

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-18-18  
Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

LIEBHERR MACHINES BULLE SA

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

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

IT IS ORDERED AND RESOLVED: That the following diesel engines and exhaust emission control systems produced by the manufacturer are certified as described below for use in heavy-duty off-road equipment:

Model Year: 2000

Typical Equipment Usage: Tractor, Loader, Dozer, Compressor and Crane

Engine Power Ratings Range: 175 – 750 horsepower, inclusive

Fuel Type: Diesel

<u>Engine Family</u>	<u>Displacement</u>		<u>Exhaust Emission Control Systems and Special Features</u>
	<u>Liters</u>	<u>Cubic Inches</u>	
YLHAL9.96ASA	9.9/6.6	608/405	Smoke Puff Limiter Turbocharger

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

	<u>Exhaust Emissions (g/bhp-h)</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>
Standard	1.0	8.5	6.9	0.4	20	15	50
Certification	0.4	0.7	6.2	0.1	2	1	4

BE IT FURTHER RESOLVED: Any engine models listed on the attachments with engine power ratings less than 175 horsepower are not covered by this Executive Order.

BE IT FURTHER RESOLVED: That the listed engine models comply with "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 "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, Sections 2425 *et seq.*).

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

Executed at El Monte, California this 28<sup>th</sup> day of December 1999.



for R. B. Summerfield, Chief  
Mobile Source Operations Division

# LARGE ENGINE MODEL SUMMARY

EO: W-R-18-18

Manufacturer: LIEBHERR MACHINES BULLE SA Process Code: New Submission

EPA Engine Family: YLHAL9.96ASA Manufacturer Family Name: YLHAL9.96ASA

1. Engine Code      2. Engine Model      3. BHP@RPM (SAE Gross)      4. Fuel Rate: mm/stroke @ peak HP (for diesel only)      5. Fuel Rate: (lbs/hr) @ peak HP (for diesels only)      6. Torque @ RPM (SEA Gross)      7. Fuel Rate: mm/stroke@peak torque      8. Fuel Rate: (lbs/hr)@peak torque      9. Emission Control Device Per SAE J1930

NA	D926T-E	227@2000	128@227	NA	708@1100 -	142@708	NA	SPL, TC, RPM
NA	D926T-E	232@1800	139@232	NA	804@1200	146@804	NA	SPL, TC, RPM
NA	D926T-E	182@1800	109@182	NA	612@1200	117@612	NA	SPL, TC, RPM
NA	D924T-E	168@2000	139@168	NA	516@1300	160@516	NA	SPL, TC, RPM
NA	D924T-E	164@1800	147@164	NA	531@1200-1400	153@531	NA	SPL, TC, RPM
NA	D924T-E	156@2000	125@156	NA	513@1200-1300	154@516	NA	SPL, TC, RPM
NA	D924T-E	138@1800	120@138	NA	461@1300-1400	134@461	NA	SPL, TC, RPM
NA	D924T-E	137@2000	110@137	NA	431@1300-1400	127@431	NA	SPL, TC, RPM
NA	D924T-E	134@2000	109@134	NA	435@1400	126@435	NA	SPL, TC, RPM
NA	D924T-E	118@2000	97@118	NA	384@1200-1400	111@384	NA	SPL, TC, RPM
NA	D924T-E	106@2000	87@106	NA	354@1400	102@354	NA	SPL, TC, RPM
NA	D924T-E	91@2000	76@91	NA	310@1400	89@310	NA	SPL, TC, RPM
NA	D924T-E	125@2100	97@125	NA	406@1400	118@406	NA	SPL, TC, RPM
NA	D926T-E	244@1800	147@244	NA	856@1150	171@856	NA	SPL, TC, RPM
NA	D926T-E	201@2000	112@201	NA	620@1300	123@620	NA	SPL, TC, RPM

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SPL, TC