SERVICE MANUAL

B90B / B90BLR / B100B / B100BLR / B100BTC
B110B / B110BTC / B115B

Backhoe Loaders

Print No. 84428663B

NEW HOLLAND
CONSTRUCTION

MidWestTech | New Holland B90B, B90BLR, B100B, B100BLR, B100BTC, B110B, B110BT... Order the manual at mid-west-tech.com >

INDEX

SECTION 00 - SAFETY RULES

FOREWORD 4

SAFETY INSTRUCTIONS 6

PREVENTION OF FIRE OR EXPLOSIONS 8

PREVENTION OF BURNS 9

PRECAUTIONS FOR WASTE DISPOSAL 10

SECTION 01 - MAINTENANCE

SECTION 02 - TECHNICAL SPECIFICATIONS

MODELS 3

IDENTIFICATION OF MAIN COMPONENTS 4

TECHNICAL SPECIFICATIONS 7

- DIESEL ENGINE 7
- TRANSMISSION 10
- AXLES 11
- BRAKES 11
- STEERING 12
- HYDRAULIC SYSTEM 12
- FRONT COUNTERWEIGHT 13
- NOISE AND VIBRATION LEVELS 13
- BUCKETS 13
- TYRES 14

DIMENSIONS AND PERFORMANCE 15

- DIMENSIONS - 2WS SIDESHIFT 15
- DIMENSIONS - 2WS CENTER PIVOT 16
- DIMENSIONS - 2WS TC - SIDESHIFT 17
- DIMENSIONS - 4WS SIDESHIFT 18
- DIMENSIONS - 4WS CENTER PIVOT 19
- LOADER ATTACHMENT PERFORMANCE 20
- PERFORMANCE OF LOADER ATTACHMENT WITH FORKS 30
- BACKHOE ATTACHMENT PERFORMANCE 35

BACKHOE ATTACHMENT LIFTING CAPACITY 55

MAXIMUM LIFTING LOADS 61

- LOADER ATTACHMENT MAXIMUM LIFTING LOAD TABLE 61
- BACKHOE ATTACHMENT MAXIMUM LIFTING LOAD TABLE 62

SUPPLY SUMMARY TABLE 63

MidWestTech | New Holland B90B, B90BLR, B100B, B100BLR, B100BTC, B110B, B11... Order the manual at mid-west-tech.com >

SECTION 21 - TRANSMISSION

POWERSHUTTLE TRANSMISSION 3
TECHNICAL SPECIFICATIONS 4
HYDRAULIC DIAGRAM 7
CONTROLS 13
LUBRICATION 17
GREASING 20
REMOVAL FROM MACHINE 22
DISASSEMBLY AND ASSEMBLY 23
TROUBLESHOOTING 148
REPAIR TIMES 152
SPECIAL TOOLS 153

POWERSHIFT TRANSMISSION 154
TECHNICAL SPECIFICATIONS 154
CONTROLS 165
LUBRICATION 167
GREASING 169
REMOVAL FROM MACHINE 170
DISASSEMBLY AND ASSEMBLY 171
TROUBLESHOOTING 335
REPAIR TIMES 339
SPECIAL TOOLS 340

SECTION 25 - FRONT AXLES

2WD - 2WS FRONT AXLE 3
TECHNICAL SPECIFICATIONS 3
LUBRICATION AND GREASING 4
REMOVAL FROM MACHINE 6
DISASSEMBLY AND ASSEMBLY 7
TROUBLESHOOTING 7

4WD - 2WS FRONT AXLE 10
TECHNICAL SPECIFICATIONS 10
LUBRICATION AND GREASING 11
REMOVAL FROM MACHINE 13
DISASSEMBLY AND ASSEMBLY 14
TROUBLESHOOTING 57
SPECIAL TOOLS 61

4WS FRONT AXLE 62
TECHNICAL SPECIFICATIONS 62
LUBRICATION AND GREASING 63
REMOVAL FROM MACHINE 65
DISASSEMBLY AND ASSEMBLY 66
TROUBLESHOOTING 131
REPAIR TIMES 137
SPECIAL TOOLS 138

MidWestTech | New Holland B90B, B90BLR, B100B, B100BLR, B100BTC, B110B, B11... Order the manual at mid-west-tech.com >

SECTION 27 - REAR AXLE

2WS REAR AXLE
(B90B - B100B - B100BTC) 3
TECHNICAL SPECIFICATIONS 3
LUBRICATION AND GREASING 5
REMOVAL FROM MACHINE 7
DISASSEMBLY AND ASSEMBLY 8
TROUBLESHOOTING 61
REPAIR TIMES 67
SPECIAL TOOLS 68

2WS REAR AXLE
(B110B - B110BTC) 69
TECHNICAL SPECIFICATIONS 69
LUBRICATION AND GREASING 71
REMOVAL FROM MACHINE 73
DISASSEMBLY AND ASSEMBLY 74
TROUBLESHOOTING 127
REPAIR TIMES 133
SPECIAL TOOLS 134

4WS REAR AXLE
(B115B) 135
TECHNICAL SPECIFICATIONS 135
LUBRICATION AND GREASING 138
REMOVAL FROM MACHINE 140
DISASSEMBLY AND ASSEMBLY 141
TROUBLESHOOTING 219
REPAIR TIMES 225
SPECIAL TOOLS 227

SECTION 33 - BRAKE SYSTEM

PARKING BRAKE 3
TECHNICAL SPECIFICATIONS 3
OPERATION 3
ADJUSTMENT 4
DISASSEMBLY AND ASSEMBLY 5

SERVICE BRAKE 14
TECHNICAL SPECIFICATIONS 14
OPERATION 14

SECTION 35 - HYDRAULIC SYSTEM

HYDRAULIC DIAGRAMS 3
HYDRAULIC DIAGRAM - 2WS SIDESHIFT MECHANICAL MODELS 3
HYDRAULIC DIAGRAM - 2WS SIDESHIFT PILOT MODELS 5
HYDRAULIC DIAGRAM - 2WS CENTER PIVOT PILOT MODELS 7
HYDRAULIC DIAGRAM - 4WS SIDESHIFT MECHANICAL MODELS 9
HYDRAULIC DIAGRAM - 4WS SIDESHIFT PILOT MODELS 11
HYDRAULIC DIAGRAM - 4WS CENTER PIVOT PILOT MODELS 13

MidWestTech | New Holland B90B, B90BLR, B100B, B100BLR, B100BTC, B110B, B11... Order the manual at mid-west-tech.com >

SUPPLY SUMMARY TABLE

RECOMMENDED FLUIDS AND APPLICATION	NEW HOLLAND Specifications	INTERNATIONAL Specifications	MODELS	Q.TY	
				Litres	Gal
ENGINE - OIL Ambra Master Gold HSP 15W - 40	NH 330 H	API CH-4, ACEA E5, 15W - 40	2WS - with filter 4WS - with filter	11.7 11.5	3.09 3.04
COOLING SYSTEM Ambra Agriflu antifreeze 50% water 50%	NH 900 A	ASTM D 6210	ALL	24	6.30
HYDRAULIC SYSTEM Ambra Multi G	NH 410 B	API GL4, ISO VG 32/46, 10W - 30	ALL	118	31.10
Hydrosystem biodegradable 46 BIO-S	NH 646 BS	ISO VG 46, DIN 51524 - part II	ALL	118	31.10
POWERSHUTTLE TRANSMISSION (complete with torque converter and pipework) Ambra Mastertran	MAT3505		2WD	18.5	4.07
			4WD	20.8	4.57
POWERSHIFT TRANSMISSION (complete with torque converter and pipework) Ambra Mastertran			ALL	20.8	4.57
FRONT AXLE (2WS) Ambra TRX 80W - 140	NH 600/TR	API GL4, 80W - 140	2WD	0.8	0.21
			4WD - Differential	8.6	2.27
			4WD - Wheel reduction gear (each)	1	0.26
FRONT AXLE (4WS) Ambra TRX 80W - 140			Differential	10.5	2.80
			Wheel reduction gear (each)	1.3	0.34
REAR AXLE (2WS) Ambra TRX 80W - 140			Differential - B90B-B95B-B100B	15.5	3.41
			Differential - B110B	17	3.74
REAR AXLE (4WS) Ambra TRX 80W - 140			Differential	11	2.90
			Wheel reduction gear (each)	1.3	0.34
FUEL Decanted and filtered diesel fuel			ALL	135	35.50
VARIOUS JOINTS Ambra MG2 grease	NH 585/GR	NLGI 2	ALL	As required	
TELESCOPIC DIPPER Ambra Grease GR EXP	NH 587/GR	NLGI 2	ALL	As required	
AIR CONDITIONING COMPRESSOR PAG SP 20 oil			ALL	240 cm^3	14.6 in^3

MidWestTech | New Holland B90B, B90BLR, B100B, B100BLR, B100BTC, B110B, B11... Order the manual at mid-west-tech.com >

TROUBLESHOOTING

Items that may cause trouble are listed in the table below. Anyway, as a general rule, we recommend carrying out some preliminary checks.

Ensure water flow to the heater radiator is steady and all air has been removed from the system.

Hoses are unrestricted and not leaking.

Check the electric connections are good and the blower motor is operational.

The operating cable to the heater valve and valve is operational.

FAULT	CAUSE	ACTION
Dust enters the cab.	Improper seal around filter element.	Check the seal condition.
	Blocked filter.	Clean or replace the filter.
	Defective filter.	Replace the filter.
	Excessive air leak(s) around doors and windows.	Repair and Seal air leak(s).
Blower motor air flow low.	Blocked filter or recirculation filter.	Clean or replace the filter(s).
	Heater radiator core blocked.	Clean radiator core thoroughly.
Blower motor not working.	Fuse blown.	Replace fuse.
Cab does not heat up.	Engine not reaching operating temperature. Thermostat stuck open.	Replace the temperature switch.
	Heater hose from engine to cab radiator, kinked or blocked.	Ensure water flow to heater radiator is adequate and not restricted.
Cab does not cool.	Heater control turned on.	Turn the temperature control knob fully counterclockwise for maximum cooling.
	Heater control valve stuck in open position.	Free up valve or change as required.
Temperature not stable.	Low engine coolant.	Top up coolant recovery tank.

MidWestTech | New Holland B90B, B90BLR, B100B, B100BLR, B100BTC, B110B, B11... Order the manual at mid-west-tech.com >

PRELIMINARY CHECKS AND TESTS

To prevent damage to components of the alternator charging circuit, the following precautions must be taken during maintenance:

- NEVER connect or disconnect a charging system connection, including the battery, when the motor is running.
- NEVER dead short to ground any component of the charging circuit.
- ALWAYS disconnect the ground cable from the battery (negative) to recharge the battery on the vehicle using a battery charger.
- ALWAYS respect the polarity when installing the battery on the vehicle or when using an auxiliary battery to start the motor.

IMPORTANT: *connect the positive cable to the positive terminal and the negative cable to the negative terminal.*

PRELIMINARY CHECKS

Before undertaking an electric inspection, check the charging system and the electric system carefully.

Check the state of cables and the tightening of connections.

Battery check

Check each cell of the battery with a hydrometer.

The battery must be charged at least 70% and be in good condition.

Drive belt check

Check that the belt and the pulley of the alternator are clean, without any trace of oil and grease and that they are in good condition.

Indicator lamp check

Turn the ignition key and check that the charge indicator is well lit.

If it is not fully lighted, check its bulb.

If the bulb is OK, check the alternator wire connections as described in the "Preliminary tests" section below.

If the indicator lamp is lighted, start the motor and run it at a speed that is higher than the idling speed. The indicator lamp must turn off.

If the indicator lamp does not turn off, turn off the motor and disconnect the ground cable L.
If the indicator lamp goes out, an alternator component is defective.

Follow the instructions given in the "Checking the alternator components" section below.

If the indicator lamp stays lighted, look for a dead short to ground between the terminal "L" cable and the indicator lamp.

MidWestTech | New Holland B90B, B90BLR, B100B, B100BLR, B100BTC, B110B, B11... Order the manual at mid-west-tech.com >

CONDENSER

The condenser (1), located at the front of the machine in front of the engine radiator consists of a number of turns of continuous coil mounted in a series of thin cooling fins to provide a maximum of heat transfer in a minimum amount of space.

The condenser receives the hot, high pressure coolant vapour from the compressor.

The hot vapour passes through the condenser coils and outside air is drawn through the condenser by the engine cooling fan.

Heat moves from the hot coolant vapour into the cooler outside air flowing across the condenser coils and fins.

When the coolant vapour reaches the pressure and temperature that will induce a change of state, a large quantity of heat is transferred to the outside air and the coolant changes to a high pressure warm liquid.

The warm liquid coolant continues onto the receiver/drier where it is filtered and desiccated, to remove any moisture, before passing through an outlet line to the thermostatic expansion valve.



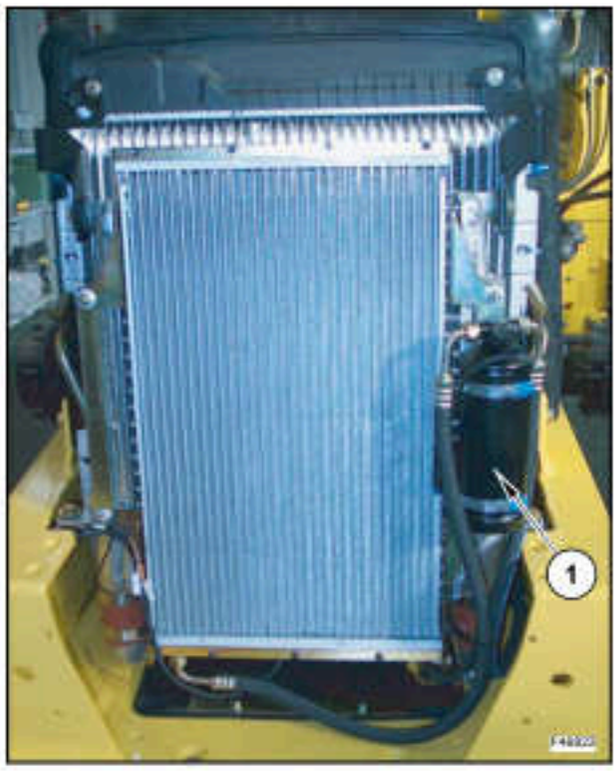
RECEIVER DRYER

The receiver/dryer (1) stores the liquid coolant to make sure that a steady flow to the expansion valve is maintained also under extremely different operating conditions.

The drier contains a desiccant (molecular sieve) which absorbs any moisture within the system, and a filter which prevents the entry of foreign particles.

NOTE: *any moisture in the air conditioning system is extremely harmful. Moisture not absorbed by the dehydrator will circulate with the coolant and droplets may collect and freeze in the thermostatic expansion valve orifice. This action will block the coolant flow and stop the cooling action. Moisture will also react with coolant HFC 134a and the lubricant to form a corrosive acid.*

The desiccant can only absorb a limited amount of moisture before reaching saturation point. Because of this, after any system component replacement or repairs requiring entry into the system, the receiver/dryer should be replaced.



MidWestTech | New Holland B90B, B90BLR, B100B, B100BLR, B100BTC, B110B, B11... Order the manual at mid-west-tech.com >

LOADER BUCKET CYLINDER REMOVAL (B100BTC - B110BTC - B115B)

Move the machine to a level and firm ground.

Place the bucket firmly on the ground.

Relieve the residual pressure in the system by moving the loader control lever through all operating positions.

Support the cylinder using a sling and a suitable support.

Disconnect the hoses.

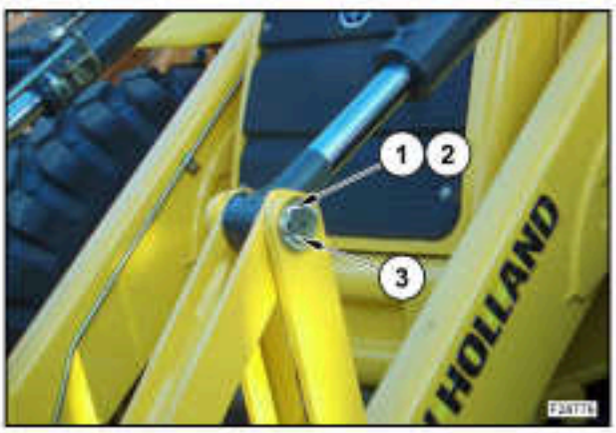
Cap or plug all exposed openings.



Support the bucket linkage and rods.

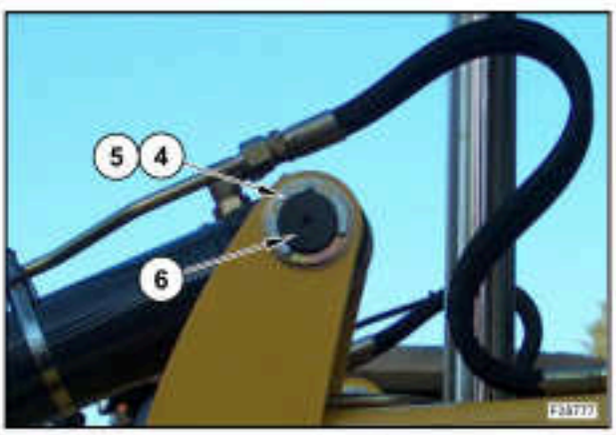
Remove the snap ring (1) and the spacer (2).

Hammer to slide out the pin (3).



Remove the stop ring (4) and the shim (5).

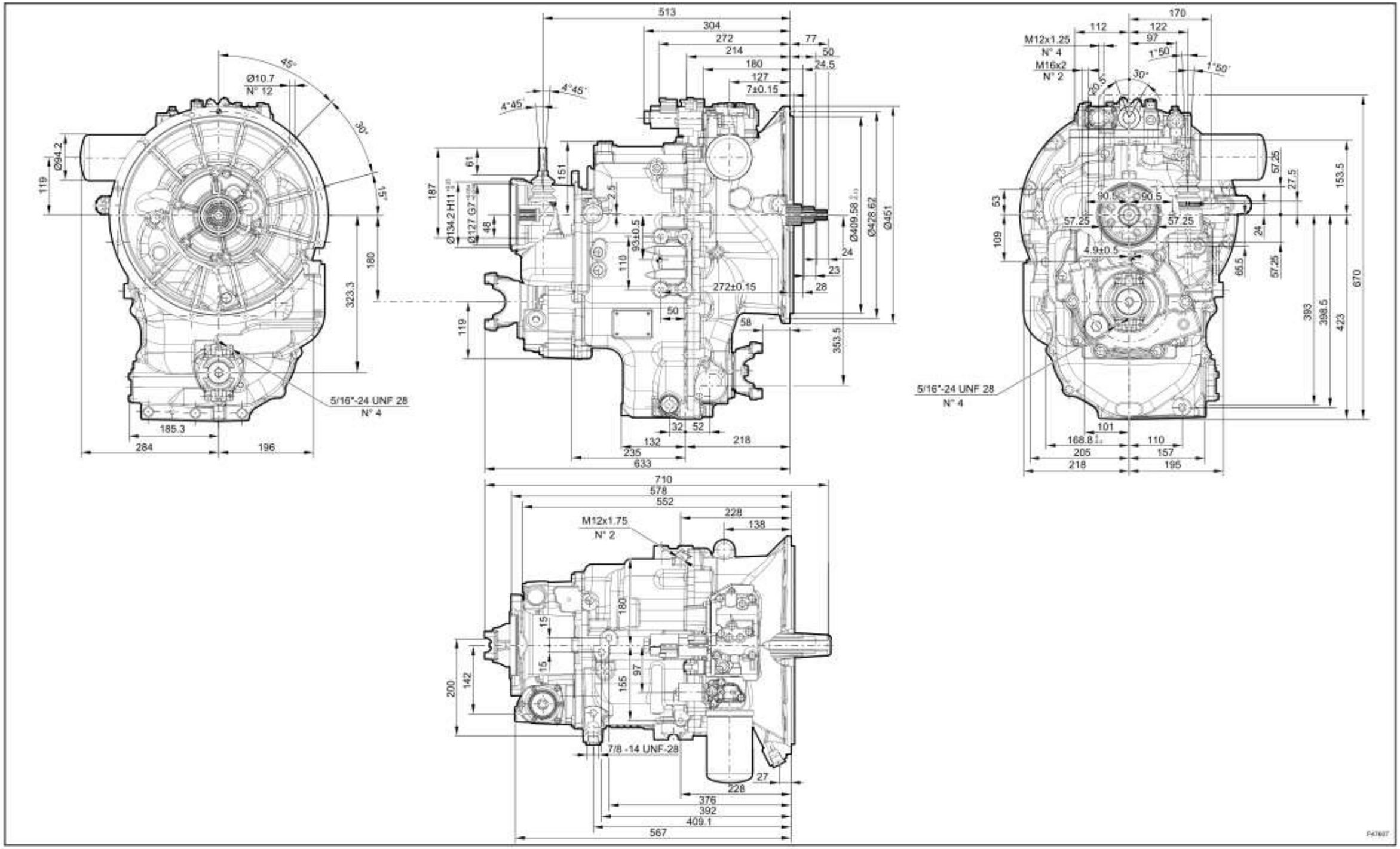
Hammer to slide out the pin (6).



Remove the loader bucket cylinder.

MidWestTech | New Holland B90B, B90BLR, B100B, B100BLR, B100BTC, B110B, B11... Order the manual at mid-west-tech.com >

4WD



P47937

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