

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-18-17
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>	
YLHAL9.96ARA	9.9/6.6	608/405	Smoke Puff Limiter Turbocharger Charge Air Cooler

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	0.2	0.5	6.4	0.1	9	6	30

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 28th day of December 1999.


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

LARGÉ ENGINE MODEL SUMMARY

10/1/99

EO: U-R-18-17

Manufacturer: **LIEBHERR MACHINES BULLE SA** Process Code: **New Submission**

EPA Engine Family: **YLHAL9.96ARA** Manufacturer Family Name: **YLHAL9.96ARA**

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	D926T1-E	314@2100	164@314	NA	878@1400-1600	166@878	NA	SPL, TC, CAC,
NA	D926T1-E	294@2000	152@294	NA	915@1300	175@915	NA	SPL, TC, CAC,
NA	D926T1-E	240@1800	134@240	NA	811@1100-1300	152@811	NA	SPL, TC, CAC,
NA	D926T1-E	272@2000	143@272	NA	863@1200-1300	201@863	NA	SPL, TC, CAC,
NA	D926T1-E	306@1800	173@306	NA	1062@1100-1300	202@1062	NA	SPL, TC, CAC,
NA	D926T1-E	294@1800	165@294	NA	959@1200-1300	188@959	NA	SPL, TC, CAC,
NA	D926T1-E	327@1800	191@327	NA	1121@1150	215@1121	NA	SPL, TC, CAC,
NA	D926T1-E	256@2000	133@256	NA	811@1100	155@811	NA	SPL, TC, CAC,
NA	D924T1-E	174@1800	150@174	NA	553@1300-1400	158@553	NA	SPL, TC, CAC,
NA	D924T1-E	204@1800	173@204	NA	664@1200-1400	192@664	NA	SPL, TC, CAC,
NA	D924T1-E	205@2000	173@205	NA	641@1200	186@641	NA	SPL, TC, CAC,
NA	D924T1-E	185@2000	146@185	NA	568@1200-1400	162@568	NA	SPL, TC, CAC,
NA	D924T1-E	192@2000	149@192	NA	601@1200-1300	173@601	NA	SPL, TC, CAC,
NA	D926T1-E	232@2000	121@232	NA	715@1300	135@715	NA	SPL, TC, CAC,