CEAW006901

Field Assembly Manual

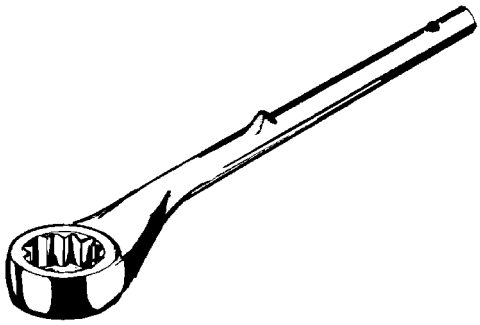
930E-4

DUMP TRUCK

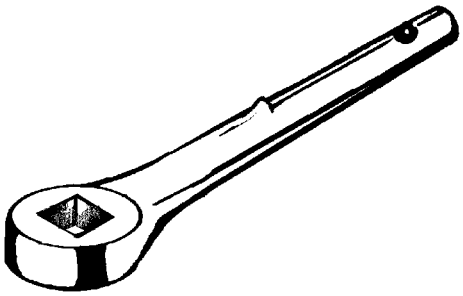
SERIAL NUMBERS **A31056 & UP**

KOMATSU®

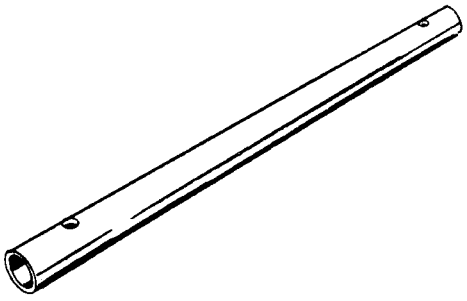
Part Number	Description	Use
PB8326	Offset Box End Wrench, 1, 7/16 in.	Miscellaneous



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



Part Number	Description	Use
TZ2733	Tubular Handle	Use with PB8326 & TZ2734



WEIGHT DISTRIBUTION

Empty Vehicle

Front Axle (49.3%). . . . . 103,301 kg (227,738 lbs)
Rear Axle (50.7 %) . . . . . 107,518 kg (237,034 lbs)
Total (with 50% fuel) . . . . . 210,819 kg (464,772 lbs)

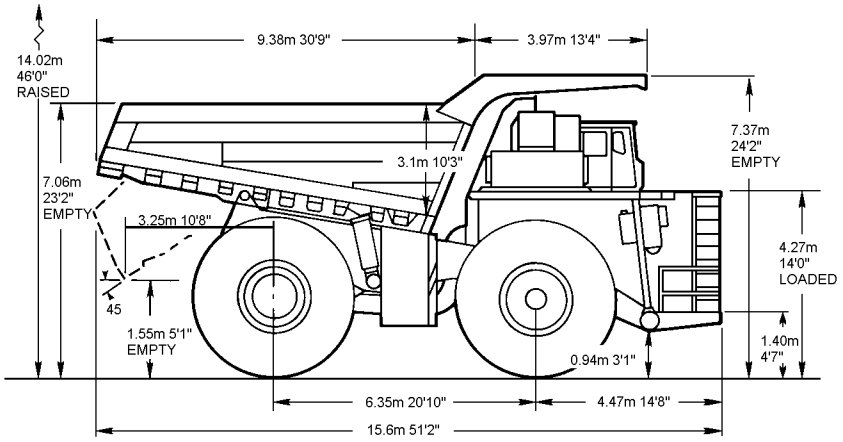
Standard Komatsu body . . . . 30,362 kg (66,936 lbs)
Standard tire weight. . . . . 26,127 kg (57,600 lbs)

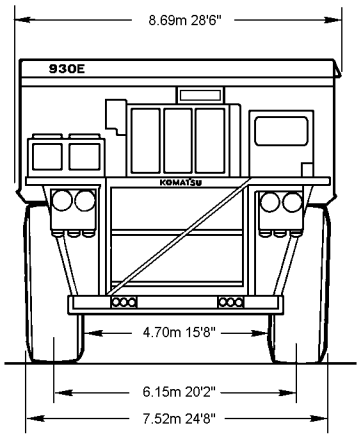
Loaded Vehicle

Front Axle (33.0%) . . . . . 165,554 kg (364,980 lbs)
Rear Axle (67.0%) . . . . . 336,124 kg (741,020 lbs)
Total . . . . . 501,678 kg (1,106,000 lbs)

Nominal Payload*. . . . . 290,859 kg (641,228 lbs)

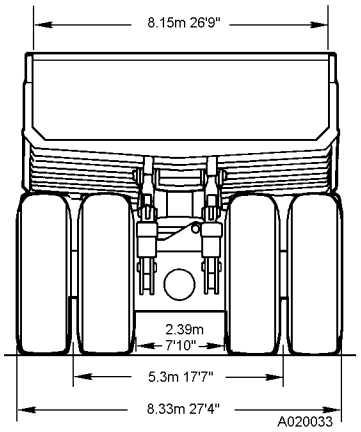
* *Nominal payload* is defined within Komatsu America Corporation's payload policy documentation. Nominal payload must be adjusted if the weight of any customized body or tires vary from that of the standard Komatsu body and tires. Nominal payload must also be adjusted to take into account the additional weight of any custom/optional extras fitted to the truck which are not stated within the Standard Features list of the applicable specification sheet.

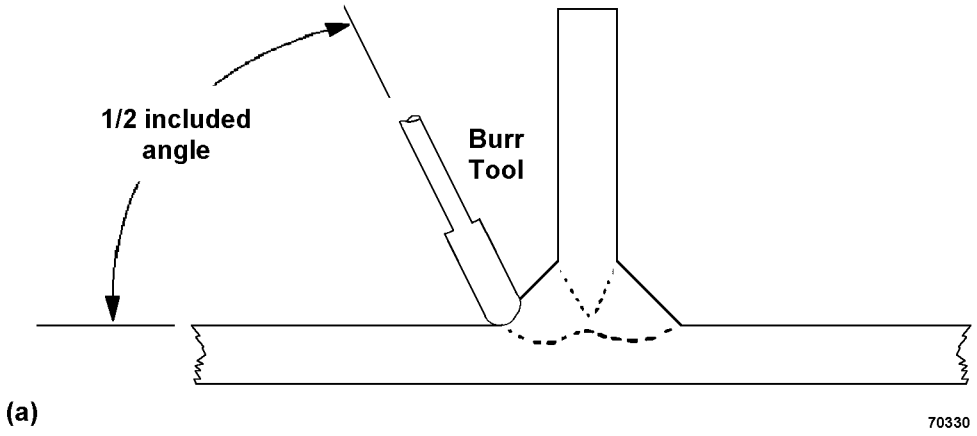


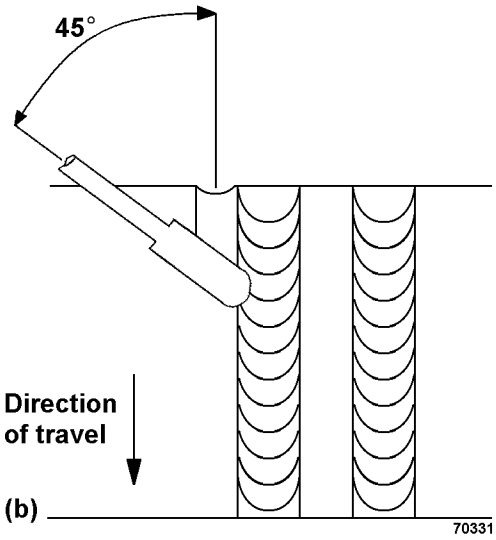


All Dimensions with 171/211m³ 224/276 yd³ Body

BODIES	Struck		2:1 Heap		Loading Height	
	M³	Yd³	M³	Yd³	M	Feet
Standard	171	224	211	276	7.06	23'2"







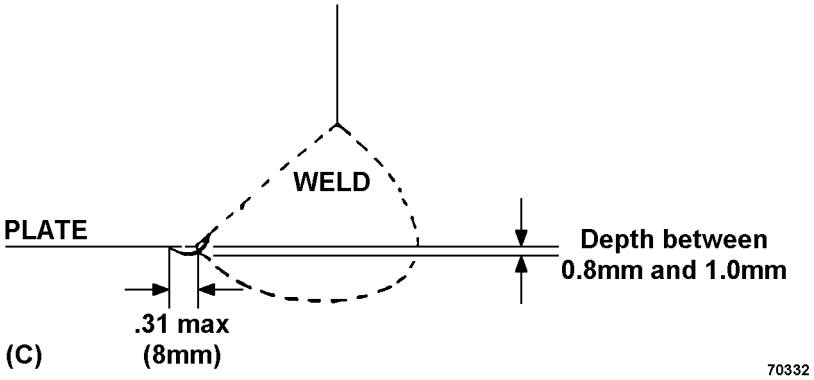


FIGURE 4-2. TOE GRINDING WITH A ROTARY BURR

⚠ IMPORTANT ⚠

To help prevent contamination that may lead to premature pump failures, flush the hydraulic system before the initial truck start-up.

17. Before the truck is started for the first time, the hydraulic system must be flushed. Refer to the following hydraulic system flushing procedure.

HYDRAULIC SYSTEM FLUSHING PROCEDURE

When a new truck is assembled and the engine is started for the very first time, the hydraulic system must be flushed immediately to remove contamination that may have been introduced during the field assembly process. DO NOT start the engine unless all flushing equipment is installed and ready for use. The flushing procedure will help eliminate harmful contamination that may lead to premature pump or valve failures. Starting the engine just one time without performing the flushing procedure may contaminate the hydraulic system.

Special hydraulic system flushing tools for the 930E truck have been released. Hoist system bypass blocks (PC3074) and steering system flushing hose (XB5777) must be on-site before or during field assembly, so when the truck is started for the first time, the hydraulic system can be flushed and any debris can be removed from the hydraulic system. Fitting assembly (XB7075) shown as (3, Figure 6-7) will also be required.

All flushing hoses must be rated to withstand 27 580 kPa (4,000 psi) pressure. The hoses must be 1 inch inside diameter and meet SAE 100R12 specifications.

Table 1: XB5777 HOSE ASSEMBLY

Part Number	Qty	Description
HA2185	1	Hose
WB0546	1	Fitting, Elbow - 45 Deg
WB0599	1	Fitting, Straight Adapter

⚠WARNING

Hydraulic fluid escaping under pressure can have sufficient force to enter a person's body by penetrating the skin and cause serious injury, and possibly death, if proper medical treatment by a physician familiar with this type of injury is not received immediately.

Before disconnecting pressure lines, removing fittings or replacing components in the hydraulic circuits, or installing test gauges, ALWAYS bleed down the steering and brake accumulators.

NOTE: The hoist cylinder bypass blocks should be saved for possible use later in case the hydraulic system needs to be flushed after a component failure.

1. If the tires are installed on the truck, chock the left and right rear wheels securely on both sides to prevent truck movement. If the truck is sitting on cribbing, ensure it is secure enough to allow safe operation of the engine and clearance for turning the front spindles lock to lock without risk of collapsing the cribbing.
2. Inspect all hydraulic hoses to ensure that they are properly routed and securely connected.
3. Connect a laptop PC to the interface module. Start the Interface Realtime Data Monitor program.
4. Ensure that both brake accumulators and both steering accumulators are properly precharged with nitrogen to 9 650 kPa (1,400 psi). Refer to the shop manual for the accumulator charging procedure.
5. Confirm that the steering pressure is released by turning the steering wheel. No steering movement should occur.
6. If any fault codes are displayed, troubleshoot the system and repair the problem before proceeding.

FIGURE 6-13.

6. Lift the LH diagonal beam into position and install the capscrews loosely. The weight of the beam is approximately 135 kg (298 lb).

   Refer to Figure 6-13.

NOTE: Do not tighten the cap screws until the deck and the cab are in place.

FIGURE 6-26.

28. Clean the mounts for the hydraulic tank.

29. Lift the tank into position. Refer to Figure 6-26. The weight of the hydraulic tank is approximately 590 kg (1,300 lb).
    a. Install the four mounting cap screws near the top of the tank. Tighten to **622 ± 62 N·m (459 ± 46 ft lb)**.
    b. Install the two mounting cap screws near the bottom of the tank. Tighten to **800 ± 80 N·m (590 ± 59 ft lb)**.

FIGURE 6-42.

56. Clean the tapered portion of the suspension rod and the bore of the spindle. Lubricate the two surfaces with multi purpose grease number 2 (5% molybdenum disulphide).

57. Lift the spindle/brake assembly into position. The weight of each spindle/brake assembly is approximately 4 803 kg (10,589 lb). Refer to Figure 6-42.

NOTE: A ratchet hoist may be used at the lower portion of the steering arm to the lifting hook to aid in leveling the assembly for easier mounting to the suspension.

FIGURE 6-52.

70. Lift the retarding grid into place on the RH deck. The weight of the grid is approximately 2 742 kg (6,045 lb). Install and tighten the eight cap screws to **465 ± 47 N·m (343 ± 34 ft lb)**.

71. Install the handrails on the RH deck. Lift the RH deck into position and loosely install the six cap screws. The weight of the deck/retarding grid assembly is approximately 3 830 kg (8,444 lb). Refer to Figure 6-52.

72. After all decking is in place, tighten the cap screws on each deck to **465 ± 47 N·m (343 ± 34 ft lb)**.

Parking Brake Installation

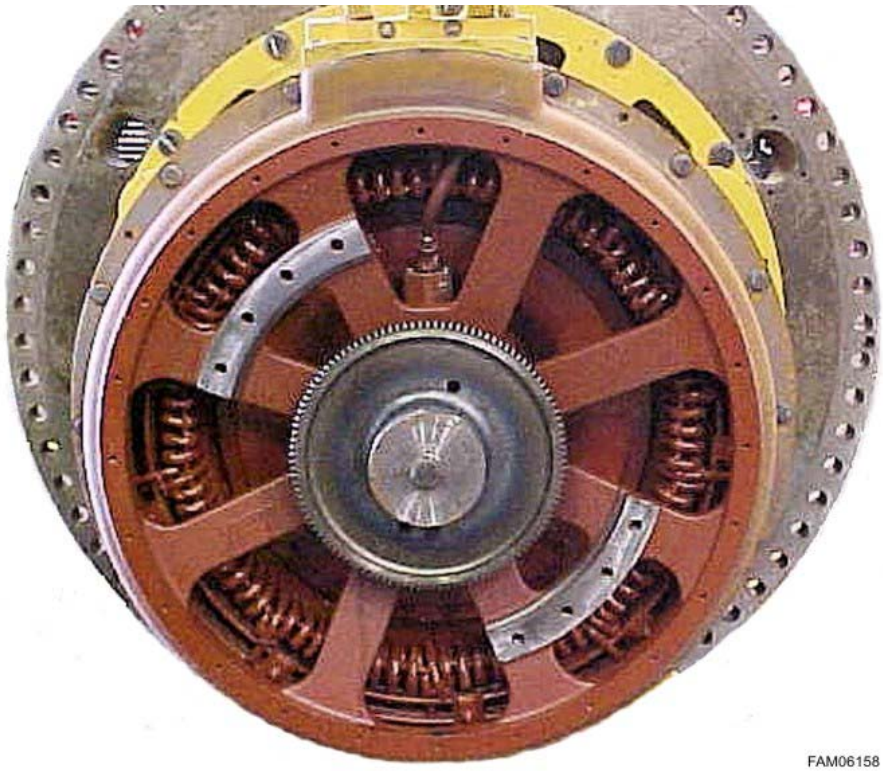


FIGURE 6-64.

84. Use a cleaner containing organic-based solvents, such as acetone, methanol or ethanol, to clean the rust preventive coating from the parking brake adapter teeth. Water-based cleaners, such as mild soaps and detergents, do not adequately remove the rust preventive coating.

85. Install the parking brake adapter, retainer plate, hardened flat washer and capscrew. Tighten the capscrew to **712 ± 72 N·m (525 ± 53 ft lb)**. Refer to Figure 6-64.

FIGURE 6-75.

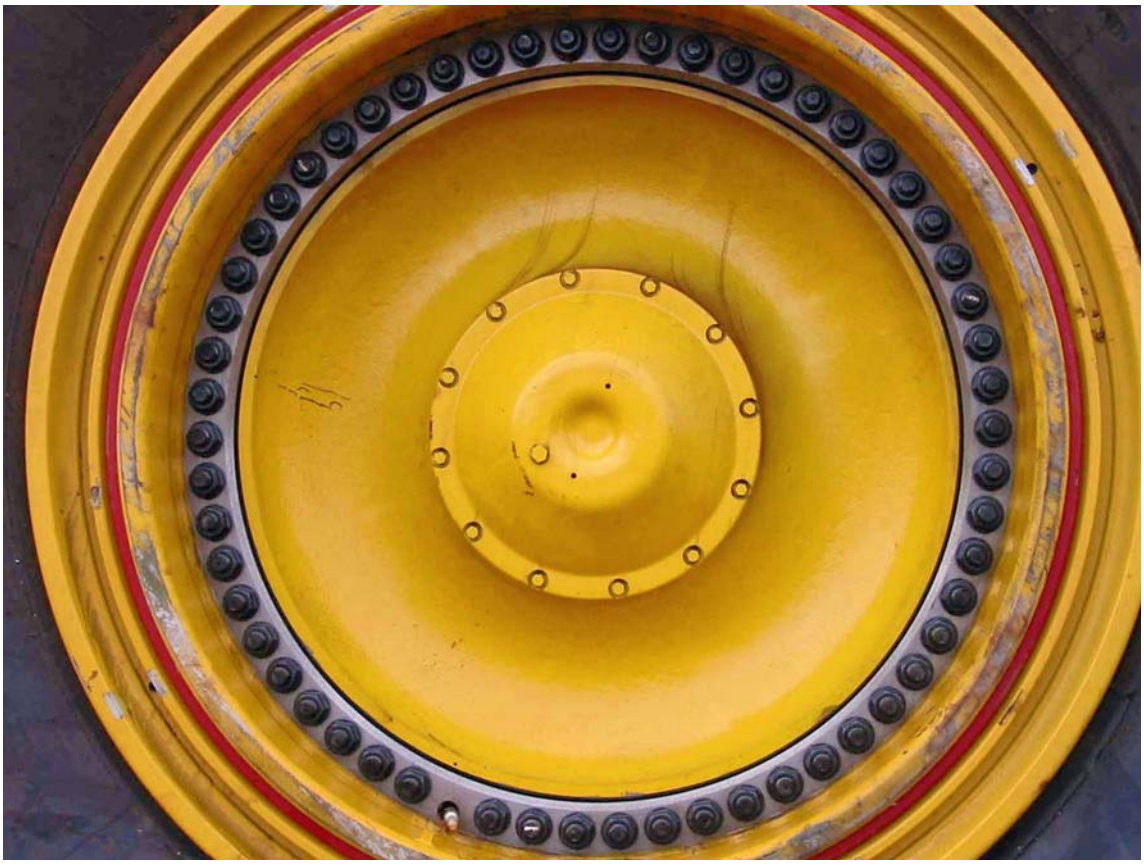


FIGURE 6-76.

NOTE: Figures 7-5 & 7-6 illustrate a domestic configuration with the canopy attached to the body halves. The canopy for international bodies is shipped as a separate piece. Do not attach the international canopy at this time

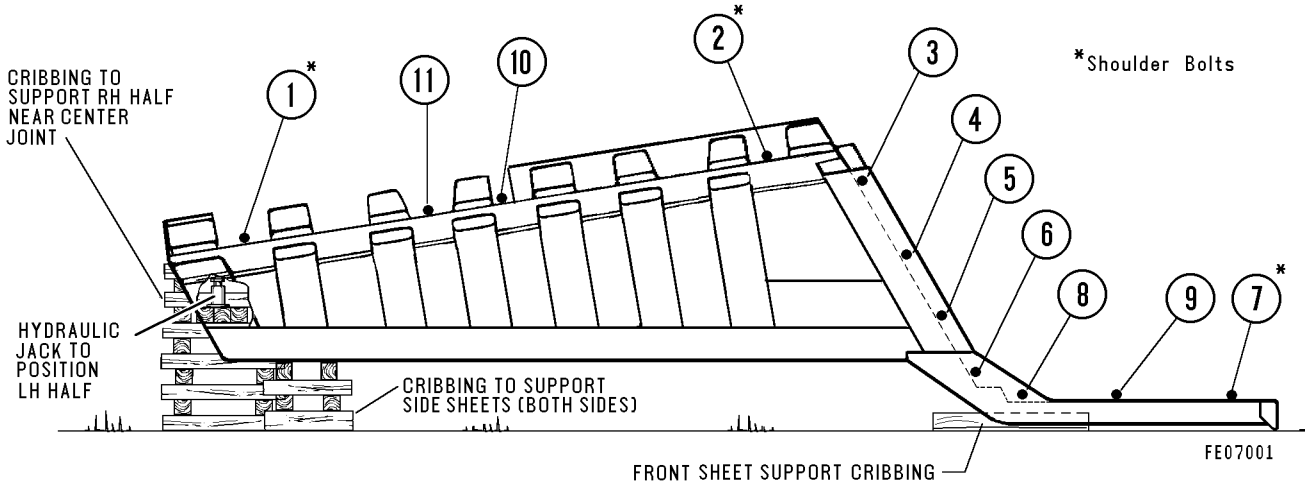


FIGURE 7-5. BODY ASSEMBLY HARDWARE INSTALLATION SEQUENCE

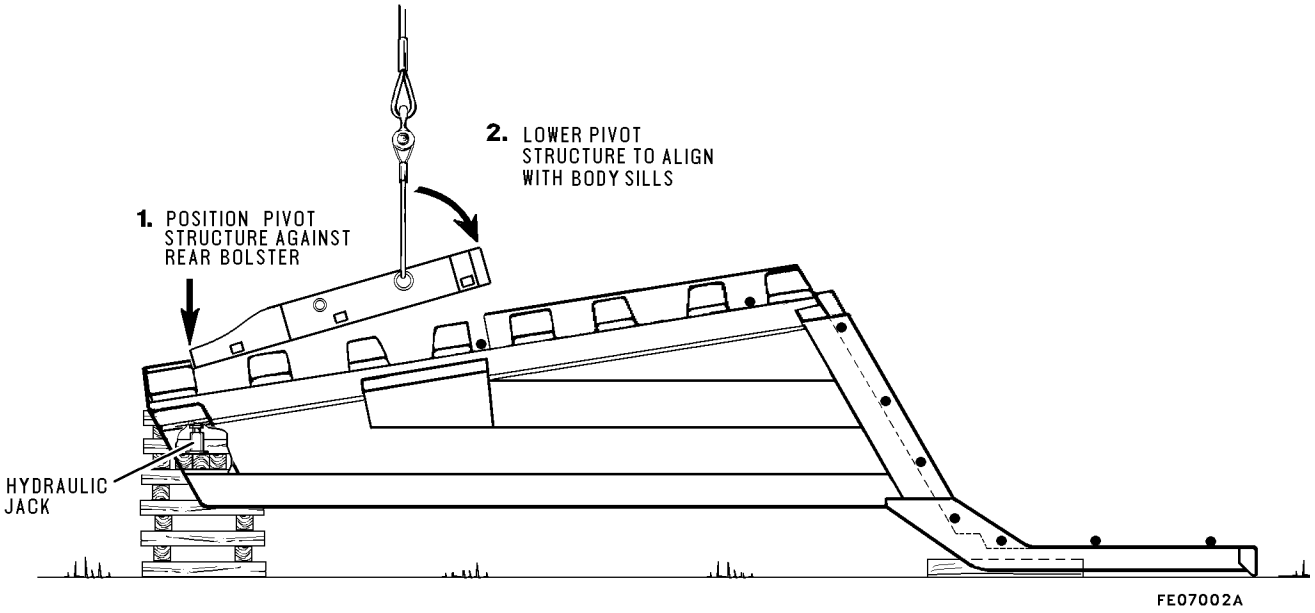


FIGURE 7-6. BODY PIVOT INSTALLATION

FIGURE 8-4.

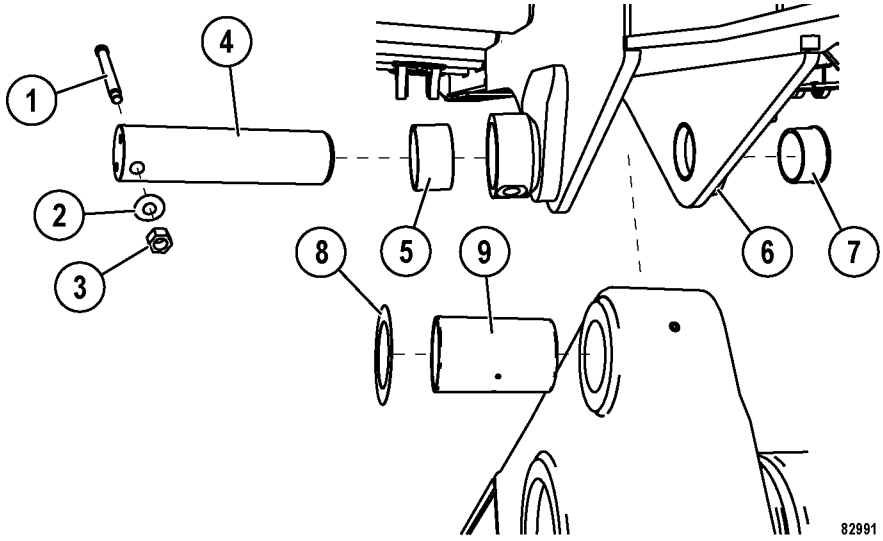


FIGURE 8-5. DUMP BODY PIVOT PIN

1. Shoulder Bolt
2. Flat Washer
3. Nut
4. Body Pivot Pin
5. Pivot Bushing
6. Body Pivot Ear
7. Pivot Bushing
8. Shim
9. Body Pivot Bushing

NOTES

FIGURE 8-30.

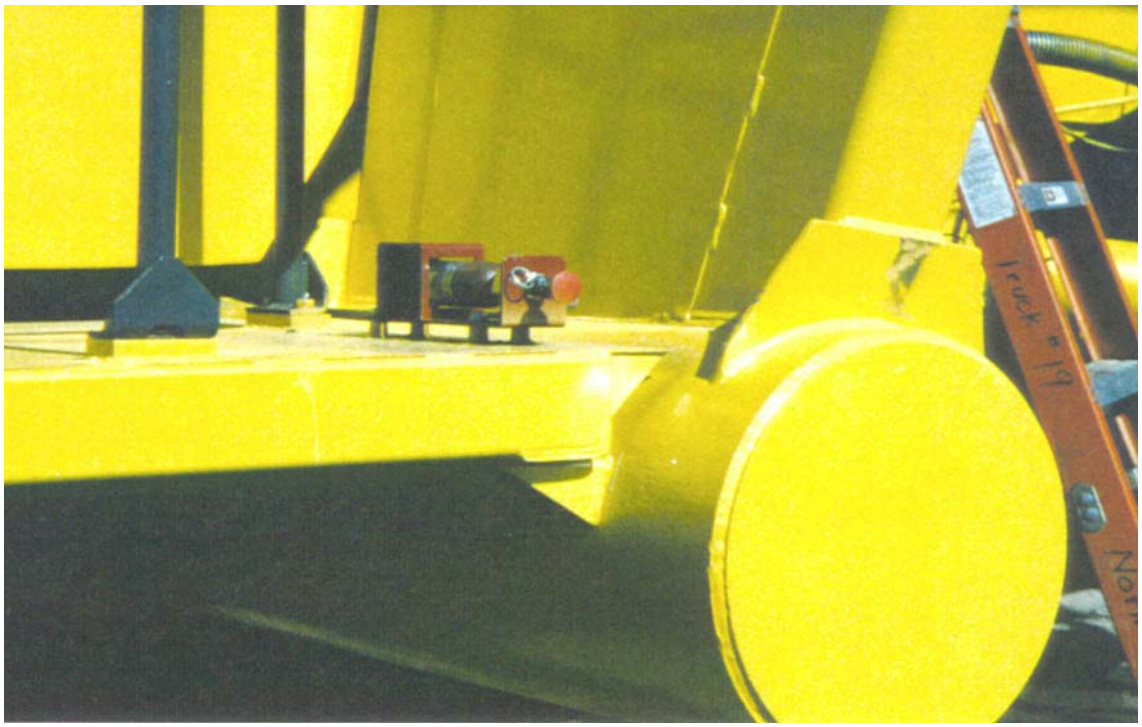


FIGURE 8-31.

25. Install the fire suppression system. Refer to Figures 8-30 and 8-31.

NOTE: This installation is normally performed by the fire system distributor.

SUSPENSION OILING AND CHARGING PROCEDURE

GENERAL

These procedures cover the oiling and charging of Hydrair® II suspensions on Komatsu 930E dump trucks.

Suspensions which have been properly charged will provide improved handling and ride characteristics while also extending the fatigue life of the truck frame and improving tire wear.

NOTE: Inflation pressures and exposed piston lengths are calculated for a normal truck gross vehicle weight (GVW). Additions to truck weight by adding body liners, tailgates, water tanks, etc. should be considered part of the payload. Keeping the truck GVW within the specification shown on the Grade/ Speed Retard chart in the operator cab will extend the service life of the truck main frame and allow the Hydrair II suspensions to produce a comfortable ride.

⚠WARNING

All Hydrair II suspensions are charged with compressed nitrogen gas with sufficient pressure to cause injury and/or damage if improperly handled. Follow all safety instructions, cautions, and warnings provided in the following procedures to prevent any accidents during oiling and charging.

Proper charging of Hydrair II suspensions requires that three basic conditions be established in the following order:

1. Oil level must be correct.
2. Suspension piston rod extension for nitrogen charging must be correct.
3. Nitrogen charge pressure must be correct.

For best results, Hydrair II suspensions should be charged in pairs (fronts together and rears together). If rear suspensions are to be charged, the front suspensions should be charged first.

NOTE: For longer life of suspension components, a friction modifier should be added to the suspension oil. See the Specifications Charts at the end of this section.

NOTE: Setup dimensions in the Specifications Charts must be maintained during oiling and charging procedures. However, after the truck has been operated, these dimensions may vary.

EQUIPMENT LIST

- Hydrair Charging Kit
- Jacks and/or Overhead Crane
- Support Blocks for:
  Oiling Height Dimensions (Front and Rear)
  Charging Height Dimensions (Front Only)
- Hydrair Oil (See Specifications Chart)
- Friction Modifier (See Specifications Chart)
- Dry Nitrogen (See Specifications Chart)

Installation of Charging Kit

Assemble the charging kit as shown in Figure 4-1 and attach it to a container of pure dry nitrogen (8).

1. Remove the protective covers and charging valve caps from the suspensions.
2. Turn "T" handles (1, Figure 4-1) of adapters (2) completely counterclockwise.

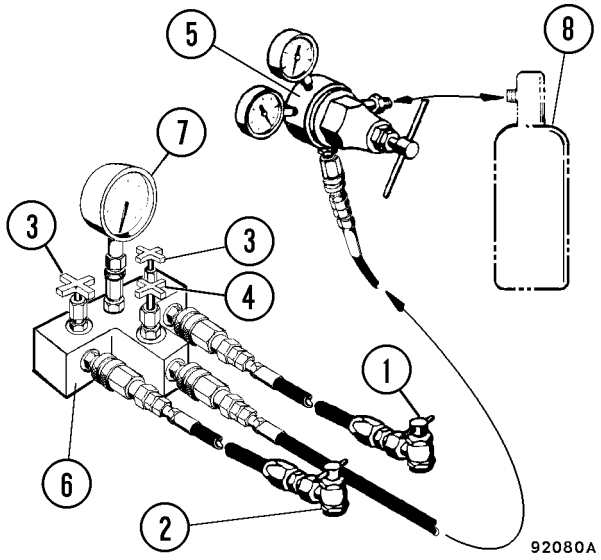


FIGURE 4-1. HYDRAIR CHARGING KIT

NOTE: The arrangement of parts may vary from the illustration depending on the kit part number.

1. “T” Handle Valve
2. Charging Valve Adapter
3. Manifold Outlet Valves (from gauge)
4. Inlet Valve (from regulator)
5. Regulator Valve (Nitrogen Pressure)
6. Manifold
7. Charging Pressure Gauge (Suspensions)
8. Dry Nitrogen Gas Container

NAME: Auto Lube Grease Procedure		MACHINE & MODEL: Electric Trucks					
WRITTEN BY:	DATE:						
B. Anderson	7-4-00						
CHECKED BY:	DATE:						
		2	Change Note TH	9/16/04	112014	BA	MM
M. McMullen	7-7-00	1	*Note some pumps, etc.	3/24/04	111518	BA	MM
APPROVED BY:	DATE:	0					
		DASH	DESCRIPTION OF CHANGE	DATE	ECN	BY	CK'D
		A SIZE	MICROFILM				

THE FOLLOWING PROCEDURE MUST BE DONE ON INITIAL START-UP FOR THE LINCOLN INDUSTRIAL ROTARY HYDRAULIC GREASE PUMP WITH ADJUSTABLE CONTROLS.

1. Check adjustment of pressure regular valve which should be set at 325 to 350 psi. (note this valve is parallel to pump motor and is suppose to be factory set @ 350 psi).

2. Flow control valve should be set so a cycle would take 18 seconds to complete. (note this valve is perpendicular to pump motor).

LINCOLN INDUSTRIAL ROTARY HYDRAULIC GREASE PUMP WITH FIXED PUMP CONTROLS NO ADJUSTMENT CAN BE MADE.

1. Observe gauge during cycle 325 psi minimum pressure should be obtained.

2. Flow control valve should be set so a cycle would take 16 to 20 seconds to complete.

THE FOLLOWING PROCEDURES MUST BE DONE IN ORDER TO REMOVE ANY TRAPPED AIR THAT IS IN THE LUBE SYSTEMS AND PROPERLY LUBE THE SPHERICAL BEARINGS.

1. On initial start up of the system.

2. When any parts or hoses are replaced or removed.

3. During the factory build of the truck (before the truck ships). This includes ship loose parts.

4. Prior to delivery of new units after field erection.

EJ4060-2

Checkout Procedure

Name Hydraulic System Checkout Procedure	Machine and Model 930E-4SE
Written by Bill Wood	Date 11-9-2007
Checked by Tim Nemeth	Date 11-12-07
Approved by M. Rabas	Date 11-13-07

DASH	DESCRIPTION OF CHANGE	APPR	DATE	ECO #	BY	CKD
0	Str. Asy. Gp. used on		NIR	905860		
Microfilm						

Torque, Fittings	4.05.007
Torque, C/S	4.05.082
Hydraulic Component Cleanliness Procedure	4.93.003 Standard Issuance

Refer to Hydraulic System Schematic when performing this Checkout Procedure.

Required Software

Interface Module Realtime Data Monitor software is required. It shall be:

a. used to view all faults and system status during this checkout procedure
b. downloaded by selecting "Download the Interface Module Realtime Monitor software" from www.kac-peoria.com/interfacemodule/

If pressure will not reach 3025 psi:

a. Confirm no bleed down related faults as seen on Interface Module Realtime Data Monitor have occurred. Stop engine. Refer to Precheckout Item 2. If no bleed down faults are found, proceed to step b below. Otherwise, locate and correct any bleed down faults that may be displayed, then return back to beginning of this step 19.
b. Refer to pump adjustment procedure in step 26, then return back to beginning of this step 19.

If pressure reaches 3025 psi:

a. The first time through this step 19 when 3025 psi is reached:

   i. Stop engine by leaving key switch on and using Engine Shutdown Switch on center console. Confirm steering accumulator bleed down does not occur and that no bleed down faults are generated. Refer to step 14.
   ii. Turn key switch off and confirm that steering bleed down begins. Confirm that bleed down completes normally within 90 seconds and that the bleed down Fault A236 “Steering Bleed Fault” (seen on Interface Realtime Data Monitor) is not active. Steering pressure at bleeddown manifold test port "TP3" will be 15 psi or less after successful bleed down. Refer to step 14. Continue to step c.

b. For all other times through this step 19, turn off key and allow steering accumulators to bleed down. Steering pressure at bleeddown manifold test port "TP3" will be 15 psi or less after successful bleed down. Refer to step 14.

c. Open needle valves in brake cabinet to allow brake accumulators to discharge. Close needle valves. Repeat this step 19 completely five times.

Note: This procedure <u>cannot</u> be combined with the flushing done in steps 15, 16, and 17. This flushing procedure must be performed after step 18 is completed.

Note: Do not steer or apply the brakes at any time during the accumulator flushing procedure. Steering flushing is done in step 20.

20. After completing steering accumulator and brake accumulator flushing, steering system must be flushed. Start truck, and allow accumulators to fully charge and

NAME: BRAKE SYSTEM CHECKOUT		MACHINE & MODEL: 930E-4 units 601 and up.
WRITTEN BY: TIM NENNICH	DATE: 23-OCT-07	
CHECKED BY:	DATE: 2/13/08	
APPROVED BY:	DATE: 2/13/08	

0 / DASH / A SIZE	DESCRIPTION OF CHANGE / MICROFILM	DATE	ECN	BY	CK'D

Necessary Equipment:

1. Checkout procedure and hydraulic system schematic.
2. Accumulator charging outfit with good gauges and either K type bottles of dry nitrogen or T type bottles with a gas intensifier.
3. Clear plastic hose and bucket for bleeding brakes or simulators of air.
4. If truck is only partially assembled and this checkout is to be done without brakes installed, brake simulators are required in order to simulate the brake volume.
5. At least 3 calibrated gauges with quick-disconnect couplings, capable of measuring up to 3000 psi.

Assumptions:

1. All components used within the brake system are to specification.
2. Any parts that do not function as described will be replaced or adjusted. (Notify Quality Control Department for problems or to obtain adjusting procedures for individual components.
3. The hydraulic source for the brake system (the steering system) is in proper operation and the compensator has been adjusted.

Note: Refer to steering and hoist check-out procedures and specifications.

Initial System Set Up:

1. Install pressure measuring instruments at:
   a. Test Port BR (Brake Cabinet)
   b. Test Port BF (Brake Cabinet)
   c. Test Port LAP1 (Brake Manifold)

2. Open each brake accumulator bleed down valve and precharge brake accumulators to 1400 psi. Allow gas temperature to approach ambient temperature before completing precharge process.

EM7346 - 0

Brake Check Light

The amber light is used to indicate when the truck is in the brake test mode. When illuminated, a brake test is ready. When flashing, the brake test is at the validation point, or the retard system test is finished.

Description

The operator can choose which brake test to perform and will set the truck controls based on the settings in Table 1. The drive system will detect the position of the directional control lever, and will prepare for the appropriate test. The operator will then press the brake test switch.

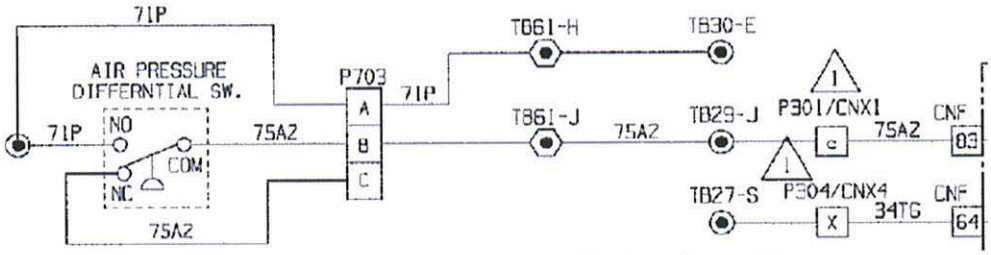
If the brake check light is illuminated solid after pressing the brake test switch, the system is in brake test mode and is ready for the chosen test to be initiated by the operator. After testing, the operator will then determine if the truck passed the brake tests, and if it is safe for operation.

If the brake check light does not illuminate immediately after pressing the brake test switch, there is most likely a problem with the setup. Refer to the setup conditions and take action to prepare the truck for a brake test.

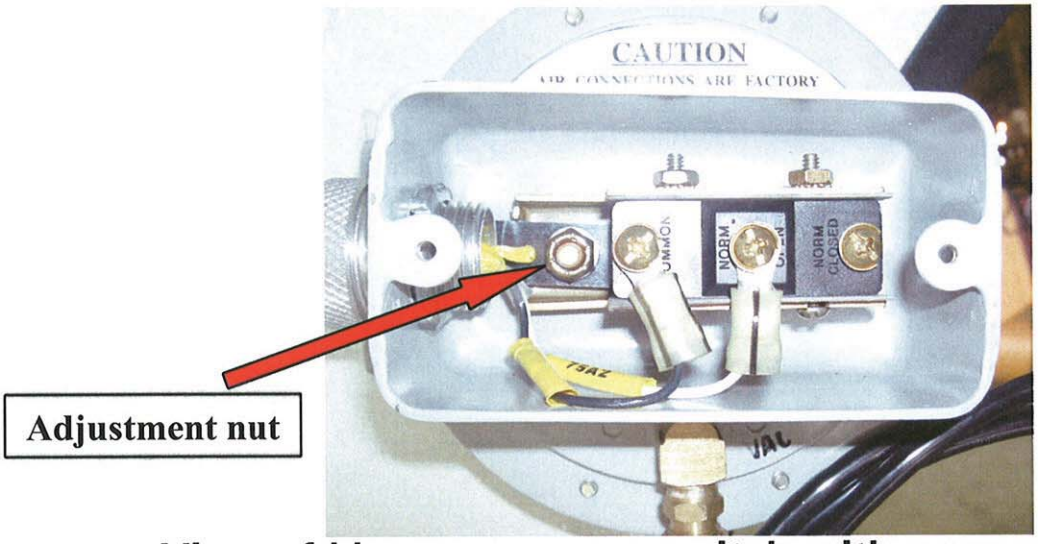
If there is a problem with the truck setup, the DID panel will display the problem.

For example if the engine is off:

ERROR Entering Brake Test
Engine not running

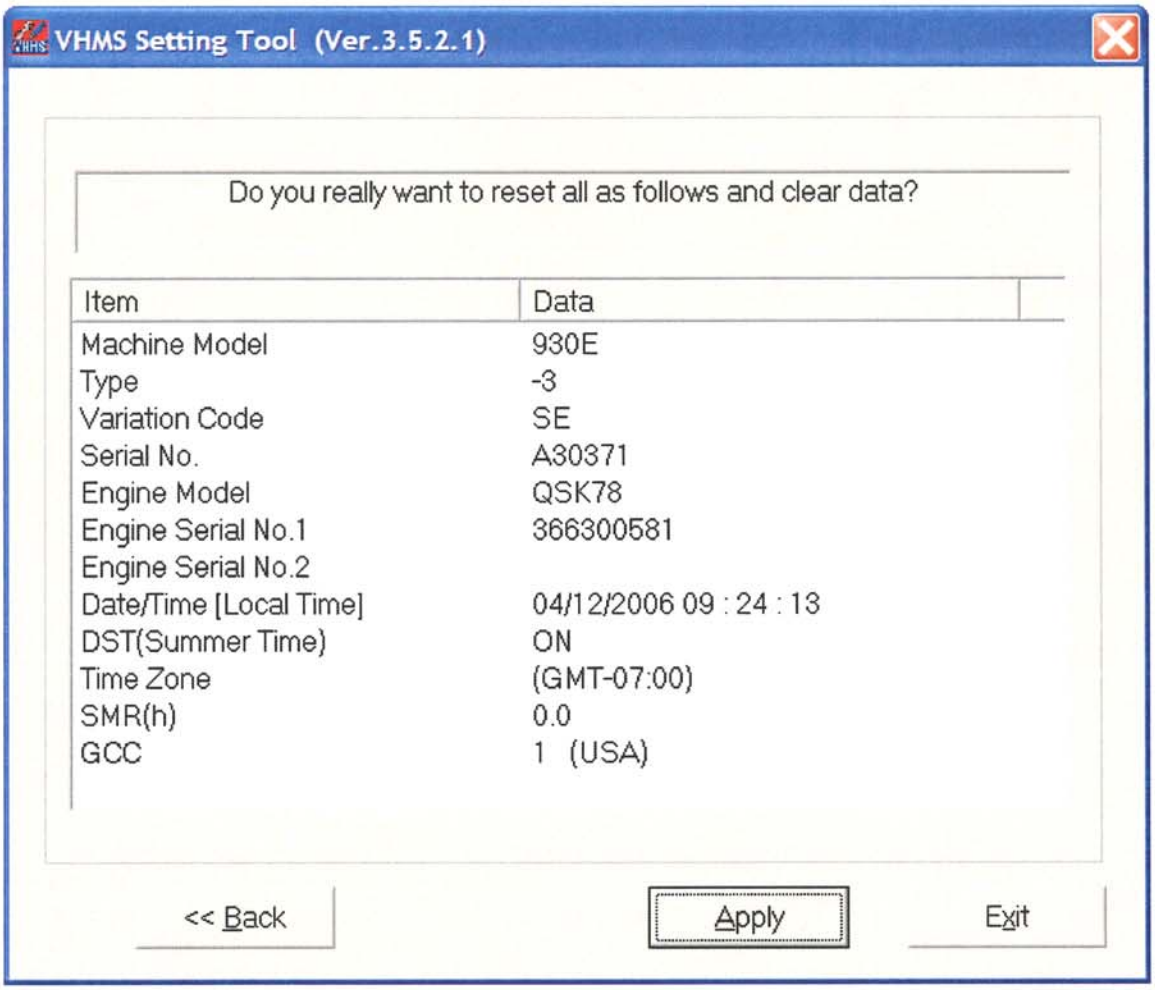


Blower pressure switch circuit



View of blower pressure switch with cover removed showing the adjustment nut.

13. Review the entered information before applying the changes. Click "Apply".



NAME:	PLM3 Checkout Proc	MACHINE & MODEL	All Electric Trucks
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
3	Changed item 40 to exclude 960-GE trucks	22 Oct 08	116632	KJB	GGH
2	Removed transition to dumping at body-up check	11 Jan 02	n/a	DTL	
1	Updated check sheet and added software version check	09 May 01	109072	DTL	GGH
0	GROUP USED ON EH6794				

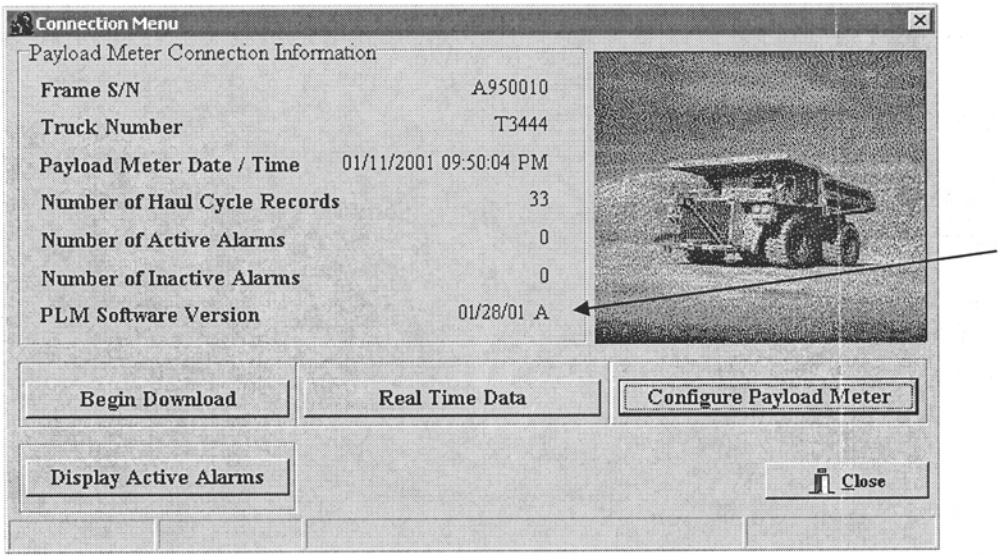
MICROFILM

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.kac-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.

2 - Spare
3 - 17FB174 PSC CPU Card
4 - Spare
5 - 17FB104 PSC I/O Digital Card
6 - 17FB173 PSC I/O Analog Card
TCI – Truck Control Interface
7 - 17FB174 TCI CPU Card
8 - 17FB160 TCI I/O Analog Card
9 - 17FB104 System I/O Digital Card
10 - Spare
Inverters
11 - 17FB179 Inverter 1 CPU I/O Card
12 - 17FB179 Inverter 2 CPU I/O Card

13 – FODC2 Fiber Optic Card

B. Control Groups 498D2 & E1

1. 17FL320D1 (PSC) Control Panel contains cards a) through f)
   17FL320E1 (PSC) Control Panel Contains cards a) through d) and g)
   a. 17FB127 Power Supply Card
   b. 17FB147 System CPU Card
   c. 17FB104 System I/O Digital Card
   d. 17FB143 System I/O Analog Card
   e. 17FB138 Invert 1 and 2 CPU Card (Qty. 2)
   f. 17FB134 Invert 1 and 2 I/O Card (Qty. 2)
   g. 17FB172 Invert 1 and 2 CPU and I/O Card (Qty. 2)

2. Truck Control Interface Panel (TCI) is located in the auxiliary control box. The 17FL349 panel contains cards a through d. The 17FL373 panel contains cards b. through d.
   a. 17FB127 Power Supply Card
   b. 17FB144 System CPU Card
   c. 17FB160 System I/O Analog Card
   d. 17FB104 System I/O Digital Card

b. Connect a jumper wire from the DC (+) link bus to ground.
c. Connect the leads of a 500 volt Megger from a contact on the GF contactor to ground. The Megger reading should be 15 megohms or greater (typical value is 20+ megohms).

F. Restore Circuits

1. Remove the jumper wire from the DC+ link buss to ground (1 total. Rem
2. ove the jumper wire between DC+ and DC- link busses (1 total.
3. Remove the jumper wires on VAM3 (3 total) and reconnect output plug.
4. Remove the jumper wires on the AFSE panel (4 total).

5. Re-insert all panel cards and close and latch the panel door.

6. Re-connect all wires on VAM1, VAM2 and VAM4 and reconnect the output plugs.
7. Re-connect all wires on GNDB ground block.

8. Re-connect GDPC1 and GDPC2 output plugs.

9. Re-connect FAULTP02 wire to GRR9 resistor.

10. Re-insert all eight 17FL386 panel cards and close and latch the panel door.
11. Reconnect the CCLR1 and CCLR2 connectors.

12. **DO NOT** re-connect the PS Power Supply CN1 connector at this time.

G. GRR wiring. (On older truck models the GRR circuitry may be located in a different location in the control group.

5. Check the five minute delay key switch off system.
   a. Activate the 5 minute delay timer by putting switch on, then to the momentary position, while turning the key switch off. Verify that that the 712 circuit remains 24V DC for approximately 5 minutes. Turn the 5 minute delay timer switch to the off position.
   b. Turn the Key switch to the on position. Activate the 5 minute delay timer by putting switch on, then to the momentary position, while turning the key switch off. Verify that that the 712 circuit remains 24V DC. Turn the 5 minute timer switch to the off position. The 712 circuit should change from 24V DC to OV DC as soon as the 5 minute timer switch is turned to the off position. NOTE: The Green LED light stays on when the Amber LED turns on for this switch.

VII. Creating the GE/OEM Configuration File

The GE base config file can be downloaded "as is" because pedal and gage calibration are now performed using the DID panel. Also, the truck ID number can also be input through the DID panel. Therefore, no editing is needed.

VIII. Saving Existing Truck Data

If the truck has been previously programmed and it is desired to save the truck's event and statistical data, perform the following for both the TCI and PSC:

1. Connect the serial communication cable from the PTU to the TCI or PSC port which is located behind the center consol on the bottom or on back wall.
2. Turn the Park Brake Switch on or put selector switch to the park position.
3. Turn on the (CPS) Control Power Switch and cab key switch.
4. START > Programs > GEOHVPTU_2.0 > AC TOOLS > wPTU AC v21.01 or v20.01 (Depending on version to be downloaded.).
5. Mode – Normal.
6. Password - ok75e.
7. Click on "LOGIN to to wPTU Toolbox".

B. PSC Output Checks.

1. Start>Programs>GEOHVPTU_2.0>AC TOOLS>wPTU AC v21.01 or v20.01 (Depending on version to be downloaded.).
2. Mode – Normal.
3. Password - ok75e.
4. Click on "LOGIN to wPTU Toolbox".
5. Under "Engine Stopped Task" heading, double click "PSC Manual Test". The screen will look very similar to the PSC Real Time Data screen. Clicking on buttons in "Toggle Digital Outputs" field will toggle outputs on and off.
6. RP1 – verify RP1 picks up and that RP1FB is highlighted.

Note: At this time, it is desirable to observe contacts on RP1 through GF while they are closed to insure that tips are mating properly. To do this, the arc shoots must be removed. These contactors are interlocked so that they will not close with the arc shoots removed. The interlock is located at the back of the right side arc shoot slot. For testing, the interlock can be pushed in to allow contactor closure with the arc shoot removed.

6. RP2 – verify RP2 picks up and that RP2FB is highlighted.

NOTE: Some truck models are not equipped with RP3, skip to 8.

7. RP3 – verify RP3 picks up and that RP3FB is highlighted.

8. GFR – verify that the GFR relay picks up. Note: no feedback exists.

9. GF – verify that the GF contactor picks up and that GFFB is highlighted (the GF cutout switch must be in the NORMAL (up) position to check this digital output).

10. GF Cutout switch safety check.
    a. Move GF Cutout switch to the cut out position (down).
    b. GF - verify that the GF contactor does not pick up and that GFFB is not highlighted.

h. PSCNOTRDY – Propel System not ready lighted in overhead display (column 6, row 3.).
i. RESTLT – 'propel sys at rest' light in overhead display (column 6 row 2).
j. REDUCELT – 'propel sys reduced level' light in overhead display (column 6, row 4).
k. RTRDCON – 'retard at reduced level' light in overhead display (column 6, row 5).
l. BATTCHRGR-Battery charger system failure light. (column 5, row 5). On VHMS Truck this function is controlled by the Interface Module. Use the VHMS/Interface Module checkout to fully test this function.
m. ENGSPDSET – Not tested or used at this time (low side driver turns on at engine speed of 1700RPM, programmable).
n. REVERSELT – turns on backup horn and backup lights.
o. RETARDXLT – retard light on top of cab and back of truck.
p. RETARDLT – 'dynamic retard light' in the overhead display (column 3, row 4).
q. TEMPWARN – 'propel sys temp caution' light in overhead display (column 5, row 3).
r. PSCWARNLT – 'propel sys caution' light in overhead display light (column 5, row 2).
s. HYDBHOTLT – Brake sys temp high (column 5, row 4. Some models this light is controlled by VHMS or AID Module, not GE controlled and can not be checked here. Use the VHMS/Interface Module checkout to fully test this function.

D. Engine cranking – **before checking engine crank signal, turn the park brake switch to the on position or put selector switch to the park position. Verify that: ((MTU – wires 21SS and 21SR are removed from the starter) or (DDC & QSK equipped trucks)) wires 21B are removed from the starter solenoids (On new truck models, the start solenoid relay is in the battery control box on front of truck.). <u>To check the following on pre-lube trucks, engine oil must be at the proper level.</u>**

E. GDPC2 CB2

1. Close circuit breaker CB2 on GDPC2 located behind the right control cabinet door.
2. with an analog meter check for 90 to 100 volts AC between the pins on the P22A+ round connector removed in step A.
3. Open circuit breaker CB2, reconnect the P22A+ connector, and then close circuit breaker CB2.
4. Carefully remove the grey plug on the top of each phase module for inverter #22 (all P22 phase modules). Without looking directly into the plug on each phase module, verify that a red light is present. **CAUTION: Never look directly into the fiber optic light. Eye damage could result.** Re-insert the grey plug.

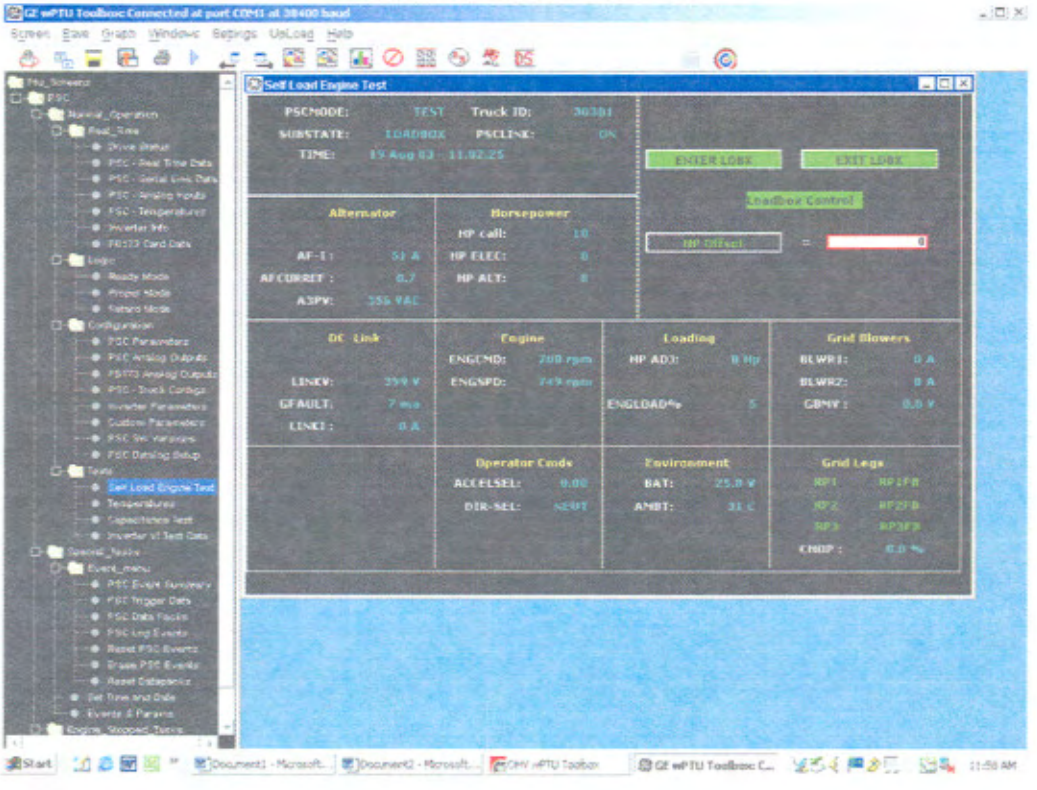
XVII Load Testing

A. Pre-Load Checks.

1. Inspect grid box for proper connections. Insure blower motor brushes are OK (springs not clamped on pigtails, pigtail connections are tight, etc) and blower motors can rotate freely.
2. Remove any paper from the alternator slip rings. Insure alternator brushes are OK (springs not clamped on pigtails, pigtail connections are tight, etc.).
3. Insure all tape is removed from contactor and control cabinet boxes For proper air flow.
4. Insure the wheel motor cables are properly insulated in the axle box, wheels chocked, park brake switch on.

9. Verify values are similar to the example below:

Load Test Initiated



10. With the selector switch in neutral, depress the acceleration pedal to just pick up contactor RP1. This should occur at around 1150 RPM engine speed.

a. Check for air flow from the grid blowers (Note: air and vents will be hot). Hot air should be felt from both front sections of the grid.

b. Check for air flow out of the rectifier air exhausts on the back of the control cabinet.

c. Check that BLWR1 and 2 currents are balanced but opposite in polarity.

a. Start the engine **(Always activate horn to warn of impending engine start).**
b. With the key switch, control power switch on and engine running, measure circuits wires "68", "68A" and "68T". The signals will be 24VDC.
c. When the lube pressure rises above 2500psi the circuit "68T" should change to 0VDC. The test switch (If installed.) located beside the lube canister can be operated or jumper circuit "68" to circuit 712A, or activate the test switch until the pressure exceeds the 2500psi cut out point and the circuit "68T' changes value to 0VDC.
d. Verify that the Low Lincoln Lube Pressure light has not turned on.
e. Remove the circuit "68P" wire from the rear axle pressure switch.
f. The Low Lincoln Lube Pressure Light in the overhead should turn on and latch after the 60 second time period.
g. Remove all jumpers, and restore circuits.

XV. Shut down the truck.

XVI. Record all data on a permanent truck record.

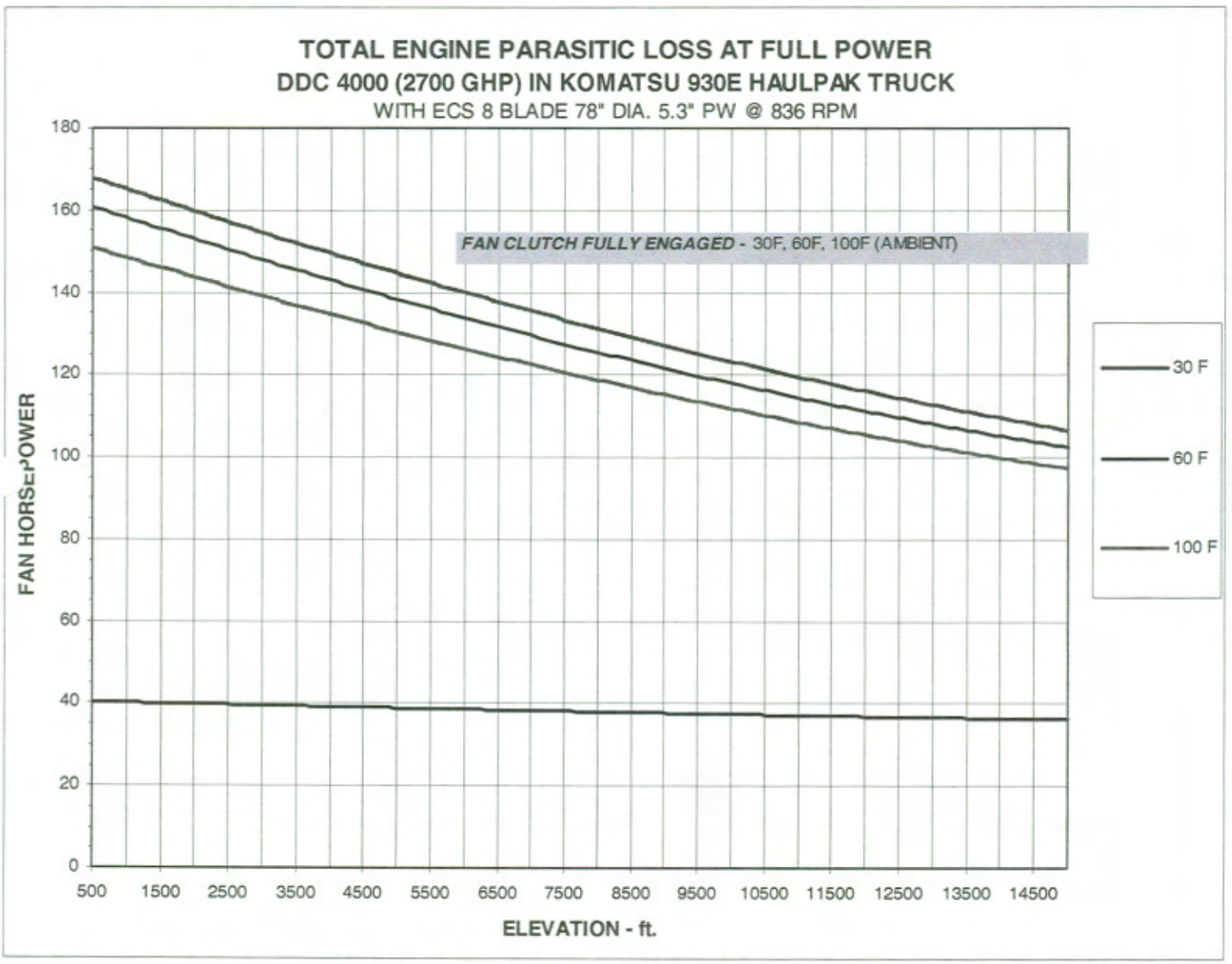
APPENDEX

I. Programming with Procomm 2.01

A. TCI

1. c:\>cd\pcplus {enter}
2. c:\pcplus>pcplus {enter}
3. Depress any key
4. Depress the tab key and turn on the Control Power Switch (CPS)
5. Release the tab key.
6. =>ef {enter}

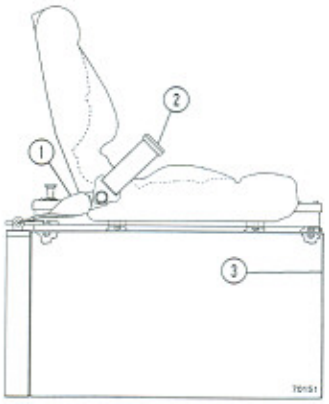
2. DDEC Engine Equipped Truck. Pick off the chart parasitic loss for truck



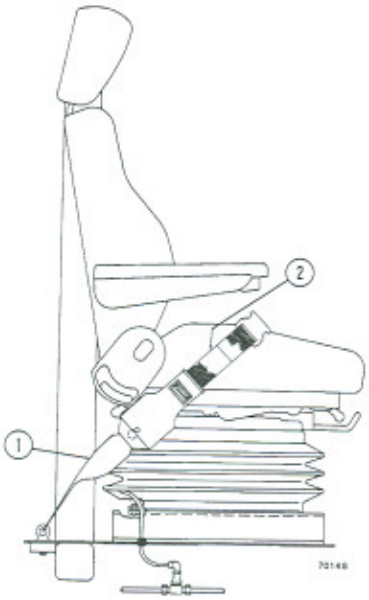
location and complete step #3. (i.e. The parasitic loss for the Peoria manufacturing shop would be 161HP.)

3. Use the Parasitic Loss from the engine peculiar Chart and add to it the power delivered to the GE Drive System to get total Horse Power delivered to the truck by the paticular engine. Then compare that to the gross horse power and RPM allowed with the tolerances from the steps 1 & 2 on page 73.

530M / HD1500-5, 730E, 830E & 930E
PASSENGER SEAT INSTALLATION
1. Tether Belt 2. Seat Belt 3. Components Base
EARLIER MODELS
530M / HD1500-5. 730E. 830E & 930E



TYPICAL TETHER/SEAT BELT INSTALLATION
1. Tether Belt 2. Seat Belt
OPERATOR SEAT ON TRUCKS WITH OR WITHOUT AIR



OPERATOR SEAT INSTALLATION
530M / HD1500-5, 730E, 830E & 930E
BOTH MECHANICAL AND
INTERNAL COMPRESSOR STYLE

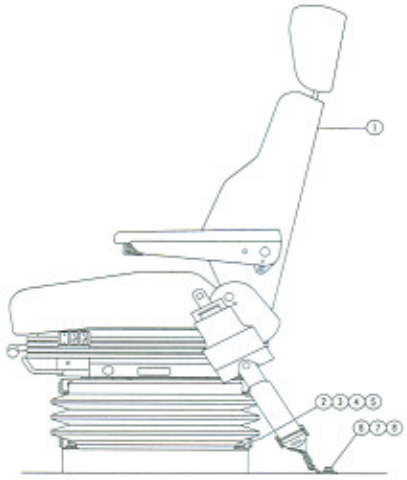
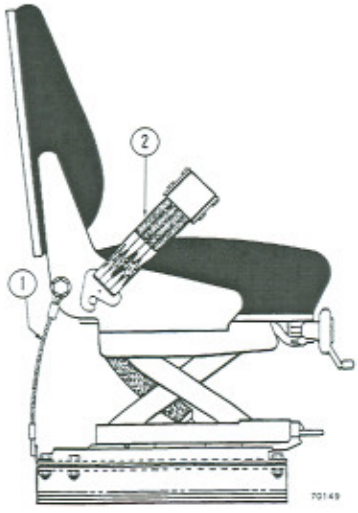


FIG. 40629
OPERATOR'S SEAT

TYPICAL SEAT INSTALLATION WITH INTEGRAL TETHER
1. Tether Cable 2. Seat Belt
EARLY MECHANICAL SEAT W/O EXTERNAL TETHERS



Function Description	Expected Result	Result (OK/Fail)	Comments

Completed By: _____ **Date:** _____

TABLE 12.
Common Conversion Multipliers
English to Metric

To Convert From	To	Multiply By
inch (in.)	millimeter (mm)	25.40
inch (in.)	centimeter (cm)	2.54
foot (ft)	meter (m)	0.3048
yard (yd)	meter (m)	0.914
mile (mi)	kilometer (km)	1.61
square inch ($in.^2$)	square centimeters (cm^2)	6.45
square feet ($ft^{2)}$	square centimeters (cm^2)	929
cubic inches ($in.^3$)	cubic centimeters (cm^3)	16.39
cubic inches ($in.^3$)	liters (l)	0.016
cubic feet (ft^3)	cubic meters (m^3)	0.028
cubic feet ($ft.^3$)	liters (l)	28.3
ounce (oz)	kilogram (kg)	0.028
fluid ounce (fl oz)	milliliter (ml)	29.573
pound (lb)	kilogram (kg)	0.454
pound (lb)	Newton (N)	4.448
inch pounds (in. lb)	Newton meters (N·m)	0.113
foot pounds (ft lb)	Newton meters (N·m)	1.356
foot pounds (ft lb)	kilogram meters (kg·m)	0.138
kilogram meters (kg·m)	Newton meters (N·m)	9.807
pounds/square inch (psi)	kilopascals (kPa)	6.895
pounds/square inch (psi)	megapascals (MPa)	0.007
pounds/square inch (psi)	kilograms/square centimeter (kg/cm^2)	0.0704
short ton (tn)	kilogram (kg)	907.2
short ton (tn)	metric ton (t)	0.0907
quart (qt)	liters (l)	0.946
gallon (gal)	liters (l)	3.785
horsepower (hp)	Watts (w)	745.7
horsepower (hp)	kilowatts (kw)	0.745