessive idling reduces fuel economy.
- When starting a cold engine, increase the engine speed (RPM) slowly to make sure adequate lubrication is available to the bearings.

Cold weather operation

Do not use volatile starting aids such as ether, propane or gasoline in the engine air intake system. Glow plugs may ignite vapors which can cause engine damage or personal injury.

In order to operate the engine in temperatures of 32°F (0°C) or lower, read the following instructions:

- Make sure that the batteries are of sufficient size and are fully charged. Check other electrical components to make sure they're in optimum condition.
- Use a permanent-type engine coolant solution to protect the engine against damage from freezing.
- Drain the fuel/water separator daily; refer to *Draining the fuel filter/water separator* in the *Maintenance and Specifications* chapter. Fill the fuel tank at the end of daily operation to prevent condensation in the fuel system.
- Make sure you use proper cold weather engine oil and that it is at its proper level.
- At temperatures of –4°F (–20°C) or below, it is recommended that you use an engine block heater to improve cold engine starting.
- If operating in arctic temperatures of –20°F (–29°C) or lower, consult your truck dealer for information about special cold weather equipment and precautions.

Note: Idling in cold weather will not heat the engine to its normal operating temperature. Long periods of idling in cold weather can cause a buildup of heavy deposits of carbon and rust on valve stems causing them to stick which, in turn, can cause valvetrain damage.

The following cold weather idling guidelines must be followed:

- Avoid idling the engine for more than 10 minutes at a time.
- Use a minimum of 42 Cetane Diesel fuel or use Cetane Index improvers from a reputable manufacturer.
- Maintain the engine cooling system properly.
- Do not shut the engine down after an extensive idling period (10 minutes or more). Drive the vehicle under load for several miles at normal operating temperatures to burn off any accumulated carbon and varnish.

Hot weather operation

- Keep the engine cooling system filled with a clean, permanent coolant solution to protect against damage from overheating.
- Fill the fuel tank at the end of daily operation to prevent condensation in the fuel system.
- Keep external surfaces of the engine, radiator, charge air cooler, A/C condenser and accessories clean to avoid dirt build-up.

Restarting after running out of fuel

The fuel system may need to be purged of air, refer to *Running out of fuel* in the *Maintenance and Specifications* chapter.

GENERAL OPERATING INSTRUCTIONS

- Accelerate smoothly and evenly; rapid acceleration increases fuel consumption without increasing engine performance.
- When approaching a hill, depress the accelerator smoothly to start the incline at full power, then shift down as needed to maintain vehicle speed.
- When going down a hill, or long steep grades, prevent over-speeding of the engine. The engine governor has no control over engine speed when it is being pushed by a loaded vehicle.

All vehicles have blind spots. To reduce the risk of severe injury or property damage, never move your vehicle to the side or rear or change lanes without being sure your way is clear on both sides and to your rear.

Backing up/Electric back-up alarm

To reduce the risk of the possibility of personal injury while backing the vehicle, always be sure your vehicle's path is clear.

Before backing your vehicle, be sure you can do so safely. If anything behind the cab limits your view, do not rely on mirrors alone to ensure that your intended path is clear. If other people are in the vicinity, have someone standing well behind your vehicle and outside of your intended path (visible through an exterior mirror) guide you as you back up.

Although OSHA or some governmental regulations may require the use of an electrical or mechanical back-up alarm to warn bystanders, such an alarm does not ensure that the intended path is clear. When in doubt, get out of the vehicle and visually check the intended path is clear; back up slowly as to allow others time to move, if necessary.

Parking your vehicle

Always use the parking brake. When parking on a grade, block the wheels and turn the front wheels to one side so that if the vehicle rolls, the front tires will act against the curb to stop the vehicle. The front wheels will be more effective at stopping a rolling vehicle than the rear wheels.

Driving through water

If driving through deep or standing water is unavoidable, proceed very slowly especially if the depth is not known. Never drive through water that is higher than the bottom of the hubs. Traction or brake capability may be limited and your vehicle may stall. Water may also enter your engine's air intake and severely damage your engine, rear axle or transmission (through the breather ports). If the transmission is submerged in water, the transmission fluid should be checked and changed, if necessary. Driving through deep water may damage the transmission

Once through the water, always dry the brakes by moving your vehicle slowly while applying light pressure on the brake pedal. Wet brakes do not stop the vehicle as quickly as dry brakes.

BRAKES

Your service brakes are self-adjusting. Refer to the *Scheduled Maintenance Guide* chapter for scheduled maintenance.

Occasional brake noise is normal and often does not indicate a performance concern with the brake system. In normal operation, brake systems may emit occasional or intermittent squeal or groan noises when the brakes are applied. Such noises are usually heard during the first few brake applications in the morning; however, they may be heard at any time while braking and can be aggravated by environmental conditions such as cold, heat, moisture, road dust, salt or mud. If a "metal-to-metal," "continuous grinding" or "continuous squeal" sound is present while braking, the brake linings may be worn-out and should be inspected by a qualified service technician.

If you are driving down a long or steep hill, shift to a lower gear. Do not apply your brakes continuously, as they may overheat and become less effective.

If brakes do not grip well

- If you have been driving through deep water, gently apply the brakes several times while the vehicle is moving slowly.
- Let the brakes cool if you have been using them excessively, as in mountain driving or after several fast, high-speed stops.
- Check brake linings for excessive wear.

Hydraulic brake booster system (HydroBoost)

The HydroBoost systems receive fluid pressure from the power steering pump to provide power assist during braking.

The HydroBoost booster includes a pneumatic accumulator that holds a reserve of power steering fluid under pressure that will provide two or more power-assisted brake applications in the event of power steering fluid pressure loss. The accumulator will also deliver a limited number of power-assisted brake applications when the engine is off.

The HydroBoost's accumulator reserve provides reduced braking power, and the number of stops is limited (depending on the severity and duration of the brake applications), so the vehicle should be operated under these conditions with caution, and only to seek service repair and remove the vehicle from the roadway.

Under normal operating conditions, noise of the fluid flowing through the booster may be heard whenever the brake is applied. This is normal and should be no reason for concern.

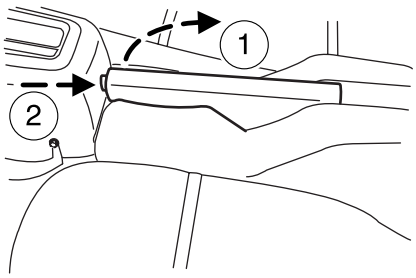
If braking performance or pedal response becomes very poor, even when the pedal is strongly applied, this may indicate the presence of air in the hydraulic system or fluid leakage. Safely stop the vehicle as soon as possible and seek service immediately.

If the brake fluid warning light in the instrument cluster remains illuminated after engine start-up, and an audible tone is heard while the light is illuminated, this indicates a system failure in the brake system. Stop the vehicle as soon as safely possible and seek service immediately.

BRAKE FLUID

Parking brake

Apply the parking brake whenever the vehicle is parked. To set the parking brake, pull the handle (1) up until it stops.



Always set the parking brake fully and make sure that the transmission is securely latched in P (Park).

To release the parking brake, pull the handle up slightly, push the button (2) on the end of the handle, then push the handle down to its original position. Driving with the parking brake on will cause the brakes to wear out quickly and reduce fuel economy.

The parking brake warning light in the instrument cluster illuminates, and remains illuminated (when the ignition is turned on), until the parking brake is released.

PARK (P)

If the parking brake is fully released, but the parking brake warning lamp remains illuminated, the brakes may not be working properly. See your dealer or a qualified service technician.

The parking brake is not recommended to stop a moving vehicle. However, if the normal brakes fail, the parking brake can be used to stop your vehicle in an emergency. Since the parking brake only applies

braking power to the rear wheels, the vehicle's stopping distance will increase greatly and the handling of your vehicle will be adversely affected.

ANTI-LOCK BRAKE SYSTEM (ABS)

Your vehicle is equipped with an Anti-lock Braking System (ABS). This system helps you maintain steering control during emergency stops by keeping the brakes from locking. Noise from the ABS pump motor and brake pedal pulsation may be observed during ABS braking and the brake pedal may suddenly travel a little further as soon as ABS braking is done and normal brake operation resumes. These are normal characteristics of the ABS and should be no reason for concern.

Using ABS

When hard braking is required, apply continuous force on the brake pedal; do not pump the brake pedal since this will reduce the effectiveness of the ABS and will increase your vehicle's stopping distance. The ABS will be activated immediately, allowing you to retain full steering control during hard braking and on slippery surfaces.

ABS warning lamp

The ABS lamp in the instrument cluster momentarily illuminates when the ignition is turned on. If the light does not illuminate during start up, remains on or flashes, the ABS may be disabled and may need to be serviced.

Even when the ABS is disabled, normal braking is still effective. (If your BRAKE FLUID warning lamp illuminates, have your brake system serviced immediately.)

AUTOMATIC TRANSMISSION

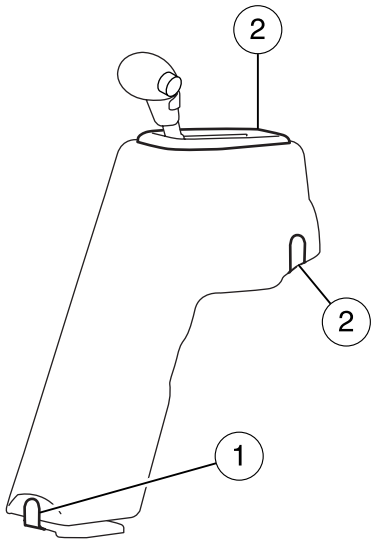
Brake-shift interlock

This vehicle is equipped with a brake-shift interlock feature that prevents the gearshift lever from being moved from P (Park) when the ignition is in the ON position unless brake pedal is depressed.

If you cannot move the gearshift lever out of P (Park) with ignition in the ON position and the brake pedal depressed:

1. Apply the parking brake, turn ignition key to LOCK, then remove the key.

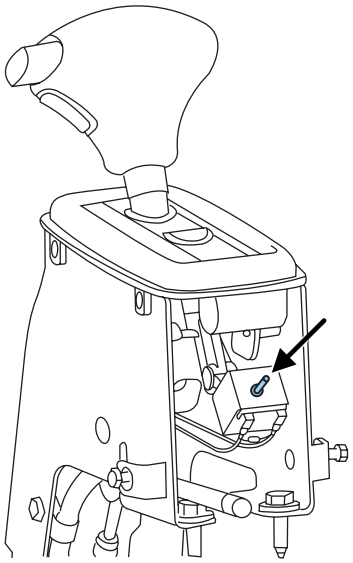
2. Remove the three fasteners as shown in the illustration; there is one at the bottom of the gearshift console and one on both sides of the console.



Note: You may need to roll back the floor cover to access the bottom fastener.

3. Remove the shifter shroud, then depress the override mechnism as shown in the illustration.

4. While depressing the override mechnism, **apply the brake pedal and shift to N (Neutral).**



5. Start the vehicle.

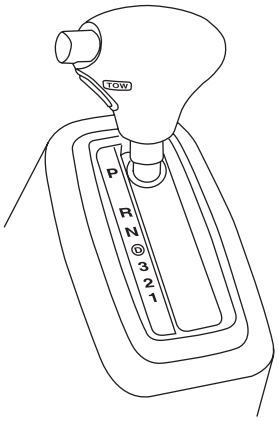
If it is necessary to use the above procedure to move the gearshift lever, it is possible that a fuse has blown or the vehicle's brakelamps are not operating properly. Refer to *Fuses* in the *Roadside Emergencies* chapter.

Do not drive your vehicle until you verify that the brakelamps are working.

Always set the parking brake fully and make sure the gearshift is latched in P (Park). Turn the ignition to the LOCK position and remove the key whenever you leave your vehicle.

If the parking brake is fully released, but the brake warning lamp remains illuminated, the brakes may not be working properly. See your dealer or a qualified service technician as soon as possible.

Understanding the shift positions of the 5–speed automatic transmission



This vehicle is equipped with an adaptive Transmission Shift Strategy. Adaptive Shift Strategy offers the optimal transmission operation and shift quality. When the vehicle's battery has been disconnected for any type of service or repair, the transmission will need to relearn the normal shift strategy parameters, much like having to reset your radio stations when your vehicle battery has been disconnected. The Adaptive Transmission Strategy allows the transmission to relearn these operating parameters. This learning process could take several transmission upshifts and downshifts; during this learning process, slightly firmer shifts may occur. After this learning process, normal shift feel and shift scheduling will resume.

P (Park)

This position locks the transmission and prevents the rear wheels from turning.

To put your vehicle in gear:

- Start the engine
- Depress the brake pedal
- Move the gearshift lever into the desired gear

To put your vehicle in P (Park):

- Come to a complete stop

- Move the gearshift lever and securely latch it in P (Park)

Always set the parking brake fully and make sure the gearshift is latched in P (Park). Turn the ignition to the LOCK position and remove the key whenever you leave your vehicle.

R (Reverse)

With the gearshift lever in R (Reverse), the vehicle will move backward. Always come to a complete stop before shifting into and out of R (Reverse).

N (Neutral)

With the gearshift lever in N (Neutral), the vehicle can be started and is free to roll. Hold the brake pedal down while in this position.

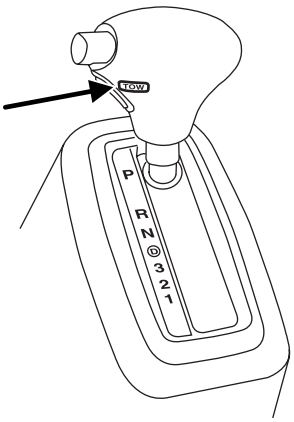
D (Overdrive) with Tow/Haul OFF

D (Overdrive) with Tow/Haul OFF is the normal driving position for the best fuel economy. The overdrive function allows automatic upshifts and downshifts through gears one through five.

D (Overdrive) with Tow/Haul ON

The Tow/Haul feature improves transmission operation when towing a trailer or a heavy load. All transmission gear ranges are available when using Tow/Haul.

To activate Tow/Haul, press the button on the side of the gearshift lever.



The TOW HAUL indicator light will illuminate in the instrument cluster.

Tow/Haul delays upshifts to reduce frequency of transmission shifting. Tow/Haul also provides engine braking in all forward gears when the transmission is in the D (Overdrive) position; this engine braking will slow the vehicle and assist the driver in controlling the vehicle when descending a grade. Depending on driving conditions and load conditions, the transmission may downshift, slow the vehicle and control the vehicle speed when descending a hill, without the accelerator pedal being pressed. The amount of downshift braking provided will vary based upon the amount the brake pedal is depressed.

To deactivate the Tow/Haul feature and return to normal driving mode, press the button on the side of the gearshift lever. The TOW HAUL light will no longer be illuminated.

When you shut off and restart the engine, the transmission will automatically return to normal D (Overdrive) mode (Tow/Haul OFF).

Do not use the Tow/Haul feature when driving in icy or slippery conditions as the increased engine braking can cause the rear wheels to slide and the vehicle to swing around with the possible loss of vehicle control.

3 (Third)

Transmission starts and operates in third gear only.

Used for improved traction on slippery roads. Selecting 3 (Third) provides engine braking.

2 (Second)

Use 2 (Second) to start-up on slippery roads or to provide additional engine braking on downgrades.

1 (First)

- Provides maximum engine braking.
- Allows upshifts by moving gearshift lever.
- The transmission will not downshift into 1 (First) at high speeds; it will downshift to a lower gear and then shift into 1 (First) when the vehicle reaches slower speeds.

Forced downshifts

- Allowed in D (Overdrive) or Drive.
- Depress the accelerator to the floor.
- Allows transmission to select an appropriate gear.

If your vehicle gets stuck in mud or snow

If your vehicle gets stuck in mud or snow, it may be rocked out by shifting between forward and reverse gears, stopping between shifts in a steady pattern. Press lightly on the accelerator in each gear.

Do not rock the vehicle if the engine is not at normal operating temperature or damage to the transmission may occur.

Do not rock the vehicle for more than a minute or damage to the transmission and tires may occur, or the engine may overheat.

VEHICLE USED AS A STATIONARY POWER SOURCE

Auxiliary equipment called power take-off, or PTO, is often added to the engine or transmission to operate utility equipment. Examples include a wheel-lift for tow trucks, tools for construction and cranes. PTO applications draw auxiliary horsepower from the powertrain, often while the vehicle is stationary. In this condition, there is limited cooling air flow through the radiator and around the vehicle that normally occurs when a vehicle is moving. Depending on the level and duration of auxiliary horsepower draw, vehicle conditions and surrounding environmental conditions and other factors, this can contribute to elevated transmission fluid temperatures and result in accelerated fluid deterioration, fuel vapor over-pressurization, and other concerns. Ford trucks are fully qualified for stationary PTO operation for 10 minutes or less of continuous operation.

Transmission Power Take-Off (PTO) Provision (if equipped)

Some vehicles with an automatic transmission may be equipped with a "Transmission Power Take-Off Provision", Option Code 62R. These vehicles have a special transmission that includes a port on the left-hand side to mount an aftermarket PTO, an internal PTO gear, and calibration for PTO usage. The actual PTO and related equipment is not offered by Ford Motor Company, but is installed by an aftermarket source. The PTO gear in the transmission will drive the aftermarket PTO while driving the vehicle. Therefore, some additional gear noise that may result is normal. Also, the transmission upshift and downshift schedules will be reduced by about 15% and may result in a firmer shift feel during PTO mobile applications.

A more complete description of PTO operation is discussed in the *Ford Truck Body Builders Layout Book*, found at www.fleet.ford.com/truckbbas.

REAR AXLE INFORMATION

Axle operating temperature normally will not exceed 100°F (38°C). If the operating temperature exceeds 230°F (110°C), the rate of axle lubrication oxidation will increase and shorten the life of the lubricant and seals, requiring axle lubrication changes to become more frequent to preserve the axle. Extreme Pressure (EP) lubricants should not be run consistently above 230°F (110°C).

Gross axle weight

Your truck has gross axle weight, gross vehicle weight and gross combination weight ratings. Do not exceed these ratings.

Exceeding these ratings by overloading can cause component failure resulting in property damage, personal injury or death.

Axle conversions

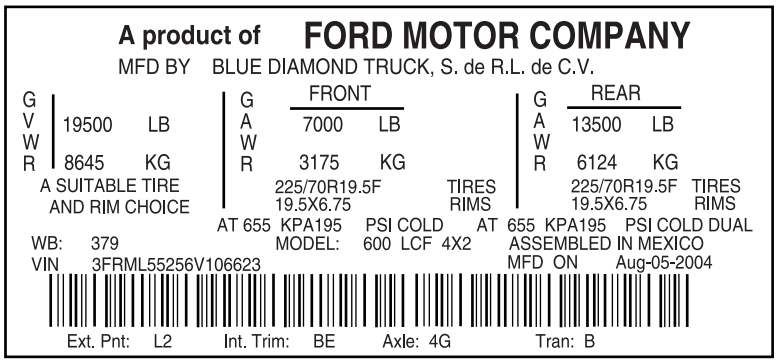
It is not recommended, or approved, for axle conversions to be performed. However, it is understood that, on occasion, aftermarket add-on axles are installed by others on the truck chassis which allow operator control for weight transfer from other axles (i.e., air lift axles).

When operating a loaded vehicle, the driver must keep all adjustable axles on the ground at all times, supporting their share of the vehicle's load. Failure to do so can overload other axles, tires, wheels, springs, steering components, brakes and frames, resulting in early component failure, loss of vehicle control, possible property damage and personal injury.

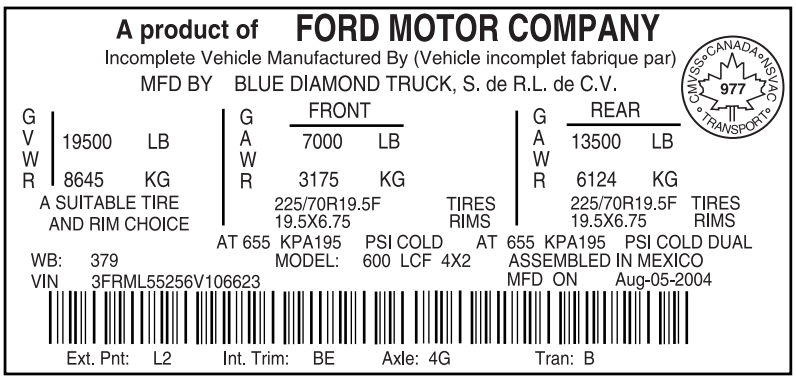
VEHICLE LOADING

This section will guide you in the proper loading of your vehicle and/or trailer, to keep your loaded vehicle weight within its design rating capability, with or without a trailer. Properly loading your vehicle will provide maximum return of vehicle design performance. Before loading your vehicle, familiarize yourself with the following terms for determining your vehicle's weight ratings, with or without a trailer, from the vehicle's Vehicle Rating Decal. Every vehicle manufactured by Ford Motor

Company is supplied with information on the Vehicle Rating Decal listing the maximum loading for the vehicle (GVWR), and its axle systems (GAWR) at the tire-to-ground interface.



- U.S.



- Canada

GAWR (Gross Axle Weight Rating) – is the maximum allowable weight that can be carried by a single axle (front or rear). These numbers are shown on the Vehicle Rating Decal located on the B-Pillar or the edge of the driver's door. The total load on each axle must never exceed its GAWR.

Exceeding the axle weight rating limits listed on the Vehicle Rating Decal could result in substandard vehicle handling or performance, engine, transmission and/or structural damage, serious damage to the vehicle, loss of control and personal injury.

Note: For trailer towing information refer to *Trailer towing* found in this chapter or the *RV and Trailer Towing Guide* provided by your dealership.

Under no circumstances should your vehicle be loaded in excess of the GVWR or GAWR. It is the operator's responsibility to ensure that neither the axle capacities, spring capacities, tire capacities nor the vehicle rated GVWR is exceeded. For tire capacities, refer to *Maintenance and Specifications* chapter.

Vehicle Curb Weight – is the weight of your new vehicle when you picked it up from your dealer plus any aftermarket equipment.

GVW (Gross Vehicle Weight) – is the Vehicle Curb Weight + cargo + passengers.

GVWR (Gross Vehicle Weight Rating) – is the maximum allowable weight of the fully loaded vehicle (including all options, equipment, passengers and cargo). The GVWR is shown on the Vehicle Rating Decal located on the B-Pillar or the edge of the driver's door. The GVW must never exceed the GVWR.

Exceeding the vehicle weight rating limits listed on the Vehicle Rating Decal could result in substandard vehicle handling or performance, engine, transmission and/or structural damage, serious damage to the vehicle, loss of control and personal injury.

GCW (Gross Combined Weight) – is the weight of the loaded vehicle (GVW) plus the weight of the fully loaded trailer.

GCWR (Gross Combined Weight Rating) – is the maximum allowable weight of the vehicle and the loaded trailer – including all cargo and passengers – that the vehicle can handle without risking damage. (Important: The towing vehicles' braking system is rated for operation at GVWR, not at GCWR. Separate functional brakes should be used for safe control of towed vehicles and for trailers where the GCW of the towing vehicle plus the trailer exceed the GVWR of the towing vehicle. The GCW must never exceed the GCWR.

Maximum Loaded Trailer Weight – is the highest possible weight of a fully loaded trailer the vehicle can tow. It assumes a vehicle with only mandatory options, no cargo (internal or external), a tongue load of 10–15% and driver only (150 lb. [68 kg]). **Consult your dealership (or the** *RV and Trailer Towing Guide* **provided by your dealership) for more detailed information.**

Tongue Load – refers to the amount of the weight that a trailer pushes down on a trailer hitch.

Example: For a 5,000 lb. (2,268 kg) conventional trailer, multiply 5,000 by 0.10 and 0.15 to obtain a proper tongue load range of 500 to 750 lb. (227 to 340 kg).

Do not exceed the GVWR or the GAWR specified on the Vehicle Rating Decal.

Do not use replacement tires with lower load carrying capacities than the originals because they may lower the vehicle's GVWR and GAWR limitations. Replacement tires with a higher limit than the originals do not increase the GVWR and GAWR limitations.

Exceeding any vehicle weight rating limitation could result in serious damage to the vehicle and/or personal injury.

TRAILER TOWING

Towing a trailer places an additional load on your vehicle's engine, transmission, axle, brakes, tires and suspension. Inspect these components carefully prior to and after any towing operation.

Your vehicle's load capacity is designated by weight, not by volume, so you cannot necessarily use all available space when loading a vehicle. 2nd unit bodies are not included in maximum trailer weight ratings. The weight of the additional "body" must be subtracted from the maximum trailer weight.

Provided the vehicle's GAWR, GVWR and GCWR are not exceeded, your vehicle may tow a Conventional/Class IV trailer or fifth wheel trailer of up to 12,500 lbs. To calculate the maximum trailer weight your vehicle can tow, subtract the towing vehicle's actual loaded weight from its GCWR. For example, if your vehicle has a 26,000 lbs. (11,794 kg) GCWR and your loaded vehicle's actual weight is 16,000 lbs (7,258 kg), then the maximum trailer weight your vehicle can tow is 10,000 lbs (4,536 kg).

Note: The maximum allowable trailer weight is not to exceed 12,500 lbs (5,670 kg). There may be some instances where your vehicle is lightly loaded or empty and the calculated maximum trailer weight exceeds 12,500 lbs (5,670 kg). In these instances, the maximum allowable trailer weight is limited to a maximum of 12,500 lbs (5,670 kg).

Note: Do not exceed the GVWR or the GAWR specified on the Vehicle Rating Decal.

Towing trailers beyond the maximum recommended gross trailer weight exceeds the limit of the vehicle and could result in engine damage, transmission damage, structural damage, loss of vehicle control, vehicle rollover and personal injury.

Model	Maximum GVWR - lbs. (kg)*	Maximum GCWR - lbs. (kg)
LCF	15000 (6804)	26000 (11794)
	16000 (7258)	26000 (11794)
	17950 (8142)	26000 (11794)
	17999 (8164)	26000 (11794)
	19500 (8845)	26000 (11794)
* Refer to your Vehicle Rating Decal for your vehicle's GVWR.		

Preparing to tow

Use the proper equipment for towing a trailer and make sure it is properly attached to your vehicle. See your dealer or a reliable trailer dealer if you require assistance.

Hitches

Do not use hitches that clamp onto the vehicle's bumper or attach to the axle. You must distribute the load in your trailer so that 10–15% of the total weight of the trailer is on the tongue.

Safety chains

Always connect the trailer's safety chains to the frame or hook retainers of the vehicle hitch. To connect the trailer's safety chains, cross the chains under the trailer tongue and allow slack for turning corners.

If you use a rental trailer, follow the instructions that the rental agency gives to you.

Do not attach safety chains to the bumper.

Trailer brakes

Electric brakes and manual, automatic or surge-type trailer brakes are safe if installed properly and adjusted to the manufacturer's specifications. The trailer brakes must meet local and Federal regulations.

Do not connect a trailer's hydraulic brake system directly to your vehicle's brake system. Your vehicle may not have enough braking power and your chances of having a collision greatly increase.

Trailer lamps

Trailer lamps are required on most towed vehicles. Make sure all running lights, brake lights, turn signals and hazard lights are working. See your dealer or trailer rental agency for proper instructions and equipment for hooking up trailer lamps.

Driving while you tow

When towing a trailer:

- Turn off the speed control. The speed control may shut off automatically when you are towing on long, steep grades.
- Consult your local motor vehicle speed regulations for towing a trailer.
- To eliminate excessive transmission shifting, activate the Tow/Haul feature; this will also assist in transmission cooling. (For additional information, refer to the *Understanding the positions of the 5–speed automatic transmission* section in this chapter.
- Anticipate stops and brake gradually.
- Do not exceed the GCWR rating or transmission damage may occur.

Servicing after towing

If you tow a trailer for long distances, your vehicle will require more frequent service intervals. Refer to the *Scheduled Maintenance Guide* chapter for more information.

Trailer towing tips

- Practice turning, stopping and backing up before starting on a trip to get the feel of the vehicle trailer combination. When turning, make wider turns so the trailer wheels will clear curbs and other obstacles.
- Allow more distance for stopping with a trailer attached.
- The trailer tongue weight should be 10–15% of the loaded trailer weight.
- After you have traveled 50 miles (80 km), thoroughly check your hitch, electrical connections and trailer wheel lug nuts.
- To aid in engine/transmission cooling and A/C efficiency during hot weather while stopped in traffic, place the gearshift lever in P (Park).
- Vehicles with trailers should not be parked on a grade. If you must park on a grade, place wheel chocks under the trailer's wheels.

GETTING ROADSIDE ASSISTANCE

To fully assist you should you have a vehicle concern, Ford offers a complimentary roadside assistance program. This program is separate from the New Vehicle Limited Warranty and is not applicable to vehicles sold in Canada. The service is available:

- 24–hours, seven days a week
- for the New Vehicle Limited Warranty period (U.S.) of two years (unlimited miles)

Roadside assistance will cover:

- jump-starts.
- lock-out assistance.
- towing to the nearest Ford Motor Company dealership, or towing to your selling dealership if within 35 miles (56 km). Even non-warranty related tows, like accidents or getting stuck in the mud or snow, are covered (some exclusions apply, such as impound towing or repossession).

Using roadside assistance

Complete the roadside assistance identification card and place it in your wallet for quick reference. This card is found in the Owner Guide portfolio in the glove compartment.

To receive roadside assistance in the United States, call 1-800-241-3673.

If you need to arrange roadside assistance for yourself, Ford will reimburse a reasonable amount. To obtain information about reimbursement, call 1-800-241-3673.

HAZARD FLASHER

The hazard flasher control is located on the instrument panel, to the right of the steering wheel. The hazard flashers will operate when the ignition is off.

Push in the flasher control and all front and rear direction signals will flash. Press the flasher control again to turn them off. Use it when your vehicle is disabled and is creating a safety hazard for other motorists.

Note: With extended use, the flasher may run down your battery.

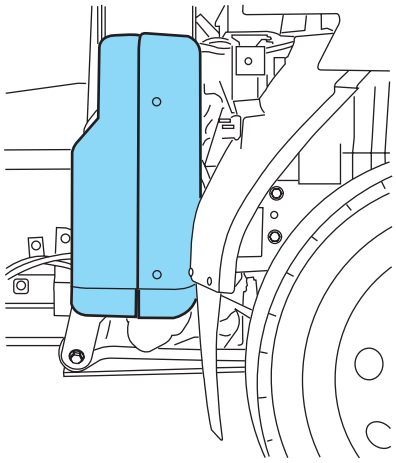
FUSING

If electrical components in the vehicle are not working, a fuse may have blown. Blown fuses are identified by a broken wire within the fuse. Check the appropriate fuses before replacing any electrical components.

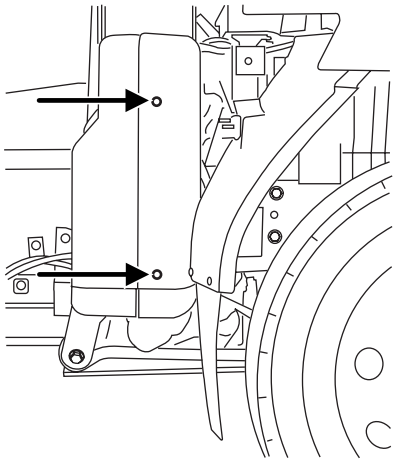
Note: Always replace a fuse with one that has the specified amperage rating. Using a fuse with a higher amperage rating can cause severe wire damage and could start a fire.

Power distribution box (PDB)

The PDB is located behind the cab on the right-hand frame rail, behind a protective cover.



To access the PDB, the protective cover must be taken off the vehicle by removing the two screws (shown in illustration), then gently pulling the cover off.

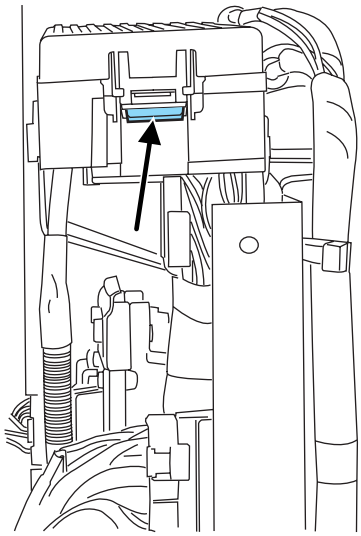


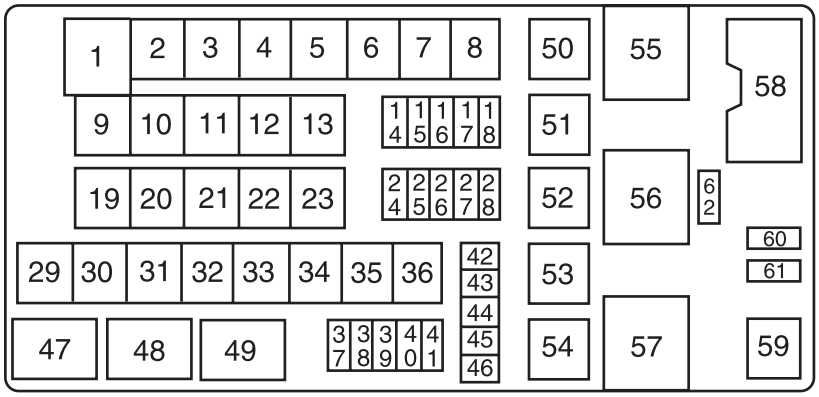
Note: Remove and install the cover carefully so that no wires or cables become disconnected or damaged.

Note: Always re-install the protective cover to avoid water or fluids from damaging the PDB or other electrical components.

Once the cover has been removed, simply lift the tab on the PDB cover to access the fuses and relays.

Always disconnect the battery before servicing high current fuses.





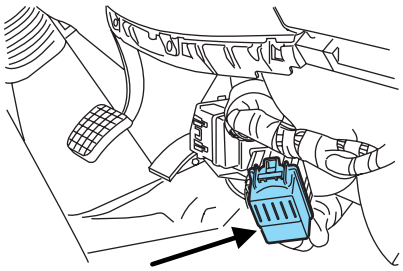
The fuses and relays are coded as follows:

Fuse/Relay Location	Fuse Amp Rating	Fuse Description
1	—	Not used
2	30A*	Starter
3	20A*	Park lamps
4	40A*	Injector Driver Module (IDM)/Powertrain Control Module (PCM)
5	30A*	Headlamps
6	40A*	Blower motor
7	25A*	Wipers
8	30A*	Electric brakes
9	20A*	Door locks
10	20A*	Stoplamps
11	20A*	Fuel pump
12	20A*	RUN/ACC feed
13	20A*	RUN/START feed
14	15A**	Horn
15	10A**	Cluster
16	15A**	Back-up lamps
17	15A**	Fog lamps
18	15A**	Transmission
19	20A*	Fuel heater
20	60A*	Anti-lock Brake System (ABS) module
21	20A*	Trailer lighting circuit
22	30A*	Body builder circuits
23	40A*	Trailer battery charge
24	20A**	Cigar lighter
25	20A**	Hazard flasher
26	15A**	Remote Keyless Entry (RKE)
27	10A**	Radio
28	10A**	Dome lamp
29	60A*	ABS pump

Fuse/Relay Location	Fuse Amp Rating	Fuse Description
30	30A*	HVAC pusher fan
31	20A*	Diagnostic connector
32	40A*	Power windows
33	25A*	Body builder prep
34	20A*	A/C clutch
35	20A*	Cluster
36	—	Not used
37	10A**	Turn signals
38	—	Not used
39	10A**	Cornering lamps
40	10A**	IDM logic power, Fan drive
41	10A**	PCM power
42	10A**	Radio
43	—	Not used
44	—	Not used
45	—	Not used
46	5A**	PCM key power
47	Micro relay	Body builder prep
48	Micro relay	Fuel pump
49	Micro relay	Back-up lamps
50	Micro relay	PCM
51	Micro relay	Fuel heater
52	Micro relay	Transmission
53	Micro relay	A/C clutch
54	Micro relay	Fog lamps
55	Full ISO relay	IDM
56	Full ISO relay	Wiper
57	Full ISO relay	Starter

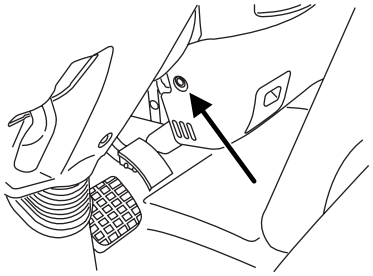
Fuse/Relay Location	Fuse Amp Rating	Fuse Description
58	—	Not used
59	Micro relay	Park lamps
60	—	Transmisison relay diode
61	—	Not used
* Cartridge fuse **Mini fuse		

Relays

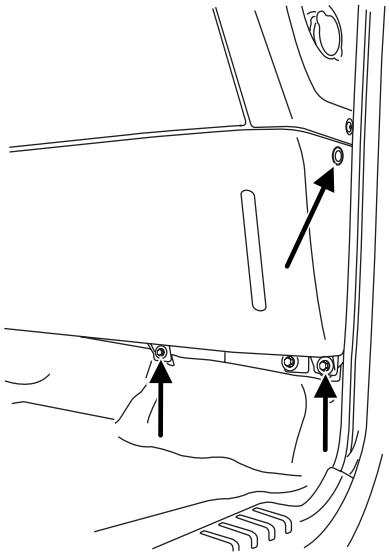


The relay box is located under the center of the instrument panel.

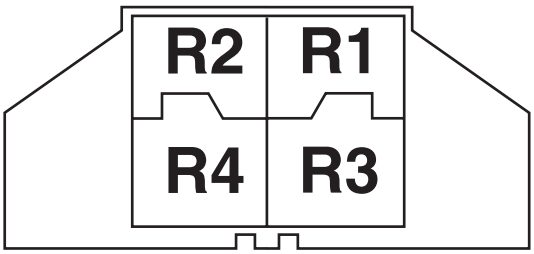
The instrument panel lower trim panel must be removed to access the relays. Remove the plastic rivet from the driver side of the trim panel.



Remove the two screws on the passenger side bottom of the panel, then the plastic rivets on the top end. Push the panel up slightly to disengage the locking tabs, then pull the panel toward you and off.



Reinstall the panel in the reverse order of the removal procedure.



The relays are coded as follows:

Relay location	Description
R1	Low beams
R2	High beams
R3	Blower motor

Relay location	Description
R4	Power windows

CHANGING A FLAT TIRE, IF EQUIPPED WITH THE OPTIONAL SPARE TIRE

If you get a flat tire while driving:

- do not brake heavily.
- gradually decrease the vehicle's speed.
- hold the steering wheel firmly.
- slowly move to a safe place on the side of the road.

For tire changing instructions refer to the Ford *Work Shop Manual*.

Note: Remember to replace the spare tire when you replace the road tires at the end of their useful life. Even if it has never been used, the spare tire should be replaced because tires degrade over time.

Note: Remember to replace the wheel air valves when the road tires are replaced at the end of their useful life.

JUMP STARTING

The gases around the battery can explode if exposed to flames, sparks, or lit cigarettes. An explosion could result in injury or vehicle damage.

Batteries contain sulfuric acid which can burn skin, eyes and clothing, if contacted.

Do not attempt to push-start your vehicle. Automatic transmissions do not have push-start capability; doing so may damage the catalytic converter.

Preparing your vehicle

When the battery is disconnected or a new battery is installed, the transmission must relearn its shift strategy. As a result, the transmission may have firm and/or soft shifts. This operation is considered normal and will not affect function or durability of the transmission. Over time, the adaptive learning process will fully update transmission operation.

1. **Use only a 12–volt supply to start your vehicle.** Do not attach the jumper cables to the glow plug relay as this could severely damage the glow plugs, injector driver module and PCM.

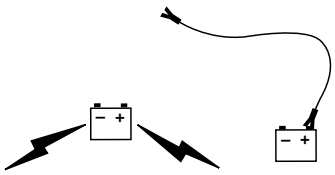
2. Do not disconnect the battery of the disabled vehicle as this could damage the vehicle's electrical system.

3. Park the vehicles close to one another, making sure they **do not** touch, so the batteries on the right-hand frame rail behind the cab of your vehicle can be accessed for jump starting. Set the parking brake on both vehicles and stay clear of the engine cooling fan and other moving parts.

4. Check all battery terminals and remove any excessive corrosion before you attach the battery cables. Ensure that vent caps are tight and level.

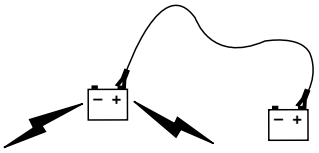
5. Turn the heater fan on in both vehicles to protect any electrical surges. Turn all other accessories off.

Connecting the jumper cables

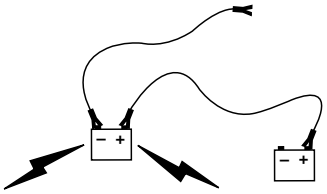


1. Connect the positive (+) jumper cable to the positive (+) terminal of the discharged battery.

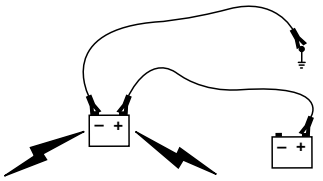
Note: In the illustrations, *lightning bolts* are used to designate the assisting (boosting) battery.



2. Connect the other end of the positive (+) cable to the positive (+) terminal of the assisting battery.



3. Connect the negative (-) cable to the negative (-) terminal of the assisting battery.



4. Make the final connection of the negative (-) cable to an exposed metal part of the stalled vehicle's engine, away from the battery and the carburetor/fuel injection system. **Do not** use fuel lines, engine rocker covers or the intake manifold as *grounding* points.

Do not connect the end of the second cable to the negative (-) terminal of the battery to be jumped. A spark may cause an explosion of the gases that surround the battery.

5. Ensure that the cables are clear of fan blades, belts, moving parts of both engines, or any fuel delivery system parts.

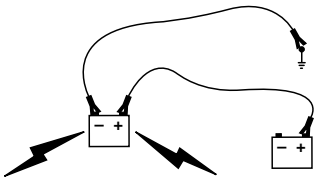
Jump starting

1. Start the engine of the booster vehicle and run the engine at moderately increased speed.

2. Start the engine of the disabled vehicle.

3. Once the disabled vehicle has been started, run both engines for an additional three minutes before disconnecting the jumper cables.

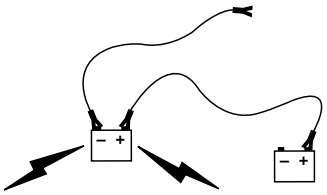
Removing the jumper cables



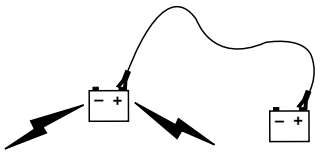
Remove the jumper cables in the reverse order that they were connected.

1. Remove the jumper cable from the *ground* metal surface.

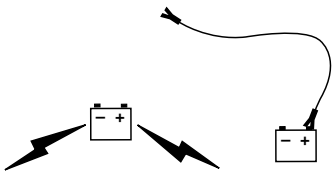
Note: In the illustrations, *lightning bolts* are used to designate the assisting (boosting) battery.



2. Remove the jumper cable on the negative (-) connection of the booster vehicle's battery.



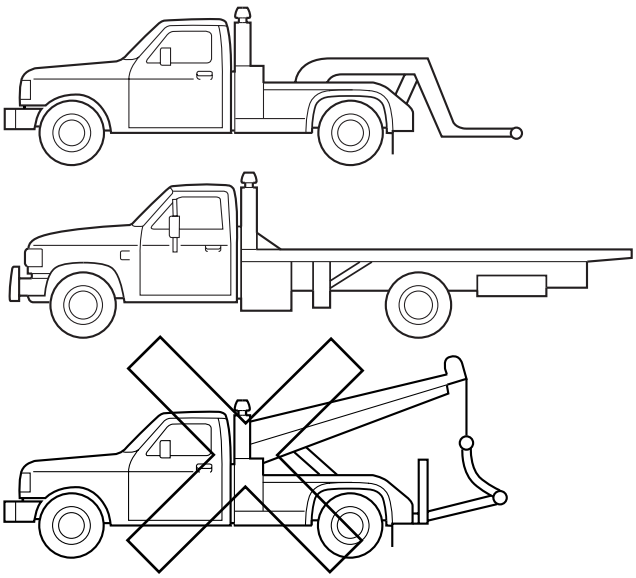
3. Remove the jumper cable from the positive (+) terminal of the booster vehicle's battery.



4. Remove the jumper cable from the positive (+) terminal of the disabled vehicle's battery.

After the disabled vehicle has been started and the jumper cables removed, allow it to idle for several minutes so the engine computer can *relearn* its idle conditions.

WRECKER TOWING



If you need to have your vehicle towed, contact a professional towing service or, if you are a member of a roadside assistance program, your roadside assistance service provider.

The following methods are recommended for towing:

- Vehicle towed from the front using a wheel lift with dollies under the rear wheels
- Vehicle towed from the rear using a wheel lift with the front wheels on the ground
- Vehicle towed using flatbed equipment.

Note: Do not tow with slingbelt equipment as doing so may damage your vehicle.

When it is necessary to tow a vehicle with the front wheels suspended, extra precautions must be taken to avoid transmission damage. The propeller shafts must be removed from between the transmission and the axle assembly to prevent the wheels from driving the differential and the transmission.

Note: To avoid transmission damage, vehicles should not be towed even a short distance without suspending rear wheels or removing the propeller shaft.

If the vehicle is towed by other means or incorrectly, vehicle damage may occur.

When calling for a tow truck, tell the operator what kind of vehicle you have.

Tow hooks

Your vehicle is equipped with front tow hooks. The tow hooks should only be used in case of an emergency (retrieving a vehicle out of a ditch or snow bank, for example). When using the tow hooks, always pull the lead or chains in a straight direction with respect to the hook; do not apply sideways force.

GETTING THE SERVICES YOU NEED

At home

Ford Motor Company and Ford of Canada have authorized dealerships to service your vehicle. It is preferred that you return to the authorized dealer where your vehicle was purchased when warranty repairs are needed. However, you may also take your vehicle to another Ford Motor Company or Ford of Canada dealership authorized for warranty repairs. Please note that certain warranty repairs require special training and/or equipment, so not all dealers are authorized to perform all warranty repairs. That means that depending on the warranty repair needed, the vehicle may need to be taken to another dealer. If a particular dealership cannot assist you, then contact the Commercial Vehicle Hotline.

If you have questions or concerns, or are unsatisfied with the service you are receiving, follow these steps:

1. Contact your Sales Representative or Service Advisor at your selling/servicing dealership.

2. If your inquiry or concern remains unresolved, contact the Sales Manager or Service Manager at the dealership.

3. If the inquiry or concern cannot be resolved at the dealership level, please contact the Ford Commercial Vehicle Hotline.

Away from home

If you need more help than the dealership can provide after following the steps provided above call the Ford Fleet and Commercial Vehicle Hotline.

In the United States:

Ford Motor Company
Commercial Vehicle Hotline
1655 Fairlane Circle
Allen Park, MI 48101
800-782-8627 (option #3)
(TDD for the hearing impaired: 1-800-232-5952)
www.fleet.ford.com

In Canada:
Customer Relationship Centre
Ford Motor Company of Canada, Limited
P.O. Box 2000
Oakville, Ontario L6J 5E4
1-800-565-3673 (FORD)
www.ford.ca

Customer Assistance

In order to help you service your Ford vehicle, please have the following information available when contacting the Commercial Vehicle Hotline:

- Your telephone number (home and business)
- The name of the dealer and the city where the dealership is located
- The year and make of your vehicle
- The date of vehicle purchase
- The current odometer reading
- The vehicle identification number (VIN)

Additional assistance

If you still have a complaint involving a warranty dispute, you must directly notify Ford in writing before pursuing remedies under your state's warranty laws. Ford is also allowed a final repair attempt in some states.

IN CALIFORNIA (U.S. ONLY)

California Civil Code Section 1793.2(d) requires that, if a manufacturer or its representative is unable to repair a motor vehicle to conform to the vehicle's applicable express warranty after a reasonable number of attempts, the manufacturer shall be required to either replace the vehicle with one substantially identical or repurchase the vehicle and reimburse the buyer in an amount equal to the actual price paid or payable by the consumer (less a reasonable allowance for consumer use). The consumer has the right to choose whether to receive a refund or replacement vehicle.

California Civil Code Section 1793.22(b) presumes that the manufacturer has had a reasonable number of attempts to conform the vehicle to its applicable express warranties if, within the first 18 months of ownership of a new vehicle or the first 18,000 miles (29,000 km), whichever occurs first:

1. Two or more repair attempts are made on the same nonconformity likely to cause death or serious bodily injury OR

2. Four or more repair attempts are made on the same nonconformity (a defect or condition that substantially impairs the use, value or safety of the vehicle) OR

3. The vehicle is out of service for repair of nonconformities for a total of more than 30 calendar days (not necessarily all at one time)

In the case of 1 or 2 above, the consumer must also notify the manufacturer of the need for the repair of the nonconformity at the following address:

Ford Motor Company
16800 Executive Plaza Drive
Mail Drop 3NE-B
Dearborn, MI 48126

GETTING ASSISTANCE OUTSIDE THE U.S AND CANADA

Before exporting your vehicle to a foreign country, contact the appropriate foreign embassy or consulate. These officials can inform you of local vehicle registration regulations and where to find unleaded fuel.

If you cannot find unleaded fuel or can only get fuel with an anti-knock index lower than is recommended for your vehicle, contact a regional office or owner relations/customer relationship office.

The use of leaded fuel in your vehicle without proper conversion may damage the effectiveness of your emission control system and may cause engine knocking or serious engine damage. Ford Motor Company/Ford of Canada is not responsible for any damage caused by use of improper fuel. In the United States, using leaded fuel may also result in difficulty importing your vehicle back into the U.S.

If your vehicle must be serviced while you are traveling or living in Central or South America, the Caribbean, or the Middle East, contact the nearest Ford dealership. If the dealership cannot help you, write or call:

FORD MOTOR COMPANY
WORLDWIDE DIRECT MARKET OPERATIONS
1555 Fairlane Drive
Fairlane Business Park #3
Allen Park, Michigan 48101
U.S.A.
Telephone: (313) 594-4857
FAX: (313) 390-0804

If you are in another foreign country, contact the nearest Ford dealership. If the dealership employees cannot help you, they can direct you to the nearest Ford affiliate office.

If you buy your vehicle in North America and then relocate outside of the U.S. or Canada, register your vehicle identification number (VIN) and new address with Ford Motor Company Worldwide Direct Market Operations.

ORDERING ADDITIONAL OWNER'S LITERATURE

To order the publications in this portfolio, contact Helm, Incorporated at:

HELM, INCORPORATED
P.O. Box 07150
Detroit, Michigan 48207

Or call:

For a free publication catalog, order toll free: 1-800-782-4356

Monday-Friday 8:00 a.m. - 6:00 p.m. EST

Helm, Incorporated can also be reached by their website: www.helminc.com.

(Items in this catalog may be purchased by credit card, check or money order.)

Obtaining a French owner's guide

French Owner's Guides can be obtained from your dealer or by writing to Ford Motor Company of Canada, Limited, Service Publications, P.O. Box 1580, Station B, Mississauga, Ontario L4Y 4G3.

REPORTING SAFETY DEFECTS (U.S. ONLY)

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Ford Motor Company.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Ford Motor Company.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1–800–424–9393 (or 366–0123 in the Washington D.C. area) or write to:

NHTSA
U.S. Department of Transportation
Washington, D.C. 20590

You can also obtain other information about motor vehicle safety from the Hotline.

WASHING THE EXTERIOR

Wash your vehicle regularly with cool or lukewarm water and a neutral Ph shampoo, such as Motorcraft Detail Wash (ZC-3–A), which is available from your dealer.

- Never use strong household detergents or soap, such as dish washing or laundry liquid. These products can discolor and spot painted surfaces.
- Never wash a vehicle that is “hot to the touch” or during exposure to strong, direct sunlight.
- Always use a clean sponge or car wash mitt with plenty of water for best results.
- Dry the vehicle with a chamois or soft terry cloth towel in order to eliminate water spotting.
- It is especially important to wash the vehicle regularly during the winter months, as dirt and road salt are difficult to remove and cause damage to the vehicle.
- Immediately remove items such as gasoline, diesel fuel, bird droppings and insect deposits because they can cause damage to the vehicle’s paintwork and trim over time.
- Remove any exterior accessories, such as antennas, before entering a car wash.
- **Suntan lotions and insect repellents can damage any painted surface; if these substances come in contact with your vehicle, wash off as soon as possible.**

WAXING

Applying a polymer paint sealant to your vehicle every six months will assist in reducing minor scratches and paint damage.

- Wash the vehicle first.
- Do not use waxes that contain abrasives.
- Do not allow paint sealant to come in contact with any non-body (low-gloss black) colored trim, such as grained door handles, roof racks, bumpers, side moldings, mirror housings or the windshield cowl area. The paint sealant will “gray” or stain the parts over time.

PAINT CHIPS

In order to ensure a proper color match, paint purchased for service and second-unit body paints must be ordered from Akzo Nobel/Sikkens using

the seven-digit NAVxxxx paint code. Paint purchased from the Ford (or Ford paint suppliers) service system using the two-digit Ford paint code may not provide an acceptable color match for your vehicle.

- Remove particles such as bird droppings, tree sap, insect deposits, tar spots, road salt and industrial fallout before repairing paint chips.
- Always read the instructions before using the products.

ALUMINUM WHEELS AND COVERS

- Clean with Motorcraft Wheel and Tire Cleaner (ZC-37–A), which is available from your dealer.
- Never apply any cleaning chemical to hot or warm wheel rims or covers.
- Some automatic car washes may cause damage to the finish on your wheel rims or covers. Chemical-strength cleaners, or cleaning chemicals, in combination with brush agitation to remove brake dust and dirt, could wear away the clearcoat finish over time.
- Do not use hydrofluoric acid-based or high caustic-based wheel cleaners, steel wool, fuels or strong household detergent.
- To remove tar and grease, use Motorcraft Bug and Tar Remover (ZC-42), available from your dealer.

ENGINE

Engines are more efficient when they are clean because grease and dirt buildup keep the engine warmer than normal. When washing:

- Take care when using a power washer to clean the engine. The high-pressure fluid could penetrate the sealed parts and cause damage.
- Do not spray a hot engine with cold water to avoid cracking the engine block or other engine components.
- Spray Motorcraft Engine Shampoo and Degreaser (ZC-20) on all parts that require cleaning and pressure rinse clean.
- Never wash or rinse the engine while it is running; water in the running engine may cause internal damage.

PLASTIC (NON-PAINTED) EXTERIOR PARTS

Use only approved products to clean plastic parts. These products are available from your dealer.

- For routine cleaning, use Motorcraft Detail Wash (ZC-3–A).

- If tar or grease spots are present, use Motorcraft Bug and Tar Remover (ZC-42).

WINDOWS AND WIPER BLADES

The windshield, rear and side windows and the wiper blades should be cleaned regularly. If the wipers do not wipe properly, substances on the vehicle's glass or the wiper blades may be the cause. These may include hot wax treatments used by commercial car washes, tree sap, or other organic contamination. To clean these items, please follow these tips:

- The windshield, rear windows and side windows may be cleaned with a non-abrasive cleaner such as Motorcraft Ultra Clear Spray Glass Cleaner (ZC-23), available from your dealer.
- Do not use abrasives, as they may cause scratches.
- Do not use fuel, kerosene, or paint thinner to clean any parts.
- Wiper blades can be cleaned with isopropyl (rubbing) alcohol or windshield washer solution. Be sure to replace wiper blades when they appear worn or do not function properly.

INSTRUMENT PANEL AND CLUSTER LENS

Clean the instrument panel and cluster lens with a damp cloth, then dry with a clean, dry cloth.

- Avoid cleaners or polish that increase the gloss of the upper portion of the instrument panel. The dull finish in this area helps protect the driver from undesirable windshield reflection.
- Be certain to wash or wipe your hands clean if you have been in contact with certain products such as insect repellent and suntan lotion in order to avoid possible damage to the painted surfaces.

INTERIOR TRIM

- Clean the interior trim areas with a damp cloth, then dry by wiping with a dry, soft, clean cloth.
- Do not use household or glass cleaners as these may damage the finish.

INTERIOR

For fabric, carpets, cloth seats and safety belts:

- Remove dust and loose dirt with a vacuum cleaner.
- Remove light stains and soil with Ford Extra Strength Upholstery Cleaner (E8AZ-19523–AA).

- If grease or tar is present on the material, spot-clean the area first with Motorcraft Spot and Stain Remover (ZC-14).
- Never saturate the seat covers with cleaning solution.
- Do not use household cleaning products or glass cleaners, which can stain and discolor the fabric and affect the flame retardant abilities of the seat materials.

Do not use cleaning solvents, bleach or dye on the vehicle's seat belts, as these actions may weaken the belt webbing.

UNDERBODY

Flush the complete underside of your vehicle frequently. Keep body and door drain holes free from packed dirt.

FORD CAR CARE PRODUCTS

Your vehicle's dealer has many quality products available to clean your vehicle and protect its finishes. These quality products have been specifically engineered to fulfill your automotive needs; they are custom designed to complement the style and appearance of your vehicle. Each product is made from high quality materials that meet or exceed rigid specifications. For best results, use the following products or products of equivalent quality:

Motorcraft Bug and Tar Remover (ZC-42)

Motorcraft Car Care Kit (ZC-26)

Motorcraft Car Wash (Canada only) (CXC-21)

Motorcraft Custom Bright Metal Cleaner (ZC-15)

Motorcraft Custom Clear Coat Polish (ZC–8–A)

Motorcraft Custom Vinyl Protectant (U.S. only) (ZC-40-A)

Motorcraft Dash and Vinyl Cleaner (ZC-38–A)

Motorcraft Deluxe Leather and Vinyl Cleaner (U.S. only) (ZC-11–A)

Motorcraft Detail Wash (ZC-3–A)

Motorcraft Dusting Cloth (ZC-24)

Motorcraft Engine Shampoo and Degreaser (U.S. only) (ZC-20)

Motorcraft Engine Shampoo (Canada only) (CXC-66-A)

Motorcraft One Step Wash and Wax Concentrate (ZC-6-A)

Motorcraft Paint Sealant (ZC-45)

Cleaning

Motorcraft Premium Car Wash Concentrate (U.S. only) (ZC-17-B)
Motorcraft Premium Glass Cleaner (Canada only) (CXC-100)
Motorcraft Premium Liquid Wax (ZC-53-A)
Motorcraft Professional Strength Carpet & Upholstery Cleaner (ZC-54)
Motorcraft Spot and Stain Remover (U.S. only) (ZC-14)
Motorcraft Tire Clean and Shine (ZC-28)
Motorcraft Triple Clean (U.S. only) (ZC-13)
Motorcraft Ultra-Clear Spray Glass Cleaner (ZC-23)
Motorcraft Vinyl Cleaner (Canada only) (CXC-93)
Motorcraft Vinyl Conditioner (Canada only) (CXC-94)
Motorcraft Wheel and Tire Cleaner (ZC-37–A)

GENERAL SERVICING GUIDELINES AND PRECAUTIONS

As with any machine, care should be taken to avoid being injured when performing maintenance, repairs or system checks. Improper or incomplete service could result in the vehicle not working properly which, in turn, may result in personal injury or damage to the vehicle or equipment. It is the operator's responsibility to see that the vehicle receives proper care and maintenance. If you have any questions about performing some service, have the service done by a qualified technician.

Servicing guidelines

When servicing your vehicle, always:

- turn off the ignition unless the particular procedure calls for the engine to be running.
- if the procedure requires the engine to be running, operate the engine in a well-ventilated area
- set the parking brake or chock the wheels.
- use support stands, not a jack, whenever you must be under a raised vehicle.
- do not smoke.
- wear safety glasses for eye protection.
- do not work on the brakes unless the proper precautions are taken to avoid inhaling friction material dust.
- do not wear loose-fitting clothing, hanging jewelry, watches or rings.
- avoid contact with hot metal parts. Allow the hot components to cool before working with, or around them.

Quality service parts are available through your dealer. If dealer parts are not used, the owner must make sure that the parts that are being used are equivalent quality to dealer parts.

The use of inferior parts can adversely affect the quality and reliability of your vehicle which, in turn, can result in property damage, personal injury or death.

Note: To avoid damage to the vehicle's electrical components, disconnect the positive (+) and negative (-) battery cables prior to electric welding. Attach the welder ground cable as close as possible to the part being welded. If it is necessary to weld close to an electrical component, it is recommended that the electronic component be temporarily removed.

Follow the periodic lubrication procedures and regular inspection intervals as outlined. Have your dealer or service center inspect your vehicle at least once a year. Remember that regular maintenance and replacement of worn components will usually prevent serious problems from developing later.

Making modifications to various parts, components and systems of the vehicle, such as brake and steering systems can adversely affect the quality, reliability and operation of your vehicle and could result in property damage, personal injury or death. Such modifications must be avoided.

The lubrication intervals present a good opportunity to inspect the vehicle. It is suggested that the various points listed herein be checked at the lubrication or other recommended intervals.

Failure to properly perform maintenance and servicing procedures could result in vehicle damage, personal injury or death.

If the owner/operator of the vehicle is a skilled technician and intends on performing the vehicle maintenance and service, it is strongly advisable to purchase a service manual.

Take care when performing any maintenance, system check or service on your vehicle. Some of the materials may also be hazardous if used, serviced or handled improperly and could result in property damage, personal injury or death.

Supporting your vehicle for service

When performing service repairs on your vehicle, first prepare the vehicle by doing the following:

1. Park the vehicle on a level concrete floor.
2. Set the parking brake and block the wheels to prevent the vehicle from moving.
3. Select a jack with a rated capacity sufficient to lift and hold up the vehicle.
4. Raise the vehicle with the jack applied to the axle. DO NOT use the bumper as a lifting point.
5. Support the vehicle with floor stands under the axle(s). If the axle or the suspension are being serviced, support the vehicle with floor stands under the frame side-members.

Do not use a jack when working under a vehicle. It may give way, causing the vehicle to fall and result in property damage, personal injury or death. Always use floor stands to support the vehicle.

Air conditioning system checks

Have your air conditioning system checked each spring. The refrigerant charge, cleanliness of the condenser-evaporator cores and belt condition is essential to air conditioning performance.

When the air conditioning system is being used daily, remove the fresh air filter (if equipped) once each season and check for dirt, lint, etc. Replace the filter if necessary. Vehicles operating in unusually dusty conditions may require inspecting and replacing the fresh air filter more often.

Front axle - general service information

Maintaining the front axle alignment to specifications is very important and should only be performed by a qualified technician. Toe-in adjustment is particularly important with radial tires.

Check to make sure that the axle mounting U-bolt nuts, attaching or mounting bolts and nuts are securely tightened. Regularly check front axle for damage, binding, worn parts and adequate lubrication.

At regular intervals, or during other scheduled maintenance, (tire rotation/service, wheel bearing service, alignment, etc.) the kingpins should be checked for excessive wear. Refer to the service manual for proper procedures.

Toe-in setting - general inspection

Inspecting steer axle tires in the first 3,000–10,000 miles (4,800–16,000 km) will generally show if tires are wearing normally.

Rapid outside shoulder wear on both tires indicates too much toe-in. Rapid inside shoulder wear on both tires indicates too much toe-out. In P&D-type service, left-to-right steer tire tread life differentials up to 40% can be observed depending on routes and other variables.

Follow the tire manufacturer's recommended cold inflation pressure for the tire size, load range (ply rating) and steer axle loading typical for their operation (each steer axle tire will equal ½ steer axle loading).

Special applications may warrant a setting based on past experience with the type of tire operating loads and conditions. Radial tires are more sensitive to toe-in setting than bias ply tires.

It is essential that correct toe-in and tire pressure be maintained for optimum tire wear.

Rear axle - general inspection

Check to make sure that the axle mounting U-bolts, attaching or mounting bolts and nuts are securely tightened. Refer to the *U-bolt nut torque* chart in this chapter. Regularly check the rear axle for damaged, binding or worn parts.

Brake system - general inspection

Your vehicle is equipped with non-asbestos brake linings. However, exposure to excessive amounts of brake material (whether asbestos or non-asbestos, fiberglass, mineral wool, aramid or carbon) may be a potentially serious health hazard.

Avoid breathing brake lining fiber dust as it may be extremely hazardous to your health. Always use a respirator during brake maintenance.

Note: Persons handling brake linings should follow all precautions listed below:

1. Always wear a respirator approved by the National Institute of Occupational Studies of Health (NIOSH) or Mine Safety and Appliance (MSA) during all brake service procedures. Wear the respirator from removal of the wheels through assembly.

2. **Never** use compressed air or dry brushing to clean brake parts or assemblies.

3. Clean brake parts and assemblies in a well ventilated area. During assembly, carefully place all parts on the floor to avoid getting dust in the air. Use an industrial vacuum cleaner with a HEPA filter system to clean dust from the brake drums, backing plates and other brake parts. After using the vacuum, remove any remaining dust with a rag soaked in water and wrung until nearly dry.

4. **Never** use compressed air or dry sweeping to clean the work area. Use an industrial vacuum cleaner with a HEPA filter system and rags soaked in water until wrung until nearly dry. Dispose of used rags with care to avoid getting dust in the air. Use an approved respirator when emptying vacuum cleaners and handling used rags.

5. **Worker clean-up:** Wash your hands before eating, drinking or smoking. Vacuum your work clothes after use and then launder them separately, without shaking them, to prevent fiber dust getting into the air.

General inspection and adjustment

A regular schedule for periodic cleaning, lubrication, adjustment and inspection should be established based on the type of vehicle operation. It is difficult to predetermine an exact maintenance interval (time or mileage), since vehicles will be used in a wide variety of applications and conditions. If you are uncertain of the proper schedule and procedures for your vehicle, contact your dealer.

Inspect the brake lining every maintenance interval. Establish inspection intervals that provide for lining replacement before damage to the disc occurs. Excessive lining wear may expose the backing plate to the disc causing scoring of the disc faces.

This inspection should be performed by a qualified technician and must be in accordance with instructions provided by the service manual.

Fluid level

Fluid level should be between the MIN and MAX lines as marked on the reservoir. Do not fill the master cylinder to the top of the reservoir.

Note: If brake fluid requires attention to maintain a proper master cylinder level, this is an indication of either severe brake pad wear or fluid leakage. A more frequent and thorough brake inspection will be required.

Fluid precautions

The HydroBoost brake system consists of two completely separate hydraulic systems operating with two different and incompatible fluids; power steering fluid and hydraulic brake fluid. Failure to observe precautions preventing the contamination of either system with fluid from the other will result in swelling and deterioration of rubber parts leading to reduced brake performance and eventual brake failure.

To avoid fluid contamination, the following should always be observed:

1. Use only fluids specified (or equivalent) and properly identified.

2. Add fluids only to the following locations:

- Power steering fluid to the power steering fluid pump reservoir
- Brake fluid to the brake master cylinder

Brake lines, hoses and fittings

Inspect these components every 4,000 miles (6,000 km).

- Check lines for kinks, dents, corrosion or rupture.
- Check hoses for abrasions, kinks, soft spots or rupture, collapse, cracks, twists or loose frame supports. When replacing a hose, be sure there is adequate clearance to the hose to avoid an abrasion to the new hose.
- Examine all connections for leaks.
- Repair or replace brake line tubes, hoses or fittings as required.

Parking brake

Parking brake adjustment should only be performed by a qualified technician, and in accordance with the instructions in the service manual.

Use wheel chocks and exercise caution when inspecting under the vehicle. A vehicle roll-away could result in property damage, personal injury or death.

TILTING/LOWERING THE CAB

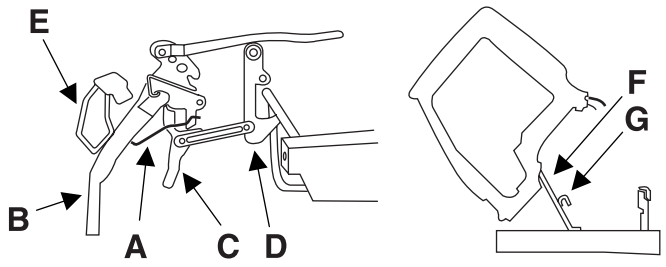
Before titling the cab:

- Make sure the vehicle is parked on a level surface.
- Make sure the parking brake is fully set.
- Turn the engine off (unless it is required to be running for inspection)
- Make sure all doors are closed tightly.

Note: Never lower handle B when cab is tilted (see illustration).

Tilting

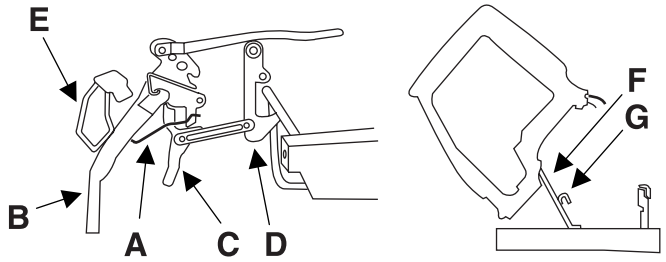
Remove all loose objects from cab, close doors, and chock wheels.



Refer to the accompanying illustration when following these directions:
1. Raise lever A then raise handle B until it comes to a stop.
2. Pull lever C toward you. Tilt the cab while holding grip E.
3. After tilting, ensure pin on rod F is seated in groove.

Note: Never lower handle B when cab is tilted.

Lowering



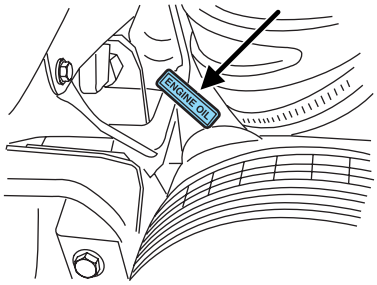
Refer to the accompanying illustration when following these directions:
1. Push the cab up using grip E. Pull handle G rearward while holding grip E.
2. With handle B raised fully, hold grip E and lower the cab until hook D is locked.
3. Lower handle B securely to its original position.

ENGINE OIL

Checking the engine oil

Refer to the *Scheduled Maintenance Guide* chapter for the appropriate intervals for checking the engine oil.

1. Park the vehicle on level ground and shut the engine off.
2. Set the parking brake and shift into P (Park).
3. Locate and carefully remove the engine oil dipstick. The dipstick is located between the air filter housing and the back of the cab; you do not need to tilt the cab to access it.



4. Wipe the dipstick clean. Insert the dipstick fully, then remove it again.

- If the oil level is **between ADD and OPERATING RANGE,** the oil level is acceptable. **DO NOT ADD OIL.**

- Maintain the oil level between ADD and OPERATING RANGE on the dipstick by adding oil as required.
- The distance from ADD to OPERATING RANGE on the dipstick represents 1.0 quart (1.0L).
- Oil levels above OPERATING RANGE may cause engine damage. Some oil must be removed from the engine by a qualified service technician.

5. Put the dipstick back into the engine and ensure it is fully seated.

Engine oil and filter recommendations

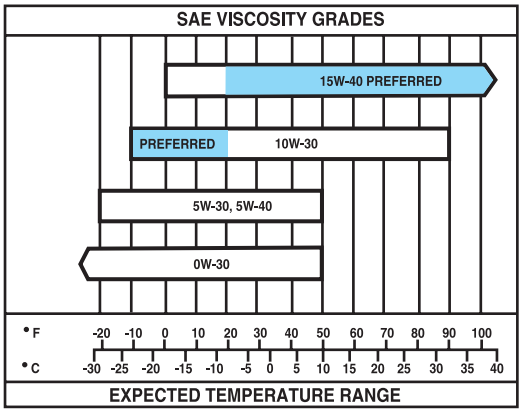
To help achieve proper engine performance and durability, it is important that you:

- Use only engine oil and oil filters of the proper quality.
- Change the engine oil and filter **no later** than the recommended service interval. Refer to the *Scheduled Maintenance Guide* chapter for the appropriate intervals for changing the engine oil and filter.
- Change your engine oil and filter more frequently if your vehicle operation includes extended periods of idling or low-speed operation, driving for a long time in cold temperatures or short driving distances.

Diesel engines require specially formulated oil to resist contamination. Proper quality oils also provide maximum efficiency of the crankcase ventilation system which reduces air pollution.

For normal or severe service, use Motorcraft oil or an equivalent oil conforming to Ford Specification WSS-M2C171–C or API Service categories CI-4 or CI-4/SL. If CI-4 oil is not available, CH-4 is acceptable.

Diesel engine oils with improved fuel economy properties (energy conserving) are currently available. If you use an energy conserving oil, be sure it meets Ford specification WSS-M2C171–D or API service category designation CI-4/SL and is of the proper viscosity grade for the temperature range in which you expect to operate your vehicle. Some energy conserving oils do not meet the requirements necessary for your diesel engine.



* Heavy duty trailer towing with ambient temperatures above 50°F (10°C) requires 15W-40 engine oil.

Using the chart, determine which SAE viscosity grade best suits the temperature range in which you expect to operate your vehicle. The use of the correct oil viscosity grade for diesel engines is important for satisfactory engine operation.

A symbol has been developed by the American Petroleum Institute (API) to help you select the proper engine oil. The symbol will be included on the oil container you purchase.

The top section of the symbol shows the API service category designation; this should be CI-4/SL or CI-4 PLUS.

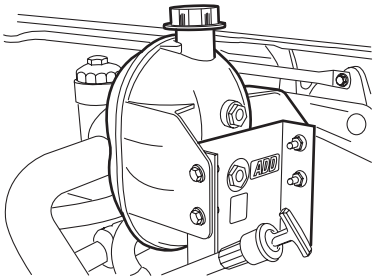
The center section of the API symbol shows the SAE viscosity grade.

Use a Ford engine oil filter, part number FL-1995, or equivalent. This filter protects your engine by filtering harmful, abrasive or sludge particles.

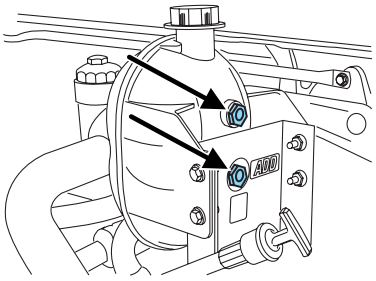
ENGINE COOLANT

Checking engine coolant

The engine coolant reservoir is located behind the passenger side of the cab.



The reservoir has two see-through level indicators on it. The top indicator is the full mark; the bottom indicator is the ADD mark. If engine coolant is visible through either indicator it will appear as yellow (or gold) in color. The reservoir level should be kept so that engine coolant is visible at the top indicator (full mark).



Note: The engine coolant reservoir requires air space for expansion volume. The proper fill level is identified on the reservoir; do not overfill the reservoir.

To reduce the risk of personal injury or death, use only the following procedure to remove the pressure-type cap from the radiator or expansion tank.

1. Always allow the engine to cool first.
2. Wrap a thick, heavy cloth around the cap.
3. Loosen the cap slowly, then pause a moment. This will reduce the risk of possible scalding by hot water or steam.
4. Continue to unscrew the cap and remove only after pressure in the radiator is fully released.

Note: If the coolant should get extremely low and the engine very hot, let the engine cool for approximately 15 minutes before adding coolant. After the engine has cooled, start the engine and add coolant slowly. Adding coolant to a hot engine may crack the cylinder head or crankcase. Never use only water to fill the cooling system.

Adding engine coolant

When adding coolant, make sure it is a 50/50 mixture of engine coolant and distilled water. Add the mixture to the coolant reservoir, **when the engine is cool**, until the appropriate fill level is obtained.

To reduce the risk of personal injury, make sure the engine is cool before unscrewing the coolant pressure relief cap. The cooling system is under pressure; steam and hot liquid can come out forcefully when the cap is loosened slightly.

Do not add engine coolant when the engine is hot. Steam and scalding liquids released from a hot cooling system can burn you badly. Also, you can be burned if you spill coolant on hot engine parts.

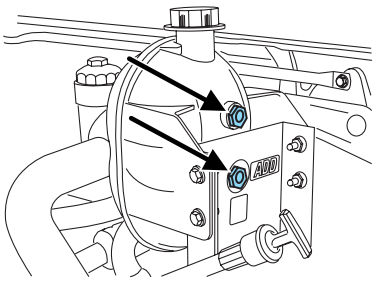
Do not put engine coolant in the windshield washer fluid container. If sprayed on the windshield, engine coolant could make it difficult to see through the windshield.

1. Before you begin, turn the engine off and let it cool.
2. When the engine is cool, wrap a thick cloth around the coolant pressure relief cap on the coolant reservoir (an opaque plastic bottle). Slowly turn cap counterclockwise until pressure begins to release.

3. Step back while the pressure releases.

4. When you are sure that all the pressure has been released, use the cloth to turn it counterclockwise and remove the cap.

5. Fill the coolant reservoir slowly with the proper coolant mixture (see above), to the top indicator (full mark) on the reservoir. If you removed the radiator cap in an overflow system, fill the radiator until the coolant is visible and radiator is almost full.



6. Replace the cap. Turn until tightly installed to prevent coolant loss.

After any coolant has been added, check the coolant concentration (refer to *Engine coolant condition inspection* later in this chapter). If the concentration is not 50/50 (protection to –34°F [–36°C]), drain some coolant and adjust the concentration. It may take several drains and additions to obtain a 50/50 coolant concentration.

Whenever coolant has been added, the coolant level in the coolant reservoir should be checked the next few times you drive the vehicle. If necessary, add enough 50/50 concentration of engine coolant and distilled water to bring the liquid level to the proper level.

If you have to add more than 1.0 quart (1.0L) of engine coolant per month, have your dealer check the engine cooling system for leaks. Operating an engine with a low level of coolant can result in engine overheating and possible engine damage.

Extended life engine coolant

The cooling system in your vehicle is filled with yellow-colored Motorcraft Premium Gold Engine Coolant meeting Ford Specification WSS-M97B51–A1.

Note: Add the coolant type originally equipped in your vehicle.

- **Add Motorcraft Premium Gold Engine Coolant (yellow-colored), VC-7–A (VC-7–B in CA, NM and OR).**

Note: Use of Motorcraft Cooling System Stop Leak Pellets, VC-6, may darken the color of Motorcraft Premium Gold Engine Coolant from yellow to golden tan.

- **Do not add/mix extended life coolants such as Motorcraft Speciality Orange Engine Coolant, VC-2 and VC-3 (U.S.) or**

CXC-209 (Canada), meeting Ford specification WSS-M97B44–D, with the factory-fill coolant, Motorcraft Premium Gold Coolant meeting Ford Specification WSS-M97B51–A. Mixing Motorcraft Speciality Orange Engine Coolant or any equivalent extended life engine coolant with this factory-fill coolant can result in degraded corrosion protection.

- A large amount of water without engine coolant may be added, in case of emergency, to reach a vehicle service location. In this instance, the cooling system must be drained and refilled with a 50/50 mixture of engine coolant and distilled water as soon as possible. Water alone (without engine coolant) can cause engine damage from corrosion, overheating or freezing.
- **Do not use alcohol, methanol or brine or any engine coolants mixed with alcohol or methanol antifreeze (coolant).** Alcohol and other liquids can cause engine damage from overheating or freezing.
- **Do not add extra inhibitors or additives to the coolant.** These can be harmful and compromise the corrosion protection of the engine coolant.
- **Do not mix with recycled coolant unless from a Ford-approved recycling process (see** *Use of Recycled Engine Coolant* **section).**

Recycled engine coolant

Ford Motor Company does NOT recommend the use of recycled engine coolant in vehicles originally equipped with Motorcraft Premium Gold Engine Coolant since a Ford-approved recycling process is not yet available.

Used engine coolant should be disposed of in an appropriate manner. Follow your community's regulations and standards for recycling and disposing of automotive fluids.

Engine coolant condition inspection

Engine cooling systems should be checked twice a year to assure proper glycol/water concentrations. a 50/50 mixture is recommended and provides freeze protection in weather conditions as low as –34°F (-36°C) as well as optimum corrosion protection. For vehicle operating in extremely cold climate, a concentration of 60% ethylene glycol will provide freeze protection in weather conditions as low as –59°F (-51°C). Concentrations greater than 60% glycol are not recommended.

Engine coolant capacities and part numbers

For cooling system capacities, refer to *Refill capacities* in this chapter. For coolant part numbers, refer to *Lubricant specifications* in this chapter.

Severe climates

If you drive in extremely cold climates (less than –34°F [–36°C]):

- **It may be necessary to increase the coolant concentration above 50%.**
- **NEVER increase the coolant concentration above 60%.**
- **Engine coolant concentrations above 60% will decrease the overheat protection characteristics of the engine coolant and may cause engine damage.**
- **If available, refer to the chart on the coolant container to ensure the coolant concentration in your vehicle will provide adequate freeze protection at the temperatures in which you drive in the winter months.**

If you drive in extremely hot climates:

- **It is still necessary to maintain the coolant concentration above 40%.**
- **NEVER decrease the coolant concentration below 40%.**
- **Engine coolant concentrations below 40% will decrease the corrosion protection characteristics of the engine coolant and may cause engine damage.**
- **Engine coolant concentrations below 40% will decrease the freeze protection characteristics of the engine coolant and may cause engine damage.**
- **If available, refer to the chart on the coolant container to ensure the coolant concentration in your vehicle will provide adequate protection at the temperatures in which you drive.**

Vehicles driven year-round in non-extreme climates should use a 50/50 mixture of engine coolant and distilled water for optimum cooling system and engine protection.

Fan clutches

Your vehicle's cooling system is equipped with a viscous fan clutch.

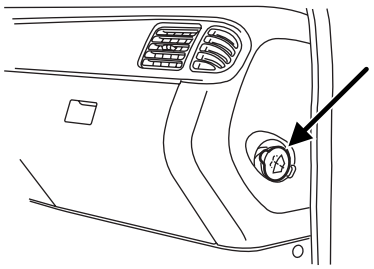
- The fan clutch helps control cooling, increase performance, improve fuel economy and reduce noise.

- The fan clutch is controlled by bimetallic spring sensors. Do not tamper with these sensors as this may change their calibration or keep the fan clutch from operating at all.

Stay clear of the fan/fan area while the engine is running or possible personal injury may occur.

WINDSHIELD WASHER FLUID

The fluid reservoir is located on the far right side of the instrument panel, accessible by opening the passenger's door. Add fluid to fill the reservoir if the level is low. In very cold weather, do not fill the reservoir completely.



Only use a washer fluid that meets Ford specification WSB-M8B16–A2. Refer to *Lubricant specifications* in this chapter.

State or local regulations on volatile organic compounds may restrict the use of methanol, a common windshield washer antifreeze additive. Washer fluids containing non-methanol antifreeze agents should be used only if they provide cold weather protection without damaging the vehicle's paint finish, wiper blades or washer system.

If you operate your vehicle in temperatures below 40°F (4°C), use washer fluid with antifreeze protection. Failure to use washer fluid with antifreeze protection in cold weather could result in impaired windshield vision and increase the risk of injury or accident.

CHANGING THE WIPER BLADES

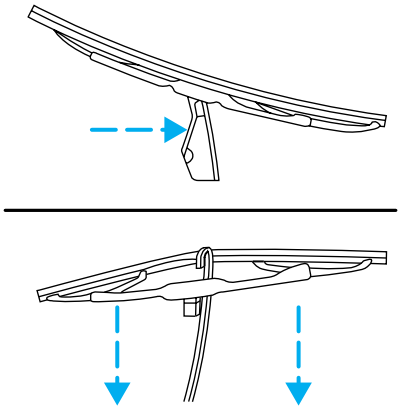
To prolong the life of the wiper blades, it is highly recommended to scrape off the ice on the windshield before turning on the wipers. The layer of ice has many sharp edges and can damage the micro edge of the wiper element.

The wiper blades should be replaced every six months for optimum performance.

1. Pull the wiper arm away from the windshield and lock into the service position.

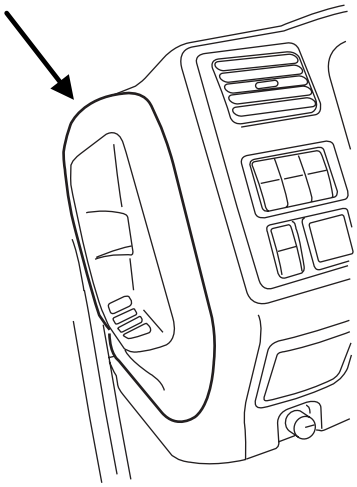
2. Turn the blade at an angle from the wiper arm. Push the lock pin manually to release the blade and pull the wiper blade down toward the windshield to remove it from the arm.

3. Attach the new wiper to the wiper arm and press it into place until a click is heard.



BRAKE FLUID

The reservoir is located behind a panel on the far left side of the instrument panel, accessible by opening the driver's door and removing the end panel.



Check and refill the brake fluid reservoir using the following procedure.
1. Clean the reservoir cap before removal to prevent dirt or water from entering the reservoir.
2. Visually inspect the fluid level; the level should be between the MIN/MAX marks on the reservoir.

3. If necessary, add brake fluid from a clean unopened container until the level reaches the MAX mark. Do not fill above this line.

4. Use only a DOT 3 brake fluid certified to meet manufacturer specifications. Refer to *Lubricant specifications* in this chapter.

Brake fluid is toxic. If brake fluid contacts the eyes, flush eyes with running water for 15 minutes. Seek medical attention if irritation persists. If taken internally, drink water and induce vomiting. Seek medical attention immediately.

If you use a brake fluid that is not DOT 3, you will cause permanent damage to your brakes.

Do not let the reservoir for the master cylinder run dry. This may cause the brakes to fail.

BATTERY

Your vehicle is equipped with two maintenance-free batteries which are mounted in a covered tray and located on the right frame rail.

Maintenance-free batteries do not normally require adding additional water. However, for severe usage or in high temperature climates, check the battery electrolyte levels. Refer to the *Scheduled Maintenance Guide* chapter for the service interval schedules.

Keep the electrolyte level in each cell up to the "level indicator". Do not overfill the battery cells.

If the electrolyte level in the battery is low, you can add plain tap water to the battery, as long as you do not use hard water (water with a high mineral or alkali content). If possible, however, try to only fill the battery cells with distilled water. If the battery needs water often, have the charging system checked.

If the batteries have a cover or shield, make sure the cover or shield is reinstalled after the battery has been cleaned or replaced.

For longer, trouble-free operation, keep the top of the batteries clean and dry. Also, make certain the battery cables are always tightly fastened to the battery terminals.

If you see any corrosion on the battery or terminals, remove the cables from the terminals and clean with a wire brush. You can neutralize the acid with a solution of baking soda and water.

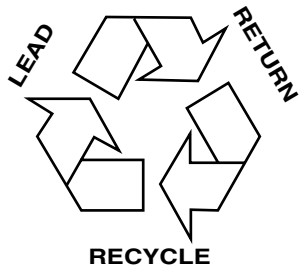
Batteries normally produce explosive gases which can cause personal injury. Therefore, do not allow flames, sparks or lighted substances to come near the battery. When working near the battery, always shield your face and protect your eyes. Always provide proper ventilation.

When lifting a plastic-cased battery, excessive pressure on the end walls could cause acid to flow through the vent caps, resulting in personal injury and/or damage to the vehicle or battery. Lift the battery with a battery carrier or with your hands on opposite corners.

Keep batteries out of reach of children. Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing. Shield your eyes when working near the battery to protect against possible splashing of acid solution. In case of acid contact with skin or eyes, flush immediately with water for a minimum of 15 minutes and get prompt medical attention. If acid is swallowed, call a physician immediately.

Battery posts, terminals and related accessories contain lead and lead compounds. **Wash hands after handling.**

Always dispose of automotive batteries in a responsible manner. Follow your local authorized standards for disposal. Call your local authorized recycling center to find out more about recycling automotive batteries.



STEERING - GENERAL INSPECTION

- Ask your service technician to examine the steering mechanism. Only minor adjustments may be necessary.
- Check tie rod, drag link end clamp bolts and ball joints for proper tightness.
- Check for installation and spread of cotter pins and tightness of nuts at both ends of the tie rod and drag link.
- Check that pitman arm (steering arm at steering gear) mounting is tight and locked. Check system for leaks or hose chafing. Repair at once, if necessary.
- Maintain proper steering gear and power steering pump lubricant levels.
- Regularly inspect steering column joint bolts and steering linkage, particularly for body-to-chassis clearance.

Note: Have any steering problems corrected at once by a qualified service technician.

Failure to maintain the steering system in proper condition can cause reduced steering ability resulting in property damage, personal injury or death.

Tightening steering column joint bolts

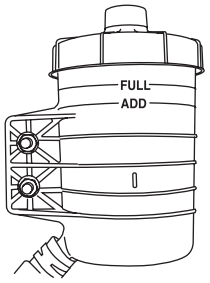
As a good maintenance practice, it is recommended that steering column joint bolts be checked for tightness every 60,000 miles (96,000 km) or annually, whichever occurs first. **Do not overtighten.**

Power steering

Whenever the power steering system has been drained and refilled for any reason, air must be bled from the system before returning the vehicle to service. Failure to properly bleed the system can result in degradation of power steering performance.

Consult your dealer who is aware of the proper procedures for filling and bleeding the system.

POWER STEERING FLUID



Check the power steering fluid level by looking at the see-through plastic reservoir. Make sure that the fluid is within the FULL and ADD range as marked on the reservoir. If the fluid level is below the ADD line, add fluid in small amounts, continuously checking the level until it reaches the proper level. If adding fluid is necessary, refer to *Lubricant Specifications* in this chapter for the proper fluid type. Refer to the *Scheduled Maintenance Guide* chapter for the recommended service intervals.

A low fluid level may indicate a leak in the power steering system. Inspect the power steering system and repair the leak. If necessary, see your dealer or a qualified service technician.

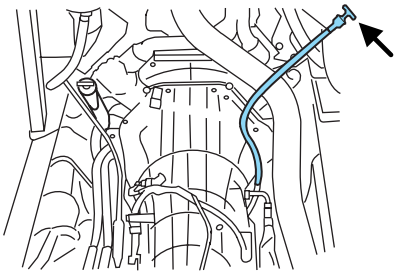
To avoid damage to the power steering system, **do not** operate the vehicle with a low power steering fluid level.

TRANSMISSION FLUID

Checking automatic transmission fluid

Refer to the *Scheduled Maintenance Guide* chapter for scheduled intervals for fluid checks and changes. Your transmission does not consume fluid. However, the fluid level should be checked if the transmission is not working properly, i.e., if the transmission slips or shifts slowly or if you notice some sign of fluid leakage.

Automatic transmission fluid expands when warmed. To obtain an accurate fluid check, drive the vehicle until it is at normal operating temperature (approximately 20 miles [30 km]). If your vehicle has been operated for an extended period at high speeds, in city traffic during hot weather or pulling a trailer, the vehicle should be turned off for about 30 minutes to allow fluid to cool before checking.



1. Drive the vehicle 20 miles (30 km) or until it reaches normal operating temperature.
2. Park the vehicle on a level surface and engage the parking brake.
3. With the parking brake engaged and your foot on the brake pedal, start the engine and move the gearshift lever through all of the gear ranges. Allow sufficient time for each gear to engage.
4. Latch the gearshift lever in P (Park) and leave the engine running.
5. Remove the dipstick, and wipe it clean with a clean, dry lint free rag.
6. Install the dipstick making sure it is fully seated in the tube.
7. Remove the dipstick and inspect the fluid level. The fluid should be in the designated area for normal operating temperature or ambient temperature.

Low fluid level

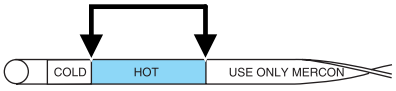
Do not drive the vehicle if the fluid level is at the bottom of the dipstick and the ambient temperature is above 50°F (10°C).

Correct fluid level

The transmission fluid should be checked at normal operating temperature 150°F-170°F (66°C-77°C) on a level surface. The normal operating temperature can be reached after approximately 20 miles (30 km) of driving.

You can check the fluid without driving if the ambient temperature is above 50°F (10°C). However, if fluid is added at this time, an overfill condition could result when the vehicle reaches normal operating temperature.

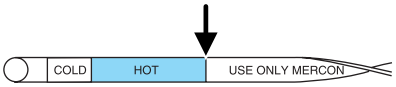
The transmission fluid should be in this range if at normal operating temperature (150°F-170°F [66°C-77°C]).



The transmission fluid should be in this range if at ambient temperature (50°F-95°F [10°C-35°C]).

High fluid level

Fluid levels above the safe range may result in transmission failure. An overfill condition of transmission fluid may cause shift and/or engagement concerns and/or possible damage.



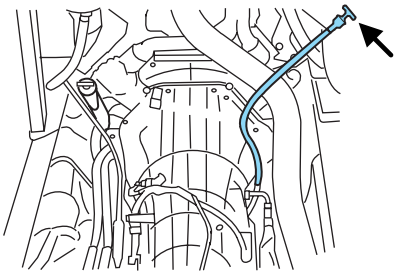
High fluid levels can be caused by an overheating condition.

Adjusting automatic transmission fluid levels

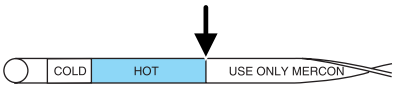
Before adding any fluid, make sure the correct type is used. The type of fluid used is indicated on a tag located on the transmission fill tube and also in the *Lubricant specifications* section in this chapter.

Use of a non-approved automatic transmission fluid may cause internal transmission component damage.

If necessary, add fluid in ½ pint (250 ml) increments through the filler tube until the level is correct.



If an overfill occurs, excess fluid should be removed by a qualified technician.

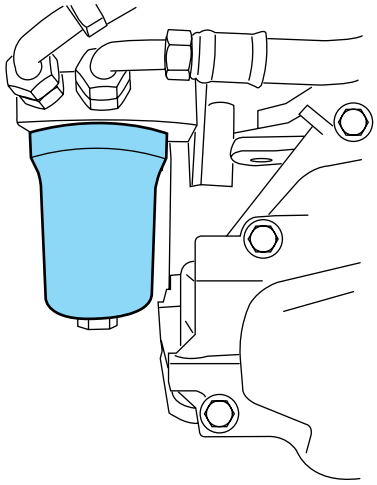


An overfill condition of transmission fluid may cause shift and/or engagement concerns and/or possible damage.

Do not use supplemental transmission fluid additives, treatments or cleaning agents. The use of these materials may affect transmission operation and result in damage to internal transmission components.

Automatic transmission fluid filter

The TorqShift automatic transmission is equipped with a serviceable external fluid filter mounted on the driver side of the transmission. Refer to the *Scheduled Maintenance Guide* chapter for service intervals.



To replace the transmission filter:

1. Shut off the engine.
2. Unscrew filter housing.
3. Replace filter with a new authorized Motorcraft filter element FT-145.
4. Reinstall housing and check transmission fluid level using procedure in this section.

ENGINE AND SUBSYSTEM MAINTENANCE

Note: To prevent damage to the engine control module or any parts of the electrical system, never spray-wash the parts directly.

For effective emissions control and low operating cost, it is important that maintenance operations listed in this section be performed at the specified periods or mileage intervals indicated (kilometers, miles, hours, or months, whichever comes first).

Service intervals are based upon average operating conditions. Where dusty, frequent start-and-stop or heavily laden operations are encountered, more frequent servicing will be required.

As the vehicle owner, you are responsible for the performance of all scheduled maintenance. The required maintenance operations may be performed by the owner at a service establishment of the owner's

choosing. Any replacement parts used for required maintenance services or repairs should be genuine manufacturer service parts or equivalent in quality and performance to genuine manufacturer service parts. Use of inferior parts hinders operations of the engine and emissions controls and can reduce engine life and/or jeopardize the warranty.

Receipts covering the performance of regular maintenance should be retained in the event questions arise concerning maintenance. The receipts should be transferred to each subsequent owner of the vehicle.

Catalytic converter

If your vehicle is equipped with a catalytic converter, it is important to review the *Scheduled Maintenance Guide* chapter to ensure proper functioning of the catalytic converter. Also, take precautions not to damage the catalytic converter when servicing your engine or storing your vehicle. **Do not** blend waste oil with diesel fuel. Operate only on low sulfur (less than 500 parts per million sulfur) diesel fuel with a Cetane value of 42 or higher.

Air induction system

Once each year, perform a complete inspection of the air induction system. In areas where road salt is used, the inspection consists of disassembling the joints of each aluminum component and inspecting for salt build-up and presence of chlorine that can cause aluminum particles to flake off and enter the engine combustion chambers.

If evidence of corrosion is found (usually at the pipe connections), use a wire brush to clean the inside of the pipes and inside the rubber hoses.

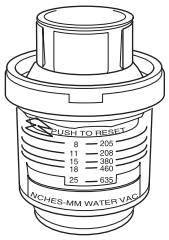
If the intake pipes are pitted at the joint ends, use RTV silicone to seal the joints. Be certain that no excess material is on the inside of the pipes that can be pulled into the engine. If the service condition of the pipes, hoses or clamps is questionable, replace the defective part(s).

Be sure that prior to reassembly all dust and debris has been cleaned out of the pipes and couplings with a clean, damp rag.

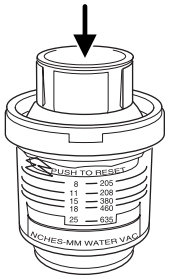

To reduce the risk of personal injury or death when performing maintenance to any turbocharged engine with engine air inlet piping disconnected, a turbocharger compressor air inlet protective shield should be installed over the turbocharger air inlet.

Air filter restriction gauge

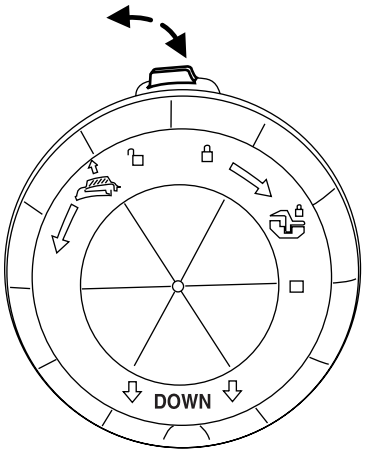
This gauge, located on top of the air filter housing, measures the vacuum inside the air cleaner. The more the air cleaner is restricted (dirty, clogged), the higher the vacuum reading.



Change the air filter when the gauge reads 25 inches (635 mm). After installation of the new filter element, reset the gauge by pressing the reset button on top of the gauge.



Air filter replacement



The air filter should be replaced any time the air filter restriction gauge reads 25 inches (635 mm) or as indicated by the maintenance intervals in the *Scheduled Maintenance Guide* chapter.

1. Remove the cover by releasing the clamp and turning the cover counterclockwise and pulling it off.

2. Remove the dirty filter and discard it.

3. Clean any accumulation of dirt from the housing using a damp rag. **Do not use compressed air to clean the housing.**

4. Inspect the housing for damage or distortion which would allow unfiltered air to enter the engine.

5. Install the new filter. Install the cover onto the housing, then turn it clockwise and close the clamp.

After replacing the filter, reset the gauge by pressing the reset button on top of the gauge.

FUEL FILTER/WATER SEPARATOR

Your vehicle is equipped with two fuel filters; one is mounted on top of the engine, the second one is mounted inside the Horizontal Fuel Conditioner Module (HFCM) on the inside of the left frame rail by the transmission. The fuel filter/water separator removes any contaminated particles and/or water from the fuel before the fuel enters the engine.

The fuel filter/water separator should be drained as recommended in the *Scheduled Maintenance Guide* chapter.

Draining the fuel filter/water separator

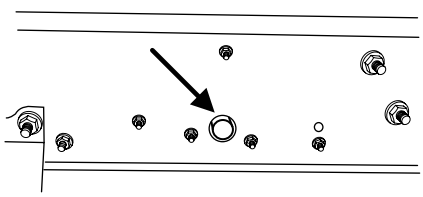
Water should be drained from the module assembly whenever the warning light comes on or every 5,000 miles (8,000 km). The WATER IN FUEL light will come on when approximately 0.2 pints (78 cc) of water accumulates in the module.

Replace the fuel filter with Motorcraft Part No. FD-4596.

1. Stop the vehicle and **shut off** the engine.

The vehicle must be stopped with the engine off when draining the HFCM. Fuel may ignite if separator is drained while the engine is running or vehicle is moving.

2. Locate the module drain plug cap on the outside of the left frame rail and place an appropriate container under the drain plug.



3. Loosen the drain plug by turning it counterclockwise. Allow to drain for approximately 25 seconds or until clean fuel is observed. Install the drain plug by turning it clockwise until it is firmly seated.

4. Verify that the drain plug is closed and sealed, then remove the container from under the vehicle.

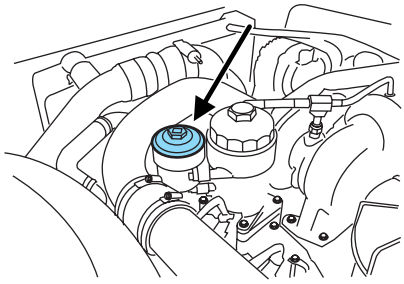
5. Restart the engine and check the WATER IN FUEL indicator light; it should not be illuminated. If it continues to illuminate, have the fuel system checked and repaired.

Fuel filter replacement

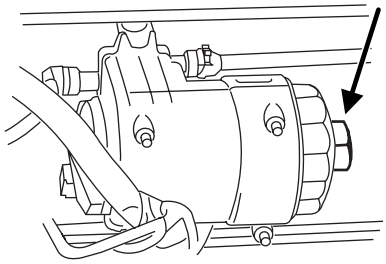
Both filters should be replaced at the same time.

Removal

- Engine-mounted filter (15/16” socket or ½” square drive required)



- Frame-mounted filter (36 mm socket required)



1. Place an appropriate container under the filter assembly, then remove the fuel filter cap by turning counterclockwise.
2. Remove and discard the old fuel filter element.
3. Carefully clean the mating surfaces.

Installation

The engine will not run properly if the fuel filter is not installed in housing.

1. Install new fuel filter into the fuel filter housing.
2. Tighten cap onto fuel filter housing slowly, allowing fuel to soak into the fuel filter element. Tighten cap until it contacts the housing.

After replacing the fuel filter, the engine will purge the trapped air as it runs. The engine may run roughly and smoke until the air is completely eliminated.

Using a fuel which has more than average impurities may require the fuel filter to be replaced more frequently than the service interval specifies.

FUEL INFORMATION

Important safety precautions

Do not overfill the fuel tank. The pressure in an overfilled tank may cause leakage and lead to fuel spray and fire.

The fuel system may be under pressure. If the fuel cap is venting vapor or if you hear a hissing sound, wait until it stops before completely removing the cap.

Automotive fuels can cause serious injury or death if misused or mishandled.

Observe the following guidelines when handling fuel:

- Extinguish all smoking materials and any open flames before fueling your vehicle.
- Always turn off the vehicle before fueling.
- Automotive fuels can be harmful or fatal if swallowed. If fuel is swallowed, call a physician immediately, even if no symptoms are immediately apparent. The toxic effects of fuel may not be visible for hours.
- Avoid inhaling fuel vapors. Inhaling too much fuel vapor of any kind can lead to eye and respiratory tract irritation. In severe cases, excessive or prolonged breathing of fuel vapor can cause serious illness and permanent injury.
- Avoid getting fuel liquid in your eyes. If fuel is splashed in the eyes, remove contact lenses (if worn), flush with water for 15 minutes and seek medical attention. Failure to seek proper medical attention could lead to permanent injury.
- Fuels can also be harmful if absorbed through the skin. If fuel is splashed on the skin and/or clothing, promptly remove contaminated clothing and wash skin thoroughly with soap and water. Repeated or prolonged skin contact with fuel liquid or vapor causes skin irritation.

When refueling always shut the engine off and never allow sparks or open flames near the filler neck. Never smoke while refueling. Fuel vapor is extremely hazardous under certain conditions. Care should be taken to avoid inhaling excess fumes.

The flow of fuel through a fuel pump nozzle can produce static electricity, which can cause a fire if fuel is pumped into an ungrounded fuel container.

If you must replace the fuel filler cap, replace it with a genuine Ford or Motorcraft part. The customer warranty may be void for any damage to the fuel tank or fuel system if a genuine Ford or Motorcraft fuel filler cap is not used.

If you do not use the proper fuel filler cap, excessive pressure or vacuum in the fuel tank may damage the fuel system or cause the fuel system to work improperly in a collision, which may result in possible personal injury.

Refueling

Fuel vapor burns violently and a fuel fire can cause severe injuries. To help avoid injuries to you and others:

- Read and follow all the instructions on the pump island;
- Turn off your engine when you are refueling;
- Do not smoke if you are near fuel or refueling your vehicle;
- Keep sparks, flames and smoking materials away from fuel;
- Stay outside your vehicle and do not leave the fuel pump unattended when refueling you vehicle — this is against the law in some places;
- Keep children away from the fuel pump; never let children pump fuel

Use the following guidelines to avoid static build-up when filling an ungrounded fuel container:

- Place approved fuel container on the ground.
- DO NOT fill a fuel container while it is in the vehicle (including the cargo area).
- Keep the fuel pump nozzle in contact with the fuel container while filling.

- DO NOT use a device that would hold the fuel pump handle in the fill position.

Choosing the right fuel

The engine is designed to use low sulfur number 1D or 2D diesel fuel only. At temperatures below –20°F (–7°C), number 1D or winter blend number 2D fuel is recommended. (See *Cold weather operation* in the *Driving* chapter.) Diesel fuel containing no more than 5% of biodiesel may be used. Biodiesel fuel is a product derived from renewable fuel sources such as vegetable oil, animal fat and cooking oil.

Do not use home heating oil or any diesel fuel not intended for highway use. Red dye is used to identify fuels intended for agricultural and non-highway use. Damage to the fuel injection system, engine and exhaust catalyst can occur if an improper fuel is used. Do not add gasoline, gasohol or alcohol to diesel fuel. This practice creates a serious fire hazard and engine performance problems.

Use low sulfur (less than 0.05% by weight) fuel as required by the EPA for emission compliance.

Do not mix diesel fuel with gasoline, gasohol or alcohol. This could cause an explosion resulting in personal injury.

Do not use starting fluid such as ether or gasoline. Such fluids can cause immediate explosive damage to the engine and possible personal injury.

Fuel quality

It should not be necessary to add any aftermarket additives to your fuel tank if you use a properly formulated diesel fuel that meets ASTM D 975 specification. Aftermarket additives can damage the injector system or engine. Repairs to correct the effects of using an aftermarket product in your fuel may not be covered by your warranty.

Do not blend used engine oil with diesel fuel under any circumstances. Blending used oil with the fuel will significantly increase your vehicle's exhaust emissions and reduce engine life due to increased internal wear.

Many of the world's automakers approved the World-wide Fuel Charter that recommends diesel fuel specifications to provide improved

performance and emission control system protection for your vehicle. Diesel fuel that meet the World-wide Fuel Charter should be used when available. Ask your fuel supplier about fuel that meet the World-Wide Fuel Charter.

Running out of fuel

Avoid running out of fuel as this will allow air to enter the fuel system, which will make restarting the vehicle difficult.

If you have run out of fuel:

- **If your vehicle is equipped with dual fuel tanks,** add at least 4–5 gallons (15–19 liters) of fuel to each tank before attempting to restart the engine.
- **Use caution not to overheat and damage the starter** by cranking the engine for an excessive period of time. You may need to crank the engine for a longer time than normal. If the engine fails to start in 20 seconds, turn the ignition to the OFF position and wait for two or three minutes before cranking the engine again.
- Any remaining trapped air will self-purge from the fuel system once the engine starts running.
- The engine may run rough and produce white smoke while air is in the fuel system. This is normal and should stop after a short period of time.

FUEL CONSUMPTION IMPROVEMENT MEASURES

There are two important factors you can control to improve fuel economy: the mechanical condition of your vehicle and how you drive it.

A properly maintained vehicle will deliver better performance than a neglected vehicle. Always follow your maintenance schedule to keep your vehicle in top operating condition.

Also, your driving habits have a significant influence on use of fuel. By following these suggestions, you can stretch your fuel use:

- Avoid changes in speed as much as possible.
- Anticipate changing traffic conditions. Sudden stops and fast acceleration waste fuel.
- Avoid extensive idling.
- Do not drive with your foot resting on the brake pedal.

Essentials of good fuel economy

Measuring techniques

Your best source of information about actual fuel economy is you, the driver. You must gather information as accurately and consistently as

possible. Fuel expense, frequency of fill-ups or fuel gauge readings are NOT accurate as a measure of fuel economy. We do not recommend taking fuel economy measurements during the first 1,000 miles (1,600 km) of driving. You will get a more accurate measurement after 2,000–3,000 miles (3,000 km–5,000 km).

The advertised fuel capacity of the fuel tank(s) on your vehicle is equal to the rated refill capacity of the fuel tank(s) as listed in *Refill capacities* in this chapter. The advertised capacity is the amount of the Indicated Capacity and the Empty Reserve combined. Indicated Capacity is the difference in the amount of fuel in a full tank and a tank when the fuel gauge indicates empty. Empty Reserve is the small amount of usable fuel remaining in the fuel tank after the fuel gauge indicates empty.

The amount of Empty Reserve varies and should not be relied upon to increase driving range. When refueling your vehicle after the fuel gauge indicates empty, you might not be able to refuel the full amount of the advertised capacity of the fuel tank due to the empty reserve still present in the tank.

Filling the tank

For consistent results:

- Use the same fill rate setting (low - medium - high) each time during filling.
- Allow three automatic click-offs when filling.
- Always use fuel of a known quality, preferably a national brand.
- Have the vehicle loading and distribution the same every time.
- When refueling a vehicle equipped with dual fuel tanks, if the two tanks are not filled equally, the fuel gauge reading may fluctuate slightly until the fuel level between the two tanks balance out and become equal.

Your results will be most accurate if your filling method is consistent.

Note: For vehicles equipped with dual fuel tanks, engine performance may degrade if fuel is not added to both tanks when refueling.

Calculating fuel economy

1. Fill the fuel tank(s) completely and record the initial odometer reading (in miles or kilometers).

2. Each time you fill the tank(s), record the amount of fuel added (in gallons or liters).

3. After at least three to five tank fill-ups, fill the fuel tank(s) and record the current odometer reading.

4. Subtract your initial odometer reading from the current odometer reading.

5. Follow one of the simple calculations in order to determine fuel economy:

- Divide total miles traveled by total gallons used.
- Multiply liters used by 100, then divide by total kilometers traveled.

Keep a record for at least one month and record the type of driving (city or highway). This will provide an accurate estimate of the vehicle's fuel economy under current driving conditions. Additionally, keeping records during summer and winter will show how temperature impacts fuel economy. In general, lower temperatures give lower fuel economy.

Driving style — good driving and fuel economy habits

Give consideration to the lists that follow and you may be able to change a number of variables and improve your fuel economy.

Habits

- Smooth, moderate operation can yield up to 10% savings in fuel.
- Steady speeds without stopping will usually give the best fuel economy.
- Anticipate stopping; slowing down may eliminate the need to stop.
- Slow down gradually.
- Sudden or hard accelerations may reduce fuel economy.
- Driving at reasonable speeds (traveling at 55 mph [88 km/h] uses 15% less fuel than traveling at 65 mph [105 km/h]).
- Using the air conditioner or defroster may reduce fuel economy.
- Resting your foot on the brake pedal while driving may reduce fuel economy.

Conditions

- Carrying unnecessary weight may reduce fuel economy.
- Fuel economy may decrease with lower temperatures during the first 8–10 miles (12–16 km) of driving.
- Flat terrain driving improves fuel economy over hilly roads.
- Transmissions give their best fuel economy when operated in the top cruise gear and with steady pressure on the accelerator.
- Close windows for highway driving.

NOISE EMISSIONS – EXTERIOR

In order to comply with the federal exterior noise regulations, your vehicle may be equipped with noise emission items. Depending on the vehicle configuration, it may have all or some of the following items:

Air Intake System

- **Air Filter:** should be inspected and its location should not be altered. Do not alter inlet and outlet piping.

Body

- **Wheel Well:** splash shields, cab shields and under-hood insulation should be inspected for deterioration, dislocation, and orientation.

Cooling System

- Check the fan for damage to blades; replace, if damaged, with the recommended parts. Inspect for fan to shroud interference, and any damage to shroud such as cracks and holes.
- The fan ratio should not be changed and the fan spacer dimensions and positions should not be altered.
- Inspect the fan clutch for proper operation, make sure that the fan is disengaged when cooling of the engine is not required.
- Check for proper operation of radiator shutters, if equipped. The shutters should be open during normal operating temperatures.

Engine and Driveline System

- **Transmission Enclosure:** inspect for cracks, holes, and tears. Clean any deposits such as oil, dirt, and stones.
- Engine valve covers and block covers are made to damp out engine mechanical noise and, if needed, should be replaced with recommended parts. Check for mechanical isolations.

Exhaust System

- Inspect the exhaust system for leaks at various joint connections and tighten the clamps.
- Do a visual inspection for cracks or holes in the muffler and tail pipe.
- Always use the recommended parts when items need to be replaced.
- The tail pipe elbow or offset tail pipe orientation must not be changed from the standard position as originally received.
- To avoid abnormal changes in vehicle sound levels, it is necessary for the owner to perform inspections and necessary maintenance at the intervals shown in the *Scheduled Maintenance Guide* chapter.

CHASSIS-MOUNTED CHARGE AIR COOLER

The charge air cooler should be inspected daily. With the engine off, visually inspect the charge air cooler core assembly for debris and clogging of external fins. Prior to engine operation, remove any debris blocking the core.

- Turbocharger-to-charge air cooler
- Charge air cooler-to-intake manifold pipe
- Mounting bracket
- Chassis-mounted charge air cooler core

Air intake piping inspection

- Check for accumulation of salt deposits (where applicable). If present, disassemble and clean the complete air intake piping system. If the intake piping is pitted, use RTV silicone to seal joints against leakage.
- Check for loose hoses and clamps.
- Check for ruptured or collapsed hoses.
- Check air filter housing for cracks.

ELECTRICAL SYSTEM INSPECTIONS

Periodically inspect electrical connectors on the outside of the cab, on the engine and frame for corrosion and tightness. Exposed terminals such as the fuel sender, cranking motor, alternator and feed-through studs should be cleaned and re-coated with a lubricant sealing grease such as Motorcraft XG-3, or equivalent. This should include the ground cable connector for batteries, engine and cab as well as the jump starting stud.

Accessory feed connections

Vehicle electrical systems are complex and often include electronic components such as engine and transmission controls, instrument panels, ABS, etc. While most systems operate on battery voltage (12 volts), some systems can be as high as 90 volts or as low as five volts. Refer to the Electrical Circuit Diagram Manuals, available from your vehicle's manufacturer, to assure that any additional body lights and accessories are connected to circuits that are both appropriate and not overloaded. No modification should be made to any vehicle control system without first contacting your dealer.

SUSPENSION INSPECTION

Periodically:

- Check condition of spring leaves for evidence of fatigue, bending or breaks.
- Check condition of suspension mounting brackets and bushings.
- Check that torque rod mounting fasteners are tight.
- Check to be sure the suspension alignment is maintained at all time.
- Check U-bolts after the chassis has been operating under load for 1,000 miles (1,600 km) or six months, whichever comes first, the U-Bolt nuts must be re-torqued. The U-Bolt nuts thereafter must be re-torqued every 36,000 miles (58,000 km). The U-Bolt and nut threads and seats should be cleaned and lubricated to assure a “like new” condition when re-torquing.

Note: See the *U-Bolt Nut Torque* chart in this chapter.

U-BOLT NUT TORQUE

Axle type	U-bolt torque	
	Ft. lb.	N•m
All	260–300	353–407

Spring U-bolt checks

Check U-bolt nuts and re-torque every 36,000 miles (58,000 km) after initial 1,000 miles (1,600 km) re-torque. The U-bolt and nut threads and seats should be cleaned and lubricated to assure peak condition when re-torqued.

FRAME AND TOW HOOKS

Your vehicles chassis is manufactured with frame rails of either mild carbon steel, or HSLA steel. Each must be handled in a specific manner to ensure maximum service life. Before attempting frame repair or modification, consult the service manual or your dealer.

It is important, particularly on vehicles where the tow hooks are used frequently to inspect the front and rear tow hooks for damage or a loose mounting.

PROPELLER SHAFT

At the regular lubrication interval, check the universal joints for any evidence of wear or looseness. Should propeller shaft vibrations occur,

stop the vehicle immediately to avoid possible hazardous consequences or damage to other components.

REAR AXLE LUBRICANT

Refer to the *Scheduled Maintenance Guide* chapter for rear axle lubricant level checks and lubricant change intervals.

The rear axle may be filled with an optional synthetic lubricant which allows the use of extended service intervals. A tag on the filler plug will identify the use of synthetic lubricant.

Use only a lubricant that meets manufacturer specifications (refer to *Lubricant specifications* in this chapter).

Use of a non-approved rear axle lubricant may cause internal axle component damage.

Check your rear axle lubricant level using the following procedure:

1. Park the vehicle on level ground.
2. Set the parking brake and shift into P (Park) and turn the engine off.
3. Clean any dirt from around the rear axle filler plug.
4. Remove the filler plug and inspect the lubricant level.
5. The lubricant level should be up to the bottom of the filler plug opening.
6. If necessary, add enough lubricant through the filler plug opening so that the lubricant level is at the bottom of the opening.
7. Clean and install the filler plug securely.

Drain and refill your rear axle lubricant using the following procedure:

Note: The rear axle lubricant should only be drained when the lubricant is warm.

1. Park the vehicle on level ground.
2. Set the parking brake and shift into P (Park) and turn the engine off.
3. Clean any dirt from around the rear axle filler and drain plugs.
4. Remove the filler and drain plugs and drain the lubricant into a suitable container. Dispose all used automotive fluids in a responsible manner following your local authorized standards.
5. Clean the drain plug and drain plug magnet, then install the plug securely.
6. Add enough lubricant through the filler plug opening so that the lubricant level is up to the bottom of the opening.

7. Clean and install the filler plug securely.

WHEELS

General

Wheel bearings should be inspected, lubricated and adjusted at regular intervals. This is especially important if operating in deep sand, mud, or water. Refer to *Lubricant specifications* in this chapter.

When installing wheel balance weights, they must be mounted on the dome-side of the wheel only. Failure to do so may result in loss of wheel weight and/or damage to brakes or wheels.

Wheel bearings

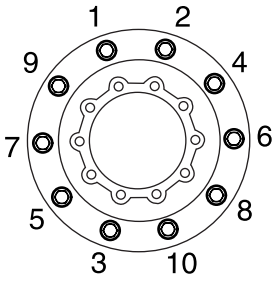
Your vehicle is equipped with grease-packed front wheel bearings and oil-lubricated rear wheel bearings.

Normal maintenance

Over a period of time, if not routinely cleaned, a slight film of oil/grease can collect dirt around the gasket, which could appear to be a leak. Routine cleaning ensures that leaks can be easily observed before damage occurs.

Installation, tightening and alignment

Tighten the lug nuts in the order shown.



When installing wheels, be certain that the threads on studs and nuts are clean to permit correct torquing of nuts. The mounting surfaces of rims, wheels, spacer rings and clamps must be free of dirt, rust, lubricants or damage.

Use a wire brush to clean the mounting contact surfaces. Do not use lubricant on threads.

After the rim or wheel has been properly tightened, it should be checked for alignment. Rotate the wheel with a piece of chalk attached to a

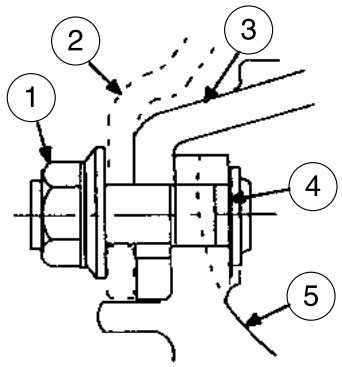
steady, firm surface, and placed to just barely clear the outside surface of the tire bead seat. This procedure will point out the high spot. A high spot does not necessarily mean that the lug nuts have been unevenly tightened. This condition or misalignment could be caused by a bent wheel.

Wheel mounting

Disc wheel with flange nuts (hub-piloted)

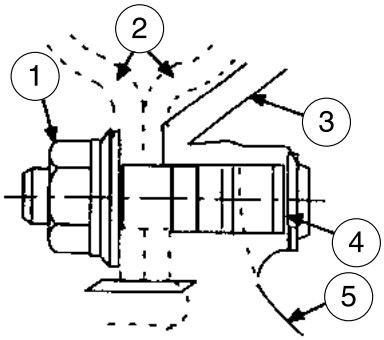
Front wheel mounting of flange nut system

1. Flange nut
2. Wheel(s)
3. Brake drum
4. Wheel stud (M14)
5. Wheel hub



Rear wheel mounting of flange nut system

1. Flange nut
2. Wheel(s)
3. Brake drum
4. Wheel stud (M14)
5. Wheel hub



1. Slide inner rear or front tire and wheel in position over studs and push it back as far as possible. Use care so that the threads on studs are not damaged.

2. Position the outer rear tire and wheel in place over the studs and push it back as far as possible. Use care so that the threads on studs are not damaged.

3. Run the nuts on the studs until they contact the wheel(s). Rotate the wheel assembly a half-turn to permit the parts to seat.

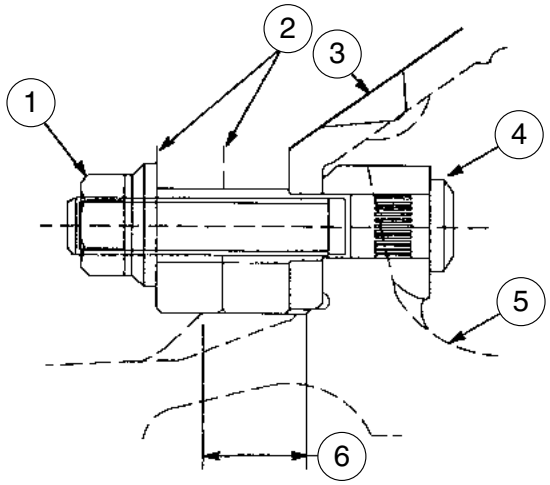
4. Draw up the nuts alternately following the crisscross sequence illustrated under *Installation, tightening and alignment*. Do not fully tighten the nuts. This will allow uniform seating of the nuts and ensure even face-to-face contact of the wheel and hub.

5. Continue tightening the nuts to the torque specifications in the *Wheel Lug Nut Torque* chart, later in this chapter, using the same crisscross sequence shown.

6. After operating the vehicle approximately 50 miles (80 km), check the nuts for tightness. Some natural seating of parts may be encountered and the torque on the nuts will drop. Retighten all nuts to specifications.

Once a week, inspect and retighten the wheel stud nuts.

Aluminum rear disc wheel with flange nuts (hub-piloted)



1. Flange nut
2. Wheel(s)
3. Brake drum
4. Wheel stud (M14)
5. Wheel hub
6. Wheel locator pad

Prior to re-installing rear aluminum hub-piloted wheels, clean each wheel locator pad on the hub from all dirt, rust and foreign material. Apply a light coat of chassis grease, never-seize or disc brake corrosion control grease, only to the wheel locator pad.

When installing the tire and rim assembly on disc-brake equipped axles, make sure the tire valve stem clears the brake caliper. The use of a tire manufacturer's stem forming tool is the only acceptable method of obtaining clearance when necessary.

Note: Always observe the following instructions:

- With loosened nuts on stud, strike clamps with a heavy hammer and be sure each clamp is loose.

- Never hammer side ring or lock ring on a partially- or fully-inflated tire.
- Never use cracked, bent or badly rusted parts.
- Always deflate tires completely before removing locks or side rings.
- Never add air until each side ring or lock ring is fully seated.
- Never re-inflate flat tires on-vehicle; use the spare tire.
- Never mix rim side rings or lock rings of different types, manufacturers or sizes.
- Always inflate tires in a safety cage.

Failure to follow these instructions could result in property damage, personal injury or death

Proper torque

It is important to tighten and maintain wheel and rim mounting nuts to the proper torque. Loose nuts or overtightened nuts can lead to premature wear and possible failure of the wheel and/or mounting hardware.

Wheel lug nut torque

Size	Nut mounting	Torque	
		Ft. lb.	N•m
M14	Flange	140–160	189–217

Note: Do not use lubrication on dry threads. Where excessive corrosion exists, a light coat of lubricant on the first three threads of the stud bolt is permitted. Keep lubricant away from:

- Hex nut and rim clamp contact surfaces.
- Cap nut ball face and ball seat on the disc wheel.
- Flange nut washer surface and flat on the disc wheel.

Changing wheel types

Consult your dealer or wheel/rim distributor before attempting any wheel or fastener changes.

Use only the same type and style wheels and mounting hardware to replace original parts. Failure to do so may result in an assembly that looks fine, but does not fit together properly. This could possibly cause wheel or fastener failures which could result in property damage, personal injury or death.

Note: Do not attempt to mix stud-piloted wheels or fasteners with hub-piloted wheels or fasteners.

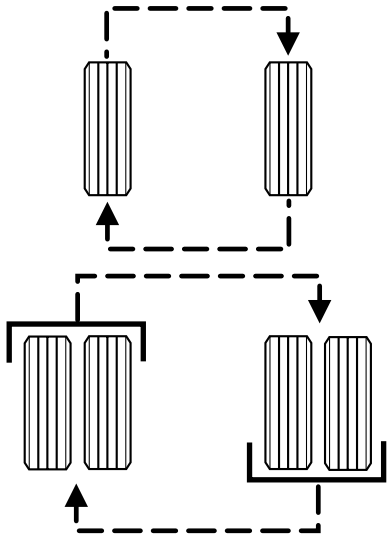
Note: Do not change from aluminum wheels to steel wheels or vice-versa without changing the mounting hardware required or, with flange-nut mounting systems, changing the hub and stud assembly.

Tire rotation

Rotating your tires at the recommended interval (as indicated in the *Scheduled Maintenance Guide* chapter) will help your tires wear more evenly, providing better tire performance and longer tire life.

Six tire rotation

It is recommended that front and rear tires (in pairs) be rotated only side to side, with the rear tires maintaining original vehicle position. After tire rotation, inflation pressures must be adjusted for the tires new positions in accordance with vehicle requirements.



Sometimes irregular tire wear can be corrected by rotating the tires.

Note: If your tires show uneven wear ask a qualified technician at a reputable repair facility to check for and correct any wheel misalignment, tire imbalance or mechanical problem involved before tire rotation.

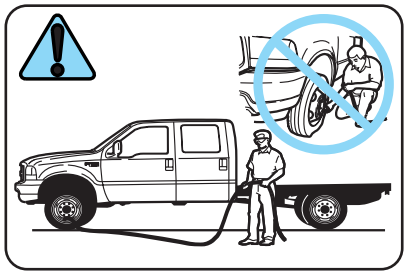
TIRE/WHEEL RIM SELECTION AND INFLATION PRESSURES

Tire size	Load range	Approved rim widths	Axle capacity	
			Front - lbs. (kg)/psi (kPa)	Rear - lbs. (kg)/psi (kPa)
225/70R19.5	F	6.00	6000 (2722)/ 95 (655)	11000 (4990)/ 95 (655)
225/70R19.5	F	6.00	7000 (3175)/ 95 (655)	13000 (5897)/ 95 (655)

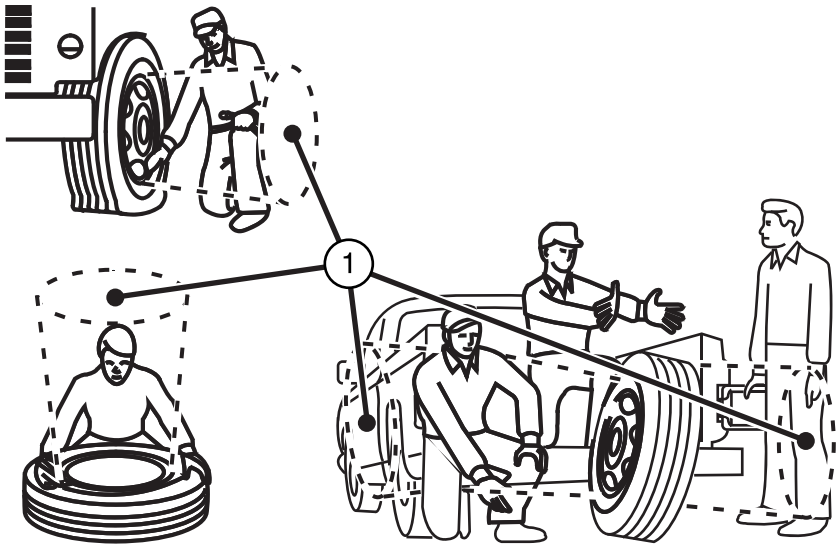
Tire inflation information

All tires with Steel Carcass Plies (if equipped):

This type of tire utilizes steel cords in the sidewalls. As such, they cannot be treated like normal light truck tires. Tire service, including adjusting the air pressure, must be performed by personnel trained, supervised and equipped according to Federal Occupational Safety and Health Administration (OSHA) regulations. For example, during any procedure involving tire inflation, the technician or individual must utilize a remote inflation device, and ensure that all persons are clear of the trajectory area.



WARNING An inflated tire and rim can be very dangerous if improperly used, serviced or maintained. To avoid serious injury, never attempt to re-inflate a tire which has been run flat or seriously under-inflated without first removing the tire from the wheel assembly for inspection. Do not attempt to add air to tires or replace tires or wheels without first taking precautions to protect persons and property.



Stay out of the trajectory (1) as indicated in the illustration. Under some circumstances, the trajectory may deviate from the suspected path.

LUBRICATION AND MAINTENANCE INTERVALS

New vehicles are lubricated at the factory. After the vehicle is placed in operation, regular lubrication intervals, based on the type of service and road conditions, should be established. Thorough lubrication at the specified intervals will insure outstanding life cycle value and will reduce overall expense.

The lubrication intervals specified should be performed at whatever interval occurs first, whether it is months, miles (kilometers) or hours of engine operation. Only lubricants of superior quality, such as Motorcraft lubricants, should be used. The use of inferior products will reduce the service life of the vehicle or result in failure of its components.

Unless otherwise specified, never add lubricant unless it is the same grade as that which is already being used. If the grade is not known or not available, drain, flush and refill with new lubricant.

The interval between lubrication periods, oil changes, etc. depends entirely upon operating conditions. The loads carried, speeds, road and weather conditions all contribute to the frequency of lubrication periods.

In some types of operation, and where operating conditions are extremely severe (such as in deep water, mud or unusually dusty conditions), the vehicle may require lubrication after every 24 hours of operation.

LUBRICANT SPECIFICATIONS

Component	Lubricant	Viscosity / Ambient temperature / Notes	Equivalent Ford part name / number
Front axle			
Eaton-Spicer axle, Spicer axle - Front axle wheel bearing grease, tie rod ends, drag link, kingpin and bushing	EP2 Lithium complex-based moly grease (or equivalent) GC/LB NLGI #2 multi-purpose lithium complex grease	**Note:** Eaton-Spicer and Meritor Easy Steer axles: With chassis load on axle, force grease through thrust bearings; then with axle lifted clear of the floor, force grease between kingpin and bushing surfaces.	Motorcraft Premium Long Life Grease / XG-1-C
Rear axle			
Dana-Spicer rear axle	Motorcraft SAE 80W-90 Premium Rear Axle Lubricant	WSP-M2C197-A	XY-80W90-QL

Component	Lubricant	Viscosity / Ambient temperature / Notes	Equivalent Ford part name / number
Eaton-Spicer axle (generic) - rear axle wheel bearing oil	Multipurpose EP gear lube of API GL-5 quality meeting MIL-PRF-2105E specifications including synthetic lubricants. **Do not mix conventional and synthetic lubricants.**	SAE 75W: –40°F to –15°F (–40°C to –26°C)	Motorcraft SAE 75W-90 Fuel Efficient High Performance Synthetic Rear Axle Lubricant / XY-75W90–FEHP
		SAE 75W-80: -40°F to 80°F (–40°C to 27°C)	Motorcraft SAE 75W-90 Fuel Efficient High Performance Synthetic Rear Axle Lubricant / XY-75W90–FEHP
		SAE 75W-90: –40°F to 100°F (–40°C to 38°C)	Motorcraft SAE 75W-90 Fuel Efficient High Performance Synthetic Rear Axle Lubricant / XY-75W90–FEHP
		SAE 75W-140: –40°F and above (–40°C and above)	Motorcraft SAE 75W-90 Fuel Efficient High Performance Synthetic Rear Axle Lubricant / XY-75W140–QL
		SAE 80W-90: –15°F to 100°F (–26°C to –38°C)	Motorcraft SAE 80W-90 Premium Rear Axle Lubricant / XY-80W90–QL
		SAE 80W-140: –15°F and above (–26°C and above)	Motorcraft SAE 75W-140 High Performance Rear Axle Lubricant / XY-75W140–QL
		SAE 85W-140: 10°F and above (–12°C and above)	Motorcraft SAE 75W-140 High Performance Rear Axle Lubricant / XY-75W140–QL

Component	Lubricant	Viscosity / Ambient temperature / Notes	Equivalent Ford part name / number
Spicer axle - rear axle wheel bearing oil	Multipurpose EP gear lube of API GL-5 quality meeting MIL-PRF-2105E specifications including synthetic lubricants. **Do not mix conventional and synthetic lubricants.**	SAE 75W: –40°F to 32°F (–40°C to 0°C)	Motorcraft SAE 75W-90 Fuel Efficient High Performance Synthetic Rear Axle Lubricant / XY-75W90–FEHP
		SAE 75W-90: –40°F to 100°F (–40°C to 38°C)	Motorcraft SAE 75W-90 Fuel Efficient High Performance Synthetic Rear Axle Lubricant / XY-75W90–FEHP
		SAE 75W-140: –40°F and above (–40°C and above)	Motorcraft SAE 75W-140 High Performance Rear Axle Lubricant / XY-75W140–QL
		SAE 80W: –15°F to 70°F (–26°C to 21°C)	Motorcraft SAE 80W-90 Premium Rear Axle Lubricant / XY-80W90–QL
		SAE 80W-140: –15°F and above (–26°C and above)	Motorcraft SAE 75W-140 High Performance Rear Axle Lubricant / XY-75W140–QL
		SAE 90W: 10°F to 100°F (–12°C to 38°C)	SAE 90 Hypoid Gear Oil / C6AZ-19580–E
		SAE 85W-140: 10°F and above (–12°C and above)	Motorcraft SAE 75W-140 High Performance Rear Axle Lubricant / XY-75W140–QL
		SAE 140W: 40°F and above (4°C and above)	Motorcraft SAE 75W-140 High Performance Rear Axle Lubricant / XY-75W140–QL

Component	Lubricant	Viscosity / Ambient temperature / Notes	Equivalent Ford part name / number
Steering			
Power steering fluid	International TMS-6810	—	Fleetrite CH990625C2
Steering gear Ross TAS-Output Seal	GC/LB NLGI #2 lithium complex-based moly grease or multi-purpose lithium complex grease	—	Motorcraft Premium Long Life Grease / XG-1-C
Steering column U-joints / slip joint	GC/LB NLGI #2 lithium complex-based moly grease or multi-purpose lithium complex grease	—	Motorcraft Premium Long Life Grease / XG-1-C
Propeller shaft			
U-joint	GC/LB NLGI #2 lithium complex-based moly grease or multi-purpose lithium complex grease	—	Motorcraft Premium Long Life Grease / XG-1-C
Cooling system			
Engine coolant (1)	WSS-M97B51-A1	—	Motorcraft Premium Gold Engine Coolant / VC-7-A (U.S., except CA, OR and NM) or VC-7–B (CA, OR and NM)
Windshield washer			
Washer fluid	WSB-M8B16-A2	—	Motorcraft Premium Windshield Washer Concentrate / ZC-32-A

Component	Lubricant	Viscosity / Ambient temperature / Notes	Equivalent Ford part name / number
Transmission			
TorqShift	Motorcraft MERCON® SP ATF	MERCON® SP ATF	XT-6–QSP
Cab components			
Cab latch and lock levers	Mobile SHC 32 Low Temperature Lubricant (or equivalent)	—	—
Cab latch pivots; Door check, hinges, latches and strikers; Seat adjuster slides	GC/LB NLGI #2 lithium complex-based moly grease (or equivalent) or multi-purpose lithium complex grease	—	Motorcraft Premium Long Life Grease / XG-1-C
Cab latch pivot pins	Light engine oil	—	Motorcraft SAE 5W-30 Super Premium Motor Oil / XO-5W30-QSP
Door lock cylinders	Lock oil	—	Motorcraft Penetrating and Lock Lubricant / XL-1
Door window regulators	NGLI #2 multipurpose lithium complex grease	—	Motorcraft Multi-Purpose Grease Spray / XL-5 or Motorcraft Multi-Purpose Grease / XG-4
Weatherstripping	Silicone lubricant	—	Motorcraft Silicone Spray / XL-6

Component	Lubricant	Viscosity / Ambient temperature / Notes	Equivalent Ford part name / number
Engine oil			
4.5L Power Stroke engine	API CI-4 / SL	SAE 15W–40 above 10°F (–12°C)	Motorcraft SAE 15W-40 Super Duty Motor Oil / XO-15W40-QSD
		SAE 10W-30 –10°F to 90°F (–23°C to 32°C)	Motorcraft SAE 10W-30 Super Duty Motor Oil / XO-10W30-QSD
		SAE 0W–30 below 0°F (–18°C)	Motorcraft SAE 0W-30 Super All Season Motor Oil / XO-0W30-LAS
Brake system			
Master cylinder	DOT 3, ESA-M6C25–A	—	Motorcraft High Performance Motor Vehicle Brake Fluid / PM-1
Caliper slide pins and bushings	Caliper Grease and Dielectic Compund	—	ESE-M1C171–A / XG-3–A

(1) Add the coolant type originally equipped in your vehicle.

REFILL CAPACITIES

Fluid	Ford Part Name	Capacity
Engine coolant[1]	Motorcraft Premium Gold Engine Coolant (yellow-colored)	21.5 quarts (20.3L)
Engine oil	API CI-4/SL	**Without filter change:** 14 quarts (13.0L)
		With filter change: 15 quarts (14.0L)
Transmission fluid[2]	Motorcraft MERCON® SP ATF	17.5 quarts (16.6L)[3] (Includes remote filter change)
Rear axle	Motorcraft SAE 80W-90 Premium Rear Axle Lubricant	23.4 pints (12.0L)[4][5]
Power steering fluid	International TMS-6810	Keep level between ADD and FULL marks as shown on reservoir
Washer fluid	Motorcraft Premium Windshield Washer Concentrate	4.25 quarts (4.0L)
Fuel tank - Single tank, mounted on left side	—	35 gallons (132.0L)
Fuel tank - Single tank mounted between frame sidemembers and behind rear axle	—	40 gallons (151.4L)

Fluid	Ford Part Name	Capacity
Fuel tanks - Dual	—	35 gallons (132.0L) each

(1) Add the coolant type originally equipped in your vehicle.

(2) Ensure the correct automatic transmission fluid is used. Transmission fluid type requirements are indicated on the tag located on the transmission fill tube. Check the container to verify the fluid being added is of the correct type. Refer to the *Scheduled Maintenance Guide* chapter to determine the correct service interval.

MERCON®, MERCON® V and MERCON® SP are not interchangeable. DO NOT mix MERCON®, MERCON® V and MERCON® SP. Use of dual usage fluids in an automatic transmission application requiring MERCON® SP may cause transmission damage. Use of a transmission fluid other than the recommended fluid may cause transmission damage.

(3) Indicates only approximate dry-fill capacity. Some applications may vary based on cooler size and if equipped with an in-tank cooler. The amount of transmission fluid and fluid level should be set by the indication on the dipstick's normal operating range.

(4) Quantities listed are approximate. Fill axle until the lubricant level is at the bottom of the filler hole, with the vehicle on level ground.

(5) If hubs are removed, add an additional 1.6 pints (0.75L) of axle lubricant. Add lubricant through the axle vent.

VEHICLE IDENTIFICATION NUMBER (VIN)

The VIN is printed on the Vehicle Rating Decal attached to the vehicle. The VIN also serves as the warranty number. If you ever find it necessary to communicate with Ford Motor Company about your vehicle, always include the VIN in your communication.

Scheduled Maintenance Guide

GENERAL MAINTENANCE INFORMATION

The scheduled maintenance services listed in this section are required because they are considered essential to the life and performance of your vehicle.

Ford Motor Company recommends you perform the Owner Maintenance Services listed in this section. These services are matters of day-to-day care that are important to the proper operation of your vehicle. In addition to the conditions described in the Owner Maintenance Checklist, be alert for any unusual noise, vibration or other indication that your vehicle may need service and attend to it promptly.

Use only recommended fuels, lubricants, fluids and service parts conforming to Ford specifications. Motorcraft parts are designed and built for best performance in your vehicle. Using these parts for replacement is your assurance that Ford-Built quality stays in your vehicle.

SCHEDULED MAINTENANCE

The maintenance or replacement of the emission control devices (or systems) in your new Ford Motor Company vehicle (or engine) may be performed at your expense. These services may be performed by any automotive repair establishment or individual using automotive parts equivalent to those with which your vehicle or engine was originally equipped. If any parts other than Ford, Motorcraft, or Ford authorized, remanufactured parts are used for maintenance replacements (or for the service) of components effecting the emission control, the owner should be ensured that such parts are warranted by their manufacturer to be equivalent to genuine Ford Motor Company Parts in performance and durability. Please consult your warranty information booklet for complete warranty information.

Authorized dealer maintenance

Your authorized dealer specializes in knowing all about Ford Motor Company vehicles rather than knowing a little about all makes.

There are Ford or Ford of Canada dealer service shops ready to serve you wherever you drive in the U.S. or Canada. They stock Ford and Motorcraft parts, and Ford Chemicals and lubricants. You can be confident that these meet the same exacting design and quality standards as those used to build the vehicle originally. Dealer service technicians have available training in the latest product developments and service techniques.

OWNER MAINTENANCE

You can do much of the maintenance your vehicle requires yourself, if you have the time and a reasonable amount of mechanical ability. If you prefer to have this work done professionally, your authorized dealer stands ready to help you.

All mechanical components and attachments are important in that they could affect the performance of vital components and systems. If replacement becomes necessary, they must be replaced with parts having the same part number or with equivalent parts. Torque values of the attaching parts must be used as specified during any reassembly procedure to ensure proper retention.

EMISSIONS CONTROL SYSTEM

To ensure the emissions control systems operate effectively, you should have the services listed in the maintenance schedule performed at the specified time and mileage/kilometer intervals. You should avoid running out of fuel or turning off the ignition while the vehicle is in motion, especially at high speeds.

Because of high engine compartment and exhaust system temperatures resulting from emissions equipment, do not park, idle or operate your vehicle in dry grass or other dry ground cover where the possibility of ground fire exists.

Do not make unauthorized modifications to the engine or vehicle. Modifications causing increased amounts of unburned fuel to reach the exhaust system can significantly increase the temperature of the engine compartment and/or the exhaust system.

Avoid driving your vehicle if it does not operate properly. If the engine diesels (more than five seconds of engine run-on after shut-off), misfires, surges, stalls or backfires, see your dealer. Be alert for fluid leakage, odor, smoke, loss of oil pressure, or charge indicator or over temperature warning.

Do NOT use diesel fuel blended with waste oil in engines equipped with a catalytic converter-muffler. Waste lube oil blending in fuel will plug the catalytic converter-muffler, resulting in a significant loss of engine power.

Emissions control system(s) laws

Federal law prohibits vehicle manufacturers, dealers and other persons engaged in the business of repairing, servicing, selling, leasing or trading

motor vehicles, as well as fleet operators from knowingly removing or rendering an emissions control device or system inoperative. Further, modifications of the emissions control system(s) could create liability on the part of individual owners under the laws of some states. In Canada, modification of the emissions control system could create liability under applicable Federal or Provincial laws.

NOISE EMISSIONS WARRANTY, PROHIBITED TAMPERING ACTS AND MAINTENANCE

On January 1, 1978, Federal regulations became effective governing the noise emissions on trucks over 10,000 lb. (4,536 kg) GVWR. The following statements concerning prohibited tampering acts and maintenance and the noise warranty are found in the Warranty Guide, and are applicable to completed trucks.

Tampering with noise control system prohibited

Federal law prohibits the following acts or the causing thereof: (1) The removal or rendering inoperative, by any person other than for purposes of maintenance, repair or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the following acts listed:

Vehicle System	Acts
Acoustical Shielding	Removal of noise shields, hood blanket, tunnel liner or acoustical absorptive material.
Engine	Removal or rendering inoperative the engine speed governor so as to allow engine speed to exceed manufacturer specifications. Removal of engine mounted noise shield or oil pan enclosure.
Engine Air Induction System	Removal of the air duct, silencer, air cleaner, and/or air cleaner element and baffle in air cleaner; re-indexing of air cleaner.

Vehicle System	Acts
Exhaust System	Removal or rendering inoperative exhaust system components including the catalytic converter - muffler assembly, inlet pipe, outlet pipe, resonator and flexpipe. Rotation of horizontal exhaust system directional outlet pipe to cause the exhaust to be emitted in a direction other than downward.
Engine Cooling System	Removal or rendering inoperative the fan clutch. Removal or modification of the fan shroud. Replacing a fixed fan with a fan of increased diameter, different number of blades or different pitch width.

MAINTENANCE

Instructions for maintenance and service of the noise control system have been included in the scheduled maintenance services listed later in this section. To further help minimize noise emissions degradation throughout the life of the vehicle, Ford Motor Company recommends that this vehicle should be operated in the manner described within the Owner's Guide. Caution should be exercised by the owner when installing replacement parts to be sure that a tampering act (as outlined above) is not committed. Note any inspection and service performed in the Maintenance Record.

EMISSIONS INFORMATION LABEL

Emissions information appears on the Important Engine Information Decal located on or near the engine.

SCHEDULED MAINTENANCE SERVICES

Maintenance service adjustments must conform to specifications contained in this manual, and those shown on the Important Engine Information Decal. The following services are to be performed at scheduled intervals because they are considered essential to the life and performance of your vehicle. Ford recommends that you perform maintenance on all designated items to achieve best vehicle operation.

Scheduled maintenance beyond 100,000 miles (160,000 km) should be continued as before 100,000 miles (160,000 km).

SCHEDULED MAINTENANCE GUIDE

MAINTENANCE SERVICES AND RECORD RETENTION

The maintenance record form which follows is for your convenience. In addition to recording the services performed, you should retain copies of your receipts for the services. You also should keep records of any emission control systems maintenance services performed on your vehicle.

Maintenance Record

Warranty Start Date _____ Engine Displacement _____

Vehicle Identification Number _____ Owner Name _____

IMPORTANT — This document should remain with the vehicle at all times.

Daily owner checks	
Engine	Check the air filter restriction gauge
	Check the engine oil level
	Inspect the engine coolant level
Transmission	Visually check the automatic transmission for fluid leakage
Steering system	Check the power steering pump fluid level and check the system for leaks
	Check the entire vehicle for evidence of fluid leaks
U.S. Department of Transportation, Federal Highway Administration requirements (ensure that the entire system is functioning properly)	Check the service brakes
	Check the parking brake
	Check the steering mechanism
	Check the lighting devices and reflectors
	Check the tires
	Check the horn
	Check the windshield wipers
	Check the rear vision mirrors
	Check the wheels and rims
	Check the emergency equipment

Check every oil change (7,500 miles [12,000 km])	
Engine	Check the engine cooling hoses, clamps and protection*
	Inspect the drive belts
Exhaust system	Inspect the entire exhaust system including the inlet pipe(s), muffler(s), outlet pipe(s), clamps and fasteners, for holes, leaks, breaks, corrosive damage and separation from other components. Adjust, service or replace with the same or the equivalent part. (Also a noise emission control service.)
Driveline and rear axle	Lubricate the U-joints and the slip yoke

Check every oil change (7,500 miles [12,000 km])	
Brake system	Inspect the disc brake pads and the piston boots.
	Inspect the parking brake system; adjust if necessary.
Fuel system	Drain the accumulated water or sediment from the fuel tank(s)
Steering system	Lubricate the steering shaft(s), U-joints and splines when equipped with grease fittings
	Grease the power steering gear output shaft
* Coolant protection checks should be made just prior to the onset of freezing weather, where applicable. If coolant is dirty or rusty in appearance, the system should be drained, flushed and refilled with the prescribed solution of engine coolant and water. Use only permanent type coolant that meets Ford specifications WSS-M97B51-A1 or add the coolant type originally equipped in your vehicle. See the engine manufacturer's operating guide for supplemental corrosion inhibitor specifications.	

In addition to the items to be performed daily or at each oil change, the services listed in *General Maintenance Services* need to be completed as specified.

GENERAL MAINTENANCE SERVICES

The following are vehicle checks that should be made periodically either by the owner or a qualified technician. It is recommended that deficiencies be brought to the attention of your dealer or another qualified service outlet as soon as possible in order that advice regarding the need for service or replacement can be obtained.

Maintenance Operation	Frequency - Observation
Check the operation of the brakes and the steering(1,2)	Vehicle handling qualities not up to par.
Inspect the vehicle for missing, damaged, or mislocated noise shields	Excessive noise emanates from under the cab or engine compartment.

Maintenance Operation	Frequency - Observation
Check the engine performance and the engine governor	Excessive engine noise.
Inspect the fan, the fan shroud, and the fan clutch	Engine overheats, fans runs at high speed constantly, excessive fan noise, or fan wobble due to worn bearings.
Check for operation of ABS warning lamp	At each engine start up.
Inspect the entire exhaust system (including inlet pipe, muffler, outlet pipe and all exhaust clamps and fasteners) for holes, leakage, breakage, looseness and corrosive damage	Excessive noise or the smell of fumes is experienced.
Inspect the engine air induction system (including the air ducts, the air cleaner, and the air cleaner element) for loose fitting, damaged or missing components	Excessive noise emanates from the engine compartment.
Inspect the tires and check the air pressure(3)	Poor steering, wandering or excessive tire wear.
Balance the wheels and the tires	Vibration or abnormal tire wear indicates imbalance.
Check the front end alignment(3)	Poor steering, wandering or excessive tire wear.
Check the transmission and engine mountings	Excessive vibration.
Check and adjust transmission controls(2)	High effort to shift or noisy transmission.
Check fuel pump pressure	Insufficient full-throttle power.
Clean radiator cap seal. Clean and inspect the cap surface on the radiator	When the cap does not hold pressure.

Maintenance Operation	Frequency - Observation
Check the battery terminals for corrosion	Whenever electrical power supply has diminished.
Retorque suspension U-bolts	Retorque at 1000 miles (1600 km), 7500 miles (12000 km) and every 30000 miles (48000 km) thereafter.
Tighten the wheel mounting nuts to the specified torque. Refer to *Servicing your wheels and tires*	Required initially at 500 and 1000 miles (800 and 1600 km). Perform again at 500 and 1000 mile (800 and 1600 km) intervals after each tire removal/replacement.
Clean body/door drain holes	At least twice annually.
Clean windshield wiper blades	As required.
Replace windshield wiper blades	If wiping the blades with a clean cloth and mild detergent and washing with a cleaner does not restore a clean wipe.
Lubricate body lock cylinders	Noisy or difficult to operate.
Check headlamp alignment	Lamp beams in wrong position when vehicle operating loaded.
Check windshield washer fluid level; add fluid if required	If washes do not spray when operated.
(1) During maintenance and repair, protect the fuel tube and the hose assemblies, the power steering lines, and the brake lines from the external heat, the acids and the abrasion that could damage the lines.	
(2) Check for (free) linkage action and ensure that (return) spring force is adequate to maintain pedal free play.	
(3) Adjust, repair or replace as required with the same or equivalent parts.	

SERVICE REQUIREMENTS - EVERY DAY

Check engine oil level.
Check engine coolant level.
Drain water separator for fuel system.
Inspect for external leakage.
Inspect air restriction indicator.

SERVICE REQUIREMENTS - EVERY YEAR

Change fuel filters (if not done sooner due to mileage).

Change power steering fluid.

Inspect and lubricate driveline U-joints, king pins, steering gear shaft, ball joints, cab latch, door check straps, door and cab seals and door locks.

Change rear axle fluid.

SERVICE REQUIREMENTS - EVERY TWO YEARS

Change engine air filter (if not done sooner due to mileage).

SERVICE REQUIREMENTS - EVERY THREE YEARS

Second and subsequent engine coolant changes (if not done sooner due to mileage). Add the coolant type originally equipped in your vehicle

SERVICE REQUIREMENTS - EVERY FIVE YEARS

Change engine coolant (first change; if not done sooner due to mileage). Add the coolant type originally equipped in your vehicle

Change power steering filter (if not done sooner due to mileage).

NORMAL SCHEDULED MAINTENANCE AND LOG

The following section contains the “Normal Schedule”. This schedule is presented at specific mileage (kilometer) intervals with exceptions noted.

Labor description	Time in service		1 year		2 years		3 years		4 years		5 years
	Miles (x1000)	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75
	Kilometers (x1000)	12	24	36	48	60	72	84	96	108	120
	Engine hours	200	400	600	800	1000	1200	1400	1600	1800	2000
Change engine oil and replace oil filter (6 months or 7,500 miles [12,000 km] maximum service length) and lubricate cab latch, driveline U-joints and splines		•	•	•	•	•	•	•	•	•	•
Replace engine and chassis mounted fuel filters			•		•		•		•		•
Inspect and lubricate king pins, steering gear shaft, ball joints, door check straps, door and cab seals and door locks			•		•		•		•		•
Inspect tires for wear, measure tread depth, check front wheel ends for play and noise and rotate front tires; rotate rear tires if unique conditions require (re-torque of rear lug nuts required 500 miles [800 km] after rotation or wheel removal)		•	•		•		•		•		•
Inspect engine cooling system and hoses		•	•	•	•	•	•	•	•	•	•
Inspect brake pads, shoes, rotors, drums, brake lines and hoses and adjust parking brake system		•	•	•	•	•	•	•	•	•	•
Inspect drive and steering shaft boots		•	•	•	•	•	•	•	•	•	•
Inspect exhaust system and heat shields		•	•	•	•	•	•	•	•	•	•
Inspect drive belts					•				•		
Re-torque suspension U-bolts		•			•				•		
Inspect engine air filter. (Replace engine air filter every two years, 52,500 miles [84,000 km] or as required by the air filter restriction gauge)		•	•	•	•(1)	•	•	•(1)	•(1)	•	•

Labor description	Time in service	7.5	1 year	15	22.5	2 years	30	37.5	3 years	45	52.5	4 years	60	67.5	5 years	75
	Miles (x1000)															
	Kilometers (x1000)	12		24	36		48	60		72	84		96	108		120
	Engine hours	200		400	600		800	1000		1200	1400		1600	1800		2000
Change automatic transmission fluid and external spin-on filter							•						•			
Lubricate front wheel bearings and replace wheel bearing grease seals (if not done during brake service in the last 30,000 miles [48,000 km])							•						•			
Change power steering oil			• (2)			• (2)			• (2)			• (2)			• (2)	
Change rear axle fluid			• (3)			• (3)			• (3)			• (3)			• (3)	
Change Motorcraft Premium Gold Engine Coolant (Five years/105,000 miles [170,000 km] for first coolant change)															• (4)	
Replace power steering filter															•	
Replace front wheel bearings and grease seals																
Replace drive belt(s)																
(1) Air filter replacement is required at every 52,500 miles (84,000 km) OR every two years, whichever comes first.																
(2) Every 97,500 miles (156,000 km) OR every year.																
(3) Dana axle fluid replacement is required at every 60,000 miles (96,000 km) OR every year.																
(4) Motorcraft Premium Gold Engine Coolant is to be replaced at five years or 105,000 miles (170,000 km) for the first change, then every three years/45,000 miles (72,000 km) thereafter.																
(5) Replace drive belts if not replaced in the last 100,000 miles (160,000 km) during inspection.																

Labor description	Time in service			6 years		7 years		8 years		9 years		10 years
	Miles (x1000)	82.5	90	97.5	105	112.5	120	127.5	135	142.5	150
	Kilometers (x1000)	132	144	156	168	180	192	204	216	228	240
	Engine hours	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000
Change engine oil and replace oil filter (6 months or 7,500 miles [12,000 km] maximum service length) and lubricate cab latch, driveline U-joints and splines		•	•	•	•	•	•	•	•	•	•
Replace engine and chassis mounted fuel filters			•		•		•		•		•
Inspect and lubricate king pins, steering gear shaft, ball joints, door check straps, door and cab seals and door locks			•		•		•		•		•
Inspect tires for wear, measure tread depth, check front wheel ends for play and noise and rotate front tires; rotate rear tires if unique conditions require (re-torque of rear lug nuts required 500 miles [800 km] after rotation or wheel removal)			•		•		•		•		•
Inspect engine cooling system and hoses		•	•	•	•	•	•	•	•	•	•
Inspect brake pads, shoes, rotors, drums, brake lines and hoses and adjust parking brake system		•	•	•	•	•	•	•	•	•	•
Inspect drive and steering shaft boots		•	•	•	•	•	•	•	•	•	•
Inspect exhaust system and heat shields		•	•	•	•	•	•	•	•	•	•
Inspect drive belts			•				•				
Re-torque suspension U-bolts			•				•				•
Inspect engine air filter. (Replace engine air filter every two years, 52,500 miles [84,000 km] or as required by the air filter restriction gauge)		•	•(1)	•	•(1)	•	•(1)	•	•	•	•(1)

Labor description	Time in service	6 years		7 years		8 years		9 years		10 years	
	Miles (x1000)	82.5	90	97.5	105	112.5	120	127.5	135	142.5	150
	Kilometers (x1000)	132	144	156	168	180	192	204	216	228	240
	Engine hours	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000
Change automatic transmission fluid and external spin-on filter			•				•				•
Lubricate front wheel bearings and replace wheel bearing grease seals (if not done during brake service in the last 30,000 miles [48,000 km])			•				•				
Change power steering oil			• (2)	• (2)	• (2)		• (2)		• (2)		• (2)
Change rear axle fluid			• (3)		• (3)		• (3)		• (3)		• (3)
Change Motorcraft Premium Gold Engine Coolant (Five years/105,000 miles [168,000 km] for first coolant change)					• (4)		• (4)				• (4)
Replace power steering filter											•
Replace front wheel bearings and grease seals											•
Replace drive belt(s)											• (5)
(1) Air filter replacement is required at every 52,500 miles (84,000 km) OR every two years, whichever comes first.											
(2) Every 97,500 miles (156,000 km) OR every year.											
(3) Dana axle fluid replacement is required at every 60,000 miles (96,000 km) OR every year.											
(4) Motorcraft Premium Gold Engine Coolant is to be replaced at five years or 105,000 miles (170,000 km) for the first change, then every three years/45,000 miles (72,000 km) thereafter.											
(5) Replace drive belts if not replaced in the last 100,000 miles (160,000 km) during inspection.											

Labor description	Time in service		11 years		12 years		13 years		14 years		15 years	
	Miles (x1000)	157.5	165	172.5	180	187.5	195	202.5	210	217.5	225	
	Kilometers (x1000)	252	264	276	288	300	312	324	336	348	360	
	Engine hours	4200	4400	4600	4800	5000	5200	5400	5600	5800	6000	
Change engine oil and replace oil filter (6 months or 7,500 miles [12,000 km] maximum service length) and lubricate cab latch, driveline U-joints and splines		•	•	•	•	•	•	•	•	•	•	
Replace engine and chassis mounted fuel filters			•		•		•		•		•	
Inspect and lubricate king pins, steering gear shaft, ball joints, door check straps, door and cab seals and door locks			•		•		•		•		•	
Inspect tires for wear, measure tread depth, check front wheel ends for play and noise and rotate front tires; rotate rear tires if unique conditions require (re-torque of rear lug nuts required 500 miles [800 km] after rotation or wheel removal)			•		•		•		•		•	
Inspect engine cooling system and hoses		•	•	•	•	•	•	•	•	•	•	
Inspect brake pads, shoes, rotors, drums, brake lines and hoses and adjust parking brake system		•	•	•	•	•	•	•	•	•	•	
Inspect drive and steering shaft boots		•	•	•	•	•	•	•	•	•	•	
Inspect exhaust system and heat shields		•	•	•	•	•	•	•	•	•	•	
Inspect drive belts					•				•			
Re-torque suspension U-bolts					•				•			
Inspect engine air filter. (Replace engine air filter every two years, 52,500 miles [84,000 km] or as required by the air filter restriction gauge)		•(1)	•	•	•(1)	•	•	•	•(1)	•	•	

Labor description	Time in service	11 years		12 years		13 years		14 years		15 years	
	Miles (x1000)	157.5	165	172.5	180	187.5	195	202.5	210	217.5	225
	Kilometers (x1000)	252	264	276	288	300	312	324	336	348	360
	Engine hours	4200	4400	4600	4800	5000	5200	5400	5600	5800	6000
Change automatic transmission fluid and external spin-on filter					•				•		
Lubricate front wheel bearings and replace wheel bearing grease seals (if not done during brake service in the last 30,000 miles [48,000 km])					•				•		
Change power steering oil		• (2)		• (2)		• (2)			• (2)		• (2)
Change rear axle fluid		• (3)		• (3)		• (3)			• (3)		• (3)
Change Motorcraft Premium Gold Engine Coolant (Five years/105,000 miles [168,000 km] for first coolant change)		• (4)							• (4)		
Replace power steering filter											•
Replace front wheel bearings and grease seals											
Replace drive belt(s)											

(1) Air filter replacement is required at every 52,500 miles (84,000 km) OR every two years, whichever comes first.

(2) Every 97,500 miles (156,000 km) OR every year.

(3) Dana axle fluid replacement is required at every 60,000 miles (96,000 km) OR every year.

(4) Motorcraft Premium Gold Engine Coolant is to be replaced at five years or 105,000 miles (170,000 km) for the first change, then every three years/45,000 miles (72,000 km) thereafter.

(5) Replace drive belts if not replaced in the last 100,000 miles (160,000 km) during inspection.

Labor description	Time in service		16 years		17 years		18 years		19 years		20 years
	Miles (x1000)	232.5	240	247.5	255	262.5	270	277.5	285	292.5	300
	Kilometers (x1000)	372	384	396	408	420	432	444	456	468	480
	Engine hours	6200	6400	6600	6800	7000	7200	7400	7600	7800	8000
Change engine oil and replace oil filter (6 months or 7,500 miles [12,000 km] maximum service length) and lubricate cab latch, driveline U-joints and splines		•	•	•	•	•	•	•	•	•	•
Replace engine and chassis mounted fuel filters			•		•		•		•		•
Inspect and lubricate king pins, steering gear shaft, ball joints, door check straps, door and cab seals and door locks			•		•		•		•		•
Inspect tires for wear, measure tread depth, check front wheel ends for play and noise and rotate front tires; rotate rear tires if unique conditions require (re-torque of rear lug nuts required 500 miles [800 km] after rotation or wheel removal)			•		•		•		•		•
Inspect engine cooling system and hoses		•	•	•	•	•	•	•	•	•	•
Inspect brake pads, shoes, rotors, drums, brake lines and hoses and adjust parking brake system		•	•	•	•	•	•	•	•	•	•
Inspect drive and steering shaft boots		•	•	•	•	•	•	•	•	•	•
Inspect exhaust system and heat shields		•	•	•	•	•	•	•	•	•	•
Inspect drive belts			•				•				
Re-torque suspension U-bolts			•				•				•
Inspect engine air filter. (Replace engine air filter every two years, 52,500 miles [84,000 km] or as required by the air filter restriction gauge)		•	•(1)	•	•	•(1)	•(1)	•	•	•	•(1)

Labor description	Time in service	16 years		17 years		18 years		19 years		20 years
	Miles (x1000)	232.5	240	247.5	255	262.5	270	277.5	285	292.5	300
	Kilometers (x1000)	372	384	396	408	420	432	444	456	468	480
	Engine hours	6200	6400	6600	6800	7000	7200	7400	7600	7800	8000
Change automatic transmission fluid and external spin-on filter		•					•				•
Lubricate front wheel bearings and replace wheel bearing grease seals (if not done during brake service in the last 30,000 miles [48,000 km])		•					•				•
Change power steering oil		• (2)		• (2)		• (2)			• (2)		• (2)
Change rear axle fluid		• (3)		• (3)		• (3)			• (3)		• (3)
Change Motorcraft Premium Gold Engine Coolant (Five years/105,000 miles [168,000 km] for first coolant change)		• (4)		• (4)						• (4)	
Replace power steering filter											•
Replace front wheel bearings and grease seals											•
Replace drive belt(s)											• (5)
(1) Air filter replacement is required at every 52,500 miles (84,000 km) OR every two years, whichever comes first.											
(2) Every 97,500 miles (156,000 km) OR every year.											
(3) Dana axle fluid replacement is required at every 60,000 miles (96,000 km) OR every year.											
(4) Motorcraft Premium Gold Engine Coolant is to be replaced at five years or 105,000 miles (170,000 km) for the first change, then every three years/45,000 miles (72,000 km) thereafter.											
(5) Replace drive belts if not replaced in the last 100,000 miles (160,000 km) during inspection.											

Date: Odometer reading: R.O.#	Dealer's Stamp:

Date: Odometer reading: R.O.#	Dealer's Stamp:

Date: Odometer reading: R.O.#	Dealer's Stamp:

Date: Odometer reading: R.O.#	Dealer's Stamp:

Date: Odometer reading: R.O.#	Dealer's Stamp:

Date: Odometer reading: R.O.#	Dealer's Stamp:

Date: Odometer reading: R.O.#	Dealer's Stamp:

Date: Odometer reading: R.O.#	Dealer's Stamp:

Date: Odometer reading: R.O.#	Dealer's Stamp:

Date: Odometer reading: R.O.#	Dealer's Stamp:

Date: Odometer reading: R.O.#	Dealer's Stamp:

Date: Odometer reading: R.O.#	Dealer's Stamp:

Date: Odometer reading: R.O.#	Dealer's Stamp:
Date: Odometer reading: R.O.#	Dealer's Stamp:
Date: Odometer reading: R.O.#	Dealer's Stamp:
Date: Odometer reading: R.O.#	Dealer's Stamp:
Date: Odometer reading: R.O.#	Dealer's Stamp:
Date: Odometer reading: R.O.#	Dealer's Stamp:

Date: **Odometer reading:** **R.O.#**	**Dealer's Stamp:**

Date: **Odometer reading:** **R.O.#**	**Dealer's Stamp:**

Date: **Odometer reading:** **R.O.#**	**Dealer's Stamp:**

Date: **Odometer reading:** **R.O.#**	**Dealer's Stamp:**

Date: **Odometer reading:** **R.O.#**	**Dealer's Stamp:**

Date: **Odometer reading:** **R.O.#**	**Dealer's Stamp:**

SPECIAL OPERATING CONDITIONS

If your driving habits **frequently** include one or more the following conditions:

- Short trips of **less** than 10 miles (16 km) when outside temperatures remain below freezing.
- Operating during **hot weather** in stop-and-go “rush hour” traffic.
- Operating in severe dust conditions.
- Extensive idling, or low speed operation such as door-to-door delivery service.
- High speed operation with a fully loaded vehicle (maximum GVW).
- Snowplowing.

Perform the following:

- Change engine oil and oil filter every three months, 5,000 miles (8,000 km) or 125 hours of engine operation.
- If operating in severe dust conditions, replace the engine air filter more often than regular intervals as determined by the air filter restriction gauge. Make sure that the air filter restriction gauge is in good working order.

Date: **Odometer reading:** **R.O.#**	**Dealer’s Stamp:**

See corresponding mileage in maintenance schedule for services performed.

Date: **Odometer reading:** **R.O.#**	**Dealer’s Stamp:**

See corresponding mileage in maintenance schedule for services performed.

Date: **Odometer reading:** **R.O.#**	**Dealer's Stamp:**

See corresponding mileage in maintenance schedule for services performed.

Date: **Odometer reading:** **R.O.#**	**Dealer's Stamp:**

See corresponding mileage in maintenance schedule for services performed.

MOTORCRAFT PREMIUM GOLD COOLANT CHANGE RECORD

The charts below will help you calculate your next service interval for your engine coolant change. Your first engine coolant change should occur at five years or 105,000 miles (170,000 km), whichever comes first. After the first coolant change the coolant should be changed every three years or 45,000 miles (72,000 km) whichever comes first.

Current mileage goes here =>		**Dealer Stamp**
Add 45,000 miles to the current miles	+ 45,000	
Next change due at this mileage =>		
Or		
Today's date goes here =>		
Add 3 years	+ 00 / 00 / 03	
Date of next change =>		**P & A CODE**
whichever comes first		**R.O.#**

Current mileage goes here =>		**Dealer Stamp**
Add 45,000 miles to the current miles	+ 45,000	
Next change due at this mileage =>		
Or		
Today's date goes here =>		
Add 3 years	+ 00 / 00 / 03	
Date of next change =>		**P & A CODE**
whichever comes first		**R.O.#**

Current mileage goes here =>		**Dealer Stamp**
Add 45,000 miles to the current miles	+ 45,000	
Next change due at this mileage =>		
Or		
Today's date goes here =>		
Add 3 years	+ 00 / 00 / 03	
Date of next change =>		**P & A CODE**
whichever comes first		**R.O.#**

Current mileage goes here =>		**Dealer Stamp**
Add 45,000 miles to the current miles	+ 45,000	
Next change due at this mileage =>		
Or		
Today's date goes here =>		
Add 3 years	+ 00 / 00 / 03	
Date of next change =>		**P & A CODE**
whichever comes first		**R.O.#**

Index

D

E

F

T

V

W