

LIEBHERR MACHINES BULLE SA

EXECUTIVE ORDER U-R-018-0032 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 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 compression-ignition engine and emission control system produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR ENGINE FAMILY DISPLACEMENT (liters)			FUEL TYPE	USEFUL LIFE (hours)				
2002 2LHAL9.96ARA		6.6 and 10.0	Diesel	8000				
SPECIAL	FEATURES & EMISSION	CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION					
Direct Dies	ef Injection, Turbocharge Smoke Puff Limi	er, Charge Air Cooler, ter	Crane, Loader, Dozer,	Compressor				

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbon (HC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kW-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

POWER CLASS	EMISSION STANDARD			E	XHAUST (g/kW-	OPACITY (%)				
	CATEGORY		HC	NOx	NMHC+NOx	co	PM	ACCEL	LUG	PEAK
130 ≤ kW < 225	Tier 1	STD	1.3	9.2	N/A	11,4	0.54	20	15	50
75 ≤ kW < 130	Tier 1	STD	N/A	9.2	N/A	N/A	N/A	20	15	50
	<u></u>	CERT	0.3	8.6		0.6	0.08	9	6	30

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

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

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this

anuary 2002. day of

R. B. Summerfield, Chief

Mobile Source Operations Division

Engine Mode Jummary Form

ATTACHMENT

U-R-018-0032

LIEBHERR MACHINES BULLE SA

Manufacturer:

Engine category: Nonroad Cl

EPA Engine Family: 2LHAL9.96ARA

Mfr Family Name: NA

Process Code: New Submission

30	227 III							ris in
8.Fuel Rate: 9.Emission Control (fbs/hr)@peak torque Device Per SAE J1930	NA 105T SPL TO CAG	NA (A SPI DIVICACION CACION CA	NATIV POSEJE FONCAC	NA U SPL HOVCAC				
on C SAE		S B		Š	Σ 1			
nissi e Pel				¥	Y.			
9.Er Jevic	ත් යි.	<u> </u>	SP	ds				
ea Ea	因劉							
te: torq								
al Ra peak	ž į	ž ž	Z	ž			ď	
8.Fuel Rate: hr)@peak tor							3	
(fbs/f						- S	þ	
¥							8	
7.Fuel Rate: mm/stroke@peak torque	1421@1156 77 215@11/21 555@1200 167@555	92@637 68@859	168@885	155@522	\$	(3	
7.Fuel Rate: n/stroke@pe torque		0 8 0 0	8	Š.			Ú,	
7.Ft m/str k	16	8 P		ř			Ś	
Ē								
×		88					3	
6.Torque @ RPM (SEA Gross)	(12.1@1150 555@1200	Si S	B	522@1300			O	
Torque @ RP (SEA Gross)	@	9 2	(9)	<u>@</u>				
Torq (SE	55	20 GS	88	22	2		V	
හ		ω						
. ∄ ≎		NA 859@1200 NA 859@1200-130	NA 7 7 885@1500				F,	
ate: eak s only							Ē	
5.Fuel Rate: /hr) @ peak or diesels on!	3 ≥	AN .	B	Ż				3
5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)							3	
				300				
ate: peak HP only)						7	30	
tate: peal I only	327	197	9	165	30			
4.Fuel Rate stroke @ pea or diesel onl	0 0	2.0 4 0	07	35@			K	
4.Fuel Rate: mm/stroke @ peak (for diesel only)	Š ÷	462@197 194@244	Š	135@				
E								
5								
RPN ross)		ğ	ğ	Š			Ġ.	
3.BHP@RPM (SAE Gross)	@	@		9			Š	
3.B	, S 12	6 6	1,08	9			H	
<i>3</i> 2	2.0	E (j Z		1		Č	2
del				- E			ů	٥
Mo	1 4			E L				
gine	24	24	2 63	, 24				
'n.	o o			ď			T _C	X
2	Approximate	NA D924THE 147 (197@2000 162@1	NA NASE NASE NASE NASE NASE NASE NASE NA			\$1 \$2		
χde							.0	
ပ္ရွိ	到			Ϋ́			2	
ģine	P ≥	2 2	Ž	įĮź				
3.BHP@RPM 1.Engine Code 2.Engine Model ≱w (SAE Gress)								Ť.
~	W.3					2014 1714		<u>`</u>

Engine Model Surmary Form

Manufacturer: LIEBHERR MACHINES BULLE SA

Engine category: Nonroad CI
EPA Engine Family: 2LHAL9.96ARA

Mfr Family Name:

Process Code: Running Change

ATTACHMENT 20F2

U-R-018-0032

	- 	·		 7: - : -		 	 			 	-
8.Fuel Rate: 9.Emission Control (lbs/hr)@peak torque Device Per SAE J1930	DDI, SPL, TC, CAC,	SPL, TC, CAC,	SPL, TC, CAC,	 manana manda d adamdhi processorom control control		 :					
8.Fuel Rate: (lbs/hr)@peak torque	ICC AN	Y AN	ΨN	 							
7.Fuel Rate: mm/stroke@peak torque	195@664	176@601	156@538	 HH	b delan gerapa delan dela						
6.Torque @ RPM (SEA Gross)	664@1000	601@1000	538@1000					ė	MANAGEMENT AND		
5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	NA	NA	NA								
4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	145@173	128@153	115@136	***************************************	. 1.0.0 to 1.00 years		mananananahahahahahahahahaha k. i mpoponononononon				
3.BHP@RPM (SAE Gross)	124 173@2000	114 153@2000	D924TI-E (V) 136@2000								
3	12		2								
3.BHP@RPM 2.Engine Model v w (SAE Gross)	D924TI-E	D924TI-E	D924TI-E				The second secon				
1.Engine Code	NA	AN	NA							 all conditions of the second o	