

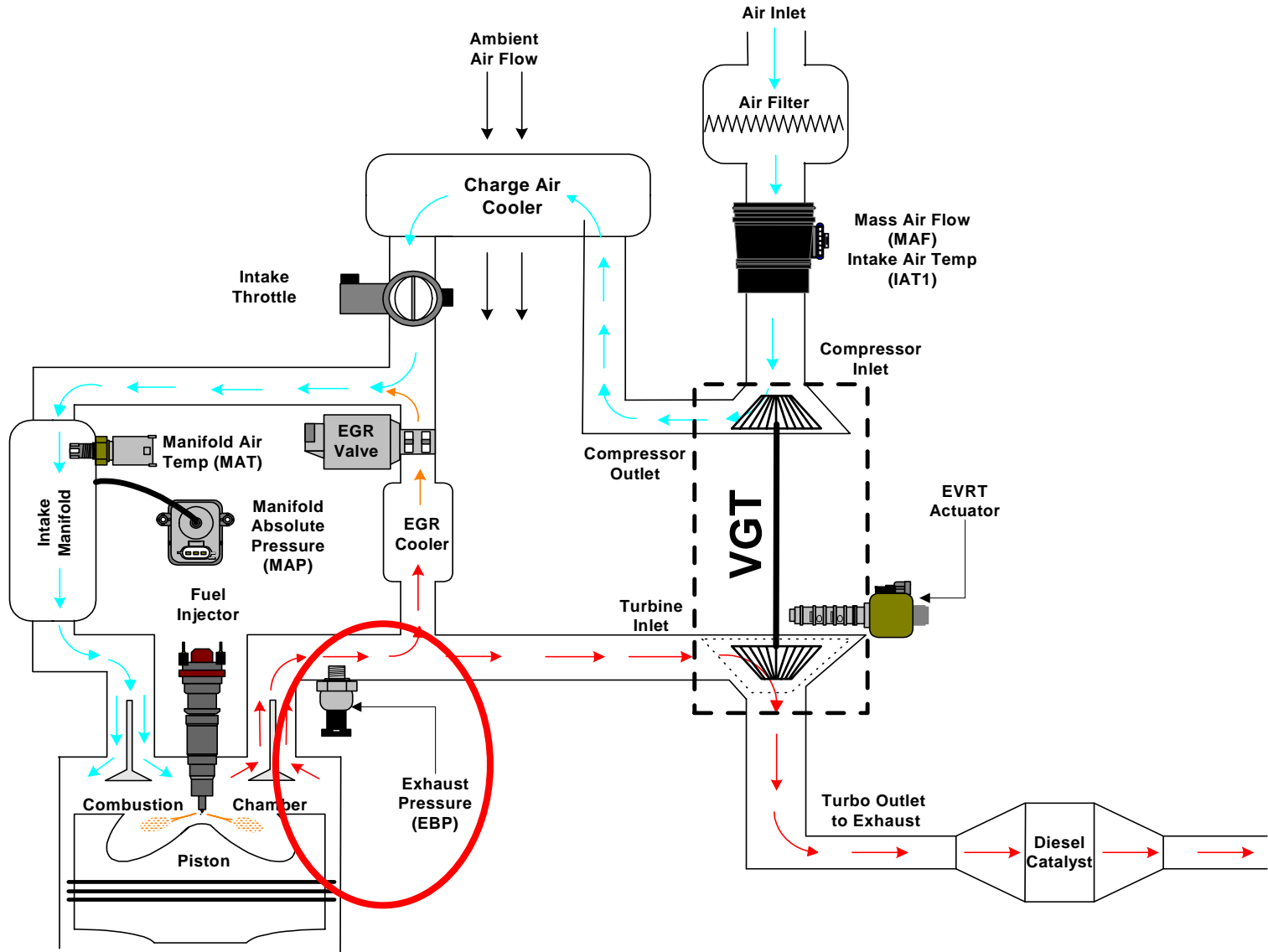
Inferred EBP Overview

03/28/06

Inferred EBP Description

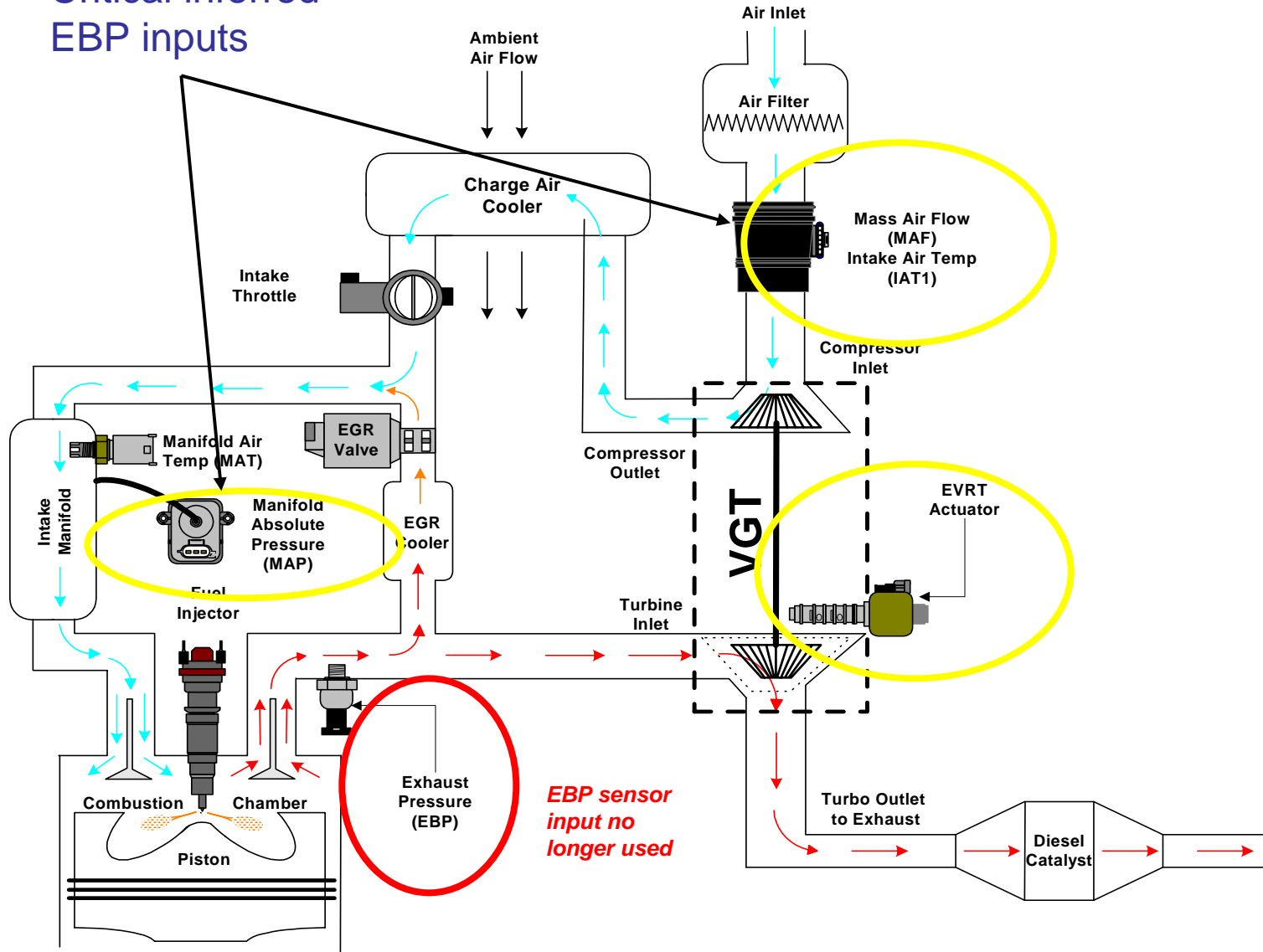
- 6.0L diesel engines use the EBP sensor for control of the turbocharger and EGR systems
- **With the implementation of the 03.25MY 06E17 action the Powertrain Control Module (PCM) eliminates the use of the EBP sensor input.**
 - Exhaust Backpressure is now “inferred” through the use of inputs from the MAF, MAP, BARO, and EOT sensors. These sensors now provide a more critical function for turbocharger control.
 - As a result, the new PCM function places increased importance on MAF input, MAP input, turbo performance, intake integrity, exhaust integrity, etc. It is possible that driveability issues may arise or be more pronounced following 06E17 update.
 - Aftermarket equipment such as intake or exhaust systems also may have a more adverse effect on vehicle operation following update.
- Following calibration update or KAM clear it is necessary to allow the PCM to execute an adaptive turbocharger learn process which exercises the turbocharger at idle to “learn” control duty cycle for optimum performance.

6.0L EBP Sensor Overview



6.0L Inferred EBP Overview

Critical inferred EBP inputs



Adaptive Turbocharger Description

The adaptive turbocharger “learn” feature is designed to adapt the turbocharger function to provide optimized backpressure control. The turbocharger is exercised over its full range duty cycle from 15-85% while the PCM samples MAP response. Control adjustments within the PCM are “fine tuned” based on the learning function for optimized control. This feature runs at idle when the following set criteria of entry conditions are met. This is referred to as the “learn process”.

Turbocharger Learn Feature

Entry conditions are inputs the PCM monitors to verify operating conditions are acceptable to execute the turbocharger learn process. The PCM evaluates the following entry conditions each time the vehicle returns to base idle condition.

Required Entry Conditions for learn process

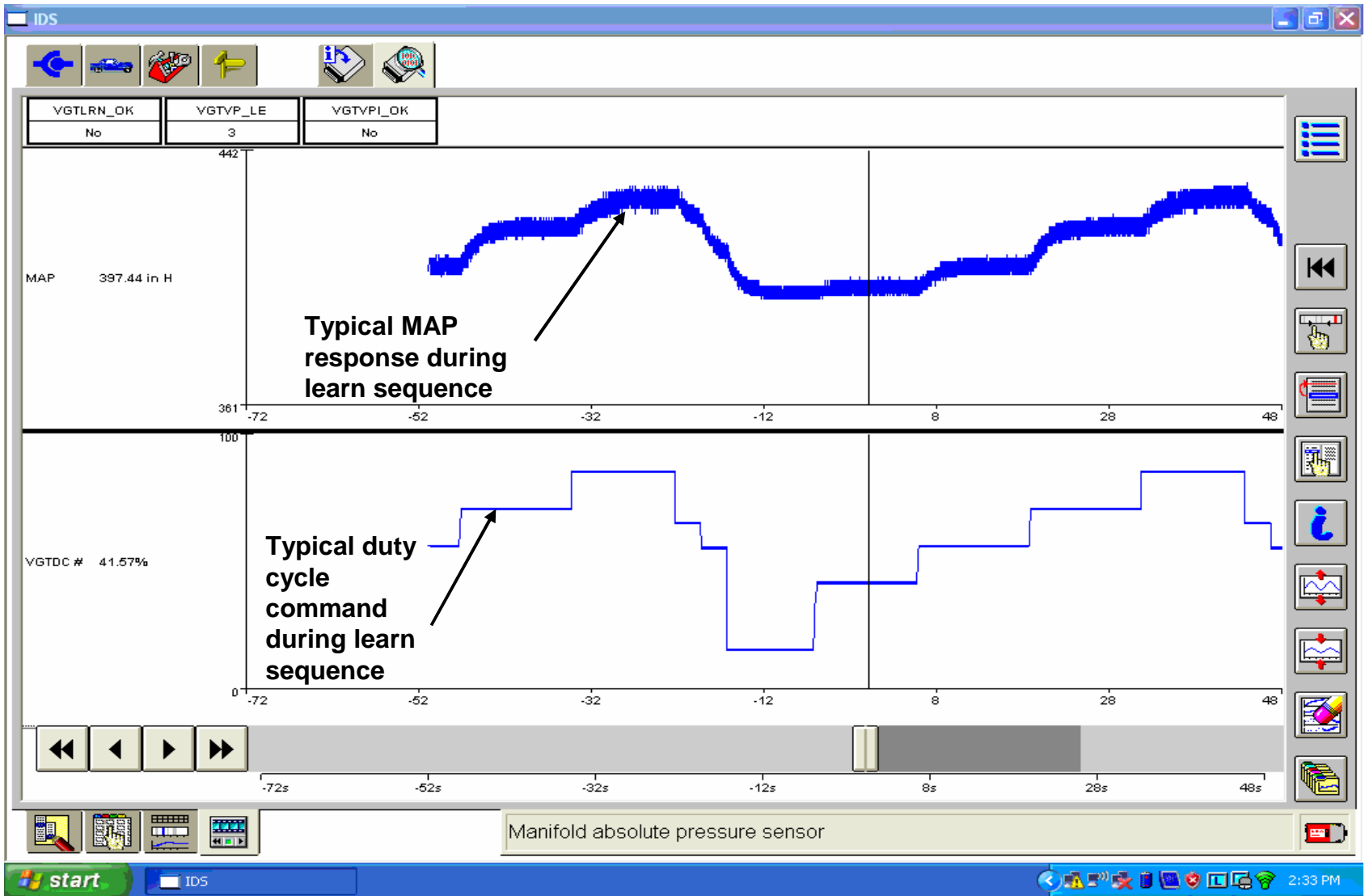
- Engine at base idle speed ($570 < \text{rpm} < 780$)
- Engine Oil Temp (EOT) between 120°-250°F (50°-120°C)
- Vehicle Speed (VS) below 9 mph
- Pedal position (APP) below 1.5%
- EGR commanded off (EGR DUTY=0)
- No malfunctions for the critical sensors/actuators. No DTC's set for the following:
 - MAP
 - EOT
 - MAF
 - BARO
 - Turbocharger/EVRT

Turbo Learning State

- Optimum performance is achieved when the required number of PCM learn sequences has been completed. This can be determined by monitoring the VGTLRN_OK PID. The PID will indicate YES when the minimum number of turbo system learn cycles are complete. For continued “fine tuning” of turbo system it is typical for the PCM to execute learn sequences even if the PID indicates YES.
- The next page illustrates the turbo duty cycle command and MAP response that is expected during the learn process.

Note: To ensure drivability issues are not present as result of incomplete learn process, operate the vehicle in the outlined entry conditions on the previous page. The PIDs provide useful info of the PCM learn states. When servicing 04MY vehicles built before 9/30/04 may be necessary to select “03MY” on the WDS tool to display the Inferred EBP PIDs.

Turbo learning illustration



Enhanced Diagnostics

There are 2 new fault codes - P132B and P006A

- P006A is a MAF fault code that is set if the MAF input error is outside the limits of the PCM MAP comparison calculation.
- P132B is a fault code that is set if the required MAP (boost) levels are not achieved during a learn cycle or at specific speed fuel demand points
- These codes are used to identify issues with the turbocharger, MAF sensor, MAP sensor/hose, intake leaks, exhaust leaks, etc
- Updated diagnostics can be found in the online PC/ED version.

Note: It is possible that DTC's may not have been generated prior to calibration update and occur as result of enhanced PCM diagnostics.