SERVICE MANUAL

T7.230 / T7.245 / T7.260
T7.230 AutoCommand™ / T7.245 AutoCommand™
T7.260 AutoCommand™ / T7.270 AutoCommand™
Stage IV
Tractor

Part number 47936454
English
November 2015

© 2015 CNH Industrial Osterreich GmbH. All Rights Reserved.

Order the manual at mid-west-tech.com >

Contents

INTRODUCTION

Engine 10

[10.001] Engine and crankcase 10.1

[10.216] Fuel tanks 10.2

[10.218] Fuel injection system 10.3

[10.254] Intake and exhaust manifolds and muffler 10.4

[10.500] Selective Catalytic Reduction (SCR) exhaust treatment 10.5

[10.400] Engine cooling system 10.6

[10.414] Fan and drive 10.7

[10.408] Oil cooler and lines 10.8

[10.101] Cylinder heads 10.9

Clutch 18

[18.112] Slip clutch or flywheel damper 18.1

Transmission 21

[21.113] Powershift transmission 21.1

[21.155] Powershift transmission internal components 21.2

[21.160] Creeper 21.3

[21.166] Overdrive 21.4

[21.504] Continuously Variable Transmission (CVT) 21.5

[21.505] Continuously Variable Transmission (CVT) external controls 21.6

[21.507] Continuously Variable Transmission (CVT) internal components 21.7

[21.506] Continuously Variable Transmission (CVT) lubrication system 21.8

[21.109] Transmission cooler and lines 21.9

Four-Wheel Drive (4WD) system 23

[23.202] Electro-hydraulic control 23.1

[23.314] Drive shaft 23.2

MidWestTech | New Holland T7.230, T7.245, T7.260, T7.270 AutoCommand Stage IV T... Order the manual at mid-west-tech.com >

Front axle system 25
[25.100] Powered front axle 25.1
[25.102] Front bevel gear set and differential 25.2
[25.108] Final drive hub, steering knuckles, and shafts 25.3
[25.122] Axle suspension control 25.4
Rear axle system 27
[27.100] Powered rear axle 27.1
[27.106] Rear bevel gear set and differential 27.2
[27.120] Planetary and final drives 27.3
[27.126] Spur gear and final drives 27.4
Power Take-Off (PTO) 31
[31.101] Rear mechanical control 31.1
[31.104] Rear electro-hydraulic control 31.2
[31.114] Two-speed rear Power Take-Off (PTO) 31.3
[31.116] Three-speed rear Power Take-Off (PTO) 31.4
[31.119] Four-speed rear Power Take-Off (PTO) 31.5
[31.146] Front Power Take-Off (PTO) 31.6
Brakes and controls 33
[33.202] Hydraulic service brakes 33.1
[33.110] Parking brake or parking lock 33.2
[33.220] Trailer brake hydraulic control 33.3
[33.224] Trailer brake pneumatic control 33.4
[33.350] Anti-lock Brake System (ABS) 33.5
Hydraulic systems 35
[35.000] Hydraulic systems 35.1
[35.300] Reservoir, cooler, and filters 35.2
[35.106] Variable displacement pump 35.3
[35.102] Pump control valves 35.4

MidWestTech | New Holland T7.230, T7.245, T7.260, T7.270 AutoCommand Stage IV T... Order the manual at mid-west-tech.com >

[35.105] Charge pump 35.5
[35.230] Priority valves 35.6
[35.322] Regulated/Low pressure system 35.7
[35.204] Remote control valves 35.8
[35.220] Auxiliary hydraulic pump 35.9
[35.114] Three-point hitch control valve 35.10
[35.160] Front hitch controls and lines 35.11
[35.162] Front hitch cylinders and lines 35.12
Pneumatic system 36
[36.100] Pneumatic system 36.1
Hitches, drawbars, and implement couplings 37
[37.120] Rear three-point hitch linkage 37.1
[37.110] Rear three-point hitch 37.2
[37.162] Front hitch 37.3
[37.106] Automatic pickup hitch 37.4
Frames and ballasting 39
[39.100] Frame 39.1
Steering 41
[41.101] Steering control 41.1
[41.106] Tie rods 41.2
[41.200] Hydraulic control components 41.3
[41.216] Cylinders 41.4
[41.432] Autoguidance steering 41.5
Wheels 44
[44.511] Front wheels 44.1
[44.520] Rear wheels 44.2
Cab climate control 50

MidWestTech | New Holland T7.230, T7.245, T7.260, T7.270 AutoCommand Stage IV T... Order the manual at mid-west-tech.com >

Auxiliary hydraulic pump - General specification

T7.230	WE
T7.245	WE
T7.260	WE

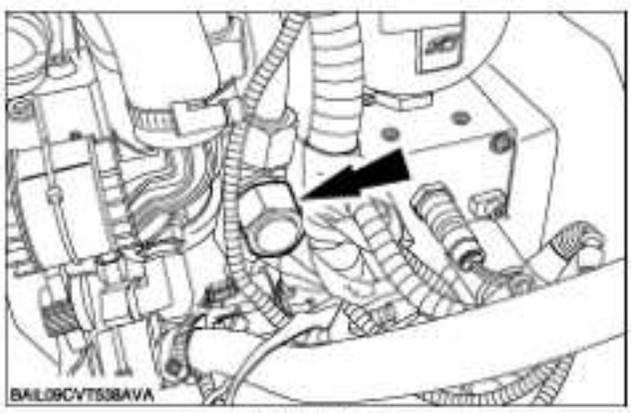
Steering/Low Pressure Circuit Pump

Type	Gear Type Pump
Minimum Output @ **2200 erpm**	**61.5 Ltr/min** **13 Imp Galls/min** **16 US Galls/min**
Flow to Steering Motor	**22 - 28 ltr/min** **4.8 - 6.2 Imp Galls/min** **5.8 - 7.4 US Galls/min**
Steering Pressure	**190 bar (2750 lbf/in2)** max

Auxiliary hydraulic pump - General specification Vane pump

T7.230 AutoCommand™	WE
T7.245 AutoCommand™	WE
T7.260 AutoCommand™	WE
T7.270 AutoCommand™	WE

Number of vanes	11
Maximum displacement	**45 cm³**
Minimum displacement	**0 cm³**
Direction of rotation	Counter clockwise
Minimum continuous pump speed	**900 RPM**
Maximum continuous pump speed	**3000 RPM**
Maximum pump over speed	**3750 RPM**
Maximum flow at any speed and viscosity in suction line	**45 l/min (11.9 US gpm)**
Minimum flow requirement of pump at **22 bar (319.0 psi)** /16.3cSt	**3 l/min (0.8 US gpm)**
Nominal suction pressure range	**0.8 - 1.2 bar (11.60 - 17.40 psi)**
Pressure control setting	**22 - 25 bar (319.0 - 362.5 psi)**
Over pressure resistance (for example lost pressure control signal)	**80 bar (1160.0 psi)**
Minimum oil flow delivery at **22 - 25 bar (319.0 - 362.5 psi)** with oil viscosity at 12 cSt	**33 l/min (8.7 US gpm)**
Output @ engine speed **2200 RPM**	**60 l/min (15.9 US gpm)**
Pressure filter relief valve	**28 bar (406.0 psi)**
Over pressure switch closes	**27 bar (391.5 psi)**

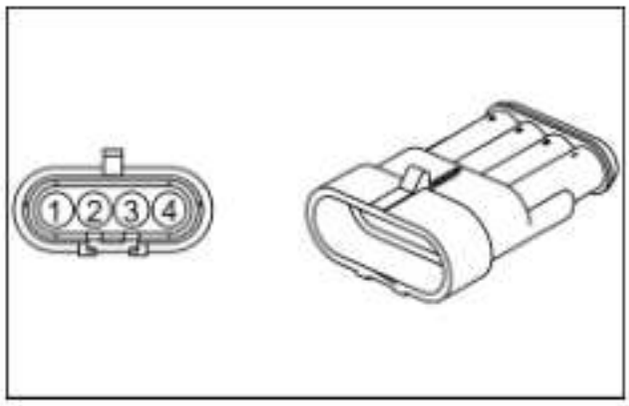


BAIL09CVT538AVA 1

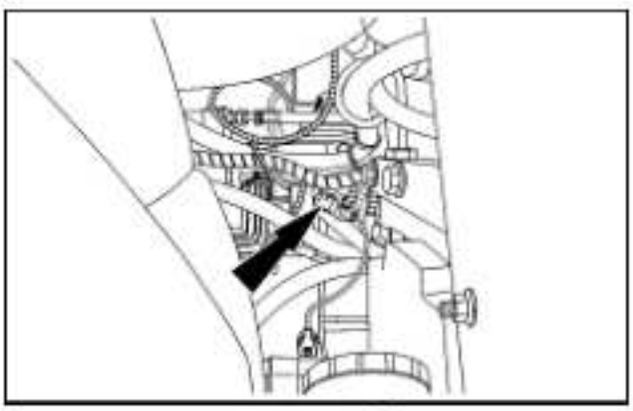
Vane pump outlet pressure test port

MidWestTech | New Holland T7.230, T7.245, T7.260, T7.270 AutoCommand Stage IV T... Order the manual at mid-west-tech.com >

CONNECTOR X-304 - On harness 47449638			
PIN NUMBER	WIRE NUMBER	CIRCUIT REFERENCE	ELECTRICAL SCHEMATIC FRAME
1	EHR-5515G (GY)	From X-304 to **X-697**	Wiring harnesses - Electrical schematic sheet 28 (55.100) Wiring harnesses - Electrical schematic sheet 52 (55.100) Wiring harnesses - Electrical schematic sheet 53 (55.100)
2	EHR-5510M (BL)	From X-304 to EHR-SP-5510	
3	EHR-5500M (RD)	From X-304 to EHR-SP-5500	
4	EHR-057MA (BK)	From X-304 to **X-697**	



25



26

Right-hand side behind steps

T7.230, T7.245, T7.260, T7.270 AutoCommand [CAN bus termination resistor]
T7.230, T7.245, T7.260 [CAN bus termination resistor]

CONNECTOR X-304 - On harness 87345428			
PIN NUMBER	WIRE NUMBER	CIRCUIT REFERENCE	ELECTRICAL SCHEMATIC FRAME
1	-	-	Wiring harnesses - Electrical schematic sheet 53 (55.100)
2	5400M (YE)	-	
3	5420M (GN)	-	
4	-	-	

MidWestTech | New Holland T7.230, T7.245, T7.260, T7.270 AutoCommand Stage IV T... Order the manual at mid-west-tech.com >

12521-Inconsistent air and hydraulic pressure on the right Aoh

T7.230 AutoCommand™	WE
T7.230 Sidewinder II [ZFEZ30001 -]	WE
T7.245 AutoCommand™	WE
T7.245 Sidewinder II [ZFEZ30001 -]	WE
T7.260 AutoCommand™	WE
T7.260 Sidewinder II [ZFEZ30001 -]	WE
T7.270 AutoCommand™	WE

Control Module : UCM

⚠WARNING

Loss of control hazard!
The brakes on your machine are hydraulically power-assisted. The brakes will still function with the engine off, but you must press harder on the pedal.
Failure to comply could result in death or serious injury.

W0442A

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

Cause:
The Universal Control Module (UCM) has detected an inconsistency between the air supply pressure and the expected hydraulic pressure on the rear right air over hydraulic (AoH) converter (low hydraulic pressure).

Possible failure modes:

1. Faulty rear right brake hydraulic system
2. Faulty rear right air over hydraulic converter
3. Faulty rear right brake pressure sensor

Solution:

1. Check for the error code.
   Clear the error code. Operate the machine and check the system for normal operation.

   A. If the error code is still present, continue to Step **2**.

2. Check for other related error codes.
   Check for other error codes with the UCM or the EBM related to pressure faults or an air over hydraulic fault.

   A. If other error codes are displayed, continue to these tests.

   B. If no related error codes are present, continue to Step **3**.

3. Carry out pressure testing on the brake hydraulic system.
   Carry out the Anti-lock Brake System (ABS) pressure testing procedure, for further information refer to **Anti-lock Brake System (ABS) - Pressure test (33.350)** checking for any rear right hydraulic faults on the machine.

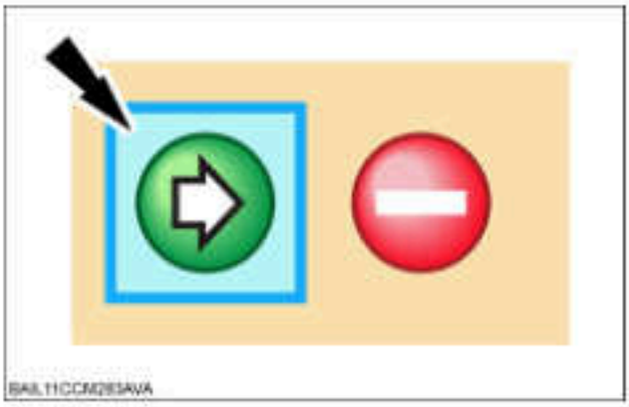
   A. If a hydraulic fault is identified, repair or replace as required. Operate the machine and check the brakes for normal operation.

   B. If no faults are identified with the rear right hydraulic circuit, replace the right hand brake pressure sensor at connector **X-983** on the rear right air over hydraulic converter. Operate the machine and check the brakes for normal operation.

MidWestTech | New Holland T7.230, T7.245, T7.260, T7.270 AutoCommand Stage IV T... Order the manual at mid-west-tech.com >

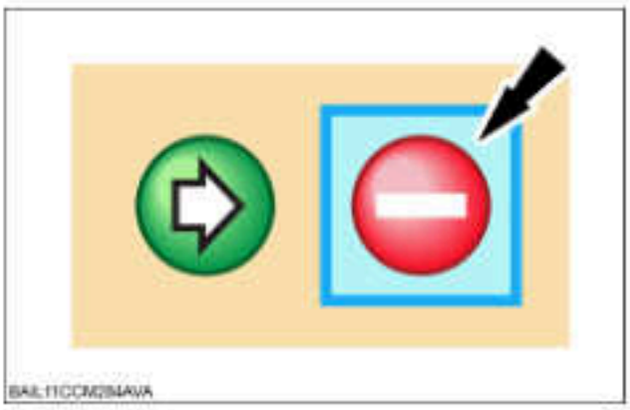
Step 5a. RAMP Test Procedure:

- On the DATAR Scope, in the bottom left corner, verify the capture trigger is "ready" to start capturing data. This is indicated with a green ball highlighted in blue as shown in the figure to the right. If the scope is not ready, then press the keyboard SPACE bar to change the scope trigger state to ready.
- Press and hold the UP SHIFT button on the transmission shift lever to run the RAMP test. The machine display will count up to 100 and then back to 0. When the test is finished the display will show "END". This test will take about 20 seconds.



BAIL11CCM283AVA 27

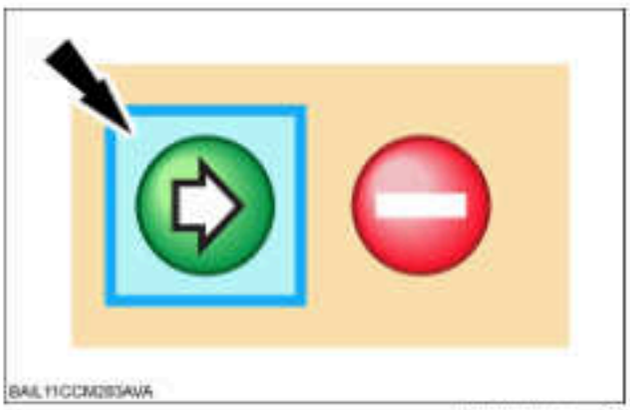
- On the DATAR Scope, when the test ramp is finished, then press the PC SPACE bar to capture and hold the result trace.
- Compare the DATAR measured trace with the expected result trace shown on the next Valve Test Assistant screen. (Remember ALT-TAB to switch between the programs)



BAIL11CCM284AVA 28

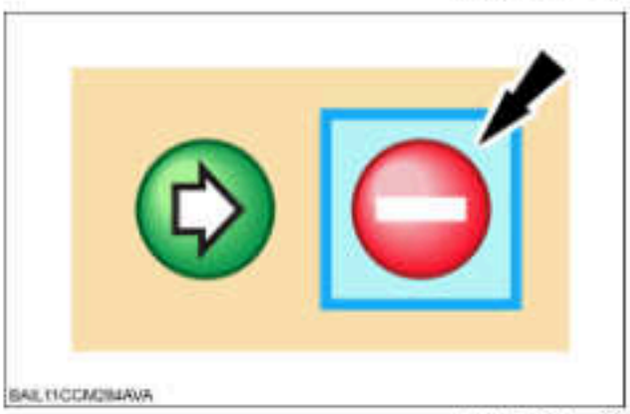
Step 5b. STEP test procedure:

- On the DATAR Scope, in the bottom left corner, verify the capture trigger is "ready" to start capturing data. This is indicated with a green ball highlighted in blue as shown in the figure to the right. If the scope is not ready, then press the keyboard SPACE bar to change the scope trigger state to ready.
- Press and hold the DOWN SHIFT button on the transmission shift lever to run the STEP test. The machine display will count up from 1 to 4. When the test is finished the display will show "END". This test will take about 5 seconds.



BAIL11CCM283AVA 29

- On the DATAR Scope, when the test ramp is finished, then press the PC SPACE bar to capture and hold the result trace.
- Compare the DATAR measured trace with the expected result trace shown on the next Valve Test Assistant screen. (Remember ALT-TAB to switch between the programs)



BAIL11CCM284AVA 30

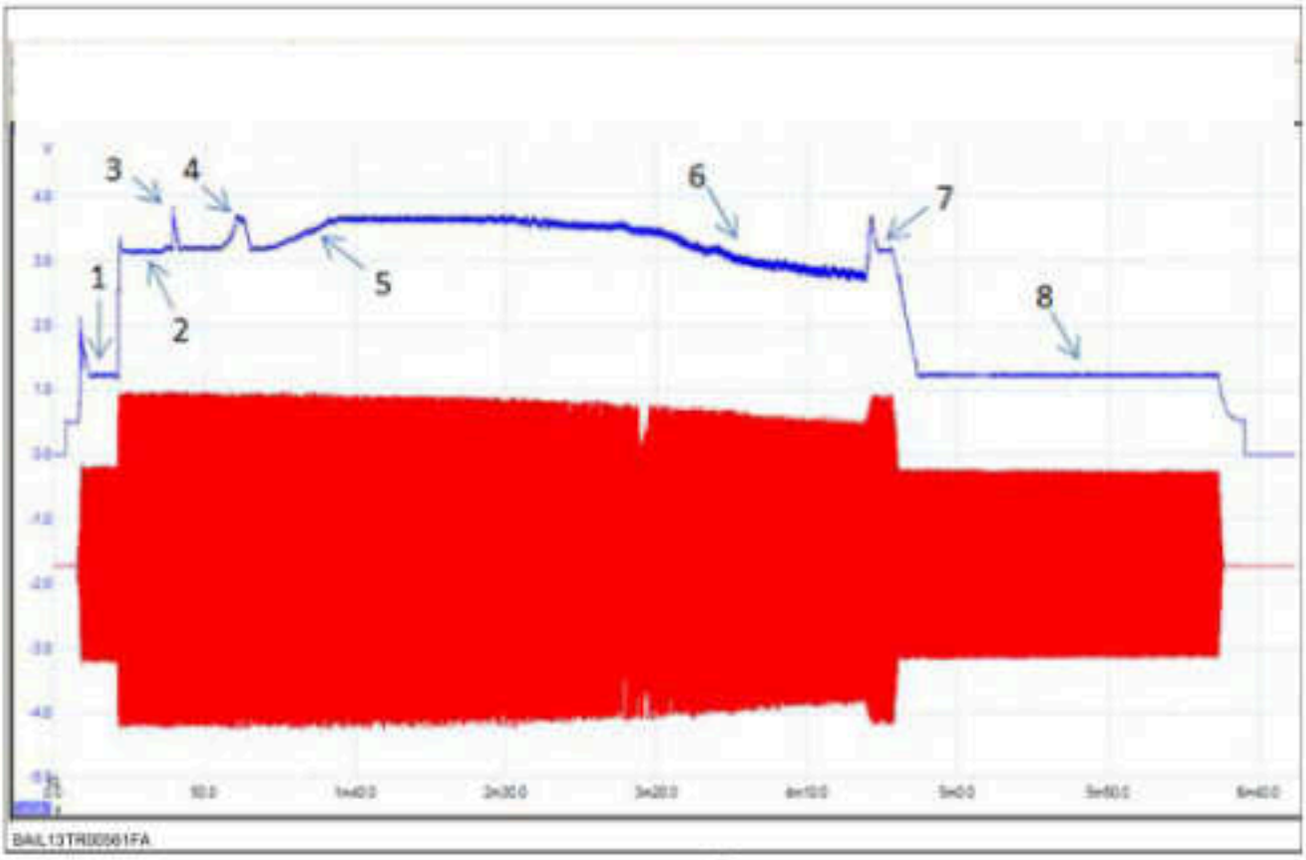
NOTE: *During the step test, the machine software makes two quick engagements of the clutch. With some clutches, there will be a banging sound.*

MidWestTech | New Holland T7.230, T7.245, T7.260, T7.270 AutoCommand Stage IV T... Order the manual at mid-west-tech.com >

4. This test is carried out on an engine without load applied. On an engine with load applied the center section of the graph will rise above **2.5 V**, but will not exceed **4.5 V**. This is a plausibility check on the sensor. If it does exceed **5 V** (the sensor supply voltage), there could be a fault with the sensor.

Example waveform

The test below shows an example waveform of an engine with load applied.



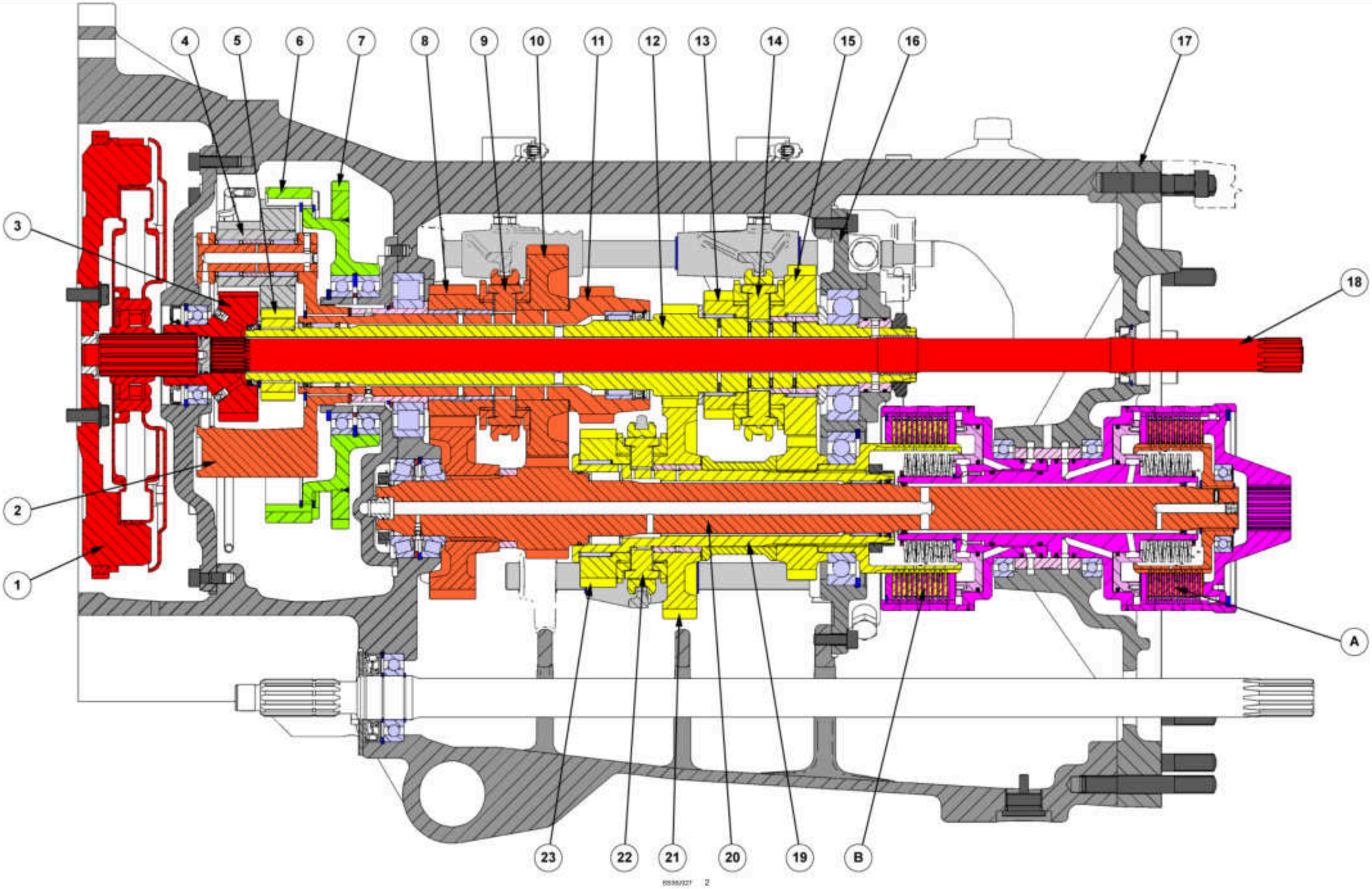
BAIL13TR00661FA 7

Waveform notes (with load applied)

The example waveform shows the same test, but with load applied (dyno test).

During the example waveform the tractor is started and run at idle for approximately 20 seconds. It is then increased to maximum RPM and dyno tested. Once the dyno test has finished the engine RPM was increased to maximum and then returned to idle at the end of the trace.

MidWestTech | New Holland T7.230, T7.245, T7.260, T7.270 AutoCommand Stage IV T... Order the manual at mid-west-tech.com >



MidWestTech | New Holland T7.230, T7.245, T7.260, T7.270 AutoCommand Stage IV Tractor Service Manual | Publication 47936454
Order the manual at mid-west-tech.com >