

E-AFIS706VSX-BP Fast Idle System—Work Truck Application

2017-2019 RAM 1500 with 3.6L Engine
2018 - 2020 RAM 2500 - 5500 with 6.4L Engine
2018 RAM 2500 - 5500 with 6.7L Engine



System Operation

The E-AFIS706VSX-BP is a Fast Idle system that elevates engine idle RPM based on a number of “triggers.” The vehicle must be in Park for Fast Idle to engage. There are three different engine RPM settings which can be selected by grounding different control inputs. The three different RPM values can be independently set during installation.

IMPORTANT—READ BEFORE INSTALLATION

It is the installer’s responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts and high heat sources. Failure to do so could result in damage to the system or vehicle and create possible safety concerns for the operator and passengers. Avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Avoid radio frequency energy from antennas or inverters next to the module. Avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

Installation Instructions

Disconnect vehicle battery before proceeding with installation.



WARNING

Disconnect the battery to prevent setting a check engine light.

CAUTION

All electronic products are susceptible to damage from Electrostatic Discharge or ESD. Ground yourself before handling or working with the module and harnessing by first touching chassis ground, such as the barrel of the cigarette lighter.



AFIS706VSX Module

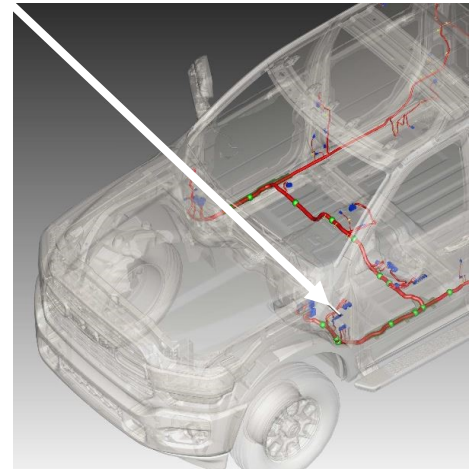
Remove the lower dash panel below the steering column area and find a suitable location to mount the module so that the Diagnostic LED’s can be viewed with the lower dash panel removed. Locate the module in an area away from any high heat sources. Do not actually mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount the module.

Data Link Harness

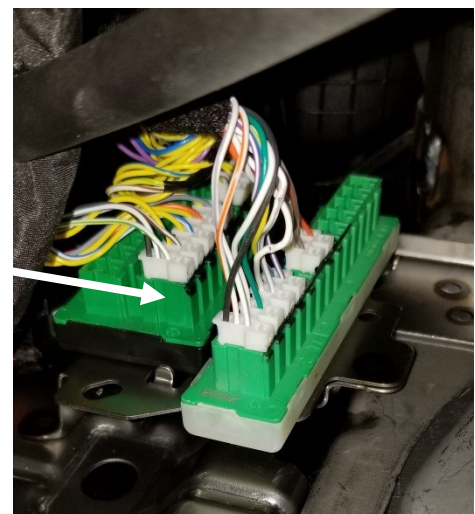
1. Locate the vehicle's OBDII Data Link Connector (a White 16-pin connector) around the area above the drivers left foot.
2. Use a flat screwdriver to remove the OEM OBDII connector. There are tabs on the sides of the connector that allow it to snap into place. Press the tabs and push the connector up and out of its bracket. The E-AFIS706VSX kit includes a Data Link harness (see picture). Plug the red connector from the E-AFIS706VSX Data Link Harness into the vehicle's OBDII connector. Ensure the connection is fully seated and secured with the supplied wire tie.
3. Mount the White pass through connector from the E-AFIS706VSX Data Link Harness in the former location of the vehicle's OBDII connector.
4. Secure the E-AFIS706VSX Data Link Harness so that it does not hang below the lower dash panel.
5. Plug the free end of the Data Link Harness into the extended harness which then plugs into the mating 4-pin connector on the E-AFIS706VSX module.



6. Locate the STAR connector bank in the location shown (next to the Park Brake).



7. Plug the 2-pin E-AFIS706VSX connector into one of the unused ports on the upper bay towards the rear of the vehicle.



AFIS Harness (8-Pin Connector) Fast Idle Engage Inputs

Engage Input 1

Attach the AFIS Harness connector Pin #8 Green wire to any equipment that provides a ground signal when the fast idle needs to be engaged. (PTO, pump, etc....)

Note: The "sense" of the Green wire can be programmed (see below). This alternatively allows equipment which provides a 12V "active" signal to be connected to this input.

Engage Input 2

Attach the AFIS Harness connector Pin #7 White wire to any equipment that provides a ground signal when the fast idle needs to be engaged. (PTO, pump, etc....)

Engage Input 3

Attach the AFIS Harness connector Pin #5 Yellow wire to any equipment that provides a ground signal when the fast idle needs to be engaged. (PTO, pump, etc....)

If multiple engage inputs are active, the lower number has priority. Auto triggers will have the lowest priority and will only trigger if none of the inputs are active.

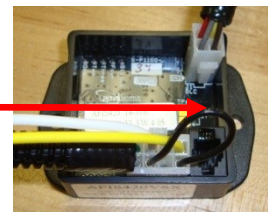
Engage Input 1—Fast Idle Pin-8 Trigger, Active: Ground or 12V signal Enable/Disable

The module is configured from the factory for an active ground fast idle trigger. To change this to an active 12V trigger:

Turn the key on, place the transmission in Park, apply the Service Brake, pull out on the Park Brake release, and apply the Park Brake four times within 5 seconds. Upon successful reprogramming, the LEDs will flash as a confirmation. The user must cycle the key for the change to take affect. Repeat to reverse back to a ground trigger.

VBAT Low Fast Idle Trigger Disable, Black wire loop

The system is configured from the factory for Fast Idle to be triggered when the battery voltage (VBAT) drops below 12.5V. If the VBAT Low Fast Idle Trigger is not desired, it can be disabled by cutting the Black wire loop on the 8-Pin connector between Pin #1 and Pin #3.



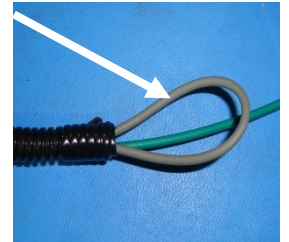
Configurable Idle Speed (Gray wire)

The E-AFIS706VSX-BP allows the user to change the fast idle RPM for each fast idle input during installation. The default speeds are as follows:

- Input 1 - 1500 RPM gas / 1500 diesel
- Input 2 - 1750 RPM gas / 1200 diesel
- Input 3 - 950 RPM gas / 900 diesel

Any speed between 900 RPM and 2000 RPM can be selected in 50 RPM increments when reconfiguring. (Note: some engines may not Fast Idle above 1500RPM).

1. To change the idle speed, locate the Gray wire in the harness which connects to the 8 pin Molex connector.
2. Pull this wire out of the loom to expose the bare copper end.
3. Place the vehicle in Fast Idle by grounding the selected Engage Input wire. Only the active idle input will be adjusted.
4. With the engine in Fast Idle, momentarily grounding the Gray wire (RPM Configuration input) increases the idle speed by 50 RPM. When the idle speed reaches the maximum allowable speed for the particular engine, it will roll back around to 900 RPM. Wherever the user stops, this RPM becomes the new default Fast Idle speed, even through key cycles.
5. Repeat this operation for each of the three Engage Input wires as desired.
6. After the vehicle is set to the desired fast idle speeds, insert the end of the Gray wire into the harness tubing and use tape to secure.



All Auto Triggers (VBAT and PB) share the same idle speed configuration as Input 1. Input 1 idle speed can be configured when in one of these triggers also.

Note: When configuring the idle speed, the engine RPM will momentarily drop before ramping back up to the new level. This is normal behavior

Note: Some vehicle PCM's will limit Fast Idle to less than 2000 RPM. Continue to momentarily ground the Gray wire and the RPM will eventually roll back around to 900 RPM. Do not leave the RPM's set in a range that the engine RPM is not responding to as this may cause Fast Idle issues.

Note: After 4 minutes of continuous idling, the RPM will drop for a brief moment and return to fast idle.

Park Brake Fast Idle Trigger Enable/Disable

The module is configured from the factory for Fast Idle **not** to be triggered when the Park Brake is applied. If the Park Brake Fast Idle trigger is desired, it may be enabled (or disabled) by the following procedure:

With key on, place the transmission in Park, apply the Park Brake and press the Service Brake three times within 5 seconds.

Upon successful reprogramming, the on-board LEDs will briefly flash as a confirmation. Cycle the key for the change to take affect.

Post Installation System Operation Test

Perform the following tests before actually mounting the module, to allow easy viewing of the diagnostic LED's, if needed.

1. Place transmission in Park and start the engine. **Note:** Vehicle may enter Fast Idle if VBAT is low. Either wait to see if the battery charges and Fast Idle stops, or place a charger on the vehicle to disable the VBAT low trigger to allow testing of other triggers.
2. One at a time, manually engage all three Fast Idle Inputs by having aftermarket vehicle equipment ground the Input wires. Engine speed will increase to the set RPM level. If this does not occur, check harness connections. Also see diagnostics below.
3. When Fast Idle is engaged, keep the Input wire grounded, and depress the Service Brake for 1 second. Fast idle will temporarily disengage anytime the Service Brake is pressed, and will automatically reengage after approximately 2 seconds once the Brake pedal is released.
4. Place transmission shift lever in the "Neutral" position. (Input wire still grounded). Verify the vehicle does not go into Fast Idle.

If the E-AFIS706VSX-BP fails any of the above tests, check harnesses and review instructions, or check diagnostics below. If necessary, call InterMotive Technical Support at (530) 823-1048.

Diagnostics

Diagnostic mode is entered by momentarily shorting the pads labeled "Test" on the module. The module provides diagnostic LEDs which illuminate according to the following table. To exit this mode simply cycle the key or momentarily ground the "Test" pad again.



LED #	Diagnostic Mode LED Descriptions
1	On when fast idle is engaged
2	On when any input trigger wire is active
3	On when Gray RPM set wire is grounded
4	On when the Parking Brake is applied with the parking brake trigger enabled
STATUS	Continuously flashes two digit status codes. See Status Code table

Module Mounting

Ensure all harnesses are properly connected and routed, and are not hanging below the dash area. Mount the E-AFIS706VSX-BP module using screws or double sided tape. Reinstall the lower dash panel.

Fast Idle Status Codes

Status Codes provide the current status of the Fast Idle system. The on-board "Status" LED will flash a 2-digit code as shown in the table. The first digit will flash, wait one second, flash the second digit, then wait four seconds before the next code. The Status Codes continue to flash until the module is reset (cycle key), or the test input is momentarily grounded again.

AFIS Status Codes	
Status Code	Description
1-1	Ready for fast idle
2-3	Triggered: Parking Brake
2-4	Triggered: VBAT Low
2-7	Triggered: Engage Input 2
2-8	Triggered: Engage Input 1
2-9	Triggered: Engage Input 3
3-1	RPM > 2800
3-2	RPM < 200
3-3	TR not = to PARK
3-4	VSS not = to 0 MPH
3-5	Service Brake applied
3-7	Unsafe; Need to cycle TR
3-8	ECT > 230°F



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Leave in vehicle Operating Instructions E-AFIS706VSX-BP Fast Idle System—Work Truck 2017 - 2019 RAM 1500 with 3.6L Engine 2018 - 2020 RAM 2500 - 5500 with 6.4L Engine 2018 RAM 2500 - 5500 with 6.7L Engine

System Operation

The Advanced Fast Idle System (AFIS) elevates engine idle speed in response to a number of “triggers” in order to assist electrical or mechanical systems on the vehicle.

Fast Idle may be initiated by either a manual trigger (Input wire being grounded), a low battery voltage (low VBAT) condition, or if enabled, by setting the Park Brake.

Fast Idle will only occur when the required preconditions are met, as listed below. Fast Idle operation will be terminated by a loss of **any** of the preconditions, or removal of the trigger(s).

Fast Idle Triggers		
Trigger Name	Trigger Conditions	Disable Conditions
Manual Engage Inputs#1-3	Fast Idle Engage Input wire(s) activated	Fast Idle Engage Input wires not active
VBAT Low	VBAT < 12.5V	Any Precondition Violation
Parking Brake (if enabled)	Parking Brake applied	Parking Brake Released

Fast Idle Preconditions

The following preconditions must be met prior to initiating Fast Idle operation:

- Vehicle speed zero
- Transmission in Park
- Accelerator pedal must not be applied
- Engine Coolant temperature less than 230°F
- Engine RPM must be greater than 200 and less than 2800.
- Service Brake not applied

Note: After 4 minutes of continuous idling, the RPM will drop for a brief moment and return to fast idle.

Upfitter Options - The following are configurable when the module is installed. The default values are:

E-AFIS706VSX-BP

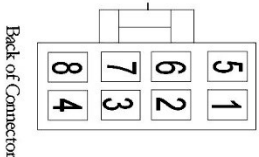
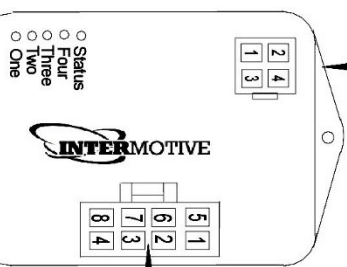
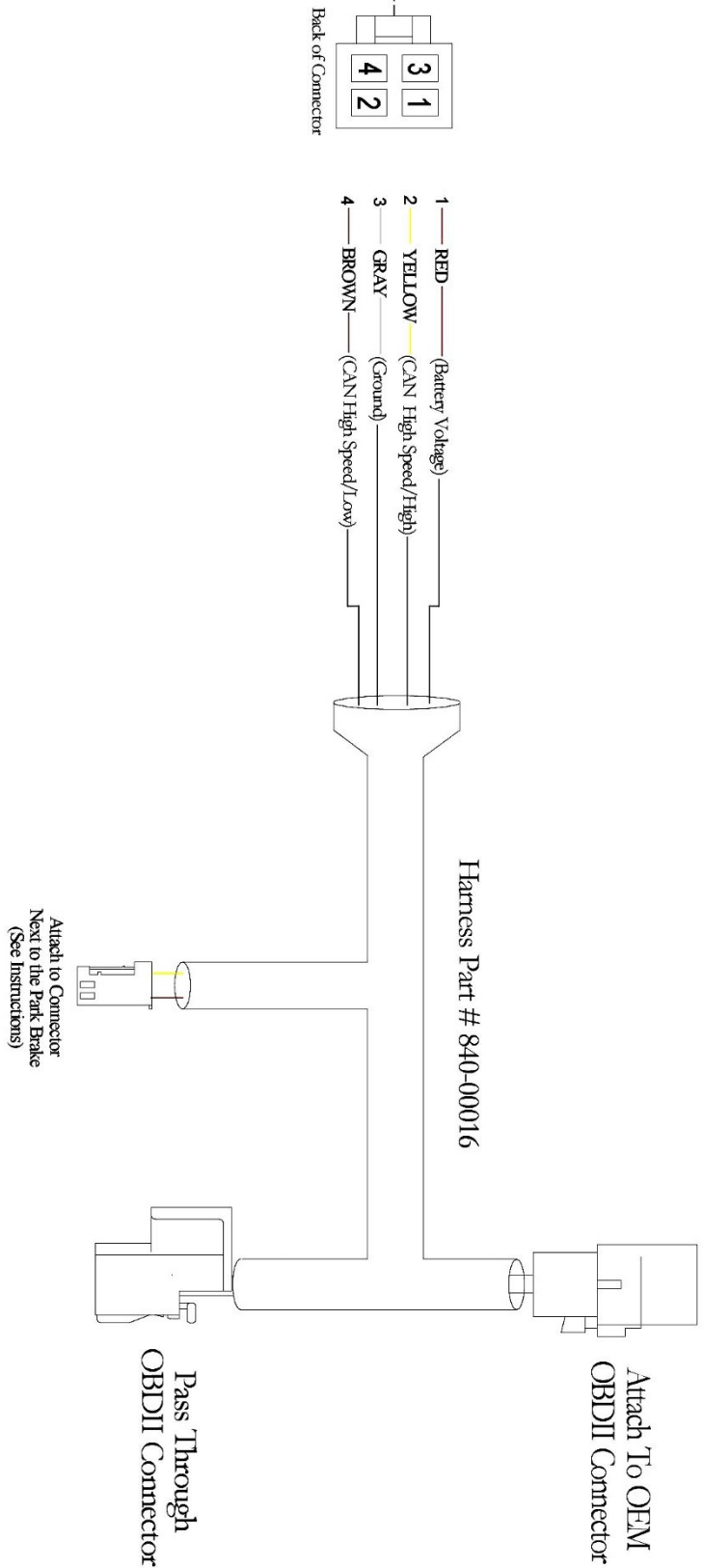
Input 1: 1500 RPM gas / 1500 diesel

Input 2: 1750 RPM gas / 1200 diesel

Input 3: 950 RPM gas / 900 diesel

VBAT Low: 12.5V

Parking Brake Trigger: Disabled



- Harness Part # S-H38BX
- | | | | |
|---|--------|--|---------------------------------------------------------|
| 1 | BLACK | | |
| 2 | N/C | | |
| 3 | BLACK | | VBAT Low Trigger |
| 4 | GRAY | | |
| 5 | YELLOW | | RPM Configuration (ground input) |
| 6 | N/C | | Fast Idle Engage Input 3 (active ground input)(default) |
| 7 | WHITE | | Fast Idle Engage Input 2 (active ground input)(default) |
| 8 | GREEN | | Fast Idle Engage Input 1 (active ground input)(default) |

E-AFIS706VSX-B
Part # S-M1100-45

BOB/BOBe Harnesses (Optional)
DLC Harr: S-H133TEX
Data Port: S-HB07DX

Submit product registration at www.intermotive.net

If the E-AFIS706VSX-BP fails any step in the System Operation Test, review the installation instructions and check all connections. If necessary, call InterMotive Technical Support at (530) 823-1048.