

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-12-13

Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

NAVISTAR INTERNATIONAL TRANSPORTATION CORPORATION

Pursuant to the authority vested in the Air Resources Board by Sections 43000.5, 43013 and 43018 of the Health and Safety Code; and,

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the following Navistar International Transportation Corporation 1997 model-year engine, with rated power between 175 and 750 horsepower, and exhaust emission control systems are certified as described below for use in heavy-duty off-road equipment:

Typical Equipment Usage: Tractor, Wheel Loader, Industrial Equipment

Fuel Type: Diesel

| <u>Engine Family</u> | <u>Liters</u> | <u>(Cubic Inches)</u> | <u>Exhaust Emission Control Systems and Special Features</u> |
|----------------------|---------------|-----------------------|--|
| VNV466R6DASC         | 7.6           | (466)                 | Turbocharger<br>Smoke Puff Limiter                           |

Engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

The total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matters (PM) certification exhaust emission standards, in grams per brake horsepower-hour (g/bhp-hr), and the opacity of smoke emission standards, in percent (%), during acceleration (Accel), lugging (Lug), and peak (Peak) modes, for this engine family are (Title 13, California Code of Regulations, Section 2423):

| <u>Exhaust Emissions (g/bhp-hp)</u> |           |            |           | <u>Smoke Opacity (%)</u> |            |             |
|-------------------------------------|-----------|------------|-----------|--------------------------|------------|-------------|
| <u>THC</u>                          | <u>CO</u> | <u>NOx</u> | <u>PM</u> | <u>Accel</u>             | <u>Lug</u> | <u>Peak</u> |
| 1.0                                 | 8.5       | 6.9        | 0.4       | 20                       | 15         | 50          |

The THC, CO, NOx and PM exhaust emission certification values, in g/bhp-hr, and the opacity of smoke emission certification values, in percent (%), for this engine family are:

| <u>Engine Family</u> | <u>Exhaust Emissions (g/bhp-hr)</u> |           |            |           | <u>Smoke Opacity (%)</u> |            |             |
|----------------------|-------------------------------------|-----------|------------|-----------|--------------------------|------------|-------------|
|                      | <u>THC</u>                          | <u>CO</u> | <u>NOx</u> | <u>PM</u> | <u>Accel</u>             | <u>Lug</u> | <u>Peak</u> |
| VNV466R6DASC         | 0.1                                 | 1.2       | 6.6        | 0.1       | 18                       | 8          | 32          |

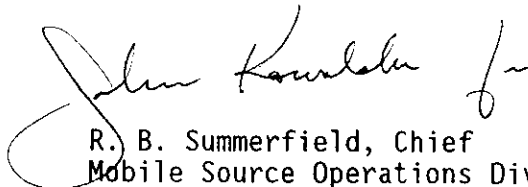
BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

BE IT FURTHER RESOLVED: That the listed engine models also comply with the "Emission Control Labels--1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model year.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Section 2425 et seq.).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

Executed at El Monte, California this 16<sup>th</sup> day of December 1996.



R. B. Summerfield, Chief  
Mobile Source Operations Division

1997 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET  
**HEAVY-DUTY OFF-ROAD DIESEL ENGINES**

Manufacturer Navistar International Transportation Corp. Engine Family VNV466R6DASC  
 Displacement : 7.6 / 466 Liters / Cubic Inches Engine Configuration: 1 - 6  
 All Eng Codes in Eng Family: CA 49 50S X Cert Test Procedures: ARB X EPA X  
 Valves / Ports per Cylinder 2 valves / cylinder Stroke per Combustion Cycle 4 - stroke  
 Maximum Rated Power 210 HP @ 2400 RPM ( 157 KW) @ 2400 RPM  
 Ignition: Compression X Compression with Glow Plug \_\_\_\_\_ Spark \_\_\_\_\_  
 Fuel Types: Dedicated X Flex-Fuel \_\_\_\_\_ Dual-Fuel \_\_\_\_\_ Gasoline \_\_\_\_\_ Diesel X M100 \_\_\_\_\_  
 M85 \_\_\_\_\_ CNG \_\_\_\_\_ LNG \_\_\_\_\_ LPG \_\_\_\_\_ Other ( specify ) \_\_\_\_\_  
 Diesel Cert Fuel: 40 CFR 86.1313-94 X Other ( specify ) \_\_\_\_\_  
 Primary Service Equipment: Tractors(farm & industrial), Construction equip.(wheel loaders,cranes,etc.) Stationary power units, Etc  
 Exhaust ECS ( e.g. , MFI, TC, CAC ) : EM DI TC SPL

( Use abbreviations per SAE J1930 JUN93 )

| Engine Mode<br>( Eng. Code ) | Rated HP<br>@ RPM | Fuel Rate<br>@ Rated HP<br>mm <sup>3</sup> / stroke<br>( lbs/hr ) | Fuel Pump<br>& Injector<br>Part No.       | ECM / PCM<br>Part No.        | EGR<br>Valve<br>Part No. | PTOX /<br>Catalytic<br>Converter<br>Part No. |
|------------------------------|-------------------|---|---|------------------------------|--------------------------|--|
| IAL210                       | 210 @ 2400        | 103.9<br>( 83.6 )   | <u>Pumps</u><br>1820269C91B<br>1825466C91 | <u>Nozzles</u><br>1823759C91 |                          |  |
| IA210                        | 210 @ 2500        | 102.3<br>( 85.7 )   | 1820269C91D                               | 1823759C91                   |                          |  |
| IA195                        | 195 @ 2400        | 92.7<br>( 74.6 )  | 1820269C91C                               | 1823759C91                   |                          |  |
| IA190                        | 190 @ 2500        | 83.3<br>( 69.8 )  | 1823309C91                                | 1823759C91                   |                          |  |
| IA180                        | 180 @ 2200        | 94.3<br>( 69.5 )  | 1823369C91                                | 1823759C91                   |                          |  |
| IA170                        | 170 @ 2500        | 73.1<br>( 61.2 )  | 1823309C91A                               | 1823759C91                   |                          |  |
| IA160                        | 160 @ 2200        | 87.5<br>( 64.5 )  | 1824775C91                                | 1823759C91                   |                          |  |

Date Issued : 10/30/96

Revisions : \_\_\_\_\_