

CleanAIR Systems, Inc.

California Air Resource Board Executive Orders for Verification

2006

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Linda S. Adams
Secretary for Environmental
Protection

Air Resources Board

1001 I Street • P.O. Box 2815
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Arnold Schwarzenegger
Governor

November 6, 2006

Dr. Mike Tripodi
CleanAIR Systems
4379 Center Place
Santa Fe, New Mexico 87505

Dear Dr. Tripodi:

The Air Resources Board (ARB) has reviewed CleanAir Systems' request for the extension of the PERMIT™ filter system, designated family name of **CA/CAS/2003/PM3/N00/ST/DPF01**, to first include prime power operation (in addition to emergency standby that they have now), and to also include all applications that are tested or certified to PM levels of up to 0.2 g/bhp-hr. Based on the evaluation of the data provided, the ARB hereby verifies that the PERMIT™ reduces emissions of diesel particulate matter by 85 percent or greater for use in stationary prime and emergency generators with engines listed in the Attachment. The PERMIT™ is verified as a Level 3 diesel emission control device.

Enclosed please find the Executive Order number DE-05-002-01 for the CleanAir Systems' PERMIT™. The ARB reminds you to include the emission control strategy family name on all identification labels. No changes are permitted to the system as described in the enclosed Executive Order. Any changes to the system, system components, applicable models, model years, etc. must be evaluated and approved by ARB. The aforementioned verification is valid provided the operating criteria are met as in the new Executive Order.

Since there may be significant variations from application to application, CleanAIR has indicated that it will review actual operating conditions (duty cycle, baseline emissions, exhaust temperature profiles, and engine backpressure) prior to retrofitting an engine with the PERMIT™ to ensure compatibility.

Furthermore, the engine should be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer. CleanAIR must install the HIBACK, a backpressure monitor, and indicator light on all engines retrofitted with a PERMIT™.

Additionally, as stated in the Diesel Emission Control Strategy Verification Procedure, CleanAIR is responsible for honoring a warranty (Section 2707) and conducting in-use

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Website: <http://www.arb.ca.gov>.

California Environmental Protection Agency

compliance testing (Section 2709). CleanAIR must also comply with the system labeling requirements in accordance with Section 2706(g).

Thank you for participating in ARB's diesel emission control strategy verification program. Should you have any questions or comments, please contact Mr. John Lee, at (916) 327-5975.

Sincerely,

/s/

Daniel E. Donohue, Chief
Emissions Assessment Branch

Enclosure

cc: John Lee, Air Resources Engineer
Technical Analysis Section, SSD

**State of California
AIR RESOURCES BOARD**

EXECUTIVE ORDER DE-05-002-01

Pursuant to the authority vested in the Air Resources Board (ARB) by Health and Safety Code, Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39616 and Executive Order G-02-003;

Relating to Exemptions under Section 27156 of the Vehicle Code, and Verification under Sections 2700 through 2710 of Title 13 of the California Code of Regulations

CleanAIR Systems, Inc.
PERMIT™

ARB has reviewed CleanAIR Systems' request for verification of the PERMIT™ diesel particulate filter (DPF). Based on an evaluation of the data provided, and pursuant to the terms and conditions specified below, the Executive Officer of ARB hereby finds that the PERMIT™ DPF reduces emissions of diesel particulate matter (PM) consistent with a Level 3 device (greater than or equal to 85 percent reductions) (Title 13 California Code of Regulations (CCR) Sections 2702 (f) and (g) and Section 2708). Accordingly, the Executive Officer determines that the system merits verification and, subject to the terms and conditions specified below, classifies the PERMIT™ as a Level 3 system, for use with stationary emergency and prime generators and using the engine families listed in Attachment 1.

This verification is subject to the following terms and conditions:

- The engines are model years 1996 through 2006 having the engine family names listed in Attachment 1.
- The engine must be in their original certified configuration.
- The engine must not employ exhaust gas recirculation.
- The engine must not have a pre-existing oxidation catalyst.
- The engine must not have a pre-existing diesel particulate filter.
- The engine must be four-stroke.
- The engine can be turbocharged or naturally-aspirated.
- The engine must be certified to meet the ARB off-road engine standards for compression ignition engines.
- The engine must achieve a particulate matter emission level equal or less than 0.2 g/bhp-hr (as tested on an appropriate steady-state certification cycle outlined in the ARB off-road regulations – similar to ISO 8178 D2).
- CleanAIR must review actual operating conditions (duty cycle, baseline emissions, exhaust temperature profiles, and engine backpressure) prior to retrofitting an engine with the PERMIT™ DPF to ensure compatibility.

- The engine should be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer.
- California diesel fuel with less than or equal to 15 ppm sulfur or a biodiesel blend provided that the biodiesel portion of the blend complies with ASTM D6571 (15 ppm sulfur), the diesel portion of the blend complies with Title 13 (CCR), sections 2281 and 2282 and the blend contains no more than 20 percent biodiesel by volume.
- The other terms and conditions specified below.

Table 1: Conditions for the PERMIT™

Maximum consecutive minutes at idle	240 minutes
Number of 10 minute idle sessions before regeneration is required	Regeneration recommended after 12 consecutive sessions; required after 24
Minimum temperature/load/time requirements for regeneration in 4-stroke engine	300° Celsius for 30% of operating time or 2 hours, whichever is longer. For most engines, 40% load results in temperature of at least 300° Celsius
Number of hours of operation before cleaning/disposal of filter	5000 hours under normal operating conditions

IT IS ALSO ORDERED AND RESOLVED: That installation of the PERMIT™, manufactured by CleanAIR Systems, 4379 Center Place, Santa Fe, NM 87507, has been found not to reduce the effectiveness of the applicable engine pollution control system.

The PERMIT™ consists of a catalyzed passive diesel particulate filter and a backpressure monitor, HIBACK.

This Executive Order is valid provided that installation instructions for PERMIT™ do not recommend tuning the engine to specifications different from those of the engine manufacturer.

Changes made to the design or operating conditions of PERMIT™, as exempted by ARB, which adversely affect the performance of the engine's pollution control system, shall invalidate this Executive Order.

No changes are permitted to the device. ARB must be notified in writing of any changes to any part of PERMIT™. Any changes to the device must be evaluated and approved by ARB. Failure to do so shall invalidate this Executive Order.

Marketing of the PERMIT™ using identification other than that shown in this Executive Order or for an application other than that listed in this Executive Order shall be prohibited unless prior approval is obtained from ARB.

This Executive Order shall not apply to any PERMIT™ advertised, offered for sale, sold with, or installed on an engine prior to or concurrent with transfer to an ultimate purchaser.

As specified in the Diesel Emission Control Strategy Verification Procedure (Title 13 CCR Section 2706 (g)), the ARB assigns each Diesel Emission Control Strategy a family name. The designated family name for the verification as outlined above is **CA/CAS/2003/PM3/N00/ST/DPF01**.

Additionally, as stated in the Diesel Emission Control Strategy Verification Procedure, CleanAIR Systems, Inc. is responsible for honoring their warranty (Section 2707) and conducting in-use compliance testing (Section 2709).

In addition to the foregoing, ARB reserves the right in the future to review this Executive Order and the exemption and verification provided herein to assure that the exempted and verified add-on or modified part continues to meet the standards and procedures of California Code of Regulations, Title 13, Section 2222, et seq and California Code of Regulations, Title 13, Sections 2700 through 2710.

Systems verified under this Executive Order shall conform to all applicable California emissions regulations.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order.

Executive Order DE-05-002 is hereby superseded and is of no further force and effect.

Executed at Sacramento, California, this __6th__ day of____November____2006.

Catherine Witherspoon
Executive Officer
by

/s/

Robert Fletcher, Chief
Stationary Source Division

Attachment 1: Verified for Stationary Diesel Engines PERMIT™ DPF
Off-Road Certified Engine Family List ($0 \leq 0.2$ g/bhp-hr PM)

**Attachment 1: Verified for Stationary Diesel Engines
PERMIT™ DPF
Off-Road Certified Engine Family List (0 ≤ 0.2 g/bhp-hr PM)**

Model Year 1996 Engines

Manufacturer	Engine Families
Caterpillar	TCP14.RZDBRK
	TCP10.RZDBRD
Deutz AG	TDZ16.RGDARA
	TDZ16.RGDARB
	TDZ7.1R6DARA
	TDZ7.1R6DARB
Generac	TGN13.R6DARA
Komatsu	TKL11.RZDARB
Navistar	TNV466R6DARA
	TNV466R6DARB
	TNV466R6DASC
	TNV466R6DASD
	TNV530R6DARA
	TNV530R6DARB
	TNV530R6DASD
	TNV530R8DASC

Model Year 1997 Engines

Manufacturer	Engine Families
Caterpillar	VCP10.RZDARD
	VCP14.RZDARK
Deere	VJD10.RJDBRB
	VJD6.8R6DBRA
	VJD8.1R6DBRA
	VJD8.1RBDRB
Deutz AG	VDZ16.RGDARA
	VDZ16.RGDARB
	VDZ7.1R6DARA
	VDZ7.1R6DARB
Generac	VGN13.R6DARA
Navistar	VNV466R6DASC
	VNV466R6DASD
	VNV530R6DARB
	VNV530R6DASC
	VNV530R6DASD

Model Year 1998 Engines

Manufacturer	Engine Families
AB Volvo Penta	WVPXL09.6ACB
	WVPXL12.0ACB
Case	WX9XL0239ACA
	WX9XL0359ABA
	WX9XL0505ABA
	WX9XL0505ABB
	WX9XL0505ACA
Caterpillar	WCPXL07.0MRB
	WCPXL10.5MRD
	WCPXL10.5MRG
	WCPXL14.6ERK
	WCPXL14.6MRJ
Cummins	WCEXL019.AAA
	WCEXL0359ABA
	WCEXL0359ABB
	WCEXL0505ABA
	WCEXL0505ABB
	WCEXL0505ACA
	WCEXL0661AAA
	WCEXL0855AAA
	WCEXL0855AAB
Daewoo	WDWXL11.1BHT
	WDWXL11.1BIA
Detroit Diesel Corporation	VDDXL08.5TJD
	WDDXL09.0TFE
	WDDXL11.1THD
	WDDXL12.1TFE
	WDDXL12.1TFM
	WDDXL12.7TGD
	WDDXL15.9TRE
	WDDXL23.9TRE
Deere	WJDXL06.8012
	WJDXL08.1007
	WJDXL08.1008
	WJDXL08.1009
	WJDXL10.5003

Model Year 1998 Engines Continued

Manufacturer	Engine Families
Deutz AG	WDZXL07.1003
	WDZXL07.1004
	WDZXL15.9001
	WDZXL15.9002
GMC	WGNXL13.3HTA
ISUZU	WSZXL06.4DTA
Komatsu	WKDXL0239AAA
	WKDXL0359ABA
	WKLXL11.0DB1
	WKLXL11.0DC1
	WKLXL15.2EB1
	WKLXL23.2FC1
	WKLXL7.15CB1
	WKLXL7.15CC1
MTU	WMUXL12.0G2V
Navistar	WNVXL0530BNB
	WNVXL0530BND

Model Year 1999 Engines

Manufacturer	Engine Families
AB Volvo Penta	XVPXL07.3ABB
	XVPXL07.3ACB
	XVPXL09.6ACB
	XVPXL12.0ACB
Case	XX9XL0239ACA
	XX9XL0359ABA
	XX9XL0505ABA
	XX9XL0505ABB
	XX9XL0505ACA
Caterpillar	XCPXL07.0MRB
	XCPXL10.5MRD
	XCPXL10.5MRG
	XCPXL14.6ERK
Cummins	XCEXL019.AAA
	XCEXL0359ABA
	XCEXL0505ABA
	XCEXL0505ABB
	XCEXL0505ACA
	XCEXL0661AAA
	XCEXL0855AAA
	XCEXL0855AAB

Model Year 1999 Engines Continued

Manufacturer	Engine Families
Daewoo	XDWXL03.3AMN
	XDWXL03.3BMN
	XDWXL03.3LMN
	XDWXL05.8AOA
	XDWXL05.8ARN
	XDWXL05.8ATT
	XDWXL08.1ACN
	XDWXL08.1ADT
	XDWXL11.1BIA
	XDWXL11.1BHT
	XDWXL11.1DJA
	XDWXL14.6AZA
	XDWXL14.6CVT
	XDWXL18.3ASA
Detroit Diesel Corporation	XDDXL08.5TJD
	XDDXL09.1TFE
	XDDXL11.1THD
	XDDXL12.1TFE
	XDDXL12.1TFM
	XDDXL12.7TGD
	XDDXL14.0TLD
	XDDXL15.9TRE
XDDXL23.9TRE	
Deere	XJDXL06.8012
	XJDXL08.1007
	XJDXL08.1008
	XJDXL10.5022
Deutz AG	XDZXL02.7014
	XDZXL07.1005
	XDZXL07.1004
	XDZXL15.9002
	XDZXL15.9003
Generac	XGNXL13.3HTA

Model Year 1999 Engines Continued

Manufacturer	Engine Families	
Komatsu	XKLXL03.3JA1	
	XKLXL11.0DB1	
	XKLXL11.0DC1	
	XKLXL15.2EC1	
	XKLXL23.2FC1	
	XKLXL7.15CB1	
	XKLXL7.15CC1	
	XKDXL0239ACA	
	XKDXL0359ABA	
	XKDXL0505ABB	
	XKDXL0505ACA	
	KUBOTA	XKBXL03.3BAC
		XKBXL03.3BCC
Mitsubishi	XMTXL07.5D6C	
	XMTXL11.9D6A	
Navistar	XNVXL0466BNA	
	XNVXL0530ANA	
	XNVXL0530ANB	
	XNVXL0530ANC	
	XNVXL0530AND	
	XNVXL0530BNA	
	XNVXL0530BNB	
	XNVXL0530BNC	
	XNVXL0530BND	
Yanmar	XYDXL2.00D4T	
	XYDXL2.78D4N	
	XYDXL4.41D4N	
	XYDXL4.41D4T	

Model Year 2000 Engines

Manufacturer	Engine Families
AB Volvo Penta	YVPXL07.3ABB
	YVPXL07.3ACB
	YVPXL09.6ACB
	YVPXL12.0ACB
	YVPXL12.0ACB
Case	YX9XL0239ACA
	YX9XL0239ADA
	YX9XL0359ABA
	YX9XL0359ABB
	YX9XL0505ABA
	YX9XL0505ABB
Caterpillar	YX9XL0505ACA
	YCPXL07.0MRB
	YCPXL10.5MRD
	YCPXL10.5MRG
	YCPXL14.6ERK
	YCPXL27.0MRH
Cummins	YCPXL27.0MRS
	YCPXL34.5ERK
	YCPXL69.0ERK
	YCEXL03.3AAA
	YCEXL03.3AAB
	YCEXL015.ABA
	YCEXL019.AAA
	YCEXL019.AAB
	YCEXL030.ABA
	YCEXL050.ABA
	YCEXL0239ACA
	YCEXL0239ADA
	YCEXL0359AAA
	YCEXL0359ABA
YCEXL0359ABC	
YCEXL050.AAA	
YCEXL0505ABA	
YCEXL0505ABB	
YCEXL0505ACA	
YCEXL060.ABA	
YCEXL0661AAA	
YCEXL0855AAA	
YCEXL0855AAB	
Deere	YJDXL06.8012
	YJDXL08.1007
	YJDXL08.1008
	YJDXL10.5022

Model Year 2000 Engines Continued

Manufacturer	Engine Families
Detroit Diesel Corporation	YDDXL08.5TJD
	YDDXL11.1THD
	YDDXL12.1TFE
	YDDXL12.1TFM
	YDDXL12.7TGD
	YDDXL14.0TLD
	YDDXL15.9TRE
	YDDXL23.9TRE
	YDDXL31.8VRE
	YDDXL65.0VTE
Deutz AG	YDZXL02.7014
	YDZXL07.1004
	YDZXL07.1005
	YDZXL15.9002
	YDZXL15.9003
	YDZXL17.5001
Genrac	YGNXL13.3HAA
	YGNXL13.3HTA
	YGNXL16.0MAA
Komatsu	YKLXL0505ACA
	YKLXL11.0DB1
	YKLXL11.0DC1
	YKLXL15.2EC1
	YKLXL23.2FC1
	YKLXL23.2FC2
	YKLXL30.5GC1
	YKLXL7.15CB1
	YKLXL7.15CC1
Navistar	YNVXL0466ANA
	YNVXL0530ANA
	YNVXL0530ANB
	YNVXL0530ANC
	YNVXL0530AND
VM Motori	YV5XI02.1R3V
	YV5XL02.8R2T

Model Year 2001 Engines

Manufacturer	Engine Families
AB Volvo Penta	1VPXL07.3ABB
	1VPXL07.3ACB
	1VPXL09.6ACB
	1VPXL12.1ACB
Case	1X9XL0239ACA
	1X9XL0239ADA
	1X9XL0359ABA
	1X9XL0359ABB
	1X9XL0505ABA
	1X9XL0505ABB
	1X9XL0505ACA
Caterpillar	1CPXL07.0MRB
	1CPXL10.5MRD
	1CPXL10.5MRG
	1CPXL12.0ESK
	1CPXL14.6ESK
	1CPXL15.8ESK
	1CPXL18.0HRN
	1CPXL27.0HRK
	1CPXL27.0MRS
	1CPXL27.0MRT
	1CPXL34.5ERK
	1CPXL78.1ERK
Cummins	1CEXL03.3AAA
	1CEXL03.3AAB
	1CEXL015.AAA
	1CEXL015.ABA
	1CEXL019.AAB
	1CEXL0239ACA
	1CEXL0239ADA
	1CEXL030.ABA
	1CEXL0359ABA
	1CEXL0359ABB
	1CEXL0359ABC
	1CEXL0359ABD
	1CEXL050.ABA
	1CEXL0505ABA
	1CEXL0505ABB
	1CEXL0505ACA
	1CEXL0505ACE
	1CEXL0661AAA
	1CEXL0661AAD

Model Year 2001 Engines Continued

Manufacturer	Engine Families
Cummins continued	1CEXL060.ABA
Daewoo	1DWXL2.37ANT
	1DWXL03.3AMN
	1DWXL03.3BMA
	1DWXL03.3LMN
	1DWXL05.8AOA
	1DWXL05.8ARN
	1DWXL08.1ACN
	1DWXL11.1BIA
	1DWXL14.6AZA
	1DWXL14.6CVT
	1DWXL18.3ASA
	1DWXL21.9AYA
Detroit Diesel Corporation	1DDXL08.5TJD
	1DDXL08.5YJD
	1DDXL12.7VGD
	1DDXL14.0VLD
	1DDXL14.0WLD
	1DDXL15.9WRE
	1DDXL23.9WRE
	1DDXL31.8XRE
	1DDXL65.0XTE
Deere	1JDXL06.8012
	1JDXL06.8038
	1JDXL06.8039
	1JDXL08.1007
	1JDXL08.1008
	1JDXL08.1036
	1JDXL08.1037
Deutz	1DZXL02.7014
	1DZXL02.7015
	1DDXL08.5TJD
	1DDXL08.5YJD
	1DZXL07.1005
	1DZXL15.9002
	1DZXL15.9003
Generac	1GNXL04.0HAA
	1GNXL04.0HNA
	1GNXL05.0FAA
Isuzu	1SZXL06.5BTA
	1SZXL09.8EXA
	1SZXL15.7ETA
	1SZXL15.7EXA

Model Year 2001 Engines Continued

Manufacturer	Engine Families
International	1NVXL0530ANC
	1NVXL0530AND
	1NVXL0530ANF
Komatsu	1KLXL0239ACA
	1KLXL0239ADA
	1KLXL0359ABA
	1KLXL0359ABC
	1KLXL0505ABB
	1KLXL0505ACA
	1KLXL03.3JA1
	1KLXL03.3JB1
	1KLXL7.15CB1
	1KLXL7.15CC1
	1KLXL11.0DD3
	1KLXL15.2EC3
	1KLXL30.5GC1
	1KLXL30.5GD1
Mitsubishi	1MTXL07.5D6A
	1MTXL07.5D6C
	1MTXL11.9D6A

Model Year 2002 Engines

Manufacturer	Engine Families
Case	2X9XL0239ACA
	2X9XL0239ADA
	2X9XL0359ABA
	2X9XL0359ABB
	2X9XL0359ABE
	2X9XL0505ABA
	2X9XL0505ABB
	2X9XL0505ABD
	2X9XL0505ACA
	2X9XL0505ACB
Caterpillar	2CPXL07.0MRB
	2CPXL10.5MRD
	2CPXL10.5MRG
	2CPXL27.0MRS
	2CPXL27.0MRT
	2CPXL34.5ERK
	2CPXL78.1ERK
Cummins	2CEXL03.3AAA
	2CEXL03.3AAB
	2CEXL015.AAA
	2CEXL015.AAB
	2CEXL015.ABA
	2CEXL019.AAB
	2CEXL0239ACA
	2CEXL0239ADA
	2CEXL0359ABA
	2CEXL0359ABB
	2CEXL0359ABC
	2CEXL0359ABE
	2CEXL0505ABA
	2CEXL0505ABB
	2CEXL0505ABD
	2CEXL0505ACA
	2CEXL0505ACB
	2CEXL0505ACE
	2CEXL060.ABA
	2CEXL0661AAA
2CEXL0661AAD	

Model Year 2002 Engines Continued

Manufacturer	Engine Families	
Detroit Diesel	2DDXL08.5TJD	
	2DDXL08.5YJD	
	2DDXL12.7VGD	
	2DDXL14.0VLD	
	2DDXL31.8XRE	
	2DDXL65.0XTE	
	2DDXL65.0XTE	
Deere	2JDXL06.8012	
	2JDXL06.8038	
	2JDXL06.8039	
	2JDXL06.8041	
	2JDXL06.8044	
	2JDXL06.8049	
	2JDXL08.1007	
	2JDXL08.1008	
	2JDXL08.1036	
	2JDXL08.1037	
Deutz AG	2DZXL02.7014	
	2DZXL02.7015	
	2DZXL05.7033	
	2DZXL07.1004	
	2DZXL07.1005	
	2DZXL07.1032	
	2DZXL15.9002	
	2DZXL15.9003	
	Daewoo	2DWXL2.37ANT
		2DWXL03.3AMN
2DWXL03.3BMA		
2DWXL03.3LMN		
2DWXL05.8AOA		
2DWXL05.8ARN		
2DWXL08.1ACN		
2DWXL11.1BIA		
2DWXL14.6CVT		
2DWXL21.9AYA		
Generac	2GNXL04.0HAA	
	2GNXL04.0HNA	
	2GNXL05.0FAA	
Isuzu	2SZXL06.5BTA	
	2SZXL09.8EXA	
	2SZXL15.7ETA	
	2SZXL15.7EXA	

Model Year 2002 Engines Continued

Manufacturer	Engine Families
International Truck	2NVXL0444ANA
	2NVXL0530ANC
	2NVXL0530AND
	2NVXL0530ANF
Komatsu	2KLXL0239ACA
	2KLXL0239ADA
	2KLXL0359ABA
	2KLXL0359ABC
	2KLXL0505ABB
	2KLXL0505ABD
	2KLXL0505ACA
	2KLXL03.3JA1
	2KLXL03.3JB1
	2KLXL11.0DB1
	2KLXL11.0DD3
	2KLXL15.2EC3
	2KLXL30.5GC1
	2KLXL30.5GD1
	2KLXL46.3HC1
	2KLXL7.15CB1
2KLXL7.15CC1	
Mitsubishi	2MTXL07.5D6A
	2MTXL07.5D6C
	2MTXL11.9D6A
	2MVXL24.5AAB
	2MVXL65.4ABA
	2MVXL65.4ABB
2MVXL65.4ABC	
AB Volvo Penta	2VPXL07.3ABB
	2VPXL07.3ACB
	2VPXL09.6ACB
	2VPXL12.1ABA
	2VPXL12.1ACA
2VPXL12.1ACB	
VM Motori	2V5XL02.8R2T

Model Year 2003 Engines

Manufacturer	Engine Families
Caterpillar	3CPXL15.8ESK
	3CPXL18.0HRX
	3CPXL27.0MRS
	3CPXL27.0MRT
	3CPXL34.5ERK
	3CPXL58.6ERK
CNH Engine Corp	3X9XL0239AAA
	3X9XL0239ABA
	3X9XL0359AAC
	3X9XL0359ABE
	3X9XL0505AAB
	3X9XL0505ABD
Cummins	3CEXL015.AAB
	3CEXL015.ABA
	3CEXL023.AAA
	3CEXL0239AAD
	3CEXL0239AAF
	3CEXL0275AAA
	3CEXL0275AAB
	3CEXL030.ABA
	3CEXL0359AAB
	3CEXL0359AAC
	3CEXL0359ABC
	3CEXL0359ABE
	3CEXL050.ABA
	3CEXL0505ABD
3CEXL0505ACB	
3CEXL060.ABA	
3CEXL0661AAD	
3CEXL078.AAB	
Daewoo Motors	3DWXL05.8COA
	3DWXL11.1DJA
	3DWXL21.9AYA

Model Year 2003 Engines Continued

Manufacturer	Engine Families
Detroit Diesel	3DDXL08.5YJD
	3DDXL12.7VGD
	3DDXL14.0VLD
	3DDXL15.9WRE
	3DDXL31.8XRE
	3DDXL35.8GRP
	3DDXL65.0GTP
	3DDXL65.0XTE
	Deere
3JDXL06.8039	
3JDXL06.8041	
3JDXL06.8044	
3JDXL06.8048	
3JDXL06.8049	
3JDXL08.1037	
Deutz AG	
	3DZXL06.1028
	3DZXL07.1032
	3DZXL15.9002
Daewoo Heavy Ind.	3DWXL08.1CPA
	3DWXL18.3ASC
	3DWXL2.37ANT
Isuzu	3SZXL09.8EXA
	3SZXL15.7ETA
	3SZXL15.7EXA
International Truck	3NVXL0530ANF
Komatsu	3KLXL0239AAD
	3KLXL0239AAF
	3KLXL0359AAB
	3KLXL0359ABC
	3KLXL0505ABD
	3KLXL11.0DD3
	3KLXL15.2EC3
	3KLXL23.2FD4
	3KLXL30.5GC1
	3KLXL30.5GD1

Model Year 2003 Engines Continued

Manufacturer	Engine Families
Lombardini Motori	3LBDL2.07CHT
Mack Trucks	3MKXL11.9P69
Mitsubishi Heavy Ind	3MVXL24.5AAB
	3MVXL24.5ABA
	3MVXL24.5ABB
	3MVXL24.5ABD
	3MVXL24.5ABE
	3MVXL33.9ABA
	3MVXL33.9ABB
	3MVXL33.9ABD
	3MVXL33.9ABE
	3MVXL37.1ABA
	3MVXL37.1ABB
	3MVXL37.1ABC
	3MVXL37.1ABD
	3MVXL49.0ABA
	3MVXL49.0ABB
	3MVXL49.0ABC
3MVXL65.4ABA	
3MVXL65.4ABB	
3MVXL65.4ABC	
3MVXL65.4ABD	
3MVXL65.4ABE	
3MVXL65.4ABF	
3MVXL65.4ABG	
AB Volvo Penta	3VPXL07.3ACB
	3VPXL09.6ACB
	3VPXL12.1ABA
	3VPXL12.1ACA
	3VPXL12.1ACB
3VPXL16.0ACB	

Model Year 2004 Engines

Manufacturer	Engine Families
Caterpillar	4CPXL15.8ERK
	4CPXL15.8ESK
	4CPXL18.0ESK
	4CPXL18.0HRX
	4CPXL27.0MRS
	4CPXL27.0MRT
	4CPXL34.5ERK
	4CPXL58.6ERK
	4CPXL78.1ERK
CNH Engine Corp.	4X9XL0239AAC
	4X9XL0359AAK
	4X9XL0359ABE
	4X9XL0505AAB
	4X9XL0505ABD
Cummins	4CEXL015.AAB
	4CEXL015.ABA
	4CEXL023.AAA
	4CEXL0239AAD
	4CEXL0239AAF
	4CEXL0239AAG
	4CEXL0275AAB
	4CEXL0275AAC
	4CEXL0275AAF
	4CEXL03.3ABA
	4CEXL03.3ABB
	4CEXL030.ABA
	4CEXL0359AAB
	4CEXL0359AAC
	4CEXL0359AAD
	4CEXL0359AAE
	4CEXL0359AAF
	4CEXL0359AAH
	4CEXL0359ABC
	4CEXL0359ABE
	4CEXL050.ABA
	4CEXL0505ABD
	4CEXL0505ACB
	4CEXL060.ABA
	4CEXL0661AAD
	4CEXL078.AAB
	4CEXL2.28A41
	4CEXL2.28A42

Model Year 2004 Engines Continued

Manufacturer	Engine Families
Detroit Diesel	4DDXL08.5YJD
	4DDXL12.7VGD
	4DDXL14.0VLD
	4DDXL23.9WRE
	4DDXL31.8XRE
	4DDXL35.8GRP
	4DDXL65.0GTP
	4DDXL65.0XTE
	4DDXL90.0XTP
Deere	4JDXL03.0064
	4JDXL06.8038
	4JDXL06.8041
	4JDXL06.8048
	4JDXL06.8049
	4JDXL08.1037
Deutz AG	4DZXL03.1039
	4DZXL03.1040
	4DZXL03.1041
	4DZXL05.7033
	4DZXL06.1038
	4DZXL06.5036
	4DZXL06.5037
	4DZXL06.5042
	4DZXL06.5043
	4DZXL07.1032
	4DZXL15.9002
	4DZXL71.0021
Daewoo	4DWXL05.8COA
	4DWXL05.8CRN
	4DWXL08.1CPA
	4DWXL11.1BIA
	4DWXL11.1DJA
	4DWXL18.3ASC
	4DWXL2.37ANT
	4DWXL21.9AYA
Isuzu	4SZXL03.1GTB
	4SZXL06.5FXG
	4SZXL15.7ETA
	4SZXL15.7EXA

Model Year 2004 Engines Continued

Manufacturer	Engine Families
International Truck	4NVXL0530ANF
Iveco	4VEXL05.9DGS
	4VEXL12.9GEN
Kubota	4KBXL03.3ACD
	4KBXL03.3BAC
	4KBXL03.3BCC
	4KBXL03.8ACD
Komatsu	4KLXL0239AAD
	4KLXL0239AAF
	4KLXL0239ADA
	4KLXL0275AAC
	4KLXL03.3JA3
	4KLXL03.3JB3
	4KLXL03.3JD3
	4KLXL0359AAB
	4KLXL0359AAE
	4KLXL0359ABC
	4KLXL0505ABD
	4KLXL11.0DD3
	4KLXL15.2EC3
	4KLXL23.2FD4
	4KLXL30.5GC1
	4KLXL30.5GD1
MACK Trucks	4MKXL11.9P69
	4MKXL11.9P72
MOTORENFABRIK HATZ	4HZXL3.43C42
	4HZXL3.43V42
Mitsubishi Heavy Ind.	4MVXL05.0AAA
	4MVXL05.0AAD
	4MVXL24.5AAB
	4MVXL24.5ABA
	4MVXL24.5ABB
	4MVXL24.5ABD
	4MVXL24.5ABE
	4MVXL33.9ABB
	4MVXL33.9ABE
	4MVXL37.1ABB
	4MVXL37.1ABC
	4MVXL37.1ABD
	4MVXL49.0ABA
	4MVXL49.0ABB

Model Year 2004 Engines Continued

Manufacturer	Engine Families
Mitsubishi Heavy Ind (continued)	4MVXL49.0ABC
	4MVXL49.0ABD
	4MVXL49.0ABE
	4MVXL65.4ABA
	4MVXL65.4ABB
	4MVXL65.4ABC
	4MVXL65.4ABD
	4MVXL65.4ABE
	4MVXL65.4ABF
	4MVXL65.4ABG
	4MVXL65.4ABH
MTU	4MTUL21.9R2A
Nissan Diesel	4NDXL03.0FTA
AB Volvo Penta	4VPXL07.3ACB
	4VPXL09.4ACA
	4VPXL09.4ACB
	4VPXL09.4ACC
	4VPXL09.6ACB
	4VPXL09.6ACC
	4VPXL12.1ABA
	4VPXL12.1ACA
	4VPXL12.1ACB
Yanmar	4YDXL3.05M4N
	4YDXL3.32J4N
	4YDXL3.32J4T
	4YDXL3.32K4N
	4YDXL3.32K4T
	4YDXL4.41K4T
Perkins	4PKXL15.8H16
Scania AB	4Y9XL11.7BBG
	4Y9XL15.6BDA

Model Year 2005 Engines

Manufacturer	Engine Families
Caterpillar	5CPXL15.2ESK
	5CPXL15.8ERK
	5CPXL18.0ESK
	5CPXL27.0MRS
	5CPXL27.0MRT
	5CPXL34.5ERK
	5CPXL58.6ERK
	5CPXL78.1ERK
CNH Engine Corp.	5X9XL0239AAC
	5X9XL0359AAK
	5X9XL0359ABE
	5X9XL0505AAB
	5X9XL0505ABD
	5X9XL0540AAB
Cummins	5CEXL015.AAB
	5CEXL015.ABA
	5CEXL019.AAB
	5CEXL023.AAA
	5CEXL0239AAD
	5CEXL0239AAF
	5CEXL0239AAG
	5CEXL0275AAB
	5CEXL0275AAC
	5CEXL0275AAF
	5CEXL03.3ABA
	5CEXL03.3ABB
	5CEXL030.ABA
	5CEXL0359AAB
	5CEXL0359AAC
	5CEXL0359AAD
	5CEXL0359AAE
	5CEXL0359AAF
	5CEXL0359AAH
	5CEXL0359ABC
	5CEXL0359ABE
	5CEXL0409AAB
	5CEXL0409AAC
	5CEXL050.ABA
	5CEXL0505AAE
	5CEXL0505ABD
	5CEXL0505ACB

Model Year 2005 Engines (Continued)

Manufacturer	Engine Families
Cummins	5CEXL0540AAB
	5CEXL060.ABA
	5CEXL078.AAB
	5CEXL2.28A41
	5CEXL2.28A42
Detroit Diesel Corporation	5DDXL08.5YJD
	5DDXL15.9WRE
	5DDXL31.8XRR
	5DDXL35.8GRP
	5DDXL65.0GTE
	5DDXL65.0GTP
	5DDXL65.0XTE
	5DDXL90.0XTP
Deere	5JDXL04.5083
	5JDXL06.8038
	5JDXL06.8041
	5JDXL06.8048
	5JDXL06.8049
	5JDXL06.8078
	5JDXL06.8101
	5JDXL08.1037
	5JDXL08.1059
	5JDXL09.0102
Deutz	5DZXL03.1039
	5DZXL03.1040
	5DZXL05.7033
	5DZXL06.1038
	5DZXL06.5036
	5DZXL06.5037
	5DZXL06.5042
	5DZXL06.5043
	5DZXL07.1032
	5DZXL15.9002
	5DZXL71.0021
Daewoo Heavy Ind.	5DWXL08.1CPA
	5DWXL18.3ASC
	5DWXL21.9AYA
MotorenFabrik HATZ GMBH	5HZXL3.43C42

Model Year 2005 Engines (Continued)

Manufacturer	Engine Families	
Isuzu	5SZXL03.1GTB	
	5SZXL04.3GTG	
	5SZXL06.5FXG	
	5SZXL09.8EXA	
	5SZXL15.7ETA	
	5SZXL15.7EXA	
Iveco	5VEXL05.9DGS	
	5VEXL06.7DGA	
	5VEXL12.9GEN	
Komatsu	5KLXL0239AAD	
	5KLXL0239AAF	
	5KLXL0239ADA	
	5KLXL0275AAC	
	5KLXL03.3JA3	
	5KLXL03.3JB3	
	5KLXL03.3JD3	
	5KLXL0359AAB	
	5KLXL0359AAE	
	5KLXL0359AAL	
	5KLXL0359ABC	
	5KLXL0409AAB	
	5KLXL0409AAC	
	5KLXL0505ABD	
	Komatsu	5KLXL23.2FD4
		5KLXL30.5GC1
		5KLXL30.5GD1
Kuboto	5KBXL03.3BAC	
	5KBXL03.3BCC	
KUKJ	5KMCL2.28A41	
	5KMCL2.28A42	
Lombardini Motori	5LBDL2.19CHT	
Mitsubishi Heavy Industries	5MVXL05.0AAA	
	5MVXL05.0AAC	
	5MVXL05.0AAD	
	5MVXL24.5ABB	
	5MVXL33.9ABB	
	5MVXL37.1ABC	
	5MVXL49.0ABD	
	5MVXL65.4ABB	
5MVXL65.4ABH		

Model Year 2005 Engines (Continued)

Manufacturer	Engine Families
MITF	5MFTL07.5D6A
MTU-Friedrichshafen	5MTUL21.9R2A
Nissan Diesel	5NDXL02.7TNA
	5NDXL03.0FTA
Perkins	5PKXL06.6PJ1
	5PKXL06.6PJ2
AB Volvo Penta	5VPXL07.3ACB
	5VPXL09.4ACA
	5VPXL09.4ACB
	5VPXL09.4ACC
	5VPXL09.6ACB
	5VPXL12.1ABA
	5VPXL12.1ACA
	5VPXL12.1ACB
	5VPXL16.1ACB
	5VPXL16.1ACC
5VPXL16.1ACD	
5VPXL16.1ACE	
5VPXL16.1ACF	
Yanmar	5YDXL3.05M4N
	5YDXL3.32J4N
	5YDXL3.32J4T
	5YDXL3.32K4N
	5YDXL3.32K4T
	5YDXL4.41K4T

Model Year 2006 Engines

Manufacturer	Engine Families
AB Volvo Penta	6VPXL12.1BAA
	6VPXL16.1ACB
	6VPXL9.4BAA
Caterpillar	6CPXL08.0ESK
	6CPXL15.2ESK
	6CPXL15.2ESL
	6CPXL18.0ESK
	6CPXL18.1ESK
	6CPXL18.1ESL
	6CPXL27.0ESL
	6CPXL27.0HRK
	6CPXL32.0ESK
	6CPXL34.5E2T
	6CPXL34.5T2E
	6CPXL34.5E2W
	6CPXL51.8E2W
	6CPXL58.6E2T
	6CPXL58.6T2E
	6CPXL78.1E2T
6CPXL78.1T2E	
CNH Engine Corp.	6X9XL0239AAC
	6X9XL0359AAM
	6X9XL0359ABE
	6X9XL0505ABD
	6X9XL0540AAB
Cummins	6CEXK0505AAE
	6CEXL015.AAB
	6CEXL019.AAB
	6CEXL019.AAC
	6CEXL023.AAA
	6CEXL0239AAD
	6CEXL0239AAF
	6CEXL0239AAG
	6CEXL0275AAB
	6CEXL0275AAC
	6CEXL0275AAG
	6CEXL0275AAH
	6CEXL030.AAB
	6CEXL030.AAD
	6CEXL030.ABA
	6CEXL03.3ABC
	6CEXL0359AAB
	6CEXL0359AAC
6CEXL0359AAD	

Model Year 2006 Engines (Continued)

Manufacturer	Engine Families	
Cummins (cont.)	6CEXL0359AAF	
	6KLXL0359AAL	
	6CEXL0359AAN	
	6CEXL0359ABC	
	6CEXL0359ABE	
	6CEXL0409AAB	
	6CEXL0409AAC	
	6CEXL050.AAD	
	6CEXL050.ABA	
	6CEXL0505ABD	
	6CEXL0540AAB	
	6CEXL060.AAD	
	6CEXL078.AAB	
	DAIMLERCHRYSLER	6MBXL7.20RJA
	6MBXL12.8RJB	
Deere	6JDXL03.0064	
	6JDXL04.5083	
	6JDXL06.8038	
	6JDXL06.8041	
	6JDXL06.8048	
	6JDXL06.8049	
	6JDXL06.8078	
	6JDXL08.1037	
	6JDXL12.5035	
	6JDXL12.5073	
6JDXL13.5103		
Detroit Diesel Corporation	6DDXL14.0VLD	
	6DDXL31.8XRR	
Deutz	6DZXL06.1038	
	6DZXL06.1028	
	6DZXL05.7033	
	6DZXL06.5036	
	6DZXL06.5037	
	6DZXL06.5042	
	6DZXL03.1066	
	6DZXL03.1039	
	6DZXL03.1040	
Isuzu	6SZXL04.3GTG	
	6SZXL06.5FXG	
	6SZXL05.2HXA	
	6SZXL05.2IXA	
	6SZXL07.8HXA	
6SZXL15.7HXA		

Model Year 2006 Engines (Continued)

Manufacturer	Engine Families
IVECO	6VEXL04.5DGT
	6VEXL04.5DGN
	6VEXL06.7DGA
	6VEXL06.7DGB
	6VEXL06.7DGS
Komatsu	6KLXL0239AAD
	6KLXL0239AAF
	6KLXL0239ADA
	6KLXL0275AAC
	6KLXL0275AAG
	6KLXL0275AAH
	6KLXL03.3JD3
	6KLXL0359AAB
	6KLXL0359AAE
	6KLXL0359AAL
	6KLXL0359ABC
	6KLXL0409AAB
	6KLXL0409AAC
	6KLXL0505ABD
	Kubota
Mitsubishi Fuso Truck & Bus Corp	6MFTL05.8D3A
Mitsubishi Heavy Industries	6MVXL05.0AAA
	6MVXL05.0AAD
	6MVXL05.0DDD
	6MVXL06.4DDD
	6MVXL06.4EEE
MotorenFabrik HATZ GMBH	6HZXL3.43C42
	6HZXL3.43V42
Nissan	6NDXL03.0FTA
Perkins	6PKXL06.6PJ1
	6PKXL06.6PJ2
VMMI	6V5XL04.2G5V
Yanmar	6YDXL3.32J4T
	6YDXL3.32K4T
	6YDXL4.41K4T

Attachment 1: PERMIT™ Engine Family List

Model Year 1996 Engines

Manufacturer	Engine Families
Caterpillar	TCP14.RZDBRK
	TCP10.RZDBRD
Deutz AG	TDZ7.1R6DARB
Navistar	TNV530R6DARB
	TNV466R6DASD
	TNV530R6DASD

Model Year 1997 Engines

Manufacturer	Engine Families
Caterpillar	VCP14.RZDARK
Detroit Diesel Corporation	VDD8.5TJDARE
	VDD12.TJDARE
Deere	VJD12.RJDBRA
	VJD10.RJDBRB
Deutz AG	VDZ7.1R6DARB
	VDZ16.RGDARB
Navistar	VNV530R6DASD
	VNV466R6DASD

Model Year 1998 Engines

Manufacturer	Engine Families	
AB Volvo Penta	WVPXL09.6ACB	
	WVPXL12.0ACB	
	WVPXL16.0ACB	
Caterpillar	WCPXL07.0MRB	
	WCPXL10.5MRD	
	WCPXL14.6ERK	
	WCPXL15.8ERK	
	WCPXL27.0HRK	
Cummins	WCEXL0661AAA	
	WCEXL0359ABA	
	WCEXL0855AAA	
Daewoo	WDWXL11.1BIA	
	WDWXL11.1BHT	
Deere	WJDXL08.1008	
Detroit Diesel Corporation	WDDXL12.1TFM	
	WDDXL08.5TJD	
	WDDXL11.1THD	
	WDDXL12.1TFE	
	WDDXL12.1TFM	
	WDDXL12.7TGD	
	WDDXL23.9TRE	
	WDDXL15.9TRE	
	WDZXL07.1004	
	WDZXL15.9002	
	WDZXL15.9001	
	Generac	WGNXL13.3HTA
	Komatsu	WKLXL0239ACA
WKLXL7.15CB1		
WKLXL15.2EC1		
Navistar	WNVXL0530ANA	
	WNVXL0530BNB	
	WNVXL0530BND	

Model Year 1999 Engines

Manufacturer	Engine Families
AB Volvo Penta	XVPXL07.3ACB
	XVPXL09.6ACB
	XVPXL12.0ACB
	XVPXL16.0ACB
Caterpillar	XCPXL07.0MRD
	XCPXL10.5MRD
	XCPXL14.6ERK
	XCPXL15.8ERK
	XCPXL27.0HRK
Cummins	XCEXL0359ABA
	XCEXL0661AAA
	XCEXL0855AAA
Daewoo	XDWXL11.1BIA
	XDWXL11.1BHT
	XDWXL11.1DJA
Deere	XJDL08.1008
Detroit Diesel Corporation	XDDXL08.5TJD
	XDDXL11.1THD
	XDDXL12.1TFE
	XDDXL12.1TFM
	XDDXL12.7TGD
	XDDXL14.0TLD
	XDDXL15.9TRE
	XDDXL23.9TRE
Deutz AG	XDZXL07.1005
	XDZXL07.1004
	XDZXL15.9002
	XDZXL15.9003
Generac	XGNXL13.3HTA
Komatsu	XKLXL0239ACA
	XKLXL7.15CB1
	XKLXL15.2EC1
Navistar	XNVXL0530ANA
	XNVXL0530ANC
	XNVXL0530AND
	XNVXL0530BNB
	XNVXL0530BNB
	XNVXL0530BND

Model Year 2000 Engines

Manufacturer	Engine Families
AB Volvo Penta	YVPXL07.3ABB
	YVPXL07.3ACB
	YVPXL09.6ACB
	YVPXL12.0ACB
	YVPXL16.0ACB
Caterpillar	YCPXL07.0MRB
	YCPXL10.5MRD
	YCPXL14.6ERK
	YCPXL15.8ERK
	YCPXL27.0HRK
	YCPXL27.0MRT
Cummins	YCPXL34.5ERK
	YCEXL015.ABA
	YCEXL060.AAA
	YCEXL060.ABA
	YCEXL0359ABA
	YCEXL0661AAA
Daewoo	YCEXL0855AAA
	YDWXL11.1BIA
	YDWXL11.1DJA
	YDWXL18.3ASA
	YDWXL21.9AYA
Deere	YJDXL08.1008
Detroit Diesel Corporation	YDDXL15.9TRE
	YDDXL23.9TRE
	YDDXL31.8VRE
	YDDXL14.0TLD
	YDDXL11.1THD
	YDDXL08.5TJD
	YDDXL12.7TGD
	YDDXL12.1TFM
YDDXL65.0VTE	
	YDDXL12.1TFE
Deutz AG	YDZXL07.1004
	YDZXL07.1005
	YDZXL15.9003
	YDZXL15.9002
Generac	YGNXL13.3HTA

Model Year 2000 Engines (continued)

Manufacturer	Engine Families
Komatsu	YKLXL0239ACA
	YKLXL7.15CB1
	YKLXL15.2EC1
	YKLXL30.5GD1
Navistar	YNVXL0530ANA
	YNVXL0530ANC
	YNVXL0530AND

Model Year 2001 Engines

Manufacturer	Engine Families
AB Volvo Penta	1VPXL07.3ACB
	1VPXL09.6ACB
	1VPXL12.1ACB
	1VPXL16.0ACB
Caterpillar	1CPXL07.0MRB
	1CPXL10.5MRG
	1CPXL27.0MRT
	1CPXL12.0ESK
	1CPXL14.6ESK
	1CPXL15.8ERK
	1CPXL15.8ESK
	1CPXL27.0HRK
	1CPXL34.5ERK
	1CPXL78.1ERK
Cummins	1CEXL015.ABA
	1CEXL060.AAA
	1CEXL060.ABA
	1CEXL0359ABA
	1CEXL0661AAA
	1CEXL0661AAD
Daewoo	1DWXL11.1BIA
	1DWXL18.3ASA
	1DWXL21.9AYA
Deere	1JDXL08.1008
Detroit Diesel Corporation	1DDXL08.5TJD
	1DDXL08.5YJD
	1DDXL14.0TJD
	1DDXL14.0VLD
	1DDXL31.8VRE
	1DDXL31.8XRE

Model Year 2001 Engines (continued)

Manufacturer	Engine Families
Deutz	1DZXL07.1005
	1DZXL07.1004
	1DZXL15.9002
	1DZXL15.9003
Generac	1GNXL03.0KTA
Isuzu	1SZXL15.7ETA
	1SZXL15.7EXA
Navistar	1NVXL0530ANA
	1NVXL0530ANC
	1NVXL0530AND
	1NVXL0530ANF
Komatsu	1KLXL0239ACA
	1KLXL7.15CB1
	1KLXL11.0DD3
	1KLXL15.2EC3
	1KLXL30.5GD1
	1KLXL060.AAA

Model Year 2002 Engines

Manufacturer	Engine Families
AB Volvo Penta	2VPXL07.3ACB
	2VPXL09.6ACB
	2VPXL12.1ACB
	2VPXL16.0ACB
Caterpillar	2CPXL07.0MRB
	2CPXL10.5MRG
	2CPXL12.0ESK
	2CPXL15.8ERK
	2CPXL15.8ESK
	2CPXL27.0HRK
	2CPXL27.0MRT
	2CPXL34.5ERK
	2CPXL58.6ERK
	2CPXL78.1ERK
Cummins	2CEXL015.AAB
	2CEXL015.ABA
	2CEXL060.AAA
	2CEXL060.ABA
	2CEXL0359ABA
	2CEXL0505ACB
	2CEXL0661AAA
	2CEXL0661AAD
Daewoo	2DWXL11.1BIA
	2DWXL21.9AYA
Deere	2JDXL06.8049
	2JDXL08.1008
Detroit Diesel Corporation	2DDXL08.5TJD
	2DDXL08.5YJD
	2DDXL12.7VGD
	2DDXL14.0TJD
	2DDXL14.0VLD
	2DDXL31.8XRE
Deutz AG	2DZXL07.1032
	2DZXL07.1004
	2DZXL07.1005
	2DZXL15.9002
	2DZXL15.9003
Generac	2GNXL03.0KTA
Navistar	2NVXL0530ANA
	2NVXL0530ANC
	2NVXL0530AND
	2NVXL0530ANF

Model Year 2002 Engines (continued)

Manufacturer	Engine Families
ISM	2H3XL1.49N3V
	2H3XL1.13LCS
	2H3CL2.22NLC
Isuzu	2SZXL15.7ETA
	2SZXL15.7EXA
Komatsu	2KLXL0239ACA
	2KLXL7.15CB1
	2KLXL11.0DD3
	2KLXL15.2EC3
	2KLXL30.5GD1
	2KLXL060.AAA

Model Year 2003 Engines

Manufacturer	Engine Families
AB Volvo	3VPXL07.3ACB
	3VPXL09.6ACB
	3VPXL12.1ACB
	3VPXL16.0ACB
Caterpillar	3CPXL12.0ESK
	3CPXL15.8ERK
	3CPXL15.8ESK
	3CPXL27.0HRK
	3CPXL27.0MRT
	3CPXL34.5ERK
	3CPXL58.6ERK
	3CPXL78.1ERK
Cummins	3CEXL015.AAB
	3CEXL015.ABA
	3CEXL023.AAA
	3CEXL0505ACB
	3CEXL060.AAA
	3CEXL060.ABA
	3CEXL0661AAD
	3CEXL078.AAB
Daewoo	3DWXL08.1CPA
	3DWXL11.1BIA
	3DWXL11.1DJA
	3DWXL18.3ASC
	3DWXL21.9AYA

Model Year 2003 Engines (continued)

Manufacturer	Engine Families
Detroit Diesel	3DDXL08.5YGD
	3DDXL12.7VGD
	3DDXL14.0TJD
	3DDXL14.0VLD
	3DDXL31.8XRE
	3DDXL35.8GRP
	3DDXL90.0XTP
Deutz AG	3DZXL07.1005
	3DZXL07.1032
	3DZXL15.9002
Generac	3GNXL03.0KTA
Isuzu	3SZXL15.7ETA
	3SZXL15.7EXA
Komatsu	3KLXL11.0DD3
	3KLXL15.2EC3
	3KLXL23.2FD4
	3KLXL30.5GD1
	3KLXL060.AAA
Lister-Petter	3L5X1.17FX8
Mitsubishi	3MVXL37.1ABB
Navistar	3NVXL0530ANF
Perkins	3PKXL15.8H16

Model Year 2004 Engines

Manufacturer	Engine Families
AB Volvo Penta	4VPXL07.3ACB
	4VPXL09.4ACB
	4VPXL09.6ACB
	4VPXL12.1ACB
	4VPXL16.0ACB
Caterpillar	4CPXL12.0ESK
	4CPXL15.8ERK
	4CPXL15.8ESK
	4CPXL18.0ESK
	4CPXL27.0HRK
	4CPXL27.0MRT
	4CPXL34.5ERK
	4CPXL58.6ERK
4CPXL78.1ERK	

Model Year 2004 Engines (continued)

Manufacturer	Engine Families
Cummins	4CEXL015.AAB
	4CEXL015.ABA
	4CEXL023.AAA
	4CEXL0505ACB
	4CEXL060.AAA
	4CEXL060.ABA
	4CEXL0661AAD
	4CEXL0661AAD
	4CEXL0661AAD
	4CEXL078.AAB
Daewoo	4DWXL08.1CPA
	4DWXL11.1BIA
	4DWXL11.1DJA
	4DWXL18.3ASC
	4DWXL21.9AYA
Deere	4JDXL06.8049
Detroit Diesel Corporation	4DDXL08.5YJD
	4DDXL12.7VGD
	4DDXL14.0VLD
	4DDXL31.8XRE
	4DDXL35.8GRP
	4DDXL90.0XTP
Deutz	4DZXL07.1032
	4DZXL15.9002
	4NVXL0530ANF
International	4NVXL0530ANF
Isuzu	4SZXL15.7ETA
	4SZXL15.7EXA
Iveco	4VEXL05.9DGS
	4VEXL12.9GEN
Kirloskar	4KOEL031IRPN
	4KOEL042IRPN
Komatsu	4KLXL11.0DD3
	4KLXL15.2EC3
	4KLXL23.2FD4
	4KLXL30.5GD1
	4KLXL060.AAA
Lister Petter	4L5XL1.17FX8
Mitsubishi	4MVXL37.1ABB

Model Year 2004 Engines (continued)

Manufacturer	Engine Families
Perkins	4PKXL15.8H16
Scania AB	4Y9XL11.7BBG
	4Y9XL15.6BDA

Model Year 2005 Engines

Manufacturer	Engine Families
AB Volvo Penta	5VPXL07.3ACB
	5VPXL09.4ACB
	5VPXL09.6ACB
	5VPXL12.1ABA
	5VPXL12.1ACA
	5VPXL12.1ACB
	5VPXL16.1ACB
	5VPXL16.1ACC
	5VPXL16.1ACD
	5VPXL16.1ACE
	5VPXL16.1ACF
Caterpillar	5CPXL12.5ESK
	5CPXL15.8ERK
	5CPXL18.0ESK
	5CPXL27.0HRK
	5CPXL27.0MRT
	5CPXL32.0ESK
	5CPXL34.5ERK
	5CPXL58.6ERK
	5CPXL78.1ERK
CNH	5X9XL0239AAC
	5X9XL0359ABE
Cummins	5CEXL015.AAB
	5CEXL015.ABA
	5CEXL019.AAB
	5CEXL023.AAA
	5CEXL060.AAA
	5CEXL060.ABA
	5CEXL078.AAB
	5CEXL0409AAC
	5CEXL0505ACB
Daewoo	5DWXL08.1CPA
	5DWXL11.1BIA
	5DWXL11.1DJA
	5DWXL18.3ASC
	5DWXL21.9AYA

Model Year 2005 Engines (continued)

Manufacturer	Engine Families
Detroit Diesel Corporation	5DDXL08.5YJD
	5DDXL14.0VLD
	5DDXL31.8XRE
	5DDXL35.8GRP
	5DDXL90.0XTP
Deere	5JDXL06.8049
	5JDXL06.8101
Deutz	5DZXL06.1038
	5DZXL07.1032
	5DZXL15.9002
Isuzu	5SZXL15.7ETA
	5SZXL15.7EXA
IVECO	5VEXL05.9DGS
	5VEXL07.8CRS
	5VEXL12.9GEN
KOMATSU	5KLXL0409AAC
	5KLXL11.0DD3
	5KLXL15.2ec3
	5KLXL23.2FD4
	5KLXL30.5GD1
	5KLXL060.AAA
MTU-Friedrichshafen	5MTUL21.9R2A
Perkins	5PKXL18.0H16
	5PKXL18.0H18
SCANIA	5Y9XL11.7BBG
	5Y9XL11.7BBI
	5Y9XL15.6BDB
	5Y9XL15.6BDD