

# UPS F650 Model Year 2021\* and Later Familiarization

\* Model year 2020 skipped

Refer to [www.fordups.com](http://www.fordups.com) for this and other UPS Ford reference information



# Driver Assist Technology (DAT)

- On model years 2023 and later vans in UPS' fleet
- Includes camera and radar that provide
  - Automatic Emergency Braking
  - Distance Alert / Indication
  - Lane Departure Warning
  - Automatic High Beam Control
- Includes Electronic Stability Control (ESC) branded as Ford AdvanceTrac
  - ESC assists in preventing skids or lateral slides by applying the brakes to one or more of the wheels individually and, if necessary, decreases engine power
- If there is a black box (camera) mounted to the inside of the windshield as shown in Figure 1, the vehicle is equipped with DAT



Fig 1. DAT camera

# UPS Ford F650 Model Year 2021 and Later Familiarization Topics Covered

- Driver Interface
  - Updates
    - Steering wheel controls
    - Hazard switch relocated
    - Instrument panel cluster (IPC)
    - Headlamp switch with automatic position
  - Added
    - Traction Control
    - Hill Start Assist
    - One of the 12V ports replaced by 2 USB ports
    - Cab fan switch
    - Fender mirror
    - DAT equipped units only (Model Years 2023 and later)
      - Electronic Stability Control (ESC) branded as Ford AdvanceTrac
      - Auto High Beam (controlled by camera)
      - Driver Alert
      - Lane Keeping System
      - Pre-Collision Assist System

# UPS Ford F650 Model Year 2021 and Later Familiarization

- Technician Interface
  - Updates
    - 7.3V8 replaces 6.8V10
      - 7.3 has different starter and alternator
    - Battery Junction Box (BJB)
    - Communications Network
  - Added
    - Cab electronics
      - Sun load sensor
    - DAT equipped vans only (Model Years 2023 and newer):
      - Camera (Image Processing Module IPM)
      - Radar [Cruise Control Module (CCM)]
      - Yaw Sensor

# Driver Interface Updates

# Steering wheel

MY 19 and earlier



MY 21 and later



# Steering Wheel Controls

BEFORE (MY19 and older)

## CRUISE CONTROL (If Equipped)



## INFORMATION DISPLAY CONTROL



AFTER (MY21 and newer)

## CRUISE CONTROL - VEHICLES WITH: CRUISE CONTROL



## INFORMATION DISPLAY CONTROL



NOTE: F650 vehicles with DAT do NOT have adaptive cruise control



# Hazard Switch Relocated

- Hazard switch relocated from top to steering column to center dash

MY 19 and earlier



MY 21 and later without DAT



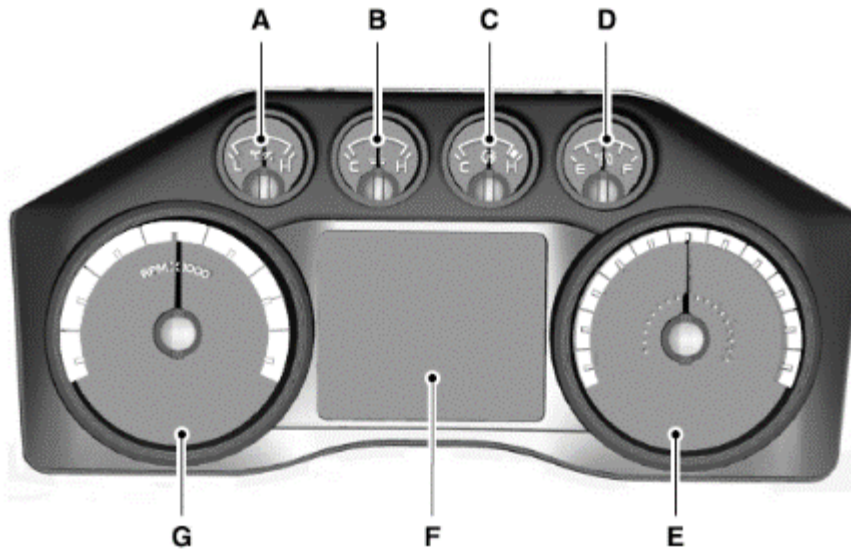
MY 21 and later with DAT





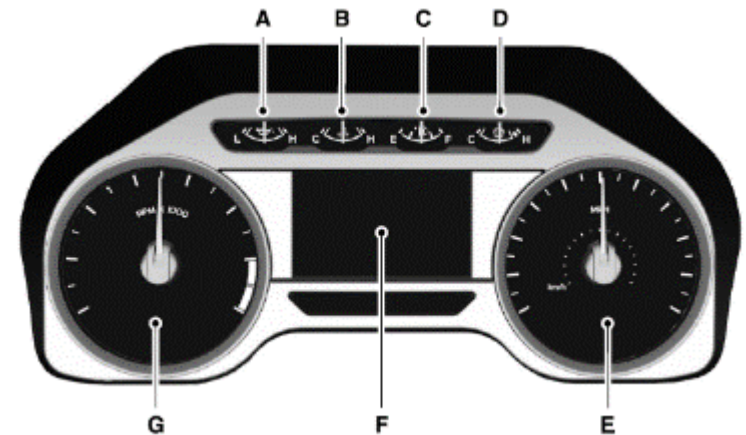
# Instrument Cluster (non-DAT equipped vans)

MY 19 and earlier



- A Engine oil pressure gauge.
- B Engine coolant temperature gauge.
- C Transmission fluid temperature gauge.
- D Fuel gauge.
- E Speedometer.
- F Information display.
- G Tachometer.

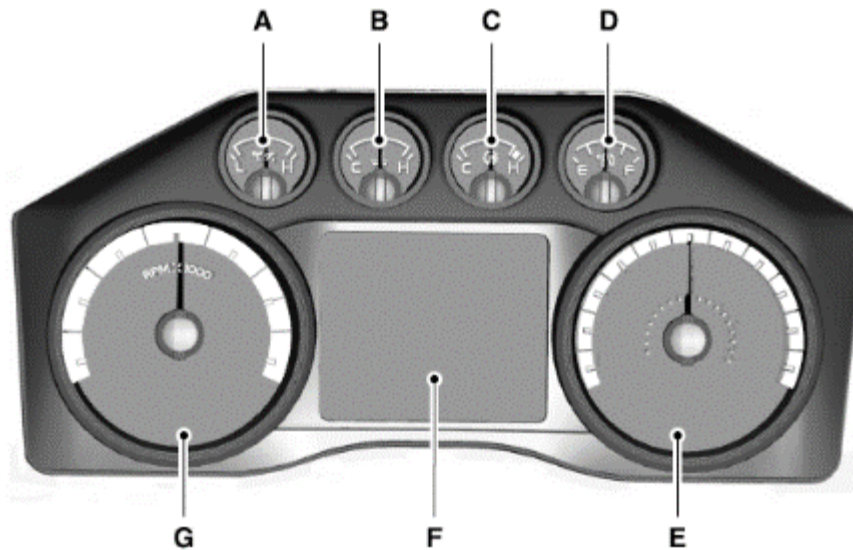
MY 21-22 w/o DAT  
(2.3 inch display)



- A Engine oil pressure gauge.
- B Engine coolant temperature gauge.
- C Fuel gauge.
- D Transmission fluid temperature.
- E Speedometer.
- F Information display.
- G Tachometer.

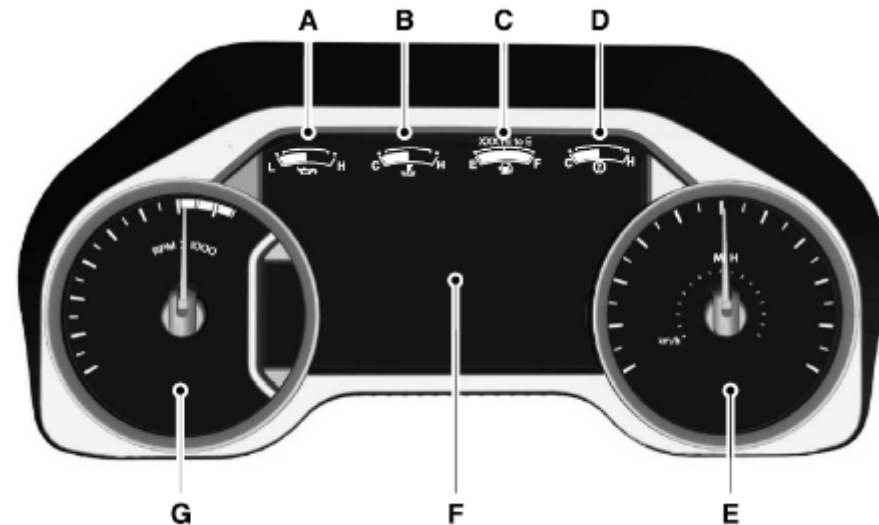
# Instrument Cluster (DAT equipped vans)

MY 19 and earlier



- A Engine oil pressure gauge.
- B Engine coolant temperature gauge.
- C Transmission fluid temperature gauge.
- D Fuel gauge.
- E Speedometer.
- F Information display.
- G Tachometer.

MY 23 and later w/ DAT  
(8 inch display)



- A Engine oil pressure gauge.
- B Engine coolant temperature gauge.
- C Fuel gauge.
- D Configurable gauge.
- E Speedometer.
- F Information display.
- G Tachometer.

# Instrument Cluster Menu without DAT (note maintenance monitor)

MAIN MENU	Trip 1	press and hold OK to rest values					
	Trip 2	press and hold OK to rest values					
	Fuel Economy	press and hold OK to rest values					
	Driver Assist						
	Settings						
Trip 1 & 2	MPH						
	miles to empty						
	distance						
	time						
	miles to empty						
	avg mpg						
Fuel Economy	miles to empty						
	mpg						
	avg mpg						
Driver Assist	Engine hours	Engine Hours					
		Engine Idle Hours					
	Voltmeter						
	Maintenance Monitor	Oil Life %	press and hold OK to rest values				
Settings	Vehicle	Lighting	Autolamp delay	Off			
				10 sec			
				20 sec	Default setting		
				120 sec			
		Locks	Autolock				
			Autounlock				
		Wiper controls	Courtesy wipe	Default off			
	Display settings	Measurement units	Miles & MPG				
			L/100km				
			km/L				
		Temperature Units	F				
			C				
		Language	English				
			Spanish				
			French				

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# Instrument Cluster Menu with DAT (note locked settings)

## MY22 Fixed Settings DAT F650 Instrument Cluster

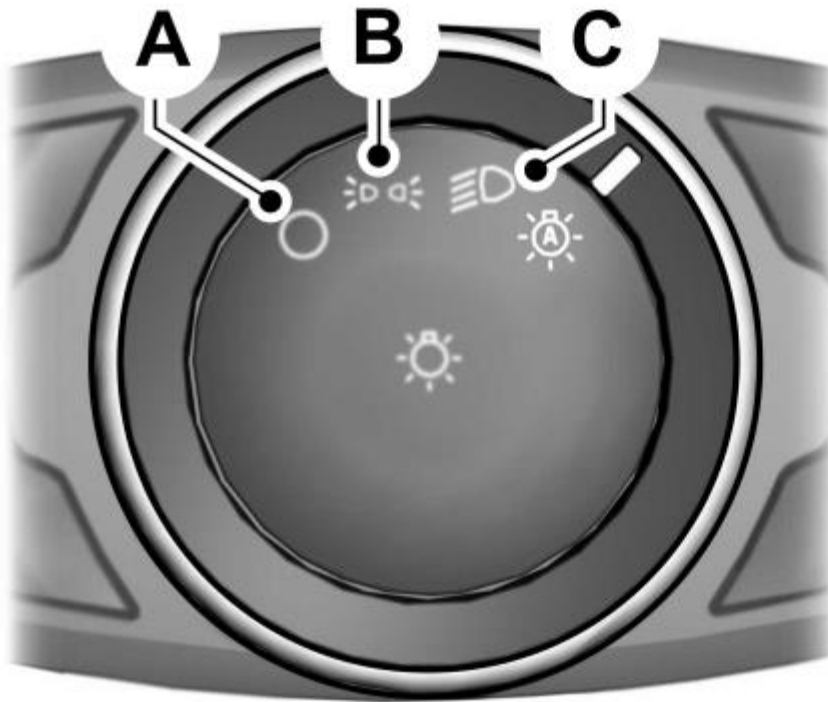
My View	Fuel Economy	Avg MPG	press and hold OK to reset values				
	Trip1	Miles to empty, distance, time, avg mpg,	press and hold OK to reset values				
	Configure MyView Screens	Add/Remove Screens	Trip/Fuel Screens	Trip1			
				Trip2			
				Fuel Economy			
				Fuel History			
			Truck Info Screens	Digital Speedometer			
				Engine Information			
				Maintenance Monitor			
				Gauge View			
				Transmission Temp			
		Reorder Screens	Fuel Economy				
			Trip1				


Trip/Fuel	Trip1	Miles to empty, distance, time, avg mpg,		press and hold OK to reset values			
	Trip2	Miles to empty, distance, time, avg mpg		press and hold OK to reset values			
	Fuel Economy	Avg MPG	press and hold OK to reset values				
	Fuel History	press and hold OK to reset values					

Truck Info	Digital Speedometer						
	Engine Information	Engine Hours	press and hold OK to reset values				
		Engine Idle Hours	press and hold OK to reset values				
	Maintenance Monitor	Oil Life %	press and hold OK to reset values				
	Gauge View	Voltmeter					
	Transmission Temperature						

Settings	Driver Alert	On, Off		Setting locked by fleet owner	On		
	Pre Collision	Alert Sensitivity	High, Normal, Low	Setting locked by fleet owner	Normal		
		Distance Indication	On, Off	Setting locked by fleet owner	On		
		Active Braking	On, Off	Setting locked by fleet owner	On		
		Pre Collision	On, Off	Setting locked by fleet owner	On		
	Gauge Selection	Voltmeter					
		Transmission Temp					
	Lane Keeping	Alert Sensitivity	High, Normal, Low	Setting locked by fleet owner	Normal	Can turn lane keeping on and off by switch on dash. Resets to on after keyswitch	
	Advanced Settings	Vehicle	Lighting	Autolamp Delay	Off, 10 sec, 20 sec, 120 sec	Off	
				Auto High Beam	On, Off	Setting locked by fleet owner	On
			Locks	Autolock	On, Off		
				Autounlock	On, Off		
			Wiper Controls	Courtesy Wipe	On, Off		
		Display Set-up	Measurement units	Miles & MPG, km&L/100km, km&km/L			
			Temperature Units	F, C			
			Language	English, Spanish, French			


# Lighting Control - Autolamps



- A. Off
- B. Parking Lights
- C. Headlights
-  Autolamps

# Autolamps and Wipers

Autolamps turn the headlamps on in low light situations or when the wipers operate.

-  Switch the lighting control to the autolamps position.
- The headlamps remain on for a period of time after you switch the ignition off. Use the information display controls to adjust the period of time that the headlamps remain on.
- Note: If you switch the autolamps on, you cannot switch the high beams on until the system turns the low beams on.

## Windshield Wiper Activated Headlamps

- When you switch the autolamps on, the headlamps turn on within 10 seconds of switching the wipers on. They turn off approximately 60 seconds after you switch the windshield wipers off.
- The headlamps do not turn on with the wipers:
  - During a single wipe.
  - When using the windshield washers.
  - If the wipers are in intermittent mode.

Very subtle with daytime running lamps



# Driver Interface Additions

# Traction Control System



- The system turns on each time the ignition is switched on.
- Use the traction control switch on the instrument panel to switch the system off or on.



- If your vehicle is stuck in mud or snow, switching traction control off is beneficial as this allows the wheels to spin.
- Note: If the traction control light does not flash during a traction control event or stays on, the system is not operating. Have the system checked as soon as possible.
- During a traction control event, the traction control light rapidly flashes. Pressing further on the accelerator does not cause the engine to rev higher. This is normal and is no reason for concern.
- When the system turns the traction control off, the OFF light illuminates on the instrument cluster.

# Hill Start Assist

- The system turns on each time you switch the ignition on and can not be turned off.
- The system activates on any slope that causes your vehicle to roll.
- Note: There is no warning light to indicate the system is either on or off.
- When the system is active, your vehicle remains stationary on the slope for two to three seconds after you release the brake pedal. This allows time to move your foot from the brake to the accelerator pedal.
- The system releases the brakes automatically once the engine has developed sufficient torque to prevent your vehicle from rolling down the slope.

## Using Hill Start Assist

1. Press the brake pedal to bring the vehicle to a complete standstill. Keep the brake pedal pressed and shift into drive (D) when facing uphill or reverse (R) when facing downhill.
2. If the sensors detect that your vehicle is on a slope, the system activates automatically.
3. When you remove your foot from the brake pedal, your vehicle remains on the slope without rolling away for about two to three seconds.
4. Drive off in the normal manner. The system releases the brakes automatically.

# One of the 12V ports replaced by 2 USB ports (still have 12V port to right of steering column)

MY 19 and earlier



MY 21 and later



12V



# Cab fan switch (AUX 4)

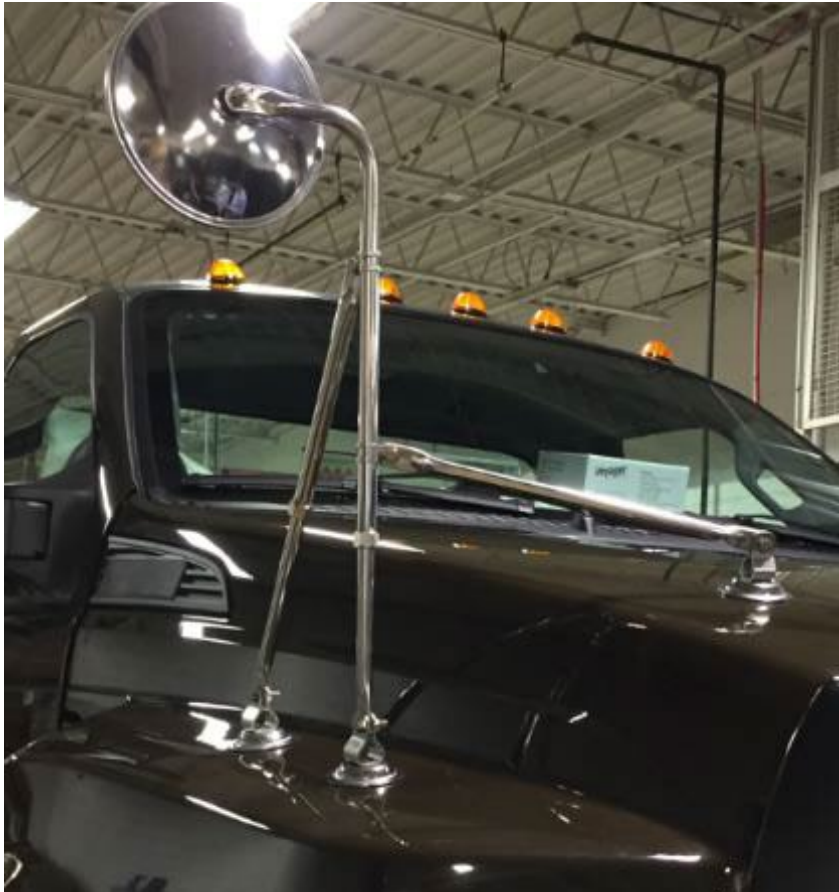


Cab Fan Fuse (Blue, 20A)

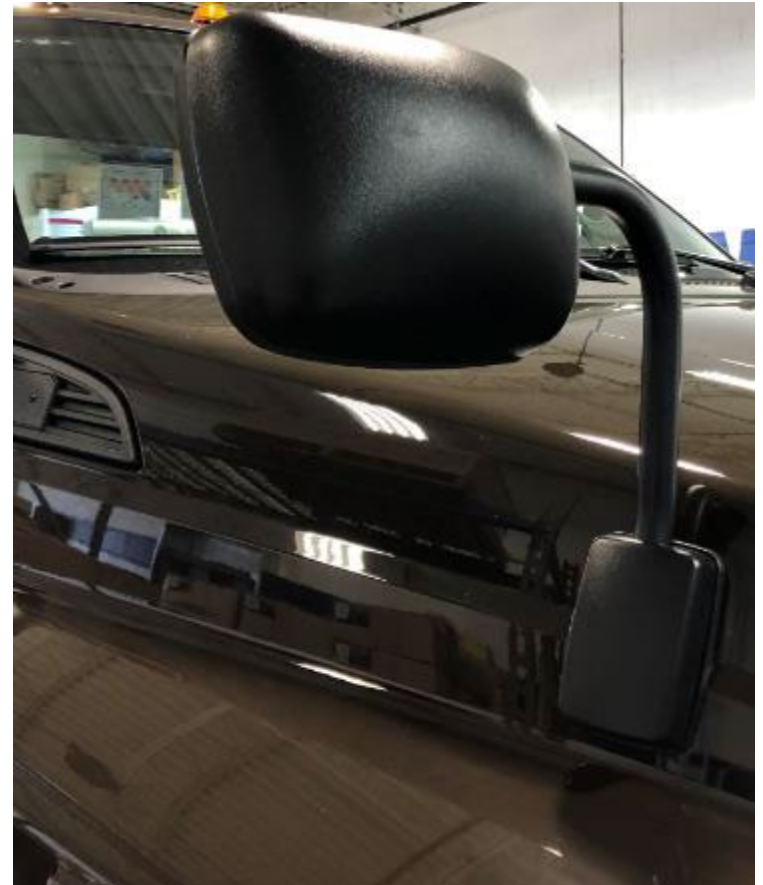


# Fender Mirror

MY 19 and earlier  
(supplied by upfitter)



MY 21 and later  
(supplied by Ford)





# Electronic Stability Control (ESC) branded as Ford AdvanceTrac



(DAT equipped vans only model years 2023 and later)

- The system turns on each time you switch the ignition on and can not be turned off.
- The system assists in preventing skids or lateral slides by applying the brakes to one or more of the wheels individually and, if necessary, decreases engine power.
- If a driving condition activates either the stability control or the traction control system, the following conditions are possible:
  - The stability and traction control light flash.
  - Your vehicle slows down.
  - The system reduces engine power.
  - A vibration in the brake pedal.
  - The brake pedal is stiffer than usual.
  - If the driving condition is severe and your foot is not on the brake, the brake pedal could move as the system applies higher brake force.

# Automatic High Beams

(DAT equipped vans only model years 2023 and later)

- Feature locked on as part of fixed DAT settings option
- The system turns on high beams if it is dark enough and no other traffic is present. If it detects an approaching vehicle's headlamps or tail lamps, or street lighting ahead, the system turns off high beams before they can distract other road users. Low beams remain on.
- Note: *The system may not operate properly if the sensor is blocked. Keep the windshield free from obstruction or damage. A message may appear in the information display if the camera is blocked.*
- A camera sensor, centrally mounted behind the windshield of your vehicle, continuously monitors conditions to turn the high beams on and off.
- The high beams turn on if:
  - The ambient light level is low enough.
  - There is no traffic in front of your vehicle.
  - The vehicle speed is greater than approximately 32 mph (51 km/h).
- The high beams turn off if:
  - The ambient light level is high enough that high beams are not required.
  - The system detects an approaching vehicle's headlamps or tail lamps.
  - The vehicle speed falls below approximately 27 mph (44 km/h).
  - The system detects severe rain, snow or fog.
  - The camera is blocked.

# Driver Alert

(DAT equipped cars only model years 2023 and later)

- Feature locked on as part of fixed DAT settings option
- Activates at speeds above 40 mph
- The system automatically monitors your driving behavior using various inputs including the front camera sensor. If the system detects that your driving alertness is reduced below a certain threshold, the system will alert you using a chime and a message in the information display.
- The warning system is in two stages. At first the system issues a temporary warning that you need to take a rest. This message will only appear for a short time. If the system detects further reduction in driving alertness, another warning may be issued which will remain in the information display for a longer time. Press OK on the steering wheel control to clear the warning. When active the system will run automatically in the background and only issue a warning if required.
- System can be reset by switching the ignition off and on.

# Lane Keeping System

(DAT equipped cars only model years 2023 and later)



- Press the button to switch the system on or off
- Note: The system works as long as the camera can detect one lane marking at a speed above 40 mph (64 km/h).
- Note: The system may not function with a blocked camera, or if the windshield is damaged or dirty
- If the system detects an unintentional drift out of your lane is likely to occur, the system notifies you to stay in your lane through the information display. The system provides a warning by an audible tone.

## System Settings

- The system sensitivity feature is locked on normal as part of fixed DAT settings option



# Lane Keeping System

(DAT equipped cars only model years 2023 and later)

- System Display



- When you switch on the system, a graphic with lane markings appears in the display screen.
- While the system is on, the color of the lane markings change to indicate the system status.
- Gray: Indicates that the system is temporarily unable to provide a warning on the indicated side(s). This may be because:
  - Your vehicle is below the activation speed.
  - The direction indicator is active.
  - Your vehicle is in a dynamic maneuver.
  - The road has no or poor lane markings in the camera field-of-view.
  - The camera is obscured or unable to detect the lane markings due to environmental, traffic or vehicle conditions. For example, significant sun angles, shadows, snow, heavy rain or fog, following a large vehicle that is blocking or shadowing the lane or poor headlamp illumination.
- Green: Indicates that the system is available or ready to provide a warning on the indicated side(s).
- Red: Indicates that the system is providing or has just provided a lane keeping alert warning.
- You can temporarily disable the system at any time by using your direction indicator.

# Pre-Collision Assist System

(DAT equipped cars only model years 2023 and later)

- Feature locked on as part of fixed DAT settings option
  - Alert sensitivity set to Normal.
  - Distance Indication set to On.
  - Active Braking set to On.
  - Pre-Collision Assist set to On.
- The Pre-Collision Assist system is active at speeds above approximately 3 mph (5 km/h).



# Pre-Collision Assist System

(DAT equipped cars only model years 2023 and later)

- If your vehicle is rapidly approaching another stationary vehicle or a vehicle traveling in the same direction the system provides three levels of functionality:

1. Alert

2. Brake Support

3. Active Braking

- Alert: When active, a flashing visual warning appears and an audible warning tone sounds.
- Brake Support: The system is designed to help reduce the impact speed by preparing the brakes for rapid braking. The system does not automatically apply the brakes. If you press the brake pedal, the system could apply additional braking up to maximum braking force, even if you lightly press the brake pedal.
- Active Braking: Active braking may activate if the system determines that a collision is imminent. The system may help the driver reduce impact damage or avoid the crash completely.

# Pre-Collision Assist System

(DAT equipped cars only model years 2023 and later)

## Distance Indication and Alert

- Distance Indication and Alert is a function that provides the driver with a graphical indication of the time gap to other preceding vehicles traveling in the same direction. The Distance Indication and Alert screen in the display screen shows one of the graphics that follow.



- If the time gap to a preceding vehicle is small, a red visual indication displays.

# Technician Interface Updates

# New Engine: 7.3L V8



Specifications	7.3	6.8
Compression Ratio	10.5	9.2
HP	350	320
Torque	468	460
Valvetrain	Pushrod	SOHC
Fuel injection	Port	Port
Cyl Head & Valves per cyl	Alum - 2	Alum - 3
Cyl Block	Cast Iron	Cast Iron
Maintenance Items	7.3	6.8
Oil Filter Part Number	FL-820-S	FL-820-S
Oil capacity (qts)	8	7
Oil Chg Interval	5000	5000
Oil	10W30	10W30
Spark Plug	SP-589	SP-509
Spark Plug Interval	80,000	80,000
Air Filter (F59)	FA-1782	FA-1782
Coolant	P-OAT (Yellow)	OAT (Orange)
Coolant Interval	10 years or 200,000	6 years or 105,000 mi

- 12 min interview with Ford 7.3 chief engineer Joel Beltramo:  
<https://www.youtube.com/watch?v=2FtNlfAbc2w>

# Battery Junction Box

MY 19 and earlier (both LH & RH sides of engine compartment)

LH (Driver) Side



RH (Passenger) Side



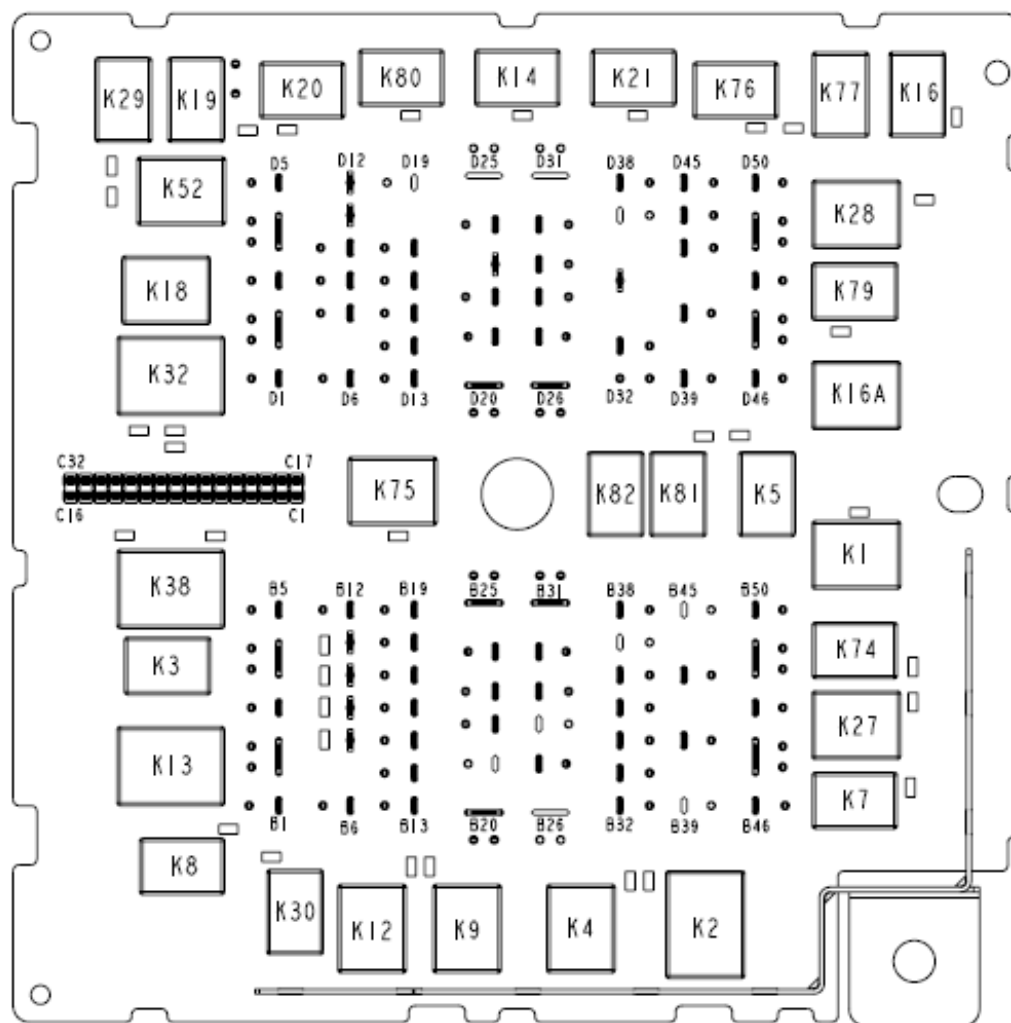
MY 21 and later (only on RH side of engine compartment)



# MY21 & Newer Battery Junction Box (BJB)

## Relay Assignments (non-serviceable)

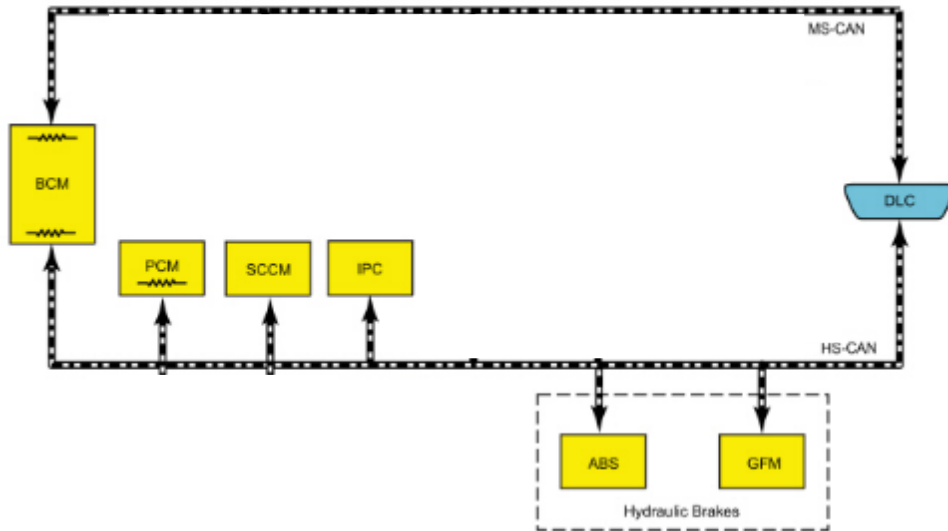
K1 – Fuel Pump  
K2 – PCM  
K3 – Starter  
K7 – Ac Clutch  
K8 – Horn  
K9 – Front Wiper Motor  
K12 – Run/Start  
K13 – Front Blower  
K14 – Heated Mirror  
K16 – Not used  
K18 – TT Park Lamps  
K19 – TT Stop/Turn LH  
K20 – TT Stop/Turn RH  
K21 – TT Backup Lamp  
K27 – Upfit 1  
K28 – Upfit 2  
K29 – Upfit 3  
K30 – Upfit 4  
K32 – Latching Relay 1  
K38 – Latching Relay 2  
K52 – Upfit Run/Start  
K74 – Customer Run/ Accessory  
K75 – Run/Accessory  
K76 – Cargo Lamps  
K77 – Stop Lamps  
K79 – TT Battery Charge  
K80 – BOO Isolation Hydromax  
K81 – Not used  
K82 – Customer Upfit Switch



# Communications Network

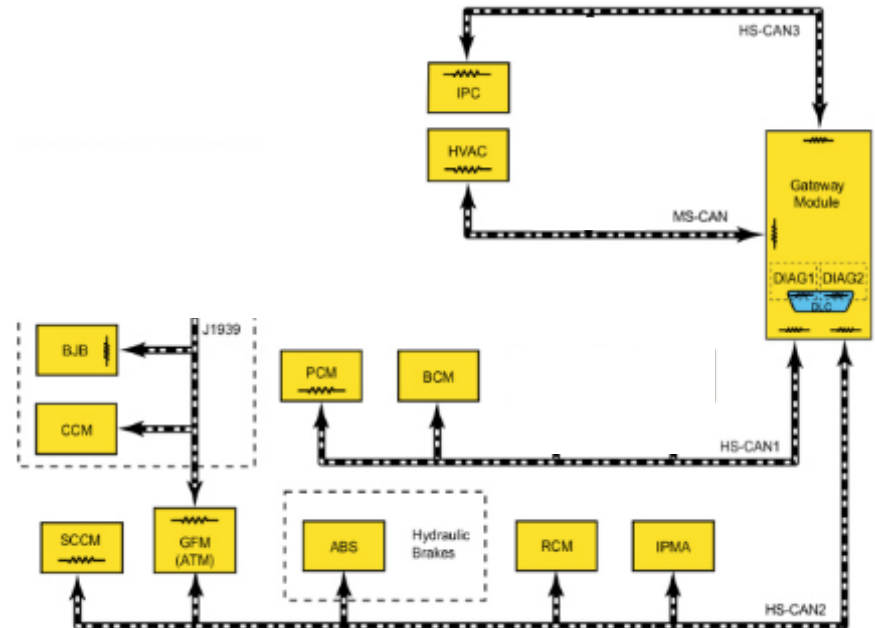
**NOTE:** For vehicles equipped with pre-collision assist, the CCM does not communicate directly on the HS-CAN2. The CCM communicates with the IPMA on a private CAN, and the IPMA communicates on the HS-CAN2.

MY 19 and earlier



1. BCM – Body Control Module
2. GFM - Generic Function Module aka ATM (Ancillary Translator Module)
3. ABS – Anti-Lock Braking System Module
4. IPC – Instrument Panel Cluster Module
5. SCCM – Steering Column Control Module
6. PCM – Powertrain Control Module
7. RCM - Restraint Control Module (Yaw Rate Sensor) (MY23+ vans only)

MY21 and later



8. HVAC – Heating Ventilation and Air Conditioning Module
9. Gateway Module
10. IPMA - Image Processing Module (Camera) (MY23+ vans only)
11. BJB – Battery Junction Box
12. CCM – Cruise Control Module (Radar) (MY23+ vans only)

# Technician Interface Additions



# Sun Load Sensor

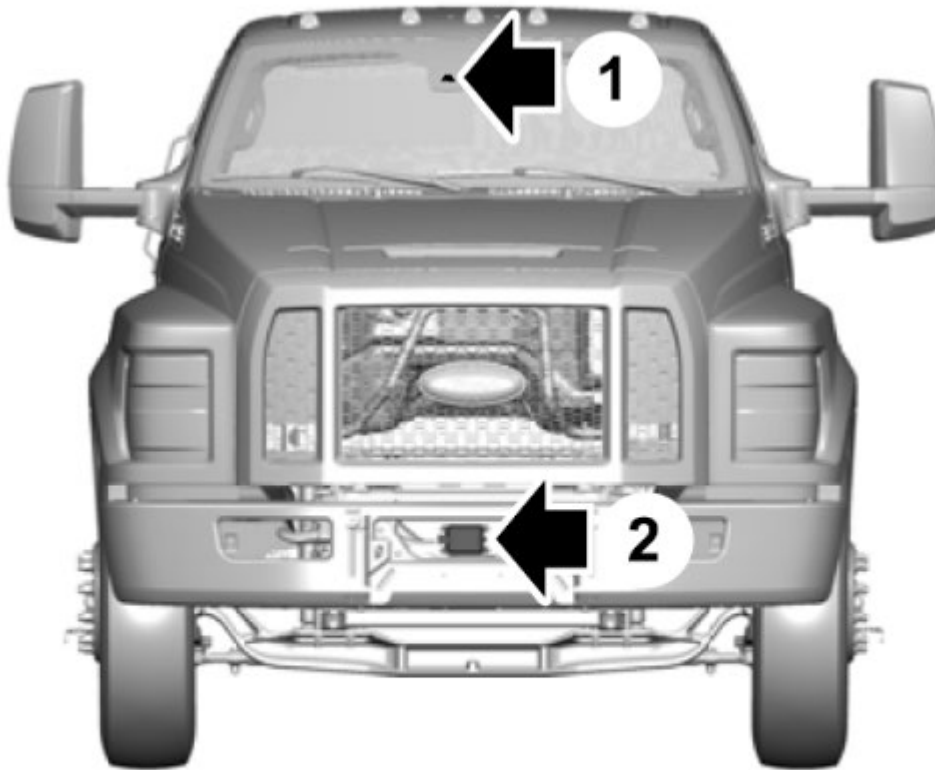


# GFM - Generic Function Module aka ATM (Ancillary Translator Module)

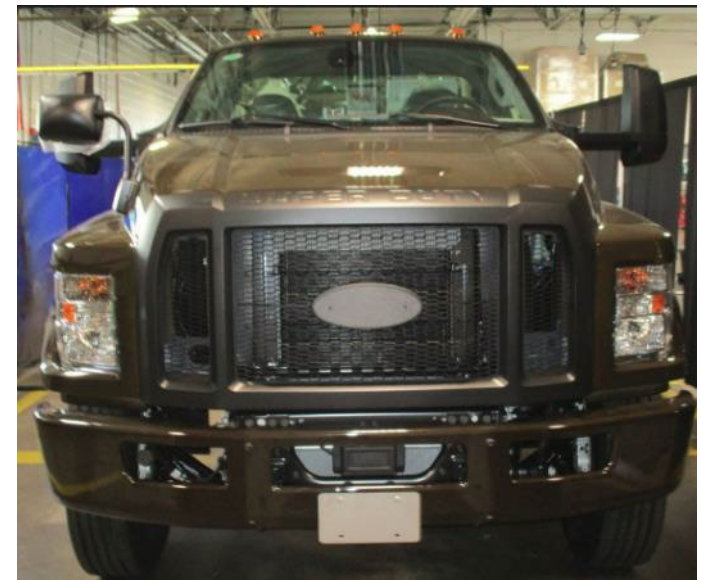


# DAT equipped cars only model years 2023 and later

- Camera [Image Processing Module (IPM)]
- Radar [Cruise Control Module (CCM)]



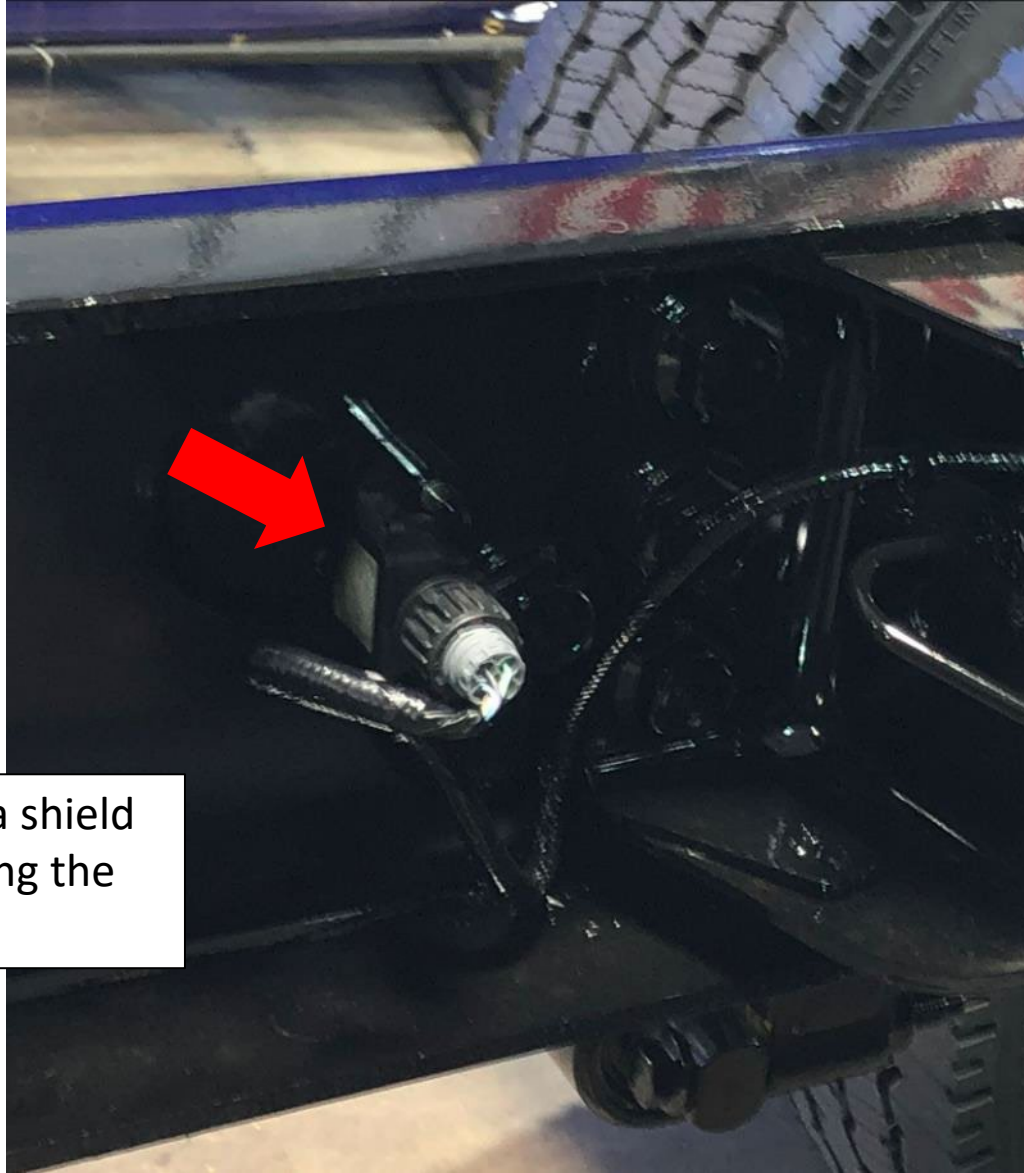
- 1 Camera  
2 Radar sensor





# DAT equipped cars only model years 2023 and later

- Yaw Rate Sensor – Located on the passenger side inner frame rail in front of the rear axle



NOTE: There will be a shield or heat shrink covering the sensor