

# PARTS & SERVICE NEWS

REF NO.	AA03055C
DATE	Dec. 4, 2003

*This Parts & Service News supercedes AA03055B dated May 30, 2003 which should be discarded.*

**SUBJECT:** TRANSMISSION SHIFT TIME LAG TOO LONG

**PURPOSE:** Provide field instruction for data collecting and transmission upgrade.

**APPLICATION:** WA380-5L Wheel Loader S/N A52001 thru A52063  
 WA450-5L Wheel Loader S/N A36001 thru A36082  
 WA480-5L Wheel Loader S/N A37001 thru A37035

**NOTE:** All WA400-5L's were updated prior to shipment

**FAILURE CODE:** 15S0NG

**DESCRIPTION:** Replace with updated parts, all of the transmission's electronic control modulation valves (ECMV) and the transmission controller to improve the machine performance

**Parts Required:**

Item	Qty.	Description	P/N	Remarks
1	*	ECMV Valve	714-12-25500	(*) 5 required with machines having standard transmissions without T/C lock-up 7 required on machines with T/C lock-up.
2	28	O-ring	07000-72015	
3	7	O-ring	07000-71007	
4	1	Controller	7523-32-2009	

**SHOP MANUAL REFERENCES:**

CEBM009702 (WA380-5L) Pgs. 10-39 to 10-51, 10-216 to 10-251, 20-203 and 20-204, 20-216 and 20-217, 20-221 thru 20-225

CEBM009603 (WA450/480-5L) Pgs. 10-40 thru 10-52, 10-248 thru 10-250, 20-203 and 20-204, 20-217 and 20-218, 20-222 thru 20-226

1. Measuring transmission shift time-lag.
  - A. Prepare machine for measurement of clutch filling time.
    - i. Start the engine and run the machine to reach normal temperature of operation. The ECMVs oil temperature must be within 55° ~ 70° C (131° ~ 158° F). Once done, ensure the machine is stopped, and follow these next steps:
      - Keep engine running and the brakes engaged
      - The transmission shift mode switch must be in manual.
      - Place the machine F-R lever to NEUTRAL position (N).
      - The transmission cut off must be turned OFF.
      - The engine "Power Mode" must be turned ON.
    - ii. Follow the steps below, referring to the charts in Shop Manual ► "SPECIAL FUNCTIONS OF MACHINE MONITOR " ► "FLOW OF MODES AND FUNCTIONS" (WA380 pages 20-203 and 20-204)(WA450/480 pages 20-203 and 20-204).
      - Follow the "PROCEDURE FOR SWITCHING TO SERVICE MODE 1 SCREEN DISPLAY" to get access to the service mode 1 menu, as per the shop manual (WA380 pages 20-216 and 20-217)(WA450/480 pages 20-217 and 20-218).
      - On monitor panel, select the 13th option "REAL-TIME MONITOR" to access the machine data monitoring functions.
      - Once in "REAL-TIME" mode, select the 5th option "2 ITEMS" to access the monitoring code input section.
  - B. Take measurement of clutch filling time.  
 Input as explained in the next steps the corresponding monitoring codes, and display the results to collect the data. For more details, refer to the Shop manual (WA380 page 20-223)(WA450/480 page 20-224).

**Remark**

*Keep pushing the service brakes at all time. Parking brakes **must not** be engaged!*

- i. Measurement of the F clutch filling time:
  - Input the monitoring code 1 "41500" (torque converter oil temperature).
  - Input the monitoring code 2 "41808" (F clutch fill time).
  - Place the speed lever to 2nd speed.
  - Push the gas pedal to raise engine RPM from low idle (750 ~ rpm) to high idle (~2200 rpm).

**Remark**

*Keep high idle for about 5 seconds.*

- Release the gas pedal and bring the engine RPM back to low idle.
  - Place the machine F-R lever to FORWARD position (F).
  - Finally, read the data on the monitor screen, and write them in the corresponding cells of the last page table in the current P&SN.
- ii. Measurement of the R clutch filling time:
    - The monitoring code 1 still the same.
    - Input the monitoring code 2 "41806" (R clutch fill time).
    - For next steps, follow the same method as for the F clutch.

- iii. Measurement of 1st clutch filling time.
- The monitoring code 1 still the same.
  - Input the monitoring code 2 "41802" (1st clutch fill time).
  - The measuring method for this clutch does not need to speed up the engine. Only keep the low idle and shift the speed lever from 2nd speed to 1st.
  - Read the data on the monitor screen, and write them in the corresponding cells of the last page table in the current P&SN.
- iv. Measurement of 2nd clutch filling time.
- The monitoring code 1 still the same.
  - Input the monitoring code 2 "41803" (2nd clutch fill time).
  - The measuring method for this clutch does not need to speed up the engine. Only keep the low idle and now shift the speed lever from 1st speed to 2nd.
  - Then read the data on the monitor.
- v. Measurement of 3rd clutch filling time.
- The monitoring code 1 still the same.
  - Input the monitoring code 2 "41804" (3rd clutch fill time).
  - The measuring method for this clutch does not need to speed up the engine. Only keep the low idle and now shift the speed lever from 2nd speed to 3rd.
  - Then read the data on the monitor.
- vi. Measurement of 4th clutch filling time.
- The monitoring code 1 still the same.
  - Input the monitoring code 2 "41805" (4th clutch fill time).
  - The measuring method for this clutch does not need to speed up the engine. Only keep the low idle and now shift the speed lever from 3rd speed to 4th.
  - Then read the data on the monitor (refer to table 1 for help).

Refer to this table for monitoring code VS displayed results (ref: WA380 pg. 20-225, WA450/480 pg. 20-226)

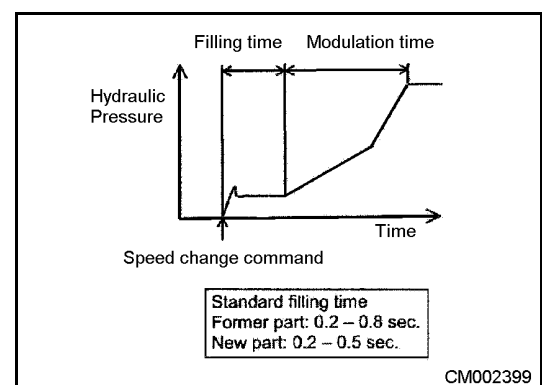
Monitoring codes	Data display range	Data units
41500	24 ~ 131	°C
41802, 41803, 41804, 41805, 41806, 41808	0 ~ 2550	msec

Table 1

## 2. Replacing the ECMVs on transmission.

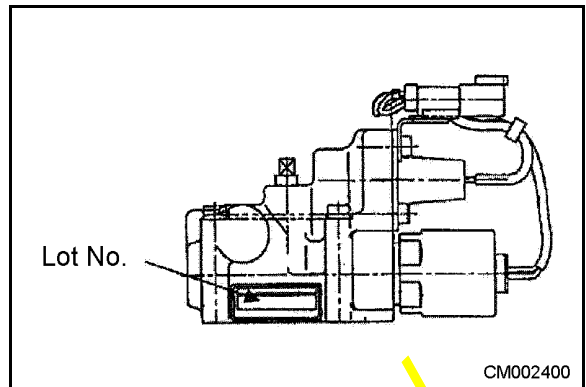
### A. Detail of the ECMV modification.

The ECMV (electronic control modulation valve) hydraulic characteristics were reviewed in order to improve stability of speed change hydraulic waveform. In particular, filling time before starting simulation after the transmission clutch speed change command is given needs to be shortened and stabilized.



Discrimination between the new and the former models can be made by looking at the manufacturing lot number on the valve side plane.

(Former): B1 \* \* \* \* \*  
 (New): G0 \* \* \* \* \*



B. Replace all transmission ECMVs on control valve.



**WARNING!** Observe all safety and precautionary standards as dictated by the environment and work conditions, under which the equipment will be inspected, reworked and repaired. Consult the appropriate wheel loader "Shop Manual" and "Operator's and Maintenance Manual" and your "Komatsu District Service Manager" with any/all questions regarding safety.

- Park the wheel loader on a flat level surface. Lower the boom with the bucket to the ground and shut off the engine. REMOVE THE KEY. Exercise the equipment controls to eliminate pressure locked in the system.
- Attach a tag to the controls stating:  
**"THIS MACHINE IS BEING SERVICED. DO NOT ATTEMPT TO START THIS MACHINE UNTIL THIS TAG IS REMOVED BY THE PERSON PERFORMING THE SERVICE".**



**WARNING!** When replacing the ECMVs, pay careful attention to prevent sand and dust from penetrating into hydraulic circuit.

- i. Remove the transmission's left-rear frame access panel to access the ECMVs.
- ii. Clean as much as possible around all ECMVs to prevent dirt to penetrate into the transmission.

**Remark**

For more details, you could refer to Shop Manual %o "Structure and Function"


► "Transmission Control Valves" (WA380 page 10-39 to 10-51, WA450/480 page 10-40 to 10-52).

- ii. Disconnect all ECMVs connectors (12 connectors for standard transmission, and 14 connectors for "lock-up" transmission).
- iv. Respecting the order, begin to remove the ECMVs for Rear clutch first, and Forward clutch next.  
 \*\*\* Make sure to put a masking tape on the valve seat once R clutch is removed. \*\*\*
- v. Respecting the order, install the modified ECMVs in using new O-ring provided, starting by the F clutch and finishing by R clutch.



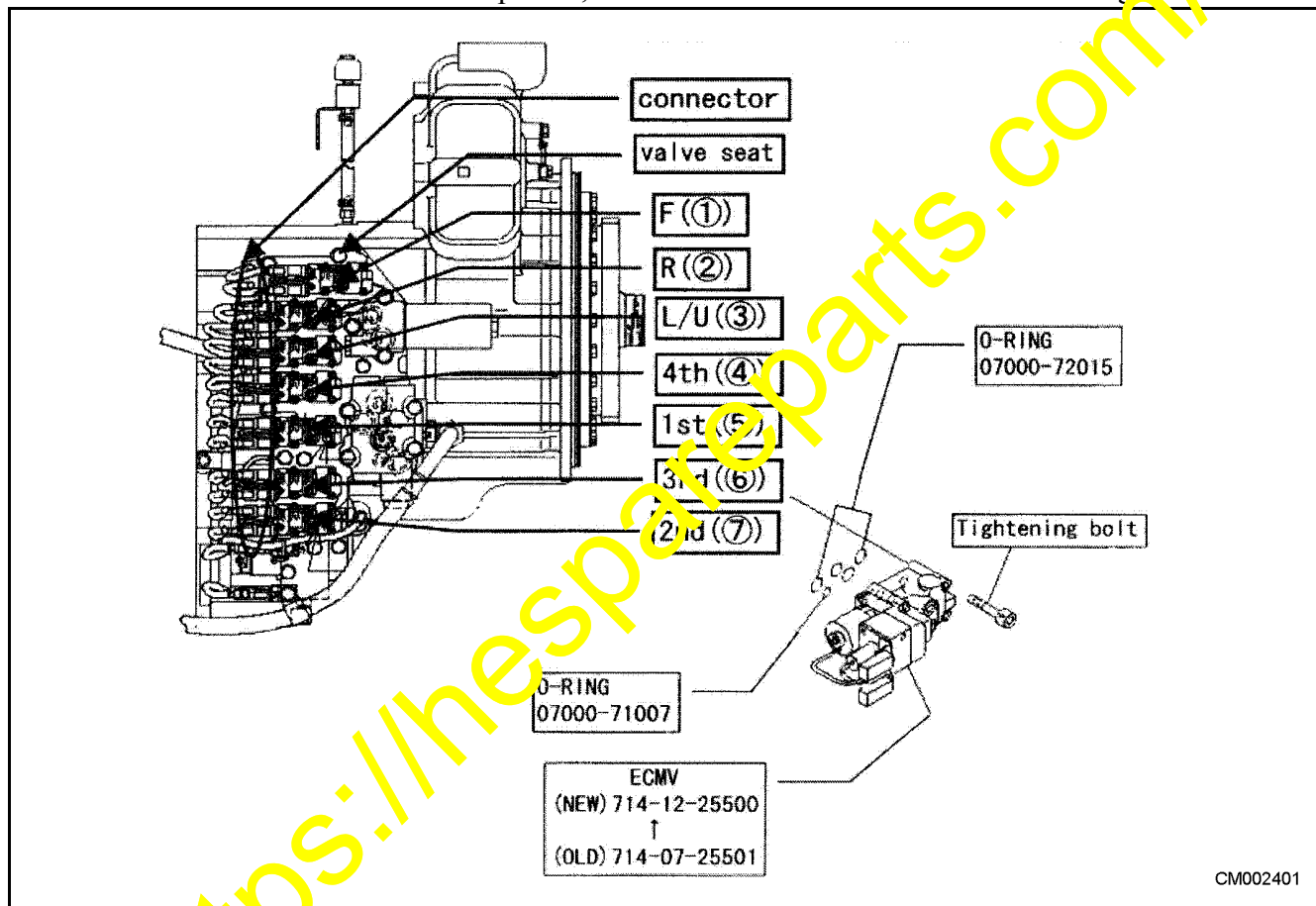
Installation torque: 7.8 ~ 9.8 Nm (5.75 ~ 7.22 lbf ft)

- vi. Respecting the order below, begin to replace the other ECMVs one by one in using the new O-ring provided, and the same tightening torque indicated in the previous step.

 Installation torque: 7.8 ~ 9.8 Nm (5.75 ~ 7.22 lbf ft)

- Lock-up clutch
- 4th clutch
- 1st clutch
- 3rd clutch
- 2nd clutch

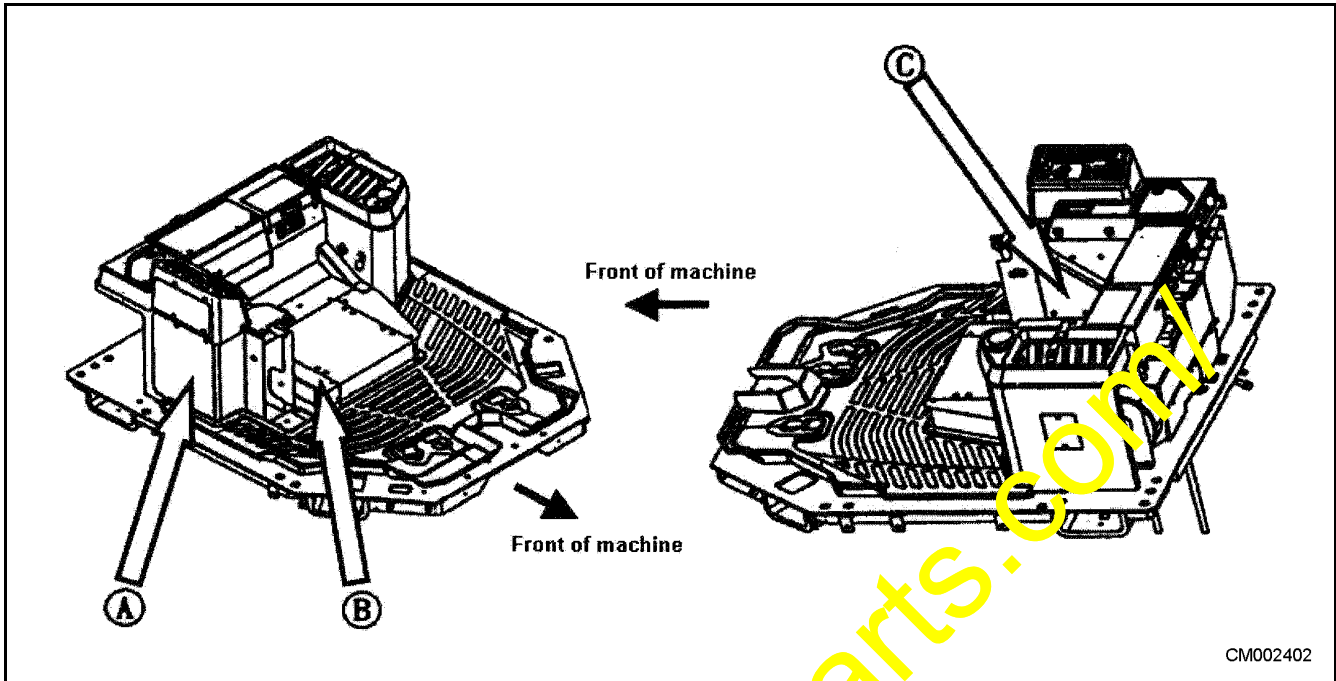
- vii. When all ECMVs are replaced, reconnect all the connectors in descending order.



- viii. Reinstall the transmission's left-rear frame access panel, and proceed with the next section for the transmission controller's replacement.

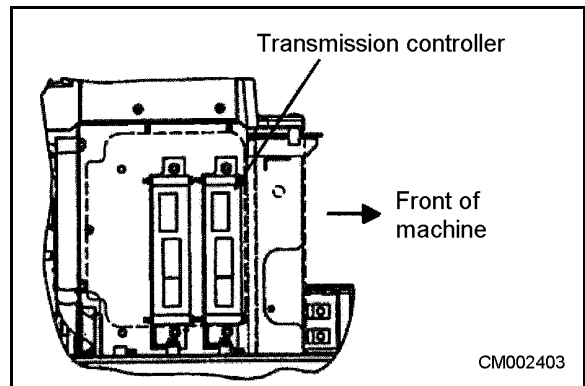
3. Replacing the transmission controller.

- i. Remove the three covers panels (A, B and C) located in the cab to access the controller.



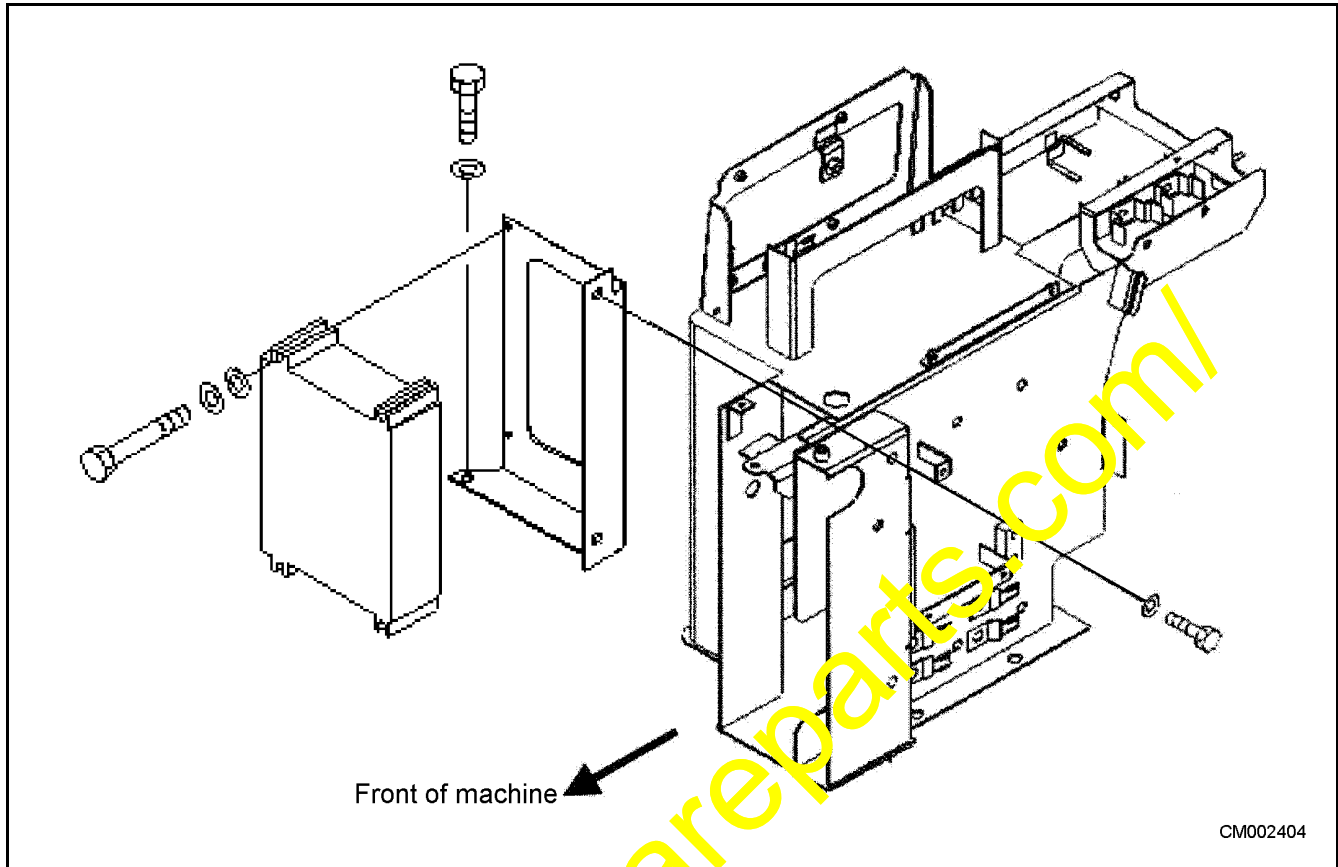
- ii. With cover panel "A" remove, you can search for the transmission controller (shown in graphic, right, below). Refer to graphic on page 4 to confirm the old controller part number.

Part No. of controller	
NEW	OLD
	7823-32-2007
	7823-32-2000
7823-32-2008 ←	7823-32-2005
	7823-32-2004
	7823-32-2003



- iii. When the transmission controller is identified, remove the connector attached to it.

- iv. Remove the controller with the attached bracket from the console box. Then you can detach the bracket from the controller.



- v. Using the updated controller provided (P/N 7823-32-2008), reverse the previous steps to reinstall.
- vi. Using the monitor panel in the cab, execute an initial learning of the transmission referring the attached copy of the shop manual ► "Structure and Function" ► "Machine Monitor" ► "Setting of Machine Monitor" ► "Setting Necessary for Option Mounting" (WA380 page 10-216 to 10-251, WA450/480 page 10-248 to 10-250).
4. Re-measuring transmission shift time-lag.  
Using the instructions describe under the step 1B of this Part & Service News, measure again the lag for each clutch, and take note of the new results.

## **ADDENDUM**

**PRINT AND FILL OUT THE THREE FOLLOWING SHEETS IN THIS ADDENDUM FOR EVERY MACHINE.**

**THE THREE ATTACHED SHEETS MUST BE COMPLETED AND ENCLOSED WITH THE RETURN OF ALL THE OLD PARTS FOLLOWING THE INSTRUCTIONS ON THE "NOTIFICATION FOR RETURN PARTS" SHEET.**

**CANADIAN DISTRIBUTORS, INSTRUCTIONS ARE DIFFERENT FROM THOSE FOR THE UNITED STATES. PLEASE READ INSTRUCTIONS CAREFULLY.**

On the "Notification for return parts" sheet, fill in the Distributor number, Branch number, the claim number<sup>(1)</sup>, the claim date<sup>(2)</sup> and finally, the model and serial number of the machine from which the old parts were removed.

The packing slip must also be filled out prior to shipment. Just fill in the empty cells.

1. A warranty claim must be filed to Komatsu as soon as possible.
2. Claim date that the claim was addressed to Komatsu.



**Please forward this sheet filled out to the following address for analysis:**

**Komatsu International (Canada) Inc.  
160 Boul. De l'industrie  
Candiac, QC  
J5R 1J3**

**ATTN: Stephane Quimet**

Measured clutch	Monitoring codes	Data collected <u>before</u> modifications	Data collected <u>after</u> modifications
F Clutch	41500		
	41808		
R Clutch	41500		
	41806		
1st Clutch	41500		
	41802		
2nd Clutch	41500		
	41803		
3rd Clutch	41500		
	41804		
4th Clutch	41500		
	41805		



**Notification to return parts**

**Komatsu International (Canada) Inc.**

**ATT: Stephane Ouimet**

**SUBJECT : REQUEST FOR WHEEL LOADER PART RETURN TO KOMATSU (CANADA)**

The requested parts should be properly *tagged* and identified in accordance with SPP 3 - 10. Please return the notated parts FREIGHT COLLECT (See the note below). Your authorization number is **KICI-2008-ST-0A**

Dist # & Branch #	Claim #	Claim Date	Machine Model	Machine Serial #	Returned Part #	Part Description
					7823-5-2008	Transmission controller
					714-2-25500	Kit of Seven (7) ECMV

In order to clear customs, the attached packing slip must be enclosed with the shipment. We strongly recommend to use the following statement in your documents:

These parts are being recalled by Komatsu International (Canada) Inc. out of Canadian off-road machinery for warranty evaluation and improvement. Prices are for custom purposes only. Except for parts shipped from Canada, this document must be forwards to « EXEL Global Logistics » for customs

**SHIPMENT INFORMATION**

Shipment from any States or from Canada, ANY WEIGHT	UPS ground (account # 25191946), Standard freight, NOT Express.
Shipment between 150 and 9000 lbs	Komatsu Consolidation center 28400, Plymouth Road. Livonia, Mi 48150 Tél : 1-800-361-8281 Ext : 1972 Ask for Customer Service
Except for the following states :	CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VA, & VT CALL NEW PENN MOTOR EXPRESS 1 (800) 565-9127 Ask for collect
Shipment over 9000 lbs, from any States:	Call Dan Moran or Kathie Hartnell at Komatsu traffic dept. (450) 659-1961

If you have any questions or problem regarding this request or if the parts are not available for any reason, please contact Stephane Ouimet , Komatsu Quality Technician, at the coordinates below.

**KOMATSU INTERNATIONAL**  
(Canada) INC. 160, boul. de l'industrie, Candiac, QC J5R 1J3  
Tel : (450) 659-1961  
Fax : (450) 659-3557

CM002421

**KOMATSU****Packing slip**

Komatsu International (Canada) Inc.

ATTN : STEPHANE OUIMET

For use by EXEL Global Logistics custom brokers

Authorization number KICI-2003-ST3-QA

Claim #	Model	Serial #	Part #	Description	Origin	Part value
			7823-32-2008	Transmission Controller	Japan	540.01 \$
			714-12-25500	Cover (L) transmission ECMV	Japan	150.53 \$

Total value of shipment

690.54 \$

KOMATSU INTERNATIONAL  
 (Canada) INC. 160, boul. de l'industrie, Candiac, QC J5R 1J3  
 Tel : (450) 659-1961  
 Fax : (450) 659-3557