Symbols and Devices

Contents

Finally, the keys and the car... Your dream has come true! You climb in behind the wheel, the engine starts and purrs. Wow! Shift into gear and you're off. The sky darkens, rain starts to fall... Where is that wiper switch? Oops, not that one. Oh, There it is! The headlights. What does that bright blue light mean? Why is that oncoming car flashing high beams? My gosh... the car in front is braking... You're sliding!! Your heart is pounding!

Now what?!

Good or bad habits are acquired through repetition. Familiarity with controls must be acquired before driving. Any other course of action could be fatal. Don't wait for experience to teach you, start with the right technique. Know your controls and practice.

AFTER COMPLETING THIS CHAPTER, THE STUDENT MUST BE ABLE TO LOCATE, OPERATE AND DESCRIBE:

- **the information devices and symbols on the instrument panel.**
- **the starting and control devices for operating the vehicle.**
- **the procedures when a warning device indicates abnormal operation.**
- **the safety, comfort and convenience devices on some vehicles.**

9-A The Driver's Compartment Drill

Whether you are a novice driver or merely driving a different car for the first time, you need to be familiar with the instruments, gauges, and controls of the vehicle **before you drive**.

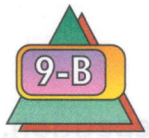
The first step: identify the location and function of all indicators/gauges in the instrument panel. Practice glancing at them (1/2 sec.), returning your eyes to the road ahead.

The second step: identify, locate and, further, use the hand controls. Practice using them until you can do so without taking your eyes from the road ahead.

The final step: perform the same practice with the vehicle controls.

Practice this driving compartment drill on the vehicle you will drive once you are licensed. This drill will assist you to feel more comfortable and be more competent in your vehicle. Also, when you take your behind-the-wheel lessons, it can be performed more quickly.

Remember, whenever you drive a new vehicle, perform this short drill. You'll never regret those few moments. When you need to use a control device urgently, you won't have to search for it.

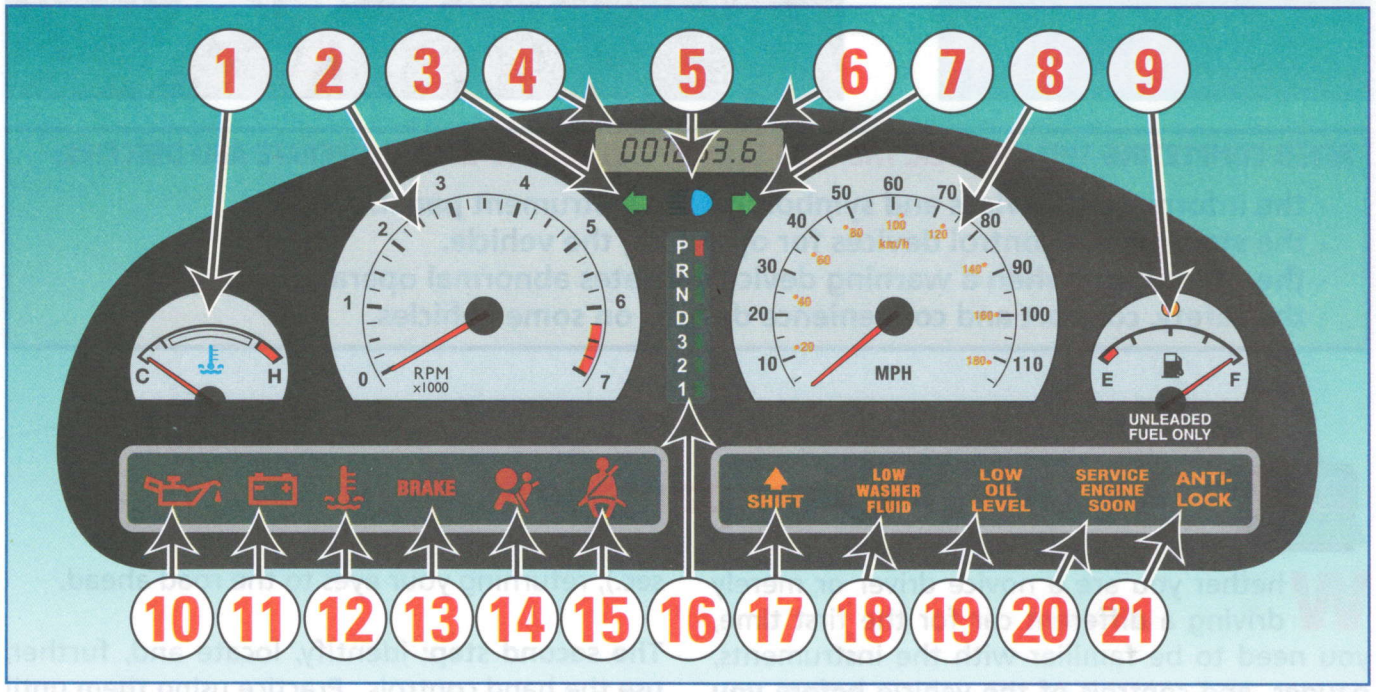


The Instrument Panel

The instrument panel cluster, part of the dash in front of the driver, has various indicators and gauges mounted on it to let you know at a glance how your vehicle is operating.

The diagram and the chart (below and opposite page) describe some of the basic items that are normally present in most dashes. You should consult the owner's manual for your vehicle (preferably while seated in the driver's seat and parked in a safe area) in order to acquaint yourself with the gauges, alert lights, and indicators that are mounted on the vehicle you will be driving. Make sure that you understand what each means and what should be done if it should become lit.

In general, alert lights or warning lights that are yellow in color denote a warning; whereas those that are red denote immediate danger, you should stop your vehicle as soon as possible.



INDICATOR	FUNCTION	INFORMATION
(1) **TEMPERATURE** (gauge (1), alert light (12), & chime)	Indicates the operating temperature of the engine coolant.	The light comes on when the engine overheats SHIFT TO NEUTRAL, DEPRESS THE GAS PEDAL SLIGHTLY TO REV MOTOR (DON'T OVER-REV). Set the heater at maximum heat. If no improvement, turn off engine (see Chapter 22).

INDICATOR	FUNCTION	INFORMATION
(2) TACHOMETER (Up-shift light (17))	Indicates the engine revolutions per minute (RPM x 1000).	Check to shift at appropriate moment (standard). Avoid entering red zone, as it may cause engine damage. Upshift light signals when to shift gears.
(3) TURN SIGNALS (Left (3), right (7))	Flashes if the turn signal or hazard lights are activated.	If the light or arrow does not flash normally, this indicates a burnt bulb or faulty wiring.
(4) ODOMETER	Displays total mileage since the vehicle was manufactured.	Check for vehicle maintenance schedule. Check when purchasing a used vehicle.
(5) HIGH BEAM	When lit, it indicates the high beams are activated.	Check when activating the headlight switch.
(6) TRIP ODOMETER	Displays the mileage since it was reset to zero.	Useful in calculating fuel consumption and trip mileage. (Button to activate and to reset.)
(8) SPEEDOMETER	Indicates the vehicle speed in miles per hour (kilometers).	Check frequently while driving to remain within the posted speed limits.
(9) FUEL GAUGE (light and chime when near empty)	Indicates the fuel level in the gas tank when the ignition is on.	CHECK BEFORE STARTING OUT! Always keep more than 1/4 full. Keep almost full in winter (TO PREVENT IMPURITIES AND GAS LINE FREEZING)!
(10) OIL PRESSURE (gauge, light, chime)	Indicates the oil pressure in the engine (or a problem with it).	The light comes on when the oil pressure is too low. STOP SAFELY AND TURN OFF THE ENGINE!
(11) BATTERY/ALTERNATOR (charging system) (gauge, light, chime)	Indicates the intensity of the electrical current.	The light comes on if the current is abnormal. Turn off all unnecessary accessories, do not shut off the engine and go to the nearest service station.
(13) BRAKE LIGHT (may have more than one light)	Indicates the parking brake is activated or the brake system is faulty.	Check the parking brake. If released, stop your vehicle safely and check the brake fluid level. If this is also normal, have your vehicle towed.
(14) AIR BAG LIGHT	Indicates the air bag system readiness (sensors in the seats may deactivate the air bags).	The light flashes when you start your vehicle and will then go out. If it stays on or comes on while you are driving, the system may be defective. Have it serviced.
(15) SAFETY BELT (light and chime)	Reminder (for all occupants) to fasten the safety belts.	The light comes on (then flashes) and a chime sounds for several seconds (the light will go out and the chime will stop when all seat belts are buckled).
(16) SELECTOR LEVER (automatic transmission)	Indicates which gear has been selected by shifting the selector lever.	The shift or selector lever is usually located on the console between the front seats. Complete operation is explained later in this chapter.
(17) UP-SHIFT LIGHT (standard transmission)	Illuminates to warn driver to shift to a higher gear.	You will save gas (and money) if you accelerate smoothly and shift to a higher gear when the light illuminates. You will also produce less emissions (more eco-friendly).
(18) LOW WASHER FLUID LEVEL (light and chime)	Indicates washer fluid level is less than one-third full.	Illuminates during starting, then goes out. If it stays on or comes on (and chimes) while driving, you need to refill the washer fluid reservoir.
(19) LOW ENGINE OIL FLUID LEVEL	Indicates the engine oil level is too low and should be checked immediately.	Illuminates during starting, then goes out. If it stays on or comes on (and chimes) while driving, you need to check the oil level (likely having to add oil).
(20) SERVICE ENGINE SOON (light and chime)	Indicates a problem in the operation of the fuel, ignition, and/or emission control systems.	Computer monitors fuel, ignition, and emission control systems. The light alerts you to problems even before they may be apparent. Service is required. (Flashing indicates misfire condition, steady indicates emission control problems.).
(21) ANTI-LOCK BRAKE (ABS system)	Indicates the condition of the Anti-Lock Brake System (ABS)	Illuminates during starting, then goes out. If it comes on, it indicates the ABS is inoperative (pump, sensor, computer). (The regular brakes are still operative.) Service ABS soon.

TPMS: A **tire pressure monitoring system** is an electronic system (sensor in each tire) for monitoring the air inflation pressure in the vehicle tires and automatically transmitting a warning to the driver via a dashboard display or warning light (as shown illuminated) in the event of an under-inflation (by 25%) and, in some cases, an over-inflated tire.

BLIND-SPOT INFORMATION SYSTEM: This technology is designed to alert you to cars/objects in your blind spot. If it detects something, it may illuminate /flash a light in the mirror/door frame (and instrument panel), cause the seat or steering wheel to vibrate, or sound an alarm. It ***may only*** operate when you activate the turn signal.

SAFETY TIPS

Don't wait for a warning light to illuminate while driving, read and understand the owner's manual in advance (plan a course of action for each emergency). Then you can be calm and cool if and when the unexpected should happen and avoid fumbling for emergency solutions in the manual when an alert light illuminates or a chime sounds.

9-C

The Vehicle Controls

In addition to the instrument panel, vehicles are equipped with a number of other controls such as lights, comfort controls, steering, braking, and controls for safety.

9

RHEOSTAT (A)

- Regulates the intensity of backlighting in the instrument panel.
- Lower the intensity in unlit areas; raise the intensity in well lit areas.

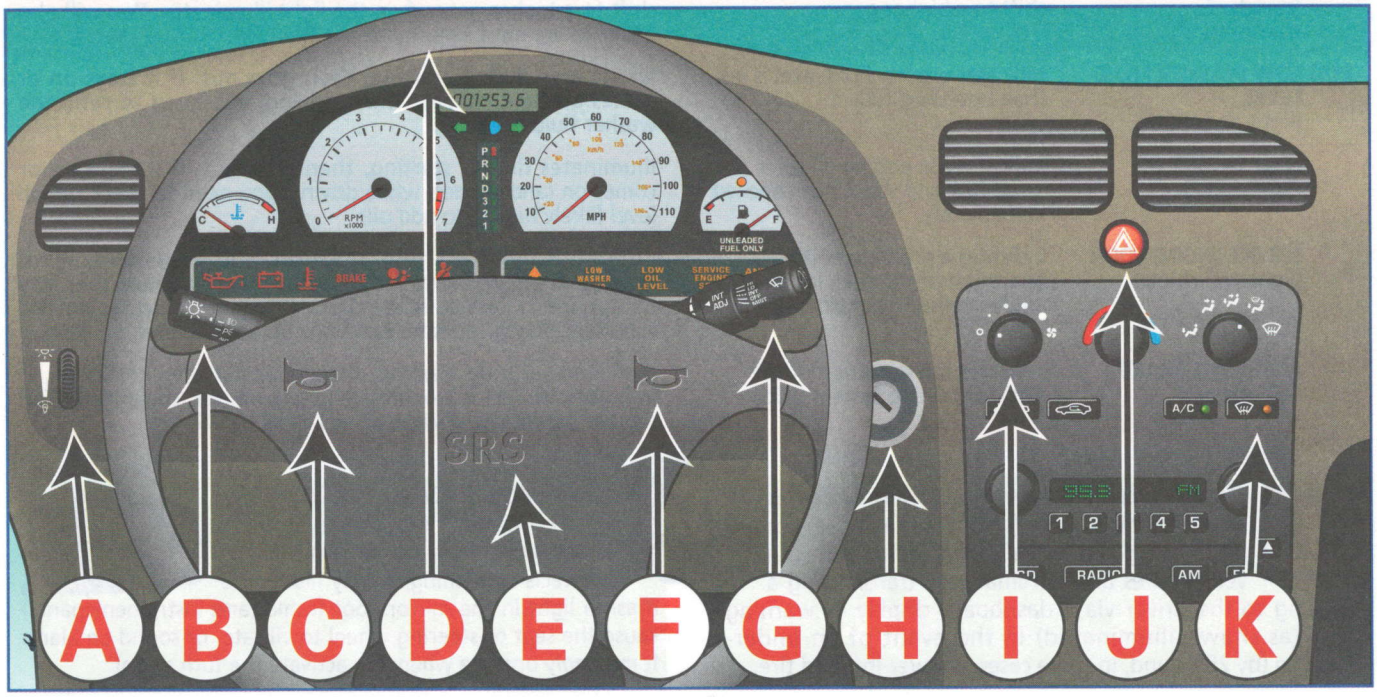
MULTI-FUNCTION LEVER (B)

This lever **(B)** on the left side of the steering column includes the following:

- Turn and Lane-Change Signals.
- Headlights and High/Low Beam Changer.
- Flash-to-pass Feature.

TURN SIGNAL LEVER (B):

- Use to communicate your intentions for **turning maneuvers** - move using fingers (hand on wheel) in the same direction as you will move the steering wheel.
- Activates the turn signal lights and an indicator light in the instrument panel.
- When the turn is completed, the lever will normally return automatically. (May have a warning chime if it remains on.)



- May activate the **BLIND-SPOT INFORMATION SYSTEM** device (on some models).

LANE-CHANGE SIGNAL (B):
- Use fingertips to move the lever until the arrow starts to flash. Some systems will flash three or four times then stop. (Move in same direction as previous.)

HEADLIGHT CONTROL (B):
Turn the outside part of the lever with the symbol on it, to operate the lights.

FIRST POSITION:
- **Turns on the parking lights** - amber lights in front, red in rear, use when parking if you must ensure the vehicle is visible to other road users.
- NEVER use alone when in motion.
- The instrument panel, license plate, and side marker lights will also come on.

SECOND POSITION:
- **Turns on headlights** as well as the ones mentioned in the first position.
- Always check the high beam indicator.
- High or low beams may be on.
- **Daytime Running Lights (DRL)** are becoming more common (state law).

HIGH BEAM DIMMER SWITCH (B):
- Push or pull the lever to change intensity of the headlights.
- The blue high beam indicator light informs you when the high beams are lit.

FLASH-TO-PASS FEATURE (B):
- Pull the multi-function lever toward you until the high-beam headlights are illuminated; release lever to turn them off. (Signal driver ahead of your intention to pass - communication.)

HORN (C and F)

You can sound the horn by pressing the symbol on the steering wheel **(C & F)** :
- A warning device used to alert other road-users of your presence.
- May be located on the signal lever.
- Do not overuse or abuse.

STEERING WHEEL (D)

The steering wheel:
- Controls the position of the front wheels.
- Turning the wheel to the right will direct your vehicle to the right; to go left, turn the wheel to the left.
- Avoid turning the steering when the vehicle is stationary (**dry steering**).
- **TILT** steering (optional) allows you to adjust the position of the wheel before driving.

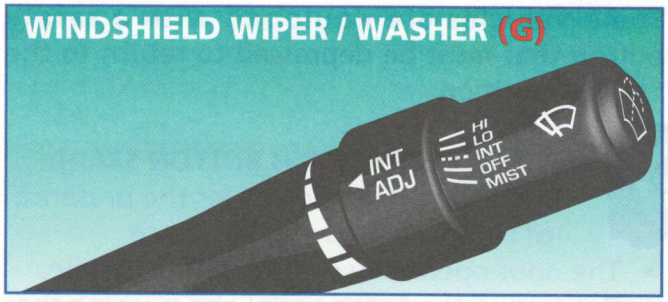
AIR BAG (E)

A frontal driver air bag, located in the hub of the steering wheel **(E)**, is designed to protect the driver in a frontal collision. Some precautions with seating position (Chapter 7) and checking Air Bag Readiness light are advised (see Chapter 13).

WINDSHIELD WIPER/ WASHER (G)

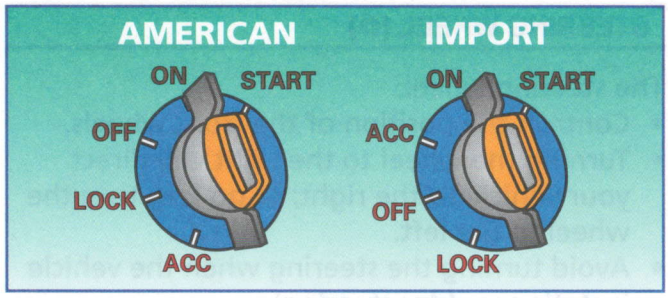
Use the windshield wiper and washer located on the right of the steering column (may also be located on the dash) to operate wipers.
- Use to clear the windshield.
- Turn outside of lever to positions - **OFF, INTERMITTENT** (optional), **SLOW, FAST**. (Never use when the windshield is dry.)
- Push end of stalk for washer fluid to clean the windshield (check reservoir).
- Install winter blades when necessary.
- Rear-window wipers and washer are available on some models (extra control).
- Automatic setting (new technology) detects when windshield requires cleaning.

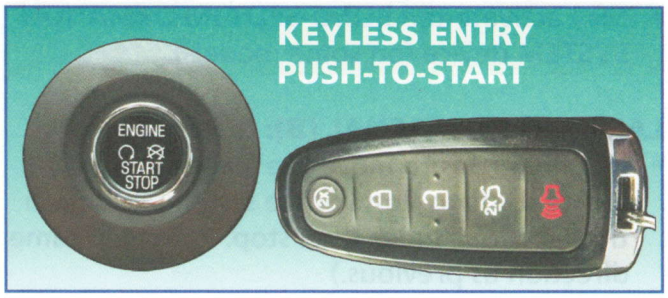
WINDSHIELD WIPER / WASHER (G)



IGNITION SWITCH (H)

The more square-looking of the two keys, the ignition key, may be inserted or removed in the lock position only. (On many vehicles may be





located on the right side of the steering column.)

"LOCK" POSITION:

- The steering is locked. Most electrical systems are inoperative.
- Transmission must be in **P**ark (automatic).

"OFF" POSITION:

- Most electrical systems are inoperative. The steering is not locked.

"ACC" POSITION (ACCESSORIES):

- Electrical accessories are operative .

"ON" POSITION:

- All electrical systems are operative.
- Indicator lights and gauges can be checked for any malfunctions.

"START" POSITION:

- Spring-loaded, a slight extra pressure must be exerted to turn the key to this position, which will then activate the starter motor (may require depressing the brake pedal).
- Release the key and switch when the engine is operating (sound of motor).
- Never engage for more than 10 seconds.
- **IF THE ENGINE IS NOT OPERATING, WAIT SEVERAL SECONDS BEFORE RE-STARTING.** (Some vehicles require returning to **"OFF"** before re-starting.)

Some vehicles are equipped with a safety button that must be depressed to return to the "LOCK" position.

KEYLESS ENTRY - PUSH BUTTON START:

- The technology recognizes the presence of the key fob as you approach.
- The door opens when you pull the handle.
- Depressing the brake pedal and pushing the "START-STOP" button activates the starter.
- Pushing the "START-STOP" button without the brake pedal activates accessories.
- To stop engine, push "START-STOP" button.
- Opening the door turns off all accessories.

COMFORT CONTROL (HVAC) (I)

- To control the temperature in the passenger compartment.
- To direct air at the windshield and windows to help keep them clear.
- Air conditioner to cool air is optional.
- CONTROLS PERMIT DIRECTING THE AIR - VENT, HEATER, DEFROST.
- Temperature - from cold to hot.
- Air recirculation or from the exterior.
- Fan control - to increase air flow.

TOUCH SCREEN (not shown):

- Located in the center of the dash.
- Incorporates back-up camera.
- Multiple screens provide access to and replace many controls, stereo, comfort control, heated seats, defrost, defogger, etc.

Check the owner's manual for the vehicle in which you will be driving prior to getting behind the wheel.

HAZARD SWITCH (J)

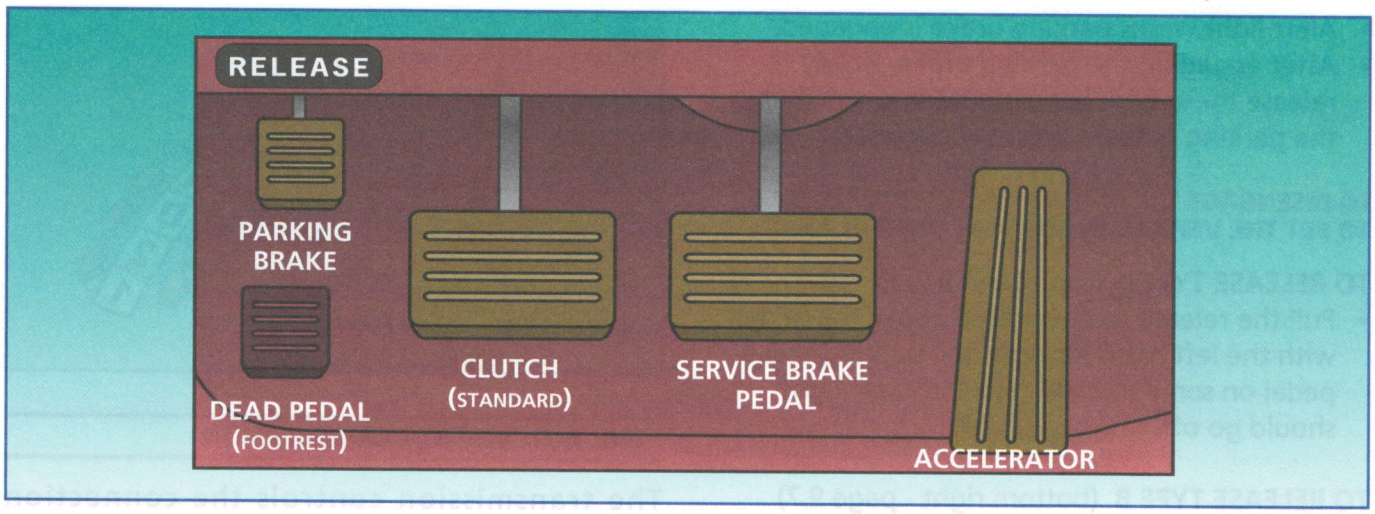
Pressing the button activates warning flashers but disables turn signals. The turn signals in both directions will flash simultaneously. Use to alert other road users of danger. (Button also flashes accompanied by an audible alert.)

REAR-WINDOW DEFOGGER (K)

Activates electric (heat) wires to clear the rear window (automatic shut-off).

ACCELERATOR PEDAL (or GAS PEDAL)

- Controls the speed of the engine.
- Operate using right foot, heel on the floor, exert pressure using the "ball" of foot.



- Pressure supplies more fuel to engine causing increased speed when in gear.
- Releasing pressure will cause the vehicle to decelerate gradually.

BRAKE PEDAL (or SERVICE BRAKE PEDAL)

- Controls the service brake system to slow or stop the vehicle.
- Operate using right foot, heel on the floor (if possible).
- Exert pressure using the "ball" of the foot.
- Pressure activates the service brakes slowing the wheels thus, in turn, slowing the vehicle.
- Different brake systems (power brakes) may require less pressure to activate.
- Test the pressure required several times at slow speeds.

- **BRAKE ASSIST** - collision-avoidance systems using frontal sonar/radar that will pre-tension the brake system, alert the driver, increase brake pressure to prevent a crash, may stop the vehicle to avoid a crash, balance brake pressure at each wheel, etc.

CLUTCH PEDAL

- Found on cars with standard transmissions.
- Disengages the motor from the transmission to allow shifting (changing) gears, stopping the vehicle and during the "start" procedure.
- Operate using left foot ("ball") and depress completely to disengage.
- Pedal must be fully depressed to start the engine (most cars are equipped with a "**clutch safety switch**" that prevents starting unless the pedal is fully depressed).

PARKING BRAKE (or EMERGENCY BRAKE)

- Controls the "mechanical" brakes.
- Usually applies on the rear wheels.
- Use when parking, after stopping, to restrain the vehicle (prevent movement).
- An indicator light (brake) will come on when the parking brake is in applied position.

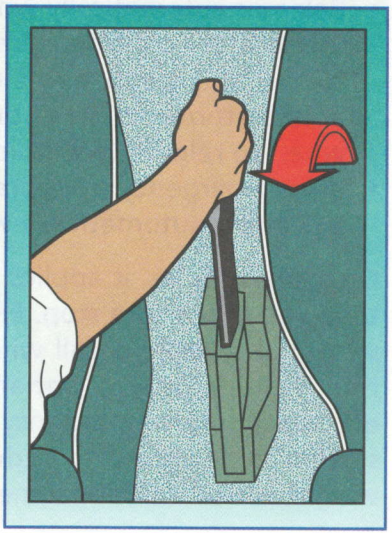
TO ENGAGE THE PARKING BRAKE:

TYPE A (in the illustration above)

- Operate using left foot, depress foot pedal firmly (pump to increase pressure on some models / press to release - no release handle - on other models). Check your owner's manual for the operation of the parking brake in your family vehicle.

TYPE B (right)

- Operate using your right hand, pull firmly (hand lever) locks in the applied position.



BOTH TYPES:

- Always use when parked, after stopping completely.

- Alert light warns parking brake is engaged.
- After engaging the parking brake, slowly release the service brake pedal to check that the parking brake is properly engaged.

TO DISENGAGE THE PARKING BRAKE - TO RELEASE, TO SET THE VEHICLE IN MOTION, ONCE IN GEAR:

TO RELEASE TYPE A (top - page 9.7)
- Pull the release lever (located above the pedal) with the left hand (or press the parking brake pedal on some models). The indicator light should go off.

TO RELEASE TYPE B (bottom right - page 9.7)
- Raise the lever slightly with the right hand, depress the lock mechanism (button), then lower the lever completely. The indicator light should go off.

9

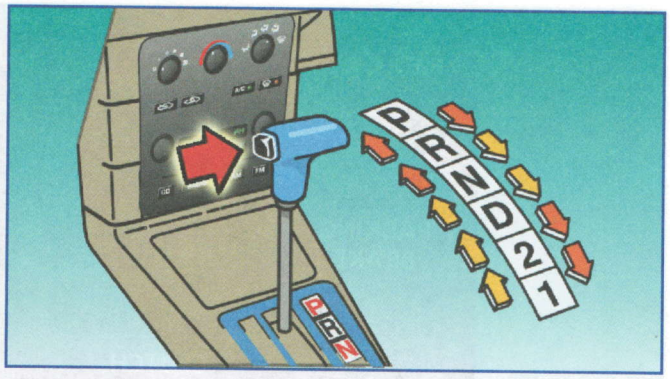
EMERGENCY STOP

In emergency situations, **if the service brakes fail**, the parking brake may be used to stop the vehicle. **While keeping the lock mechanism released, pump the parking brake to bring the vehicle to a stop.**

The stopping distance will be longer as only the back brakes are functioning; however, ***the vehicle will STOP***. This emergency maneuver should be practiced in a quiet, traffic-free area.

ELECTRONIC PARKING BRAKE (EPB):
- Brake lever replaced by a switch.
- Designed to hold vehicle securely even if onboard electrical current fails.
- Releases automatically when you depress the accelerator - control unit analyzes engine torque and speed, angle of incline, and accelerator/clutch position to determine when to release (will hold vehicle on a hill).
- In an emergency stop, press the switch - it will apply automatically without wheel skid.

On some vehicles, it applies automatically every time you brake to a stop. EPB may use the ABS system and apply on all wheels (instead of the rear wheels only) - enhancing the braking efficiency in an emergency stop. As well, this system is designed to reduce drag and save weight versus traditional mechanical brakes.



THE AUTOMATIC TRANSMISSION

The transmission controls the connection between the engine and the wheels. In forward motion, it will automatically change to the appropriate economical gear - hence the name. The driver may override the system by selecting a specific gear position.

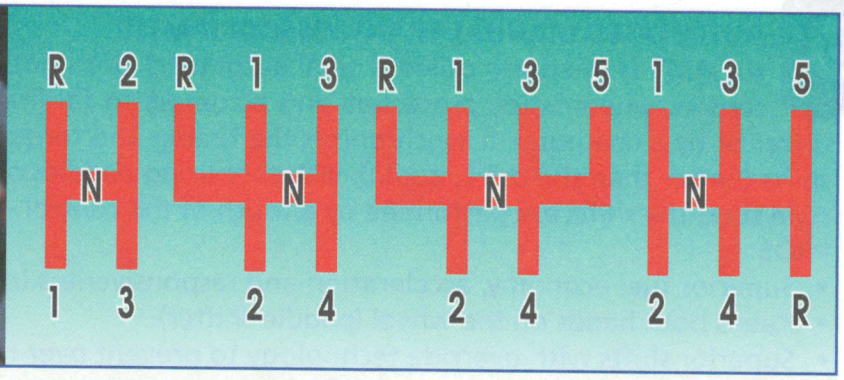
SELECTOR LEVER POSITIONS:

"P"-PARK:
- After stopping and applying the parking brake, the selector is placed in **"P"** park.
- Locks transmission to prevent rolling.
- Must be in this position for ignition switch to move to **"lock"** position and remove the key.
- Allows starting the engine.
- To move out of park, depress the lock button (large red arrow). May require depressing the service brake (called a **"Shifter Lock"**).

"R"-REVERSE:
- Used to back the vehicle.
- Must be at a standstill before engaging.
- Activates "**REVERSE**" lights (**white lights**) on rear of vehicle (communication/visibility).
- Activates back up obstacle warning sensors.
- Activates back up camera (required by 2018).
- Activates cross-traffic warning sensors

"N"-NEUTRAL:
- No connection to the drive wheels.
- The vehicle will roll.
- Allows starting the engine (if engine stalls when in motion, shift to neutral and restart while rolling).

" D " or OVERDRIVE (up to 8 gears):
- Optional position (may be electric).
- Extra forward gear for cruising more



economically (speeds above 45 mph).
- In stop and go situations "**D**" (normal drive) should be selected.

"D"-DRIVE (CVT - continuously variable transmission):
- Fully automatic forward gear position.
- The transmission will select the appropriate gear (3 to 8 gears or CVT).
- May be engaged while stopped or rolling forward.

"2" or "D2" or "L2"-SECOND GEAR:
- Prevents the transmission from selecting high forward gear.
- Used to slow a vehicle from high speed or when descending a steep hill at high speeds.
- Used to obtain more power than high gear to climb a steep hill at higher speed.
- Used in poor traction conditions - mud, snow, etc.

"1" or "D1" or "L"-FIRST GEAR:
- Prevents the transmission from selecting any other forward gear.
- Used to slow the vehicle at lower speeds or when descending a steep hill at slow speed.
- Used for maximum power at slow speed to climb a steep hill or pull a heavy load.

THE STANDARD TRANSMISSION

Standard transmissions are available in three, four, five, or six speed models. With experience, the standard affords the driver superior control of the vehicle but requires more work.

"N"- NEUTRAL:
- The shifter lever moves easily from side to side.
- Use this position to start the engine - make sure the clutch pedal is fully depressed (clutch safety switch) and the parking brake is engaged.
- The engine is not connected to the drive wheels.

"R"- REVERSE:
- Used to back the vehicle (back-up lights are activated - as with automatic).
- Make sure the vehicle is at a standstill before shifting into reverse.
- Activates sensors, cameras, cross-traffic, etc.

"1"- FIRST GEAR:
- Lowest forward gear - most power.
- Use to start from a stopped position until speeds of 10 to 15 mph.
- Use to climb steep hills or pull heavy loads at slow speed.

"2"- SECOND GEAR:
- Less power - more speed.
- Use when shifting out of 1st until speeds of 10 to 20 mph.
- Use when rolling slowly to pick up speed rather than return to 1st gear.
- Use to turn corners when in motion.
- Use to climb long, steep hills or pull heavy loads at slow speeds (downshift from 3, or 4).

"3"- THIRD GEAR:
- On a 3-speed transmission, use to cruise at speeds over 25 mph.
- On a 4+ speed transmission, use to accelerate to 35 to 40 mph (downshift from 4 or 5).

"4"- FOURTH GEAR:
- Use for steady driving in the 40 mph and over range.

"5"or"6" - FIFTH or SIXTH GEAR:
- Use for steady expressway cruising to save fuel and engine wear.

AUTOMATED MANUAL TRANSMISSION (AMT):
An AMT (sometimes called a semi-automatic) does not have a clutch pedal. It uses electronic sensors, pneumatics, processors and actuators to facilitate gear shifts on the command of the driver or by a computer. It synchronizes the timing and torque required to make quick, smooth gear shifts (better than the driver could). Whether using paddles on the steering wheel or a selector lever style stick, the shifts are performed by a touch of the control - no clutch required.

PROS:
- Superior fuel economy, acceleration and responsiveness (more engine energy to the wheels).
- Keeps both hands on the wheel (paddle-shifter).
- Superior shifts with override technology to prevent over-revving.

CONS:
- Technology is complex; it can be pricey (the double clutch design especially).
- Can be clumsy and surge at slow speeds (while parking).
- Repairs are much more expensive.

9

SAFETY TIPS

It is advantageous to drive smoothly, at a constant speed, within the posted speed limit while using the highest gear possible. All of these decisions will save gas (and money) as well as allow you to drive more safely in the HTS.

Communication

Sharing the roadway safely and effectively requires cooperation between road users. You cannot read other people's minds; other road users cannot read yours. Communication of intentions is absolutely necessary.

Signal your presence and what you intend to do. Sharing the road in any environment requires that others can see you and that they know your intentions.

COMMUNICATE

Use the tools at your disposal (listed below) early and intelligently.

Headlights: turn them on while driving, and flash the high beams to communicate your presence.

Turn signals: activate early to warn of turns or lane changes (avoid causing confusion).

Hazard lights: activate to warn of risk and abnormal situations.

Brake lights: tap the brake pedal before applying the brakes.

Horn: tap to attract other road users attention (make eye-to-eye contact with other road users).

Hand signals: to warn of intentions and communicate the right-of-way (see Chapter 3).

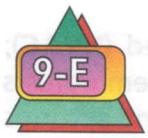
This must be applied in a wide variety of situations. Communication involves signalling

prior to maneuvering. This may be accomplished by activating the turn signal, honking the horn, flashing the high beams, using a hand signal, etc. Whatever method used, make sure the message is clear.

Make sure you remove all possibility of faulty comprehension. As an example, if you are approaching an intersection and intend to park (straight or parallel) right after the intersection, do not activate the turn signal until after you enter the intersection. Otherwise, other road users will think you are turning at the intersection. An oncoming driver may cut across your path to turn left (assuming you were going to reduce speed and then turn).

If the other road users are aware of your intention and you are aware of theirs, this will reduce the risk of any of the parties being surprised.

Communication also applies in many other driving situations. When stopped at an intersection, use a hand signal to yield the right-of-way to another road user. Improper communication is the most common reason for collisions when the right-of-way is in question (intersection collisions). Reduce the situational risk by communicating clearly.



Comfort and Convenience Devices

Automotive engineers continuously improve the many safety features available on today's automobiles. The novice, as well as the experienced driver, must make themselves aware of these items, how they function, and the proper use thereof.

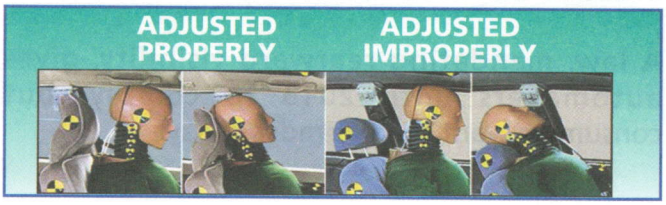
DOOR LOCKS

Door locks protect you, your passengers and the vehicle itself. Always lock all doors before you drive; this helps prevent them from popping open in a collision and will deter possible **car-jackers**. Despite automatic door lock systems, get in the habit of locking the doors as part of the recommended "Driver Readiness Tasks" in Chapter 07.

When you park, close all windows, lock all doors, and store any packages in the trunk (out of view). You can be cited for leaving a vehicle unlocked! By securing your vehicle, you can avoid being one of the thousands whose vehicles are stolen every year.

HEAD RESTRAINTS

Today's vehicles have padded head restraints attached to front seats. (Some have them on the rear seats as well.) They are intended to prevent neck and spinal column injuries resulting from a collision. If adjustable, make sure the top of the restraint reaches just above the top of your ears (not the back of your neck), and don't lean on it while driving.



MIRRORS

All vehicles are equipped with an inside rear-view mirror as well as two side-view mirrors. They are intended to give the driver a clear view of traffic to the rear. To do so, they must be adjusted properly (see Chapter 7). Despite

this, the mirrors cannot cover the entire space behind a driver's forward field of vision. The areas that are not visible are called **BLIND SPOTS** (see Chapter 7-C Blind Spots). For this reason, you must not rely exclusively on the mirrors when backing, turning, or changing lanes. Neither should you depend solely on the back up/blind spot/cross-traffic sensors.

The interior rear-view mirror is also adjustable (may be automatic) to help prevent glare from vehicles following you at night. There is a **NIGHT** setting which deflects glare away from the driver's eyes while still providing a dark view of the traffic following you. Remember to reset after the glare is gone!

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SUN VISOR

Sun visors, located above the windshield on both sides of the vehicle, can be positioned to block the sun's rays from shining into the driver's eyes (either from the front or from the side of the vehicle). Be careful not to block your line of sight; position the visor angled towards the window!

BACKING AIDS

Most vehicles are being equipped (or offered as optional equipment) with detection devices like back up cameras or backing sensors that emit an audible signal (or cause the seat or steering wheel to vibrate) when approaching any obstacle. Many also include cross-traffic sensors and warnings. This is in reaction to backover incidents that have become much too common.

A law, mandating rearward visibility, gives automakers until 2018 to comply, but consumers want the upgrades today.

TILT STEERING

Many vehicles have an adjustable (tilt) steering wheel which allows you to alter the position to one that provides maximum comfort and control. Be careful not to block your view of the dash gauges and warning lights. (Aim the air bag at chest to prevent facial injury.

AIR CONDITIONING (HVAC)

An option on most vehicles, you can use the air conditioner climate control to cool or heat the interior and reduce the humidity to make driving more comfortable. You can also regulate the fan speed to increase air circulation. The air can be directed through the floor outlets, the defroster nozzles, the dash vents, or a combination of these. This control is also useful on a trip, or when your emotions (road rage) are starting to get the better of you.

Some models are computer controlled (**HVAC**); you set the temperature and the system adjusts automatically. Some provide different settings for the driver and passenger or the front and back passengers (or all four).

CRUISE CONTROL

An optional feature on most vehicles, cruise control allows you to maintain a desired speed while removing your foot from the accelerator pedal after you set the control (at speeds above 30 mph.).

The controls are located on the steering wheel or a stem on the left side of the steering column (check your owner's manual). The available control options include on/off, set/accelerate, coast, and resume. To activate the system, you must push the "**ON**" button,

SAFETY TIPS

Before releasing one hand from the steering wheel to adjust any control, communication, convenience, or comfort device, you should place your other hand in a position on the steering wheel for balanced steering control and consciously hold it steady to avoid your vehicle drifting in the direction your eyes are looking.

then accelerate to the desired speed (using the foot pedal or "**ACC**" accelerate button), and then push the "**SET**" button.

Tap the brake pedal (the clutch pedal as well, or in some vehicles, shifting to neutral) or push the "**OFF**" button to return the vehicle speed to normal foot control. After braking (using the clutch or shifting to neutral, in some vehicles), pressing the "**RES**" resume button activates a memory circuit that will automatically return your vehicle to the previously set speed (unlike the "**OFF**" button). (On vehicles equipped with Enhanced Traction System or traction control, if the computer limits wheel spin, the cruise disengages.)

Some vehicles will allow you to return to your set speed even after using the "**OFF**" button, provided the button is reset to "**ON**" and you press the "**RES**" resume button.

You should never drive with the cruise "**ON**" unless you are using it (it could cause you to accelerate unexpectedly), or activate the system unless you can cruise at the pre-set steady speed without unnecessary risk (volume of traffic, road conditions, curves, etc.). Never use the cruise control in rainy or icy conditions. Doing so would continue to supply power to the drive wheels even if the vehicle begins to hydroplane on water or slide on ice.

Instead, use the accelerator to supply the power to achieve an acceptable speed. This will permit you to diminish power in a timely and appropriate amount if the conditions worsen.

ADAPTIVE or SMART CRUISE:
Modern systems go beyond maintaining a constant speed. Thanks to front-facing sensors and the use of radar, it measures the gap and closing speed to anything ahead. The system can adjust the throttle and brakes to keep a safe distance from the vehicle ahead. If it senses a potential collision, it typically will brake hard and tighten the seatbelts. Once the system knows the lane is clear, or traffic has sped up, it will return to its original cruising speed. Of course, you may override the system by applying the brake pedal.

ENGINE IMMOBILIZER SYSTEM

The engine immobilizer is a theft prevention system (one of many on modern vehicles). The engine will start only when the electronic code in the transponder chip (located in the key or key fob) corresponds to the registered ID code for the vehicle.

The system is set automatically when the key is removed from the ignition switch or the driver walks away from the vehicle (keyless entry). An indicator light will flash to show that the system is set (check your owner's manual).

PASSENGER AIR BAG SWITCH

The passenger air bag cut off switch permits the driver to disengage the mechanism which activates the air bag. With the switch in the "**OFF**" position, the air bag will not inflate in a frontal collision.

The switch is usually located on the center console (check your owner's manual). Many

SAFETY TIPS

Most owner's manuals issue a warning or caution concerning activating the cruise control mechanism on slippery roads (winding roads as well) because of possible wheel spin which could initiate a skid or destabilize the vehicle. You should never activate cruise control in these road conditions.

models are now available from dealers with passenger air bag cut-off switches already installed. Dealerships and repair garages with authorization from NHTSA can install such a switch on existing models.

ELECTRICAL OR LEVER REMOTE CONTROLS

Power windows, optional on many vehicles, provide switches to open and close the windows electrically. The driver can control all of them; each passenger can control their window. Often the driver can lock the controls to prevent children from playing with the switches.

Power door locks will secure all doors by means of switches. Once again, the driver can lock the controls for safety purposes. Some models automatically lock all of the doors when the transmission is shifted out of "**P**" Park into any gear selector position or once the vehicle is put in motion.

Child-proof door locks are available (switches located on the rear door frames) on some models preventing the rear doors from being opened except when using the outside door handle.

Power seats offer the driver, and often the front passenger, several switches that can control the position of their seats.

The height of the seat from the floor, the position of the seat relative to the pedals, as well as the angle of the back rest are all adjustable. The controls may be located on the console, the side of the seat, or the door (check your owner's manual). These adjustments allow for the best possible driving position.

Some vehicles provide adjustments for lumbar and side support as well. In some advanced systems, two programmable settings can be stored in a memory chip which, at the touch of a button (or insertion of the key or recognition of the key fob), will then move the seat to the predetermined position for that driver.

The driver should never adjust the seat position while in motion. Stop your vehicle in a safe location, then adjust the seat position. Can you imagine what would happen, if at the moment you were moving the seat, you needed to make an emergency stop?

Adjustable foot pedals
Some new models offer adjustable foot pedals in order to assist the height-challenged in achieving a good seating position for optimum control of the vehicle. Remember, because of possible air bag deployment, it is recommended that the driver leave ten inches between the steering wheel and his/her chest.

The adjustable pedals allow the height-challenged to maintain this space while still being capable of applying firm pressure on the pedals for maximum control.

A trunk release button or lever, which can be locked on some vehicles, allows the driver to open the trunk from the driver's seat (or using a remote control). Some models have a system for locking the remote mechanism. This mechanism provides additional security when you park in a parking lot where you must leave a key. Without this additional key, the attendant cannot open the trunk.

The interior hood release lever, an additional protection against theft, opens the first latch on the hood locking system (a second latch, which must be opened manually from outside the vehicle, is security against the hood flying up).

SAFETY TIPS

Comfort and convenience items are just that; they are there to assist you and improve your enjoyment of your vehicle. Make sure they do not distract you, nor lull you into a false sense of security. You are the driver; you are responsible for your safety and the safety of your passengers and the other road users who share the HTS.