

*File*

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-9-1

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

MITSUBISHI MOTORS 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 Mitsubishi Motors Corporation 1996 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: Rough Terrain Crane

Fuel Type: Diesel

| <u>Engine Family</u> | <u>Liters (Cubic Inches)</u> |       | <u>Exhaust Emission Control Systems and Special Features</u> |
|----------------------|------------------------------|-------|--|
| TMT460D6DARA         | 7.5                          | (460) | Turbocharger<br>Charge Air Cooler                            |

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-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> |
| 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 Emission (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> |
| TMT460D6DARA         | 0.6                                | 0.7       | 6.1        | 0.2       | 14                         | 2          | 28          |

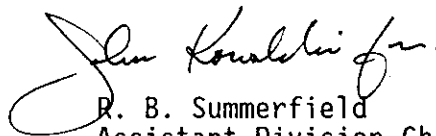
BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

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 30<sup>th</sup> day of November 1995.



R. B. Summerfield  
Assistant Division Chief  
Mobile Source Division

1996 M/Y AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET  
HEAVY-DUTY OFF-ROAD DIESEL ENGINES

E.O.# U-R-9-1

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Manufacturer: Mitsubishi Motors Corporation Engine Family: TMT460D6DARA  
 Displacement: 7.5 / 460 Liters/Cubic Inches Eng Config: I6/OHV  
 All Codes in Eng Fam: CA 49 50S xx Cert Test Procedures: ARB xx EPA xx  
 Valves/Ports per Cylinder: 2 valves/cyl Strokes per Combustion Cycle: 4-stroke  
 Maximum Rated Power: 247 HP ( 184 KW) @ 2,800 RPM  
 Ignition: Compression xx Compression with Glow Plug xx Spark xx  
 Fuel Type(s): Dedicated X Flex-Fuel xx Dual-Fuel xx Diesel xx M100 xx M85 xx  
 CNG xx LNG xx LPG xx Other (specify) xx  
 Diesel Cert Fuel: 40 CFR 86.1313-94 xx Other (specify) xx  
 Primary Service Equipment: Rough Terrain Crane  
 Exhaust ECS (incl. MFI, TC, CAC): TC, CAC

(Use abbreviations per SAE J1930 JUN93)

| Engine Model<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. |
|----------------------------|---------------------|---|-------------------------------------|---------------------|--------------------------|--|
| 6D16TLEA-US96              | 247 HP<br>2,800 rpm | 101 mm <sup>3</sup> /st<br>(95.4 lbs/hr)                        | I/P<br>ME078064<br>I/N<br>ME078066  | N/A                 | N/A                      | N/A  |

Date Issued: \_\_\_\_\_

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

I/P : Fuel Injection Pump  
I/N : Fuel Injection Nozzle