



Technical Service Bulletin

Technical Service Bulletin: TSB150099
Released Date: 12-May-2020
Advanced Dynamic Efficient Powertrain Technology (ADEPT™)

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Warranty Statement

The information in this document has no effect on present warranty coverage or repair practices, nor does it authorize TRP or Campaign actions.

Contents

The purpose of this document is to announce the availability of Advanced Dynamic Efficient Powertrain Technology (ADEPT™ technology) on select Cummins® engines. See Table 1 below.

Product Affected

Table 1, Product Affected		
Engine Model	Model Year	CPL
ISX15 CM2350 X101	2013	3937
	2015	4583
	2016	4586
	2016	4761
X15 CM2350 X114B	2017	4342
	2018	
	2019	
X15 CM2450 X124B	2020	5348
	2021	5535
X12 CM2350 X119B	2018	4814
	2019	
	2020	5580
ISX15 CM2250 SN	E4	3566
		3567
	E5	3574

Table 1, Product Affected		
Engine Model	Model Year	CPL
		3575

Compatibility

Table 2, Compatible OEMs				
Freightliner® Trucks	International™ Trucks	Kenworth™ Trucks	Peterbilt™ Trucks	Volvo® Trucks
Table 3, Compatible Eaton™ Transmissions				
Advantage® Series EA3		UltraShift® PLUS VAS		
Advantage® Series EC3 (SmartAdvantage)		UltraShift® PLUS VCS		
UltraShift® PLUS LAS		UltraShift® PLUS VHP		
UltraShift® PLUS LSE		UltraShift® PLUS VMS		
UltraShift® PLUS MHP		UltraShift® PLUS VXP		
UltraShift® PLUS MXP		Endurant™		
Table 3, Compatible Adaptive Cruise Control System				
Bendix® Wingman®				
Wabco™ OnGuard™				

Note : Adaptive cruise control is **not** required to enable ADEPT™ technology.

Description of Change

ADEPT™ technology is a set of electronic features including SmartTorque2 and SmartCoast™, and Predictive Gear Shifting.

SmartTorque2 senses the selected gear, road grade, and overall engine load. As these conditions vary, SmartTorque2 determines the exact amount of torque required to maintain road speed and eliminate unnecessary downshifts.

SmartCoast™ has been added to improve the efficiency of coasting events. SmartCoast™ will disengage the driveline on moderate downhill grades or when the operator lifts off the accelerator pedal, allowing the engine to return to idle.

Predictive Gear Shifting improves vehicle speed tracking performance during cruise control. The feature will utilize vehicle characteristics and road grade profile information to determine the proper transmission gear when the engine is power limited on hills.

Predictive Engine Braking aims to enhance the vehicle speed limiting capability of existing engine brake features based on the upcoming road grade. The features to which this predictive functionality can apply are Cruise Control and Engine Brake Interaction or Maximum Vehicle Speed Control.

On-ramp Boost is a performance feature that improves vehicle acceleration on an on-ramp leading to an interstate which increases the merging speeds and assists in an easier merging maneuver. It allows the vehicle to operate in a fuel-efficient mode during regular operation and allows better

performance during critical situations.

Predictive Road Speed Governor improves efficiency of the vehicle by adjusting the Road Speed Governor within programmable offsets based on current and upcoming road grade.

Dynamic Power aims to improve overall engine efficiency by limiting use of excessive torque when it is **not** required. Utilizing similar references as SmartTorque2, Dynamic Power modulates available engine torque to reflect current vehicle operation & environmental influence.

Note : Predictive Gear Shifting, Predictive Engine Braking, On-ramp Boost, Dynamic Power, and Predictive Road Speed Governor require either a Cummins® Route Parameter Manager (RPM) or an OEM Predictive Cruise Control module to get look-ahead road information.

Reason for Change

Fuel economy and performance improvement option

Service Instructions

Electronic Tools Required:

- INSITE™ Pro electronic service tool for engine calibration update
- ServiceRanger™ 4 for transmission software update (if required)

1. Check engine, transmission, and adaptive cruise control system compatibility. See Product Affected Table, Table 1, Table 2, and Table 3 for applicability.

2. Review ADEPT™ technology documentation on cumminsengines.com and communicate modification charge to customer.

- The customer will incur a fleet count charge as well as the stated modification charge.

3. Verify that transmission software meets minimum software requirement. See Table 4 below.

Table 4, Transmission Software Version										
Trans missi on Type	Soft ware Versi on	SmartTorque2	Predictive Gear Shifting	Smart Coast (Cruise Control)	Smart Coast (Accelerator Control)	Smart Coast (Cruise and Accelerator Control)	Predictive Engine Braking	On-Ramp Boost	Predictive Road Speed Governor	Dynamic Power

Advantage® or Ultrashift®	5569960 or newer	Supported	Not Supported	Supported	Not Supported	Not Supported	Not supported	Not supported	Supported	Not supported
Endurant™	5516018 or newer	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported	Supported

- If necessary, update the transmission using the Eaton™ ServiceRanger™ 4 service tool.
- If minimum transmission software requirement is **not** met, ADEPT™ features will **not** function properly and fault codes can be triggered.
 - If a feature is enabled that the transmission does **not** support, fault code 5297 will come active as a result.

4. Update the engine calibration to ADEPT™ technology calibration using selection matrix in Table 5 below. See the ISX15 CM2350 X101 Service Manual, Bulletin 4310641. Refer to Procedure 019-032 (/qs3/pubsys2/xml/en/procedures/105/105-019-032.html) in section 19. See the X15 CM2350 X114B - Efficiency Series Service Manual, Bulletin 5411181. Refer to Procedure 019-032 (/qs3/pubsys2/xml/en/procedures/105/105-019-032.html) in section 19. See the X15 CM2450 X124B Service Manual, Bulletin 5504583. Refer to Procedure 019-032 (/qs3/pubsys2/xml/en/procedures/105/105-019-032.html) in Section 19.

Note : Dynamic Power is available **only** for X15 CM2450 X124B engine ratings that have ECM calibration codes starting with 'KW' located in Table 5 in the ADEPT™ Technology ECM Calibration Code column.

5. Clear resulting fault codes

- Depending on the download sequence an inactive fault code 5297 can be logged in the ECM after the upgrade as a result of transmission and ECM communication loss during calibration event.

6. Verify ADEPT™ features are turned on in the ECM. Under the Features and Parameters section in INSITE™ electronic service tool:

For Ultrashift® or Advantage® Transmissions:

- Adjust “SmartCoast” to “Enabled” if set to “Disabled” (May be located in the Cruise Control section or as a separate featured called SmartCoast). The Advantage or Ultrashift transmissions **only** support Smart Coast in cruise control.
 - The Smart Coast features may **not** be restored after a calibration has taken place using a vehicle electronics programming station (VEPS) machine. Use INSITE™ electronic service tool to connect to the ECM and follow the instructions in Step 6 to confirm that the parameter Smart Coast is set to Enabled.
- Adjust “Load Based Torque Control” to “Smart Torque 2” if set to “Base”.

- Adjust “Road Speed Governor Type” from “Traditional” to “Predictive”. If Predictive Road Speed Governor is unavailable in the calibration, “Road Speed Governor Type” will be Read **Only**.

For Endurant™ Transmissions:

- Adjust “SmartCoast” to “Enabled” if set to “Disabled” (May be located in the Cruise Control section or as a separate feature called SmartCoast). The Endurant transmission supports Smart Coast in accelerator control, cruise control, or cruise and accelerator control.
 - If available, set the “Operating Mode” to the desired option (select “Both” for maximum coasting opportunity).
 - The Smart Coast features may **not** be restored after a calibration has taken place using a vehicle electronics programming station (VEPS) machine. Use INSITE™ electronic service tool to connect to the ECM and follow the instructions in Step 6 to confirm that the parameter Smart Coast is set to Enabled.
- For CM2450 (ECM calibration code starting with 'KW' located in Table 5 in the Existing ECM Calibration Code column) and CM2350 ECMs, Adjust “Load Based Torque Control” to “Smart Torque 2” if set to “Base”.
 - For CM2450 ECMs with ECM calibration code starting with 'KW' located in Table 5 in the ADEPT™ Technology ECM Calibration Code column, adjust "Load Based Torque Control" to "Dynamic Power" if set to "Base".
- Adjust “Predictive Gear Shifting” to “Enabled” if set to “Disabled”.
- Adjust “Predictive Engine Braking” to “Enabled” if it is set to “Disabled”.
- Adjust “On-ramp Boost” to “Enabled” if it is set to “Disabled”.
- Adjust “Road Speed Governor Type” from “Traditional” to “Predictive”. If Predictive Road Speed Governor is unavailable in the calibration, “Road Speed Governor Type” will be Read **Only**.

Note : Predictive Gear Shifting, Predictive Engine Braking, On-ramp Boost, Dynamic Power, and Predictive Road Speed Governor features are **only** applicable if the vehicle has a Cummins® Route Parameter Manager or OEM predictive cruise control system.

7. Set upper and lower cruise control droops to customer desired settings.

- Default settings are 3 miles per hour (mph) upper and 6 mph lower.
- The Cruise Control Lower Droop controls the range of cruise control based SmartCoast™. SmartCoast™ will **not** function with a 0 mph Cruise Control Lower Droop. Maximum fuel economy is achieved using 6 mph, and a minimum of 3 mph is recommended.

8. Set Road Speed Control maximum speed to customer desired settings.

- The RSG Maximum Vehicle Speed sets the maximum coasting speed for Accelerator Control operating mode. A minimum of 3 mph greater than maximum Accelerator Vehicle Speed is recommended.
- If the Maximum Vehicle Speed Control feature is used, the start braking speed will also set the maximum coasting speed. A start braking speed that is a minimum of 3 mph greater than Maximum Accelerator Speed is recommended.

9. Adjust the Predictive Road Speed Governor Maximum Positive and Maximum Negative Offsets to customer desired settings.

- Default and recommended settings are 3 miles per hour (mph) for both. Input both as positive values.
- “Road Speed Governor Type” must be set to “Predictive” for the maximum offsets to be visible.

10. If any fault codes or symptoms remain, reference the standard troubleshooting procedures. If Fault Code 5297 is active, review the transmission type and features in Table 4 above to determine what was incorrectly enabled.

Table 5, Engine Control Module (ECM) Calibration Code	
Existing ECM Calibration Code	ADEPT™ Technology ECM Calibration Code
EF10044	EF10680
EF10047	EF10662
EF10048	EF10664
EF10049	EF10666
EF10050	EF10668
EF10051	EF10670
EF10052	EF10672
EF10053	EF10674
EF10054	EF10676
EF10055	EF10678
EF10078	EF10682
EF10079	EF10684
EF10081	EF10270
EF10082	EF10272
EF10083	EF10274
EF10084	EF10276
EF10085	EF10278
EF10086	EF10280
EF10087	EF10282
EF10088	EF10284
EF10089	EF10286
EF10090	EF10288
EF10112	EF10290
EF10113	EF10292
EF10154	EF10686

Table 5, Engine Control Module (ECM) Calibration Code	
Existing ECM Calibration Code	ADEPT™ Technology ECM Calibration Code
EF10156	EF10294
EF10214	EF10663
EF10215	EF10665
EF10216	EF10667
EF10217	EF10669
EF10218	EF10671
EF10219	EF10673
EF10220	EF10675
EF10221	EF10677
EF10222	EF10679
EF10223	EF10681
EF10238	EF10271
EF10239	EF10273
EF10240	EF10275
EF10241	EF10277
EF10242	EF10279
EF10243	EF10281
EF10244	EF10283
EF10245	EF10285
EF10246	EF10287
EF10247	EF10289
EF10263	EF10683
EF10264	EF10685
EF10266	EF10291
EF10267	EF10293
EF10268	EF10687
EF10269	EF10295
EF10298	EF10299
EF10301	EF10300
EF10302	EF10303
EF10307	EF10305
EF10308	EF10309
EF10313	EF10311

Table 5, Engine Control Module (ECM) Calibration Code	
Existing ECM Calibration Code	ADEPT™ Technology ECM Calibration Code
EF10314	EF10315
EF10319	EF10317
EF10320	EF10321
EF10325	EF10323
EF10326	EF10327
EF10331	EF10329
EF10332	EF10333
EF10337	EF10335
EF10338	EF10339
EF10343	EF10341
EF10344	EF10345
EF10349	EF10347
EF10350	EF10351
EF10355	EF10353
EF10356	EF10357
EF10361	EF10359
EF10405	EF10404
EF10409	EF10407
EF10411	EF10410
EF10415	EF10413
EF10416	EF10417
EF10421	EF10419
EF10504	EF10688
EF10505	EF10689
EF10507	EF10506
EF10511	EF10509
EF10512	EF10513
EF10515	EF10514
EF10516	EF10517
EF10519	EF10518
EF10521	EF10520
EF10525	EF10523
EF10527	EF10526

Table 5, Engine Control Module (ECM) Calibration Code	
Existing ECM Calibration Code	ADEPT™ Technology ECM Calibration Code
EF10531	EF10529
EF10532	EF10533
EF10534	EF10535
EF10536	EF10537
EF10538	EF10539
EF10540	EF10541
EF10542	EF10543
EF10544	EF10545
EF10546	EF10547
EF10548	EF10549
EF10550	EF10551
EF10567	EF10568
EF10569	EF10570
EF10571	EF10572
EF10574	EF10575
EF10576	EF10577
EF10578	EF10579
EF10693	EF10692
EF10697	EF10695
EF10698	EF10699
EF10704	EF10702
EF10709	EF10708
EF10713	EF10711
EF10714	EF10715
EF10720	EF10718
EF10722	EF10723
EF10728	EF10726
EF10730	EF10731
EF10736	EF10734
EF10738	EF10739
EF10744	EF10742
EF10746	EF10747
EF10752	EF10750

Table 5, Engine Control Module (ECM) Calibration Code	
Existing ECM Calibration Code	ADEPT™ Technology ECM Calibration Code
EF10757	EF10756
EF10761	EF10759
HD10001	HD10072
HD10002	HD10057
HD10005	HD10075
HD10011	HD10054
HD10012	HD10060
HD10014	HD10078
HD10030	HD10126
HD10031	HD10129
HD10032	HD10132
HD10036	HD10144
HD10037	HD10147
HD10038	HD10150
HD10055	HD10056
HD10058	HD10059
HD10061	HD10062
HD10073	HD10074
HD10076	HD10077
HD10079	HD10080
HD10127	HD10128
HD10130	HD10131
HD10133	HD10134
HD10145	HD10146
HD10148	HD10149
HD10151	HD10152
HD10169	HD10171
HD10170	HD10172
HD10173	HD10175
HD10174	HD10176
HD10177	HD10179
HD10178	HD10180
HD10181	HD10183

Table 5, Engine Control Module (ECM) Calibration Code	
Existing ECM Calibration Code	ADEPT™ Technology ECM Calibration Code
HD10182	HD10184
HD10185	HD10050
HD10186	HD10048
HD10199	HD10164
HD10200	HD10162
HD10201	HD10203
HD10202	HD10204
HD10205	HD10207
HD10206	HD10208
HD10209	HD10210
HD10211	HD10212
HD10213	HD10214
HD10215	HD10216
HD10217	HD10089
HD10218	HD10087
HD10221	HD10222
HD10223	HD10224
HD10225	HD10226
HD10227	HD10228
HD10229	HD10230
HD10231	HD10232
HD10233	HD10234
HD10235	HD10236
HD10237	HD10238
HD10239	HD10240
HD10241	HD10242
HD10243	HD10244
HD10247	HD10246
HD10248	HD10245
HD10251	HD10250
HD10252	HD10249
HD10279	HD10280
HD10281	HD10282

Table 5, Engine Control Module (ECM) Calibration Code	
Existing ECM Calibration Code	ADEPT™ Technology ECM Calibration Code
HD10283	HD10284
HD10285	HD10286
HD10287	HD10288
HD10289	HD10290
HD10291	HD10292
HD10293	HD10294
HD10295	HD10296
HD10297	HD10298
HD10299	HD10300
HD10301	HD10302
HD10305	HD10304
HD10306	HD10303
HD10331	HD10332
HD10333	HD10334
HD10335	HD10336
HD10337	HD10338
HD10343	HD10344
HD10345	HD10346
HD10347	HD10348
HD10349	HD10350
HD10351	HD10352
HD10353	HD10354
HD10355	HD10356
HD10357	HD10358
HD10359	HD10360
HD10361	HD10362
HD10363	HD10364
HD10365	HD10366
HD10369	HD10368
HD10370	HD10367
HD10373	HD10372
HD10374	HD10371
HD10401	HD10402

Table 5, Engine Control Module (ECM) Calibration Code	
Existing ECM Calibration Code	ADEPT™ Technology ECM Calibration Code
HD10403	HD10404
HD10405	HD10406
HD10407	HD10408
HD10409	HD10410
HD10411	HD10412
HD10413	HD10414
HD10415	HD10416
HD10417	HD10418
HD10419	HD10420
HD10421	HD10422
HD10423	HD10424
HD10427	HD10426
HD10428	HD10425
HD10441	HD10442
HD10443	HD10444
HD10445	HD10446
HD10447	HD10448
KW10009	KW10047
KW10010	KW10048
KW10010	KW10049
KW10011	KW10050
KW10012	KW10051
KW10012	KW10052
KW10013	KW10053
KW10014	KW10054
KW10014	KW10055
KW10021	KW10056
KW10018	KW10057
KW10022	KW10058
KW10025	KW10059
KW10024	KW10060
KW10026	KW10061
KW10029	KW10062

Table 5, Engine Control Module (ECM) Calibration Code	
Existing ECM Calibration Code	ADEPT™ Technology ECM Calibration Code
KW10002	KW10063
KW10030	KW10064

Document History

Date	Details
2015-6-23	Module Created
2016-1-21	Updated product affected, Table 2, and Table 4. Updated Step 6 and Step 7. Added Step 8.
2016-9-9	Updated product affected, Table 2, and Table 3. Updated Step 3.
2016-11-15	Updated software version number 5569939 to 5569960.
2017-6-8	Added X15 CM2350 X114B to Product Affected and updated associated tables.
2018-6-11	Updated tables with revised headings, added table content.
2018-8-20	Added Table 1, modified Tables 2, 3, 4 and 5.
2018-10-5	Updated note to include VEPS instructions
2019-5-23	Added FC 5297 information
2019-8-9	Updated Table 4. Added For Ultrashift® or Advantage® Transmissions section. Added statement about Fault Code 5297.
2019-10-11	Non-Product Problem Solving (PPS)
2020-2-10	Added predictive road speed governor information.
2020-3-12	Non-Product Problem Solving (PPS)
2020-5-11	Added X15 CM2450 X124B engine.

Last Modified: 12-May-2020
