Simplified Machine/Electrical Checklist for Part 36 Approval Applications



U.S. Department of Labor

Mine Safety and Health Administration

Approval and Certification Center



		THIS BLOCK FOR MSHA USE ONLY
		ME #
		REV LEVEL
MAC	CHINE/ELECTRICAL CHECKLIST	
Make	e and Model No <u>ABC Inc. Model 997</u>	
Mach	hine Type Load-Haul-Dump Unit	
If an	MSHA Part 36 approval plate has been affixed to this machine, it mu	st meet the requirements of Part 36, Title
30, C	Code of Federal Regulations. It is the responsibility of the user to ensu	are that this machine is maintained in
perm	sissible condition in accordance with this checklist.	
	INSPECTIONS AND TESTS SHALL BE PERFORMED IN FRESI	TAIK.
1.	For a complete permissibility evaluation, this checklist must be us checklist.	sed in conjunction with a power system
2.	The design of the exhaust conditioner limits permissible operation	n to grades not exceeding 12 %
3.	Due to braking capability limitations, this machine shall not be or	<u> </u>
<i>3</i> .	NOTE: When operated in areas which do not require permissible	_
	on grades greater than the <u>12</u> % grade limitation due	_
	Manufacturer's Drawing No Rev	_
	but in no case can the machine be operated on grades gre	
	capability limitations.	_ <u></u>
4.	The approval plate specifies a ventilation rate of CFM.	
	Manufacturer's Drawing No	Rev

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NO CHANGES ARE PERMITTED WITHOUT PERMISSION FROM MSHA

A. <u>FUEL SYSTEM</u>:

- 1. () There are no fuel leaks.
- 2. () The fuel filler cap (1)* is vented and the vent is not plugged (see Figure 1).
- 3. () The fuel filler cap is self-closing and is attached to the tank in a manner which will prevent loss during refueling.

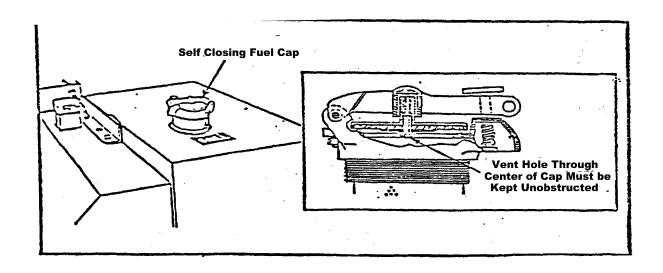


Figure 1

*Referenced items shown on Machine Layout Diagram.

- 4. () Auxiliary fuel tank capacity has not been added to the vehicle.
- 5. () Fuel filters (2)* are properly installed and are not damaged.
- 6. () The fuel injection rate adjustment mechanism (3)* and the engine governor setting are locked and sealed (see Figure 2).

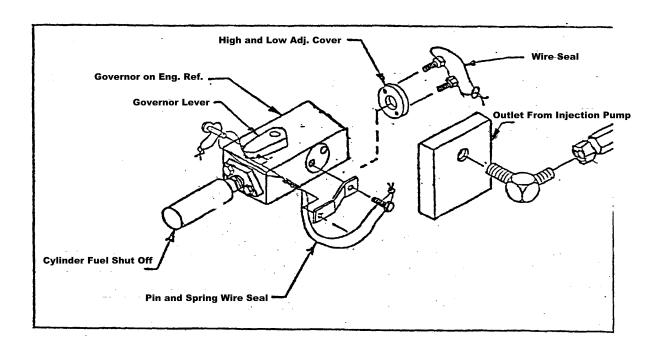


Figure 2

*Referenced items shown on Machine Layout Diagram.

- 7. () The fuel shutoff valve (4)* in the fuel supply line is operable.
- 8. () The drain plug (5)* in the fuel tank is locked in position. (Pipe plugs are considered "locked in position" when tight.)

NOTE: The following checks may be performed if the fuel lines have been repaired or replaced.

- 9. () Fuel lines are not routed near or connected to hot exhaust components and are protected from external damage.
- 10. () Fuel lines are secured

^{*}Referenced items shown on Machine Layout Diagram.

B. <u>BRAKING SYSTEM</u>:

WARNING: Brake tests

Brake tests are to be conducted on a relatively level surface, away from traffic areas where other machines or persons may be moving about. Consider the possible consequences of testing a machine with assumed braking inadequacies, and select an area where the test machine would not cause an accident due to these inadequacies.

- 1. () Service Brake Test.
 - a. With the engine operating and the machine stationary, apply the service brake.
 - b. Release all other brakes.
 - c. Place the transmission gear selector in <u>second</u> gear and the directional control selector in forward or reverse.
 - d. Depress the accelerator to full throttle, allowing the engine to put the transmission torque converter into a stall condition.

If the service brake is operating satisfactorily, the unit will not move when the above procedure is followed. If movement is detected, the service brake must be repaired or adjusted.

- 2. () Parking Brake Test.
 - a. With the engine operating and the machine stationary, apply the parking brake (6)*.

*Referenced items shown on Machine Layout Diagram.

- b. Release all other brakes.
- c. Place the transmission gear selector in <u>third</u> gear and the directional control selector in forward or reverse.
- d. Depress the accelerator to full throttle, allowing the engine to put the transmission torque converter into a stall condition.

If the parking brake is operating satisfactorily, the unit will not move when the above procedure is followed. If movement is detected, the parking brake must be repaired or adjusted.

- NOTE 1: As applicable, detailed override procedures are to be included in this section to effectively evaluate parking brake capability.
- NOTE 2: Gear selection for these tests must insure service and parking brake capability equal to or greater than the maximum specified gradeability of the machine.

C. <u>ELECTRICAL LIGHTING SYSTEM</u>:

()

13.

ALL ELECTR	ICAL EN	ICLOSURES MUST MEET THE FOLLOWING:
1.	()	All electrical enclosures (i.e., alternator (7)*, headlight switch (8)*, headlight (9)*) have
		an MSHA plate attached that is clearly stamped with an MSHA certification number.
*Referenced it	ems show	n on Machine Layout Diagram.
2.	()	All electrical enclosures are securely mounted and all vulnerable electrical components
		are protected from physical damage.
3.	()	All electrical enclosures are intact (not cracked or broken); the headlight lenses are not
		loose. All shaft and/or pushbutton controls are operable.
4.	()	All threaded covers are secured from loosening by a locking screw, wire, or other means
5.	()	Lockwashers or equivalent devices are provided for all bolts, screws, or studs that secure
		parts of the explosion-proof enclosures. All bolts, screws, and studs are in place and
		tightened.
6.	()	None of the fastenings used for joints on the explosion-proof enclosures are used for
		attaching non-essential parts or for making electrical connections.
7.	()	All joints forming the flame arresting paths (flanges and covers) are smooth and free
		from rust, corrosion, and pitting.
8.	()	Use feeler gauges of the appropriate size to insure the clearances in all accessible flame
		path joints, between the enclosures and corresponding covers, are not exceeded
9.	()	Headlight(s) is/are installed at each end of the machine and operable.
10.	()	Headlight switch must not control or operate any electrical circuits other than headlights.
11.	()	All lead entrances (packing glands) are assembled so that the cable jacket penetrates into
		the enclosure and when tightened, a 1/8" minimum clearance remains between the
		packing nut and stuffing box. All packing nuts and stuffing boxes are secured from
		loosening by a locking screw, wire, or other means
12.	()	All unused lead entrances are closed with metal plugs which are secured in place by spot
		welding, brazing, or equivalent
IF CABLES C	ONNECT	TING ELECTRICAL COMPONENTS ARE REPAIRED, REPLACED, OR OTHERWISE
DISTURBED,	THEY M	MUST CONTINUE TO BE:

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Clamped in place to prevent undue movement.

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14.

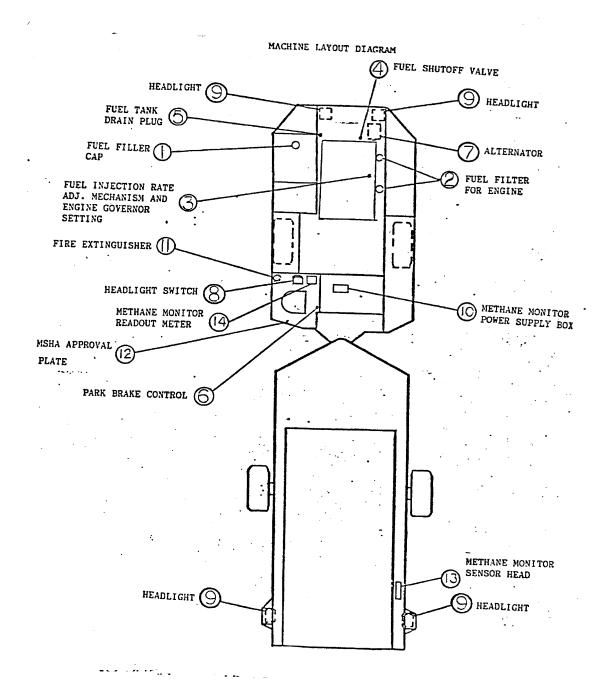
			tubing, or troughs.	
			NOTE: Flexible or threaded rigid metal conduit is not acceptable.	
	15.	()	Not subject to abrasion from sharp corners or edges.	
	16. ()		Isolated from hydraulic lines and hydraulic components.	
	17.	()	Isolated from fuel lines.	
	18.	()	Flame resistant if not enclosed in hose conduit. This is indicated by "MSHA" markings	
		on the cable.		
	19.	()	If hose conduit is used, it must be securely clamped at both ends and MSHA markings	
			appear as "Flame-Resistant, US MSHA, US MESA, or USBM 2G-(152)."	
	NOTE:	TE: The following check may be performed when an electrical enclosure has been disass		
		whatever reason, or if there is cause to believe a problem exists within the enclosure.		
	20.	()	Provided with short circuit protection for each power conductor.	
	21.	()	Electrical connections inside the electrical enclosures are secure (not loose) and are	
			insulated where space is limited. The ground conductors are not broken and are securely	
			attached.	
D.	METHA	ANE MO	NITOR SYSTEM (IF SO EQUIPPED)	
	NOTE:	For mac	hines equipped with a methane monitoring system, the following checks apply. These	
		checks a	are given as an example; actual checks should be based on the individual system used and	
		the manufacturer's recommendations.		
	1.	()	The power supply (10)* and amplifier readout (14)* components bear a label or plate	
			indicating the methane monitor system Certification No. $\underline{32A-XXXMD}$.	
*Refere	nced iten	ns shown	on Machine Layout Diagram.	
	2.	()	All explosion-proof enclosures in the methane monitoring system meet the checks noted	
			for electrical enclosures stated in Section C, Electrical Lighting System.	
	3.	()	The methane monitor solenoid valve assembly is installed in the machine's safety	
			shutdown system in the same area and manner as the other safety shutdown devices	
			which automatically shut off the fuel supply to the engine when activated.	

Protected from mechanical damage by position, flame resistant hose conduit, metal

	4.	()	The sen	sor head (13)* is mounted in an area where it will not be exposed to a continuous		
			water sp	pray and where a free flow of air from the mine face is available. Also, the vent		
			holes ar	nd filter(s) on the sensor head are not clogged with water, dust, or other material		
*Refer	enced iter	ms showr	n on Macl	nine Layout Diagram.		
	5.	()	The wa	rning device can be seen (or heard) by the machine operator at all locations from		
	which the machine is operated.			he machine is operated.		
indicate zero (0) percent methane when 7. () Activate the test switch. A warning is		Assure	that the methane monitor meter or readout assembly is properly adjusted to			
		indicate	zero (0) percent methane when no methane is present			
		Activate	e the test switch. A warning is given when one (1) percent methane is indicated			
		on the r	neter or readout assembly. When two (2) percent methane is indicated on the			
	meter or readout assembly, the engine shuts down a		r readout assembly, the engine shuts down and all electrical components are			
		deenergized. Self-contained, battery-powered headlights, approved un				
exempt from th		exempt	from this requirement.			
	8.	() It is not possible to defeat the methane moni		possible to defeat the methane monitor and start the engine by holding or		
			blockin	g the machine's reset switch in the start position.		
E. <u>MISCELLANEOUS</u> :		OUS:				
		chine is equipped with at least one 5 lb. dry chemical fire extinguisher (11)*. All				
		fire exti	inguishers are fully charged.			
	2.	For ma	chines eq	uipped with a fire suppression system, the fire suppression system is operable as		
		determi	letermined by the following checks:			
		NOTE	1:	These checks are given as an example; actual checks should be based on the		
				individual system used and the manufacturer's recommendations.		
		a.	()	Note general appearance of system components for mechanical damage or		
				corrosion.		
		b.	()	Check nameplate(s) for readability.		
		c.	()	Remove fill cap.		
		d.	()	Make certain tank is filled with free-flowing dry chemical to a level of not more		

than <u>2</u> inches from the bottom of the fill opening.

	e.	()	Secure fill cap, hand tighten.
Reference	d items shov	vn on Ma	chine Layout Diagram.
	f.	()	Remove expellant gas cartridge and examine disc; seal should be unruptured.
	g.	()	Return cartridge to pneumatic actuator/cartridge receiver, hand tighten, and
			secure in bracket.
	h.	()	Check hose, fittings and nozzles for mechanical damage and cuts.
	i.	()	Check nozzle openings; slot on nozzle should be closed (capped) with silicone
			grease or covered with plastic blow-off cap.
	j.	()	Remove cartridge from manual actuator(s) and examine disc; seal should be
			unruptured.
	k.	()	Return cartridge to manual actuator(s) assembly; hand tighten.
	1.	()	Replace any broken or missing lead and wire seals.
3.	()	For m	achines equipped with an air system, the main air pressure gauge in the operator's
		comp	artment is operable.
4.	()	The n	nachine has an MSHA Part 36 approval plate (12)* attached to it in the operator's
		comp	artment.
5.	()	The e	ngine will not turn over unless the directional control selector is in the neutral
		positi	on.
6	()	The	whoust diffusor at the scrubber outlet is installed



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