SERVICE MANUAL

Boomer™ 40D CVT
Boomer™ 45D CVT
Boomer™ 50D CVT

Tier 3

Compact Tractor

Part number 47975091
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MidWestTech | New Holland Boomer 40D, 45D, 50D CVT Tier 3 Compact Tractor Service Manual | Publication 47975091

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Link Product / Engine

Product	Market Product	Engine
Boomer™ 40D CVT 40HP, TIER 3, CVT, compact tractor, built in Mexico for the Canadian market	North America	N844
Boomer™ 45D CVT 45HP, TIER 3, CVT, compact tractor, built in Mexico for the Canadian market	North America	N844L
Boomer™ 50D CVT 50HP, TIER 3, CVT, compact tractor, built in Mexico for the Canadian market	North America	N844L

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Connecting rod and piston - Dimension

Boomer™ 40D CVT 40HP, TIER 3, CVT, compact tractor, built in Mexico for the Canadian market	NA
Boomer™ 45D CVT 45HP, TIER 3, CVT, compact tractor, built in Mexico for the Canadian market	NA
Boomer™ 50D CVT 50HP, TIER 3, CVT, compact tractor, built in Mexico for the Canadian market	NA

PISTON

	Boomer 40D	Boomer 45D	Boomer 50D
Engine Model	ISM N844	ISM N844L	ISM N844L
Diameter			
Standard	**83.948 - 83.963 mm (3.30503 - 3.30562 in)**	**83.948 - 83.963 mm (3.30503 - 3.30562 in)**	**83.948 - 83.963 mm (3.30503 - 3.30562 in)**
Minimum	**83.7 mm (3.2953 in)**	**83.7 mm (3.2953 in)**	**83.7 mm (3.2953 in)**
Bore Clearance			
Standard	**0.038 - 0.072 mm (0.0014 - 0.0028 in)**	**0.038 - 0.072 mm (0.0014 - 0.0028 in)**	**0.038 - 0.072 mm (0.0014 - 0.0028 in)**
Maximum	**0.25 mm (0.010 in)**	**0.25 mm (0.010 in)**	**0.25 mm (0.010 in)**
Piston Pin Bore			
Standard	**27.996 - 28.000 mm (1.102 - 1.1023 in)**	**27.996 - 28.000 mm (1.102 - 1.1023 in)**	**27.996 - 28.000 mm (1.102 - 1.1023 in)**
Maximum	**28.04 mm (1.103 in)**	**28.04 mm (1.103 in)**	**28.04 mm (1.103 in)**
Piston Pin Clearance			
Standard	-0.001 + 0.007 mm (-0.000393 + 0.0002 in.)	-0.001 + 0.007 mm (-0.000393 + 0.0002 in.)	-0.001 + 0.007 mm (-0.000393 + 0.0002 in.)
Maximum	**0.02 mm (0.0008 in)**	**0.02 mm (0.0008 in)**	**0.02 mm (0.0008 in)**

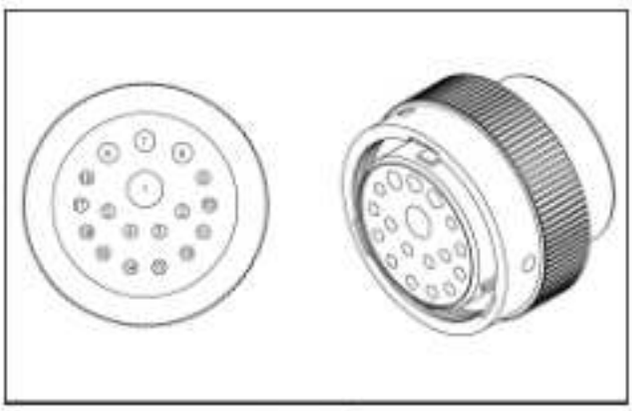
PISTON PIN

	Boomer 40D	Boomer 45D	Boomer 50D
Engine Model	ISM N844	ISM N844L	ISM N844L
Diameter			
Standard	**27.996 - 28.0 mm (1.1022 - 1.10236 in)**	**27.996 - 28.0 mm (1.1022 - 1.10236 in)**	**27.996 - 28.0 mm (1.1022 - 1.10236 in)**
Minimum	**27.98 mm (1.1016 in)**	**27.98 mm (1.1016 in)**	**27.98 mm (1.1016 in)**
Pin-to-Bushing Clearance			
Standard	**0.01 - 0.025 mm (0.00039 - 0.00098 in)**	**0.01 - 0.025 mm (0.00039 - 0.00098 in)**	**0.01 - 0.025 mm (0.00039 - 0.00098 in)**
Maximum	**0.08 mm (0.0031 in)**	**0.08 mm (0.0031 in)**	**0.08 mm (0.0031 in)**

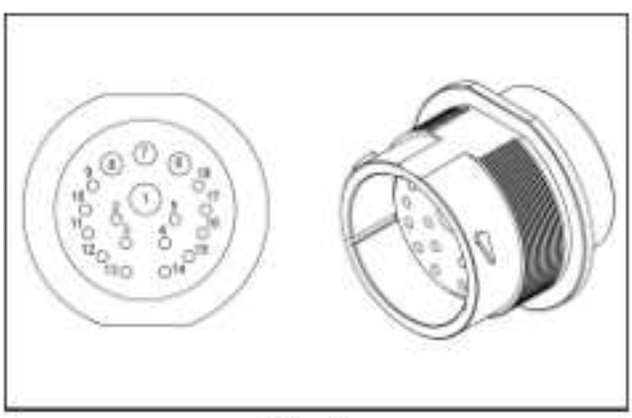
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C3 - POWER CONNECTOR, CHASSIS HARNESS TO MAIN HARNESS

CONNECTOR C3 - POWER CONNECTOR, CHASSIS HARNESS TO MAIN HARNESS			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
1	HC101/HM101	UNSW B+	**SHEET 20**
2	HC102/HM102	SW B+	
3	HC103/HM103	SW B+	
4	HC104/HM104	UNSW B+	**SHEET 13**
5	HC105/HM105	5V Ref.	**SHEET 11**
6	HC106/HM106	UNSW B+	**SHEET 24**
7	HC107/HM107	SW B+	**SHEET 20**
8	**	Open	**SHEET 26**
9	HC109/HM109	Flasher Cutoff	**SHEET 25**
10	**	Open	**SHEET 26**
11	HC111/HM111	HVAC Compressor	**SHEET 31**
12	HC112/HM112	High Beams	**SHEET 26**
13	HC113/HM113	Low Beams	
14	HC114/HM114	Work Lights	
15	HC115/HM115	SW B+	**SHEET 24**
16	HC116/HM116	UNSW B+	
17	HC117/HM117	SW B+	
18	HC118/HM118	UNSW B+	**SHEET 20**



Connector C3P - Main harness side



Connector C3R - Chassis harness side

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2615-Transmission Torque Pressure Sensor Open Circuit or Shorted to Ground

Control Module : TCU

NOTE: *When the cause of the error code has been rectified, clear the error code and test the system for normal operation.*

Context:
The TCU is sensing less than **0.44 V** at connector **C61** pin J1-7.

Cause:
There is a short to ground or open circuit in the torque pressure sensor circuit.

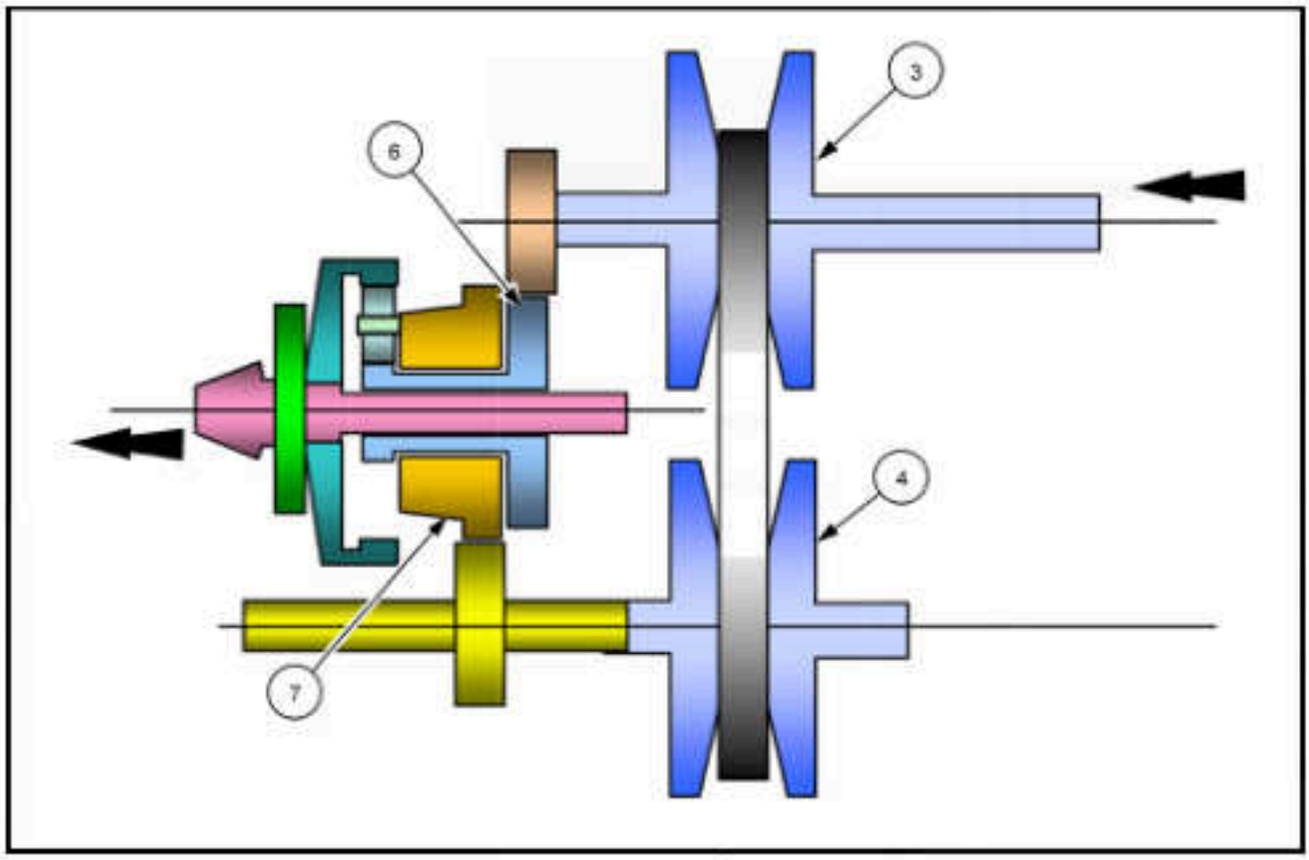
Possible failure modes:

1. Faulty connector
2. Faulty torque pressure sensor
3. Faulty harness
4. Faulty controller

Solution:

1. Check the torque pressure sensor connector **C75** and the controller connector **C61**.
   A. Ensure the connectors are connected, not damaged, the pins are in the correct position and that the fit is tight. Repair or replace as required.
   B. If the connectors are okay, continue to step **2**.
2. Check for correct voltage at TCU connector: Use multi-meter, and a back-probe pin to measure voltage at connector **C61** pin J1-17 (Y). With the ignition switch in the ON position, measure the voltage on the harness side of connector **C61**, pin J1-17 (Y).
   A. If the voltage indicated is not between **0.44 V** and **4.59 V**, continue to step **3**.
   B. If the voltage indicated is between **0.44 V** and **4.59 V**, reload correct level of software. If error reoccurs, remove and replace controller.
3. Check for source voltage and clean ground: Disconnect connector **C75**. With the ignition switch in the ON position, on the harness side of the connector measure the voltage between connector **C75** pin 1 (BW) and **C75** pin 2 (P)
   A. If **5 V** are indicated, continue to step **4**.
   B. If **0 V** are indicated, continue to step **5**.
4. Check for an open circuit or short to ground: Disconnect connectors **C61** and **C75**.
   Check to make sure the harness is continuous and not grounded between **C75**, pin 3 and connector **C61**, pin J1-17
   A. If the harness between connector **C75**, pin 3 and connector **C61**, pin J1-17 is broken or grounded, repair or replace.
   B. If the harness between **C75**, pin 3 and connector **C61**, pin J1-17 is not broken or grounded, replace torque pressure sensor.
5. Check for 5V to chassis ground: Disconnect connector **C75**, and test for voltage between pin 2 and chassis ground.
   A. If **5 V** are indicated between connector **C75**, pin 2, and chassis ground, repair or replace ground wire.
   B. If **0 V** are indicated between connector **C75**, pin 2, and chassis ground, repair or replace 5V Ref. wire.

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Variator Assembly

The variator assembly **(2)** is an electro-hydraulically controlled variable speed transmission. The variator assembly consists of a gerotor style fixed displacement hydraulic pump, input drive pulley, output driven pulley, drive chain and mechanical torque sensor. The fixed displacement gerotor pump produces the oil flow for the complete transmission system except for the Forward/Reverse clutch which oil is supplied by the power steering hydraulic pump. The throat of the input and output pulleys are adjusted simultaneously by the use of both hydraulic and spring pressure to set the desired speed of the transmission. The driven output pulley also incorporates a mechanical torque sensor that acts similar to a mechanical governor. As the torque sensor senses torque rise it adjusts and increases the pressure to the input (P1) **(3)** and the output (P2) **(4)** pulleys to compensate and apply more force to the variator assembly. If the torque load increase to the point where the variator cannot hold the chain assembly safely, the transmission logic will dump the Forward/Reverse clutches and the unit will lose drive pressure, similar to blowing a pressure relief valve in a hydrostatic transmission.

Planetary Reduction

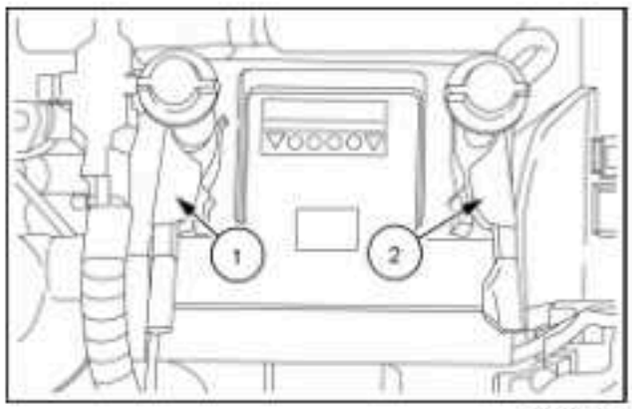
The planetary reduction **(5)** uses the speed from the input pulley assemblies to control the sun gear **(6)** and carrier **(7)**. By controlling the speed at which the sun gear turns in comparison to the carrier, we can reduce the high speed revolutions of the variator assembly to a usable drive piniion ratio. The drive pinion is the direct out put of the planetary assembly.

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Electrical system - Electrical test Relative compression test using DATAR

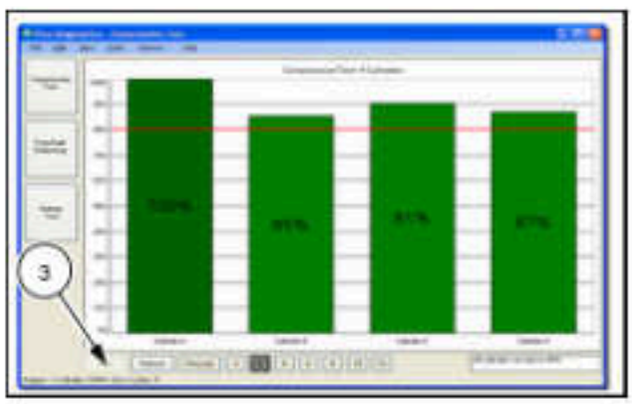
The compression test is meant to be a first check. If the compression looks good, you can move on and investigate other components which might cause the fault. If the test detects a low cylinder, you should perform a manual compression test to verify the results.

1. Connect one end of the general BNC cables to channel A on the oscilloscope. On the other end, connect the large red alligator clip **(1)** to the red battery positive (+) cable, and the black clip **(2)** to the battery negative (-) cable.



2. Select the number of cylinders corresponding in the engine. To start the test, click the Start button **(3)** in the lower left corner. A new window with a progress indicator will appear. Wait until the message in the window is "Crank Engine". Crank the engine until the progress indicator reaches 100%.

NOTE: *In relative compression mode, the result is always scaled to show the highest cylinder at 100%. The bars are ordered according to the engine's firing order. The cylinders are names A, B, C and so on. With only a connection to the battery the software has no way of knowing which cylinder is number one. This may cause the result to be shifted if you run the test on the same engine more than once.*



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