CEAW004701

Field Assembly Manual

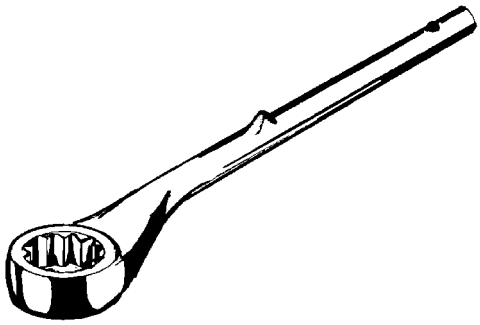
830E

DUMP TRUCK

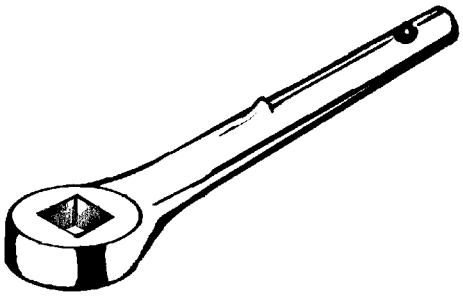
SERIAL NUMBERS **A30816 & UP**

KOMATSU®

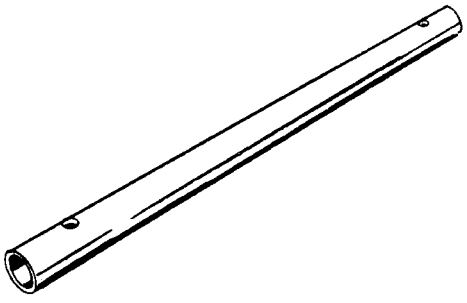
Part Number	Description	Use
TZ3535	Offset Box End Wrench, 1, 1/2 in.	Miscellaneous



Part Number	Description	Use
TZ2734	3/4 in. Torque Adapter	Miscellaneous



Part Number	Description	Use
TZ2733	Tubular Handle	Use with TZ2734 & TZ3535



MAJOR COMPONENT WEIGHTS

⚠WARNING

The condition of lifting slings, chains, and/or cables used for lifting components must be inspected before each use. Lifting equipment must be in good condition and rated for approximately two times the weight being lifted. DO NOT use worn or damaged lifting equipment. Serious injury and damage may result.

Optional equipment added onto the truck may cause an increase to the component weights listed in this chapter. Contact your customer support manager for concerns or questions about lifting truck components.

NOTE: All component weights are dry weights. The additional weight of coolant, fuel, and oil that may be in the components are not calculated into this list.

ITEM	KILOGRAMS	POUNDS
CHASSIS		
Chassis	48,988	108,000
Main Frame	18,288	40,318
Wheel Rim	971	2,140
Tire	4,309	9,500
Rim & Tire	5,380	11,640
DECK AND DECK SUPPORT COMPONENTS		
Cab	2,177	4,800
RH Deck	718	1,583
LH Deck	1,315	2,900
Center Deck	220	485
Left Deck Support	490	1,080
Right Deck Support	222	489
LH Upright	1,225	2,700
RH Upright	907	2,000
LH Diagonal Beam (ROPS)	120	265
Diagonal Ladder	176	388
Vertical Ladder	35	77
LH Bumper Extension	181	400
RH Bumper Extension	181	400

Locate the GF cut-out switch in the access panel on the left side of the main control cabinet. Place the switch in the CUTOUT position. This will prevent the alternator from re-energizing and creating system voltage until the switch is returned to its former position.

After repairs, replace all covers and doors and place the GF cutout switch and battery disconnect switches in their original positions. Reconnect all harnesses prior to starting the truck.

Leave the drive system in the rest mode until the truck is to be moved.

4. If the red lights on the exterior of the control cabinet and/or the back wall of the operator's cab continue to be illuminated, a fault has occurred.

   Leave all cabinet doors in place. DO NOT touch the retard grid elements. DO NOT disconnect any power cables or use them as hand or foot holds.

⚠WARNING

Notify your Komatsu customer service manager immediately. Only qualified personnel, specifically trained for servicing the A/C drive system, may perform this service.

General Welding Guidelines

1. Open the battery disconnect switches and disconnect the battery charging alternator lead wire.
2. Disconnect all electrical harnesses from the Engine Control System (ECS). The ECS is located inside the electrical cabinet behind the operator's cab. Disconnect the ground strap from the ECS.
3. Fasten the welding machine ground (-) lead to the piece being welded. The grounding clamp must be attached as near as possible to the weld area.
4. DO NOT weld on the rear of the control cabinet! The metal panels on the back of the cabinet are part of the capacitors and cannot be heated.
5. DO NOT weld on the retard grid exhaust louvers.
6. Some power cable panels throughout the truck are made of aluminum or stainless steel. They must be repaired with the same material or the power cables may be damaged.
7. Power cables must be cleated in wood or other non-ferrous materials. DO NOT repair cable cleats by encircling the power cables with metal clamps or hardware. Inspect power cable insulation prior to servicing the cables and prior to returning the truck to service. Discard cables with broken insulation.
8. Protect power cables and wiring harnesses from weld spatter and heat.
9. DO NOT lay welding cables over or near the vehicle electrical harnesses. Welding voltage may be induced into the electrical harnesses and cause damage to components.
10. DO NOT allow welding current to pass through ball bearings, roller bearings, suspensions, or hydraulic cylinders.

FIGURE 6-1.

FIGURE 6-10.

FIGURE 6-11.

FIGURE 6-20.

FIGURE 6-21.

FIGURE 6-30.

FIGURE 6-31.

FIGURE 6-39.

FIGURE 6-40.

FIGURE 6-51.

FIGURE 6-61.

FIGURE 6-62.

DUMP BODY ASSEMBLY

GENERAL INFORMATION

⚠WARNING

The total weight of the body is approximately 26,853 kg (59,201 lb). Use two cranes for assembling the body. A 45 metric ton (50 ton) crane and a 109-136 metric tons (120-150 ton) crane are required. The larger crane is needed to help turn the body over after completion of the underside welding.

Assembly of the body must be performed on flat terrain with an adequate area for welding machines and for maneuvering lifting equipment.

⚠ IMPORTANT ⚠

Body sections must be assembled as originally manufactured. Match the shipping numbers stenciled on the body sections to mate the correct parts. DO NOT mix components.

If the body is being welded in a cold climate, it is advisable to move the parts to be welded into an enclosed shop area. Surfaces to be welded must be dry and the temperature must be above 10°C (50°F). If shop space is not available, it may be necessary to provide a portable enclosure and pre-heat the parts prior to welding.

In most instances, it is easier to assemble and weld the body while the sections are upside down. After the pivot, guide pin, and body pads are welded in place, the body can be turned over and the remainder of the assembly can be completed.

All paint must be removed from surfaces to be welded. Use a wire brush or paint removal equipment.

Refer to the assembly blueprints shipped with the truck for specific welding details and the parts required for assembly.

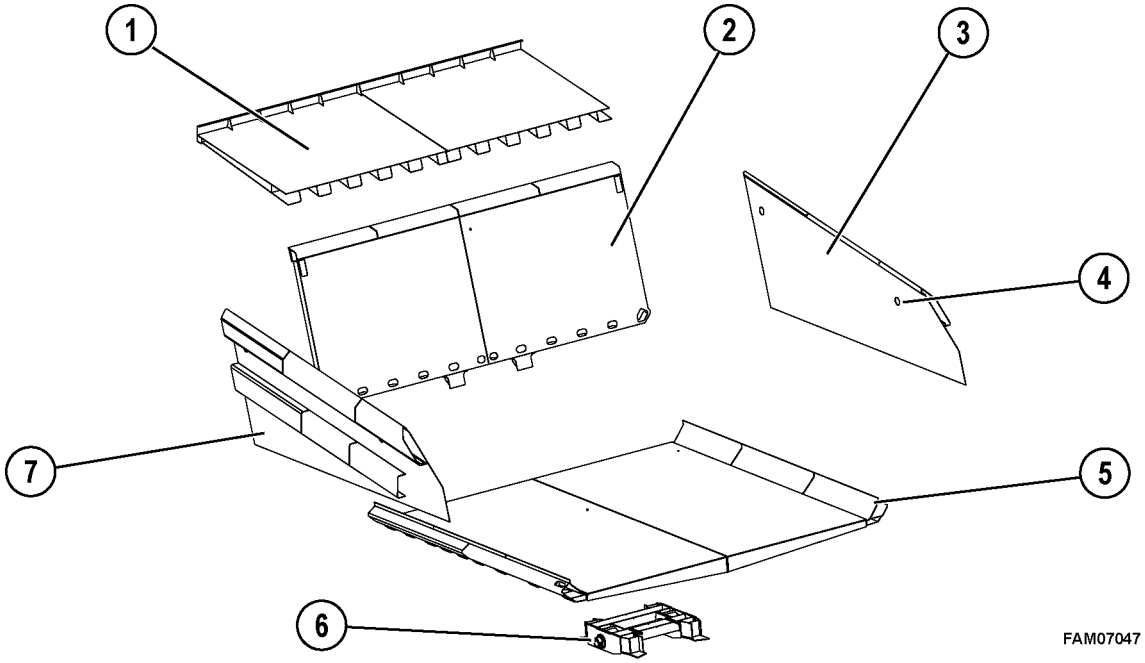


FIGURE 7-1. BODY PARTS NOMENCLATURE

1. Canopy
2. Front Sheet
3. RH Side Sheet
4. Lift Hole
5. Floor
6. Pivot
7. LH Side Sheet

FIGURE 8-1.

FIGURE 8-2.

FIGURE 8-11.

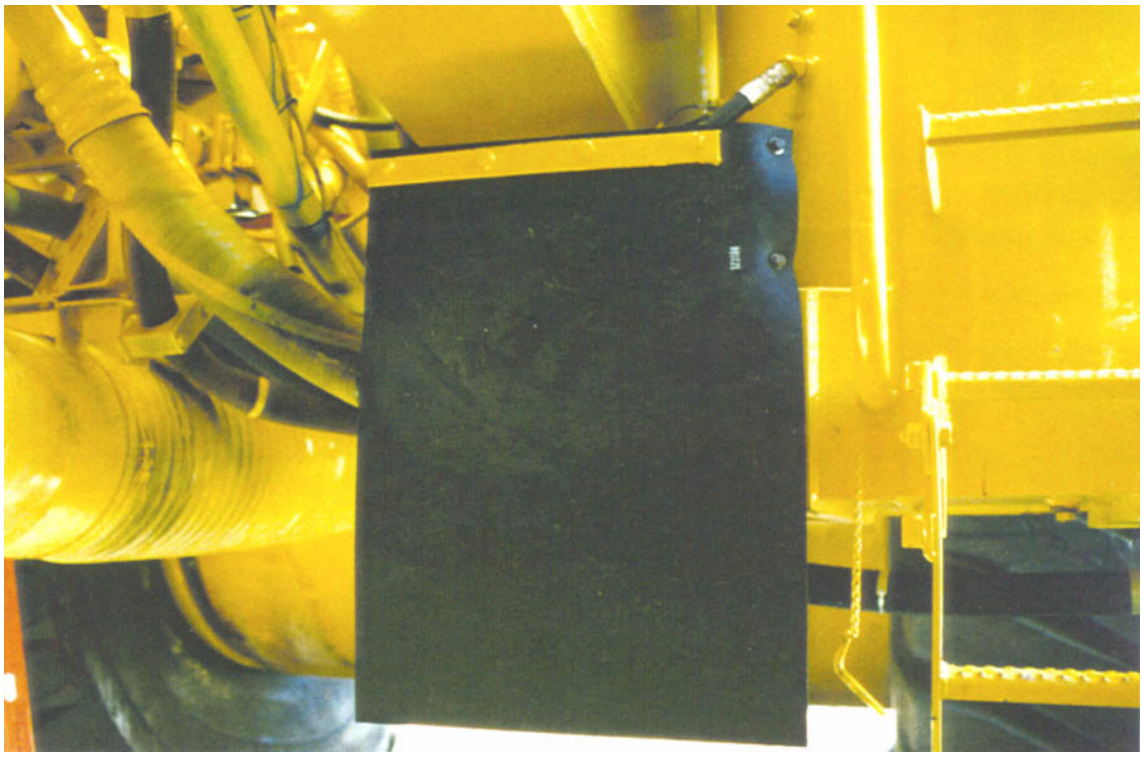


FIGURE 8-12.

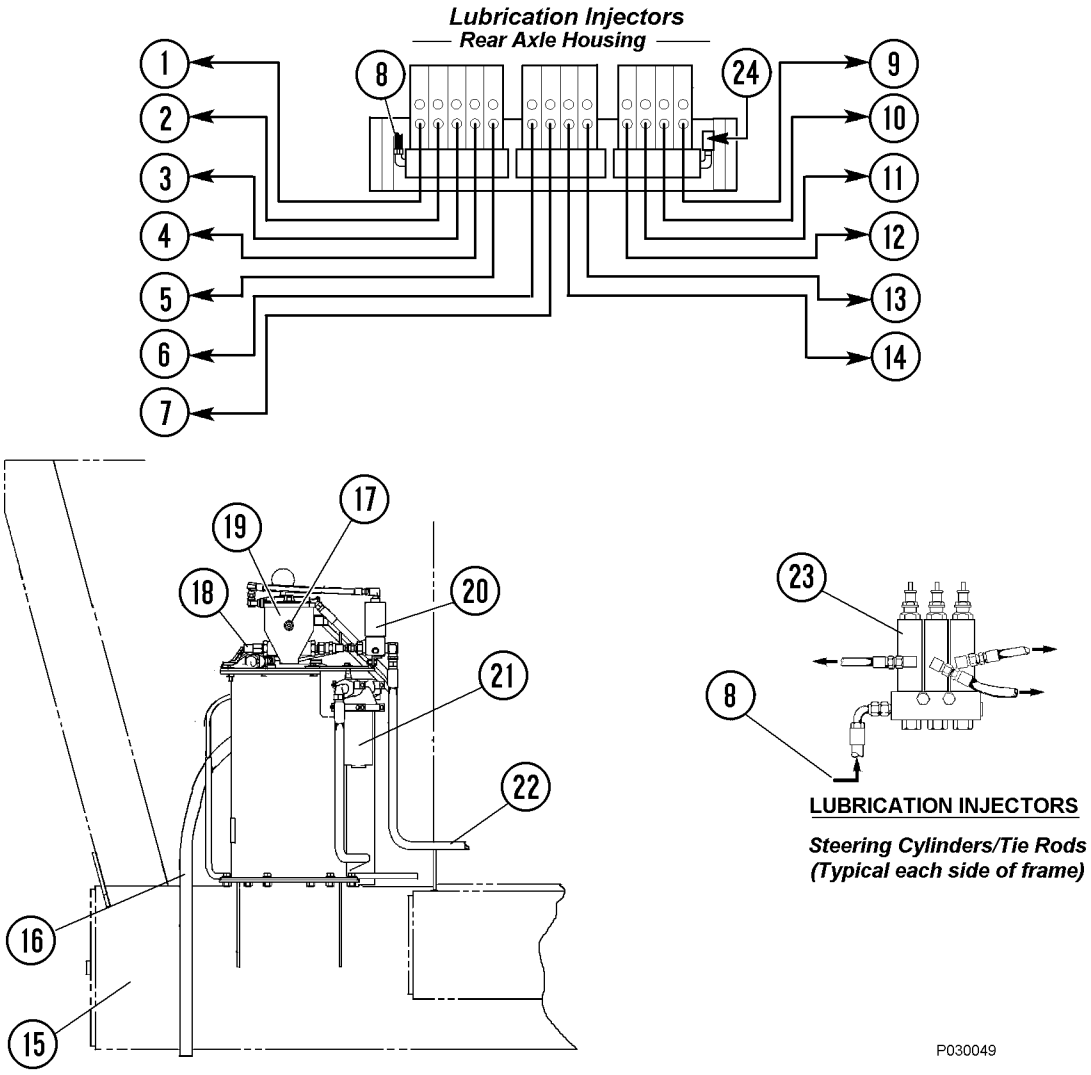


FIGURE 8-19.

1. L.H. Suspension, Bottom Bearing
2. L.H. Hoist Cylinder, Top Bearing
3. L.H. Hoist Cylinder, Bottom Bearing
4. L.H. Anti-Sway Bar Bearing
5. L.H. Suspension, Top Bearing
6. L.H. Body Pivot Pin
7. R.H. Body Pivot Pin
8. Grease Supply From Pump
9. R.H. Suspension, Bottom Bearing
10. R.H. Hoist Cylinder, Top Bearing
11. R.H. Hoist Cylinder, Bottom Bearing
12. Rear Axle Pivot Pin
13. R.H. Anti-Sway Bar Bearing
14. R.H. Suspension, Top Bearing
15. Truck Frame
16. Vent Hose
17. Pipe Plug (Oil Level)
18. Pressure Switch, N.O., 17 237 kPa (2500 psi)
19. Grease Pump
20. Vent Valve
21. Filter
22. Grease Supply to Injectors
23. Injectors
24. Pressure Switch, N.O., 13 790 kPa (2000 psi)

APPENDIX

This chapter contains additional information and procedures for aiding in field assembly of the truck. Refer to the list below for contents of this chapter. Refer to the latest service manual for additional information on servicing the truck.

1. Lubrication Chart - WB2790
2. Suspension Oiling And Charging Procedure
3. Toe In Adjustment Procedure
4. Automatic Lubrication System Checkout Procedure
5. Air Conditioning Checkout Procedure - EL4302
6. Air Conditioning Drive Belt Adjustment Procedure - EL9330
7. Hydraulic Checkout Procedure - EL2603
8. Brake Checkout Procedure - EG4938
9. VHMS Checkout Procedure - EK8480
10. Payload Meter III Checkout Procedure - EJ3061
11. Electrical Checkout Procedure - EK8477
12. Standard Torque Charts and Conversion Tables
13. Field Assembly Inspection Report
14. 50 Hour Post Commissioning Checksheet

2. Remove charging valve cap. Turn the charging valve swivel nut (small hex) counterclockwise three full turns to unseat valve seal. DO NOT TURN LARGE HEX. The charging valve body has a bleeder groove in its mounting threads, but for safety of all personnel, the valve body MUST NOT be loosened until ALL nitrogen pressure has been vented from the suspension.
3. Depress the charging valve core to release nitrogen pressure from the suspension. When nitrogen pressure has been vented to atmosphere, loosen and remove the fill plug. The suspension should have collapsed slowly as gas pressure was released. Truck weight is now supported by the support blocks.
4. Use a plastic tube to help bleed off trapped air inside the piston. Remove vent plugs and the bleeder screw. Service the suspension with clean HYDRAIR® Oil (with 6% friction modifier) until clean oil comes out of the port where the bleeder screw and plug were removed from the side of the housing. Drip pans should be used and all spillage cleaned from the outside of the suspension. Install the bleeder and vent plugs. Continue to fill the oil until it reaches the fill port. Allow the suspension to stand for at least 15 minutes to clear any trapped nitrogen and/or air bubbles from the oil. Add oil if necessary, and install the fill plug.

REAR SUSPENSION DIMENSIONS (EMPTY)			
TRUCK MODEL & OPTIONS	**OILING HEIGHT mm (IN.)**	**CHARGING HEIGHT mm (IN.)**	***CHARGING PRESSURE kPa (psi)**
830E	25.4 (1.0)	241 (9.5)	1724 (250)
830E	25.4 (1.0)	241 (9.5)	2172 (315)
* Note: Charging pressures are for reference only and may vary depending on body weights.			

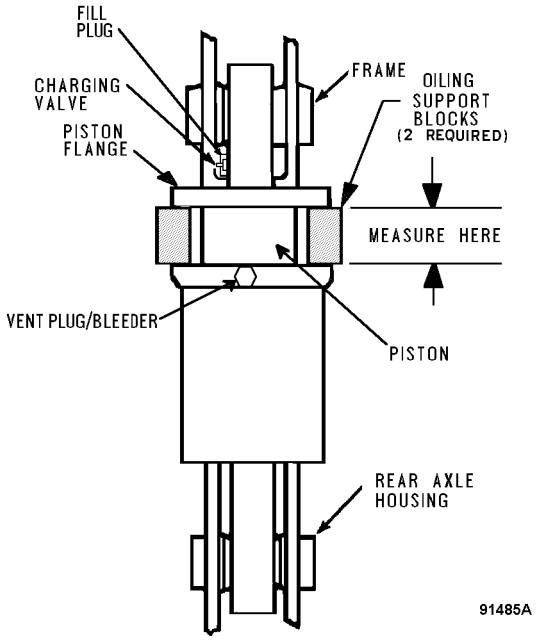


FIGURE 4-4. REAR SUSPENSION

Rear Suspension Nitrogen Charging

⚠WARNING

Lifting equipment (overhead or mobile cranes, or hydraulic jacks) must be of sufficient capacity to lift the truck weight. Be certain that all personnel are clear of lift area before lift is started. Clearances under the truck may be suddenly reduced.

⚠IMPORTANT⚠

Ensure the automatic apply circuit has not applied the service brakes during truck maintenance. If the front brakes are applied during rear suspension charging, the axle cannot pivot for frame raising / lowering, and the rear suspension may be unable to move up or down.

NAME: A/C CHECKOUT PROCEDURE		MACHINE & MODEL: ALL TRUCKS					
WRITTEN BY:	DATE:						
Bill Anderson	9/7/04						
CHECKED BY:	DATE:	2	Revise Note	5/10/06	113819	BA	
		2	Changed Oil was GM12378526	4/11/06		BA	
Mike McMullen	9/17/04	1	Item 2 (b) changed approved oil – was 2356151	4/13/05	112726	BA	DAT
APPROVED BY:	DATE:				112074		
		DASH	DESCRIPTION OF CHANGE	DATE	ECN	BY	CK'D
T. Heller	9-17-04	A SIZE	MICROFILM				

1. Keep A/C Components sealed until prepared to charge system. The RPAG oil in compressor and desiccant in receiver-drier both attract moisture. Leaving components open will contaminate the system.

2. At field erection the following steps need to be taken to make A/C system operational.

   a. Determine if compressor is still sealed: (the compressor is filled with gas at manufacturer) slowly remove cover on rear of compressor observing if gas escapes.
   b. If gas escapes from compressor it is still sealed, go to Step d.
   c. If compressor seal has been broken remove compressor and drain oil. Refill with 207ml (7 oz.) of new RPAG oil PC2212 added to compressor sump (thru drain hole). Reinstall compressor, belts and cover.
   d. Add 207 ml (7 oz.) of new RPAG oil PC2212 to inlet side of accumulator or receiver-drier.
   e. Connect all hoses and components for A/C system. Note: Lubricate o-rings before assembly with mineral oil.
   f. Evacuate system down to minimum of 737 mm (29.00 In) Hg for a minimum of 45 minutes.
   g. Shut off vacuum pump and observe gauges. System should hold a minimum vacuum of 711 mm (28.00 In) Hg for 15 minutes. If vacuum does not hold, find and repair leak. Repeat Step f.
   h. Charge system with 3.4 Kg (7.4 lbs.) of 134a refrigerant.
   i. Observe pressures and check for leaks.
   j. Set the fan on low speed and temperature setting on maximum. Observe cab vent outlet temperatures.
   k. Check evaporator condensation drain line to see if water is draining properly.

3. Refer to Shop Manual for recommended pressures, temperatures and troubleshooting guide.

EL4302-2

a. Install calibrated multiple range pressure gauge capable of 5000 psi at steering pump test port "GPA".

b. Install calibrated pressure gauge capable of 5000 psi at base of rear steering accumulator in the SAE #6 port on the accumulator stem.

c. Bottom out unloader valve adjustment screw.

d. Back out pressure compensator adjustment screw.

e. Fully open all shut off valves before starting truck.

f. Start truck and adjust pressure compensator until 3800 psi is read and maintained at steering pump test port "GPA". Tighten jam nut.

g. Stop truck and bleed down accumulators.

h. Back out unloader valve adjustment screw completely.

i. Start truck and allow pump to unload. Pump in unloaded condition can be verified by pressure gauge at steering pump test port "GPA" reading about 200 to 400 psi.

j. Adjust unloader valve to reload accumulators when pressure in accumulator reaches 3150 psi. Unload pressure will be approximately 3500 to 3550 psi, but the reload pressure of 3150 psi is the critical pressure to obtain. If adjusting from step 15, do not turn steering wheel to make accumulator pressure fall. The needle valves in the brake cabinet can be opened partially to bleed steering accumulator pressure slowly to allow pump to cycle while adjusting the unloader valve. *Minimum reloading pressure must be 3150 psi.*

k. Tighten jam nut and verify pressures remain as adjusted. If reload pressure is 3150 psi as pump is cycling, pump is properly adjusted. Close needle valves in brake cabinet.

l. If pump is being adjust from step 15, return to step 15 now and flush accumulators *without turning steering wheel.*

m. End of steering pump with unloader valve adjustment procedure.

21. Verify low steering accumulator pressure switch activates at 2300 ± 46 psi falling, measured at SAE #6 port in stem of rear steering accumulator. Start truck and

Reapplications

25) Start engine to recharge hydraulic system. Allow engine to run until low brake accumulator pressure stabilizes at or above 3200 PSI.

* 26) Shut engine down. Do not allow steering accumulator to bleed down. Make repeated slow, complete brake applications with pedal until auto apply comes on. Record the number of brake applications prior to auto apply.

Differential Pressure Switch

27) Open each brake accumulator bleed down valve and bleed down the entire brake system.

28) Outside the brake cabinet, disconnect the hose that supplies oil from the front brake accumulator to the brake pedal in the cab for the front brakes and plug the tube end at the cabinet. Be sure to leave end of hose vented to atmosphere.

29) Start engine. Allow the engine to run until LAP1 pressure stabilizes at or above 3200 psi.

* 30) Very slowly depress the brake pedal until the brake differential switch has activated the low brake pressure lamp and the buzzer. Record the rear brake pressure at the point this occurs. (The fault should occur at 600 ± 50 psi). Release the pedal.

31) Shut engine down and turn key switch off. Open each brake accumulator bleed down valve and bleed down entire brake system.

32) Outside the brake cabinet, reconnect the hose that connects the front brake accumulator to the brake pedal in cab. Disconnect the hose that supplies oil from the rear brake accumulator to the brake pedal in the cab for the rear brakes and plug the tube end at the cabinet. Be sure to leave end of hose vented to atmosphere.

33) Very slowly depress the brake pedal until the rear brake differential switch has activated the low brake pressure lamp and the buzzer. Record the front brake pressure at the point this occurs. (The fault should occur at 1000 ± 75 psi). Release the pedal.

EG4938 — 1

2. Brake Cooling RPM Advance 1 should go to 24 volts (check at TB40-B).
3. Brake Cooling RPM Advance 2 should go to 24 volts (check at TB40-C).
4. The Brake Oil Temperature Gauge (930E only) should read near the middle of the red band.
5. The High Brake Oil Temp light should come on.
6. If the output functions do not turn on, read the value of the temperature for the selected input in VHMS Watcher. It should be between 126 and 140 C.
7. If the temperature reading is low check wiring for high resistance between the probe and Interface Module.
8. If the temperature reading is high check for shorts in the wiring.
9. It the temperature is in the right range but the output functions do not work, check the Interface Module output circuit and wiring associated with any non-working function.

For 960E only:

Actuate and hold the lamp test switch in the operator's cab. The following lamps are driven by the Interface Module and should come on (along with all the other lamps):

1. Park Brake Lamp
2. Low Fuel Lamp
3. Batt Charge Alt Failure Lamp
4. IM Warning Lamp
5. High Brake Oil Temp Lamp

The functionality of the Fuel Level output can be confirmed by observing the needle position of the gauge when the low fuel lamp comes on.

1. Dismount the sending unit only from the tank and position the gauge to a low level with a screwdriver. The shaft of the screwdriver will turn this magnetically coupled sending unit to any position you desire.
2. Set the gauge to empty. After 15 seconds, the Low Fuel Light should come on.
3. Return the gauge to the approximate position of the actual fuel in the tank before remounting it.

The Park Brake Solenoid and Brake Apply output can be checked with the following procedure.

1. Turn parking brake off. Park brake valve should be energized and brake auto apply valve should not. Energization of these valves can be determined by checking voltage across the valves or check for magnetism in the valve with a screwdriver.
2. Use the GE DID panel to set the truck speed to some elevated value such as is used to calibrate the speedometer. The park brake valve should continue to be energized. The auto apply valve should continue to be off.
3. With the truck speed signal still high, turn the park brake on. The park brake valve should continue to be energized, and the auto apply valve should stay off.

NAME:	PLM3 Checkout Proc	MACHINE & MODEL	930E
WRITTEN BY:	D. Lindell	DATE:	3 May 00
CHECKED		DATE:	
APPROVED	G. HORST	DATE:	1 JUN 00

DASH	DESCRIPTION OF CHANGE	DATE	ECN	BY	CKD
1	Updated check sheet and added software version check	09 May 01	10907Z	DTL	GGH
0	GROUP USED ON EH6794				

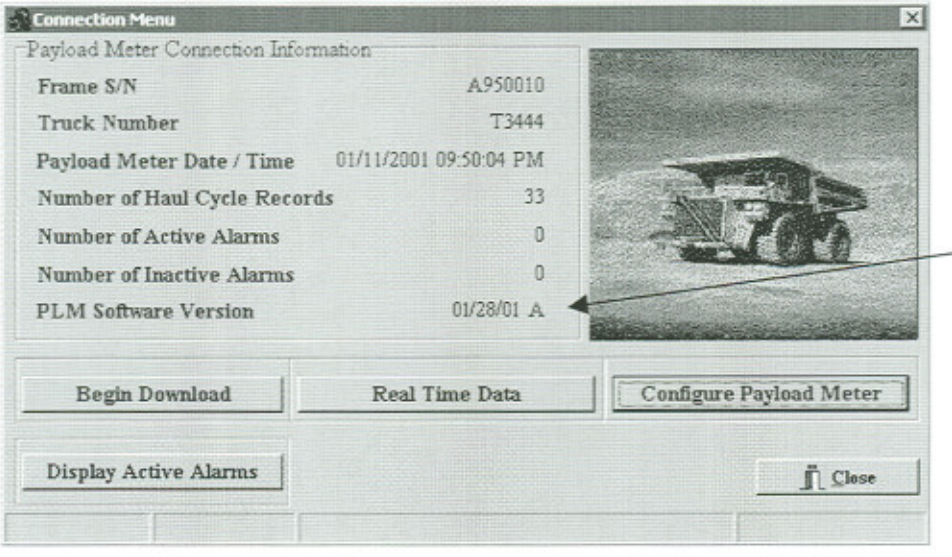
MICROFILM																		

GENERAL DESCRIPTION:
This document describes the checkout procedure for the payload meter 3 installation. The process consists of attaching dummy loads in place of the suspension pressure sensors and checking the pressures indicated by the payload meter. The second primary step is connecting to the payload meter using a laptop to confirm the latest software version and the rest of the inputs and outputs of the system.

Tools Required:
Payload Data Manager software
EF9160 - Download Harness
EJ3057 - Harness Str, PLM3 test - need 4.

1 Appendix

Before beginning, be sure that you have the ".kms" file required to program the product and you know where to find it on your computer



1. The latest payload meter 3 software version is available on the internet at http://www.kms-peoria.com/payload
2. Confirm that the payload meter has the latest software version installed by checking the information on the Connection Menu of the Payload Data Manager software connected to the payload meter. Compare the version installed to the latest version indicated on the web site.
3. If the installed version is not the latest, download the latest ".kms" file from the internet by right-clicking on the file and saving the file.
4. Turn off the payload meter
5. Start the "Flashburn" software installed on the laptop when the Payload Data Manager software was installed.

II. MEGGER TEST - (Continued)

E. Motor Field Circuit Preparation - (Continued)

3. Jumper the main contact tips (closed) on the MF contactor.

4. Jumper the front contact tip of the MF contactor to ground.

5. Make sure the reverser is in the Forward or Reverse position, and not in the Neutral position.

F. Control Circuit Preparation

1. Disconnect the connector plugs CNA, CNB, CND, & CNE from the Microprocessor Control Panel (FL275).

2. Disconnect all of the DDEC cable connectors at the ECM's. (DDC engine)
Disconnect all of the MTU cables at the Governor Box (MTU Engine)
Disconnect all of the Centry cables at the ECM. (Cummins Engine)

3. Disconnect the battery cable at the battery negative post.

4. At each wheel motor, jumper all four temperature sensor terminals together, and jumper them to ground.

5. At each wheel motor, jumper all three speed sensor terminals to ground.

G. Power Circuit Megger Test

1. Operate the megger at 500 volts and read the insulation resistance between either of the contactor tips of the P1 contactor and ground. The minimum megger reading must be two megohms. Record the actual insulation resistance reading.

2. Jumper the front contactor tips of the P1 and P2 (if used) contactors to ground.

H. Alternator Field Circuit Megger Test

1. Remove the jumper between the GF contactor tip and ground.

2. Operate the megger at 500 volts and read the insulation resistance between either of the contactor tips of the GF contactor and ground. The minimum megger reading must be two megohms. Record the actual insulation resistance reading.

3. Jumper the front contactor tip of the GF contactor to ground.

J. Motor Field Circuit Megger Test

1. Remove the jumper between the MF contactor tip and ground.

2. Operate the megger at 500 volts and read the insulation resistance between either of the contactor tips of the MF contactor and ground. The minimum megger reading must be two megohms. Record the insulation resistance reading.

3. Jumper the front contactor tip of the MF contactor to ground.

K. Restore Circuits to Original Condition

1. Remove the jumpers between the P1 and P2 contactor tips and ground

2. Remove the jumper between the GF contactor tip and ground.

VI. CPU SOFTWARE PROGRAM MODIFICATION - MINE SITE CHECK-OUT - (Continued)

D. Saving STATEX Truck Program Configuration Changes - (Continued)

2. Save the modified configuration file to a new file name.

a. In the far upper right hand corner, click on File > Save As. Verify that the directory is TRUCK.

b. Type the desired mine configuration file name defined above to replace the original file name. Click on save, and then OK.

c. The saved mine configuration file name should now appear in the source directory. Click on Windows > Select Truck CFG File and verify that the new file is listed. The mine configuration file is now accessible in the TRUCK subdirectory for installation into the CPU.

3. Exit from the configuration utility.

VII. CPU SOFTWARE PROGRAM INSTALLATION

A. STATEX Program File Selection

1. To program or reprogram the STATEX III card panel, it is necessary to select the desired truck program file and to be connected to the truck.

2. Select START > Programs > GEOHVPTU 2.01 > DCTOOLS > wPTU DC v1.04 or double click the appropriate icon. Wait for connection to the truck to be complete.

3. Type the password for your computer, but do not **Enter** it. Instead click on Program Panel.

4. Verify that panel to download is FB144 CPU Card for DC Drive Systems (Statex III)

5. Verify that the file listed next to "Select Object File" is Stxobj.157 (the entire path is shown). If it is not, select Browse, find the proper file (Stxobj.157), click on the file, and then click on open.

6. Verify that the file listed next to "Select Configuration File" is appropriate for this truck (as previously named and saved). If it is not, select Browse, find the proper file name, click on the file, and then click open.

B. Install or Reload Program Into Truck - With both the object file and configuration file properly selected, it is now time to load the program into the truck. Click on Begin Download, and watch its progress. When finished, click on Exit.

C. Set Correct Date and Time in CPU

1. Click on LOGIN to wPTU Toolbox.

2. Click on STX3 Enhanced (144).

3. Click on OK.

4. Double click on Set Time and Date

5. A special screen will appear stating:

Selection of SPECIAL OPERATION will override truck driver controls until all SPECIAL OPERATION screens are closed! Continue?

PROCEED CANCEL

Click on **PROCEED**.

IX. ANALOG INPUT SIGNALS TESTS - FL275 CARD PANEL - (Continued)

B. Analog Input Checks - (Continued)

3. GROUND FAULT CHECK - VMM2 **ground fault = 0.0 ma** - (Continued)

j. The two digit display will still show a **01** event code. Press the reset switch on the two digit display to clear the code back to **00**.

k. Reverse the power supply connections. Attach the positive lead (+) of the DC power supply to the vehicle ground and attach the negative lead (-) of the power supply to the cable #7J1 on the VMM2, terminal A.

m. Repeat steps c - j, in this sub-section.

n. Remove the DC power supply and the digital voltmeter.

4. MOTOR 1 ARMATURE CURRENT - ISOA3 **motor 1 amps = 0.0**

(Screen value amps = 1000 x input voltage).

a. To test the zero offset on the isolation amplifier ISOA3, place a digital voltmeter between the terminals D (+) and F (-) on ISOA3. With the control power On & no other signal(s) applied, the meter should read less than 30 mv dc.

b. Remove the wire from the input terminal B on ISOA3. Connect a test jumper from G (+15 volt) to A, and another one from C to F on ISOA3.

c. The digital voltmeter should read +1.00 +/-0.05 volts from D to F.

d. The PTU Screen value should read +1000 +/- 50 amps.

e. Remove the test jumper from G to A. Connect a test jumper from E (-15 volt) to A.

f. The digital voltmeter should read -1.00 +/-0.05 volts from D to F.

g. The PTU screen value should read -1000 +/- 50 amps.

h. Remove the jumpers and the voltmeter. Reconnect the wire to terminal B.

5. MOTOR 2 ARMATURE CURRENT - ISOA4 **motor 2 amps = 0.0**

Repeat the above procedure used for (ISOA3) **motor 1 amps**, except use ISOA4.

6. MOTOR FIELD CURRENT - ISOA5 **motor field amps = 0.0**

(Screen value amps = 400 x input voltage).

a. Test the zero offset on the isolation amplifier ISOA5 by using the same procedure as in Section IX.B.4.a.

b. Remove the wire from the input terminal B on ISOA5. Connect a test jumper from G (+15 volt) to A, and another one from C to F on ISOA5.

c. The digital voltmeter should read +1.00 +/-0.05 volts from D to F.

d. The PTU screen value should read +400 +/- 20 amps.

e. Remove the test jumper from G to A. Connect a test jumper from E (-15 volt) to A.

f. The digital voltmeter should read -1.00 +/-0.05 volts from D to F.

X. SEQUENCE TESTS - (Engine not running) - (Continued)

L. Overspeed Retard Operation Check - (Continued)

4. Connect an oscillator to the circuits #77 and #77A on the control cabinet terminal board. Increase the oscillator frequency until the **OVRSPD** DIGITAL OUTPUT changes from **off** to **= on**. This will indicate that an overspeed condition has been obtained.

5. Verify that the propulsion contactors MF, P1/P2, GF, and GFR drop out and then the retard contactors RP1, RP2, MF, GF, GFR, RP3, RP4, & RP5, (RP6-RP9 if used) pick up. The dynamic retard light on the instrument panel will come on.

6. Disconnect the oscillator and release the throttle pedal. Remove the jumpers and reconnect the wheel motor speed sensor wires to the TB.

7. Put the selector switch in the Neutral position, depress the override pushbutton in the console, and press the reset button on the display to clear the event code.

M. Hoist Interlock Operation Check

Note: Monitor the ACCEL STATE LOGIC screen while performing this check.

1. Put the selector switch in the Forward position, and depress the throttle pedal. The propulsion contactors MF, P1/P2, GF, and GFR should pick up.

2. Remove the metal washer from the body up switch.

3. The propulsion contactors should drop out.

4. Operate the override switch. The contactors should pickup. Release the override switch. The contactors should drop out.

5. Put the selector switch in the Neutral position, release the throttle pedal, and replace the metal washer.

6. Put the selector switch in the Reverse position, and depress the throttle pedal.

7. The propulsion contactors should pick up.

8. Remove the metal washer from the body up switch.

9. The propulsion contactors should drop out.

10. Operate the override switch on the panel. The contactors should not pick up. Release the override switch.

11. Replace the metal washer. The contactors should not pick up. Release the throttle pedal.

12. Put the selector switch in the Neutral position and then back into the Reverse position.

13. Depress the throttle pedal. The propulsion contactors should pick up.

14. Put the selector switch in the Neutral position and release the throttle pedal.

N. Motor Blower Fault Light Operation Check

Note: The time delay of the warning light is dependant on what was set in the configuration File in the TRUCK SPECIFICS SCREEN in section V.F.6 or VI.C.6.

1. Monitor the MONITOR REAL TIME DATA screen on the PTU while performing this check.

XV. LOAD TEST WITH A LOAD BOX - (Continued)

E. Load Test - (Continued)

15. Check the stall current limit. With the engine at idle, place the load box in the position #10, or position #8 for the portable 18 element grid load box.

Note: The load position #10 or #8 should be run as quickly as possible. Only enough time to record the volts and amps. (And perferably less than two seconds.) With the event data collection interval set at 0.01 seconds, the **EVENT DATA MENU** can be used for reference.

16. Depress the throttle pedal cautiously to full throttle but not too slowly. Check to see that the maximum armature ampere reading is equal to the value from the **TRUCK CONFIGURATION SCREEN** in Section V.E.2. (+/- 150 amp). Record the requested readings from Section XV.E.13.

17. When the test is finished, close all screens on the PTU and close the PTU program before shutting off control power.

F. Disconnect Load Box from Truck

1. Turn the control power Off. Shut down the engine and turn the key switch Off.

2. Disconnect the load box cables and restore the wheel motor armature leads to their proper locations. If a reactor was used, then disconnect the reactor and remove the load test terminal boxes from the rear axle housing.

3. Reconnect fan clutch where applicable.

XVI. LOAD TEST USING TRUCK RETARD GRIDS

NOTE: DO NOT RUN OPEN CIRCUIT TEST.

NOTE: The single ended grid package used on the 772 wheel drive system will be operating at 100% of the capacity when loaded with a 1200 HP engine. The grids should be monitored closely on any extended horsepower tests to avoid overheating.

A. Setup and Preparation

1. For engines equipped with Rockford fan clutch only, disconnect the fan clutch solenoid to fully engage the fan.

2. Connect swing shunts to load test position. The top shunt swings to the upper position. The bottom shunt swings to the lower position. For the 830E & 685E trucks, the left shunt swings to the left position, & the right shunt swings to right position.

3. If the load test must be run any longer than to just read horsepower, the wheel motor field leads must be disconnected to prevent overheating. Disconnect the circuit #716E at the -1 terminal and disconnect the circuit #716F at the +2 terminal on the GFM on the MFSE. This will disable the wheel motor field.

B. Load Test

1. Monitor the horsepower output using the PTU setup for the **AUTOMATIC LOAD BOX TEST** screen.

2. Put the selector switch in the Forward position and depress the throttle pedal to load the engine. Compare the Net HP TO ALTERNATOR value to the Calculated NET HP to the alternator. (Use the formula in Section XV.E.10).

3. After finishing the test, close all screens and close the program on the PTU before turning off control power.

STANDARD TORQUE CHARTS AND CONVERSION TABLES

This manual provides dual dimensioning for most specifications. U.S. standard units are specified first, with metric (SI) units in parentheses.

References throughout the manual to standard torques or other standard values will be to one of the following charts or tables. For values not shown in these charts or tables, standard conversion factors for most commonly used measurements are provided in TABLE XIII, page A5-6.

Standard torque values are not to be used when "turn-of-the-nut" tightening procedures are recommended.

INDEX OF TABLES

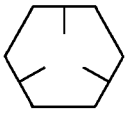
EFFECT OF SPECIAL LUBRICANTS On Fasteners and Standard Torque Values

The Komatsu engineering department does not recommend the use of special friction-reducing lubricants, such as Copper Coat, Never-Seez®, and other similar products, on the threads of standard fasteners where standard torque values are applied. The use of special friction-reducing lubricants will significantly alter the clamping force being applied to fasteners during the tightening process.

If special friction-reducing lubricants are used with the standard torque values listed below in Table I, excessive stress and possible breakage of the fasteners may result.

Where the torque tables specify "Lubricated Threads" for the standard torque values listed, these standard torque values are to be used with simple lithium base chassis grease (multi-purpose EP NLGI) or a rust-preventive grease (see list, page A5-2) on the threads and seats unless specified otherwise.

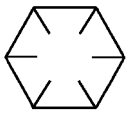
NOTE: Ensure the threads of fasteners and tapped holes are free of burrs and other imperfections before assembling.



Grade 5

TABLE I. -STANDARD TORQUE CHART
SAE HEX HEAD CAP SCREW AND NUT ASSEMBLY
(LUBRICATED THREADS) - TOLERANCES ±10%

Grade 8



Cap Screw Thread Size	TORQUE - GRADE 5			TORQUE - GRADE 8			Cap Screw Thread Size	TORQUE - GRADE 5			TORQUE - GRADE 8		
	ft lbs	kg•m	N•m	ft lbs	kg•m	N•m		ft lbs	kg•m	N•m	ft lbs	kg•m	N•m
1/4-20	7	0.97	9.5	10	1.38	13.6	3/4-16	235	32.5	319	335	46.3	454
1/4-28	8	1.11	10.8	11	1.52	14.9	7/8-9	350	48.4	475	500	69.2	678
5/16-18	15	2.07	20.3	21	2.90	28	7/8-14	375	51.9	508	530	73.3	719
5/16-24	16	2.21	22	22	3.04	30	1.0-8	525	72.6	712	750	103.7	1017
3/8-16	25	3.46	34	35	4.84	47	1.0-12	560	77.4	759	790	109.3	1071
3/8-24	30	4.15	41	40	5.5	54	1.0-14	570	78.8	773	800	110.6	1085
7/16-14	40	5.5	54	58	8.0	79	1 1/8-7	650	89.9	881	1050	145	1424
7/16-20	45	6.2	61	62	8.57	84	1 1/8-12	700	96.8	949	1140	158	1546
1/2-13	65	9	88	90	12.4	122	1 1/4-7	910	125.9	1234	1480	205	2007
1/2-20	70	9.7	95	95	13.1	129	1 1/4-12	975	134.8	1322	1580	219	2142
9/16-12	90	12.4	122	125	17.3	169	1 3/8-6	1200	166	1627	1940	268	2630
9/16-18	95	13.1	129	135	18.7	183	1 3/8-12	1310	181	1776	2120	293	2874
5/8-11	125	17.3	169	175	24.2	237	1 1/2-6	1580	219	2142	2560	354	3471
5/8-18	135	18.7	183	190	26.2	258	1 1/2-12	1700	235	2305	2770	383	3756
3/4-10	220	30.4	298	310	42.8	420							

1 ft lbs = 0.138 kg•m = 1.356 N•m