

SERVICE MANUAL

Boomer™ 3040 CVT / Boomer™ 3045 CVT / Boomer™ 3050 CVT Compact Tractor

PIN ZCMB11001 and above; PIN ZDMB11925 and above

Part number 48017760

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SERVICE MANUAL

**Boomer™ 3040 CVT [ZCMB11001 -], Boomer™ 3040 CVT [ZDMB11925 -],
Boomer™ 3045 CVT [ZCMB11001 -], Boomer™ 3045 CVT [ZDMB11925 -],
Boomer™ 3050 CVT [ZCMB11001 -], Boomer™ 3050 CVT [ZDMB11925 -]**

Link Product / Engine

Product	Market Product	Engine
Boomer™ 3040 CVT [ZCMB11001 -]	Europe	N844
Boomer™ 3040 CVT [ZDMB11925 -]	Europe	N844
Boomer™ 3045 CVT [ZCMB11001 -]	Europe	N844L
Boomer™ 3045 CVT [ZDMB11925 -]	Europe	N844L
Boomer™ 3050 CVT [ZCMB11001 -]	Europe	N844L
Boomer™ 3050 CVT [ZDMB11925 -]	Europe	N844L

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INTRODUCTION

Foreword - Important notice regarding equipment servicing

All repair and maintenance work listed in this manual must be carried out only by qualified dealership personnel, strictly complying with the instructions given, and using, whenever possible, the special tools.

Anyone who performs repair and maintenance operations without complying with the procedures provided herein shall be responsible for any subsequent damages.

The manufacturer and all the organizations of its distribution chain, including - without limitation - national, regional, or local dealers, reject any responsibility for damages caused by parts and/or components not approved by the manufacturer, including those used for the servicing or repair of the product manufactured or marketed by the manufacturer. In any case, no warranty is given or attributed on the product manufactured or marketed by the manufacturer in case of damages caused by parts and/or components not approved by the manufacturer.

The manufacturer reserves the right to make improvements in design and changes in specifications at any time without notice and without incurring any obligation to install them on units previously sold. Specifications, descriptions, and illustrative material herein are as accurate as known at time of publication but are subject to change without notice.

In case of questions, refer to your NEW HOLLAND Sales and Service Networks.

Safety rules

Personal safety



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

 DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

 WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

 CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: Notice indicates a situation that, if not avoided, could result in machine or property damage.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: Note indicates additional information that clarifies steps, procedures, or other information in this manual.

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Safety rules - Ecology and the environment

Soil, air, and water quality is important for all industries and life in general. When legislation does not yet rule the treatment of some of the substances that advanced technology requires, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

Familiarize yourself with the relative legislation applicable to your country, and make sure that you understand this legislation. Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, anti-freeze, cleaning agents, etc., with regard to the effect of these substances on man and nature and how to safely store, use, and dispose of these substances.

Helpful hints

- Avoid the use of cans or other inappropriate pressurized fuel delivery systems to fill tanks. Such delivery systems may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of these products contain substances that may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when you drain fluids such as used engine coolant mixtures, engine oil, hydraulic fluid, brake fluid, etc. Do not mix drained brake fluids or fuels with lubricants. Store all drained fluids safely until you can dispose of the fluids in a proper way that complies with all local legislation and available resources.
- Do not allow coolant mixtures to get into the soil. Collect and dispose of coolant mixtures properly.
- The air-conditioning system contains gases that should not be released into the atmosphere. Consult an air-conditioning specialist or use a special extractor to recharge the system properly.
- Repair any leaks or defects in the engine cooling system or hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding. Penetrating weld splatter may burn a hole or weaken hoses, allowing the loss of oils, coolant, etc.

Battery recycling

Batteries and electric accumulators contain several substances that can have a harmful effect on the environment if the batteries are not properly recycled after use. Improper disposal of batteries can contaminate the soil, groundwater, and waterways. NEW HOLLAND strongly recommends that you return all used batteries to a NEW HOLLAND dealer, who will dispose of the used batteries or recycle the used batteries properly. In some countries, this is a legal requirement.



Mandatory battery recycling

NOTE: The following requirements are mandatory in Brazil.

Batteries are made of lead plates and a sulfuric acid solution. Because batteries contain heavy metals such as lead, CONAMA Resolution 401/2008 requires you to return all used batteries to the battery dealer when you replace any batteries. Do not dispose of batteries in your household garbage.

Points of sale are obliged to:

- Accept the return of your used batteries
- Store the returned batteries in a suitable location
- Send the returned batteries to the battery manufacturer for recycling



SERVICE MANUAL

Engine

**Boomer™ 3040 CVT [ZCMB11001 -], Boomer™ 3040 CVT [ZDMB11925 -],
Boomer™ 3045 CVT [ZCMB11001 -], Boomer™ 3045 CVT [ZDMB11925 -],
Boomer™ 3050 CVT [ZCMB11001 -], Boomer™ 3050 CVT [ZDMB11925 -]**

Engine - General specification

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

	Boomer 3040	Boomer 3045	Boomer 3050
Engine Model	ISM N844	ISM N844L	ISM N844L
Number of Cylinders	4	4	4
Bore x Stroke	84 mm x 90 mm (3.31 in x 3.54 in)	84 mm x 100 mm (3.31 in x 3.94 in)	84 mm x 100 mm (3.31 in x 3.94 in)
Displacement	1995 cm ³ (121.7 in ³)	2216 cm ³ (135.2 in ³)	2216 cm ³ (135.2 in ³)
Compression Ratio	22.5:1	22.5:1	22.5:1
Rated Speed	2600 RPM	2600 RPM	2800 RPM
Muffler			Horizontal
Firing Order	1-3-4-2	1-3-4-2	1-3-4-2
Low Idle Speed	1050 RPM	1050 RPM	1050 RPM
Maximum No-Load Speed	2825 RPM	2825 RPM	3025 RPM
Cylinder Arrangement	In-Line Vertical	In-Line Vertical	In-Line Vertical
Valve Arrangement	Overhead	Overhead	Overhead
Compression Pressure at 200 RPM(cylinder speed)	29.4 ± 1.8 bar (427 ± 50 psi)	29.4 ± 1.8 bar (427 ± 50 psi)	29.4 ± 1.8 bar (427 ± 50 psi)
Variation between cylinders			

Engine - Torque

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

	Boomer 3040	Boomer 3045	Boomer 3050
Engine Model	ISM N844	ISM N844L	ISM N844L
TORQUE SPECIFICATION			
Connecting Rod Cap Bolts	49 - 54 N·m (36 - 40 lb ft)	49 - 54 N·m (36 - 40 lb ft)	49 - 54 N·m (36 - 40 lb ft)
Main Bearing Retaining Bolts	49 - 54 N·m (36 - 40 lb ft)	49 - 54 N·m (36 - 40 lb ft)	49 - 54 N·m (36 - 40 lb ft)
Relief Valve Assembly	59 - 69 N·m (43 - 51 lb ft)	59 - 69 N·m (43 - 51 lb ft)	59 - 69 N·m (43 - 51 lb ft)
Crankshaft Main Bearing Holder Bolts			
Rear Main	25 - 29 N·m (18 - 22 lb ft)	25 - 29 N·m (18 - 22 lb ft)	25 - 29 N·m (18 - 22 lb ft)
Center Mains	49 - 54 N·m (36 - 40 lb ft)	49 - 54 N·m (36 - 40 lb ft)	49 - 54 N·m (36 - 40 lb ft)
Engine Rear Mounting Plate	12 - 17 N·m (9 - 12 lb ft)	12 - 17 N·m (9 - 12 lb ft)	12 - 17 N·m (9 - 12 lb ft)
Flywheel Retaining Bolts	68 - 78 N·m (51 - 58 lb ft)	68 - 78 N·m (51 - 58 lb ft)	68 - 78 N·m (51 - 58 lb ft)
Engine Front Plate	9 - 12 N·m (6 - 9 lb ft)	9 - 12 N·m (6 - 9 lb ft)	9 - 12 N·m (6 - 9 lb ft)
Crankshaft Pulley Nut	274 - 333 N·m (202 - 246 lb ft)	274 - 333 N·m (202 - 246 lb ft)	274 - 333 N·m (202 - 246 lb ft)
Cylinder Head Bolts	98 - 103 N·m (72.3 - 76 lb ft)	98 - 103 N·m (72.3 - 76 lb ft)	98 - 103 N·m (72.3 - 76 lb ft)
Rocker Arm Assembly	27 - 39 N·m (20 - 29 lb ft)	27 - 39 N·m (20 - 29 lb ft)	27 - 39 N·m (20 - 29 lb ft)
Rocker Arm Locknut	11 - 16 N·m (8 - 12 lb ft)	11 - 16 N·m (8 - 12 lb ft)	11 - 16 N·m (8 - 12 lb ft)
Oil Tube Banjo Bolt	9 - 13 N·m (7 - 9 lb ft)	9 - 13 N·m (7 - 9 lb ft)	9 - 13 N·m (7 - 9 lb ft)
Oil Pressure Switch	14 - 20 N·m (10 - 14 lb ft)	14 - 20 N·m (10 - 14 lb ft)	14 - 20 N·m (10 - 14 lb ft)
Rocker Cover Bolts	7 - 12 N·m (6 - 9 lb ft)	7 - 12 N·m (6 - 9 lb ft)	7 - 12 N·m (6 - 9 lb ft)
Glow Plugs	14 - 20 N·m (10 - 14 lb ft)	14 - 20 N·m (10 - 14 lb ft)	14 - 20 N·m (10 - 14 lb ft)
Cooling Fan Bolts	9 - 13 N·m (7 - 9 lb ft)	9 - 13 N·m (7 - 9 lb ft)	9 - 13 N·m (7 - 9 lb ft)
Balancer			
Retaining Bolts	49 - 53.9 N·m (36 - 39 lb ft)	49 - 53.9 N·m (36 - 39 lb ft)	49 - 53.9 N·m (36 - 39 lb ft)

Metric Bolt Torque Specifications

Bolt Size	Grade No.	Coarse Thread		Fine Thread	
		Pitch	Torque	Pitch	Torque
M6	4T		4.9 - 6.9 N·m (3.6 - 5.1 lb ft)		
	7T	1.0	8.3 - 11.3 N·m (6.1 - 8.3 lb ft)		
	10T		11.8 - 15.7 N·m (8.7 - 11.6 lb ft)		
M8	4T		12.7 - 16.7 N·m (9.4 - 12.3 lb ft)		15.2 - 20.1 N·m (11.2 - 14.8 lb ft)
	7T	1.25	22.6 - 28.4 N·m (16.6 - 21.0 lb ft)	1.0	26.5 - 34.3 N·m (19.5 - 25.3 lb ft)
	10T		28.4 - 36.3 N·m (21.0 - 26.8 lb ft)		30.4 - 40.2 N·m (22.4 - 29.7 lb ft)
M10	4T		25.5 - 33.3 N·m (18.8 - 24.6 lb ft)		28.4 - 36.3 N·m (21.0 - 26.8 lb ft)
	7T	1.5	44.1 - 55.9 N·m (32.5 - 41.2 lb ft)	1.25	49.0 - 62.8 N·m (36.2 - 46.3 lb ft)
	10T		53.9 - 69.6 N·m (39.8 - 51.4 lb ft)		57.9 - 73.5 N·m (42.7 - 54.2 lb ft)
M12	4T		37.3 - 47.1 N·m (27.5 - 34.7 lb ft)		43.1 - 54.9 N·m (31.8 - 40.5 lb ft)
	7T	1.75	65.7 - 83.4 N·m (48.5 - 61.5 lb ft)	1.25	74.5 - 94.1 N·m (55.0 - 69.4 lb ft)
	10T		92.2 - 116 N·m (68.0 - 85.4 lb ft)		99.0 - 127 N·m (73.1 - 93.3 lb ft)
M14	4T		62.8 - 80.4 N·m (46.3 - 59.3 lb ft)		69.6 - 87.3 N·m (51.4 - 64.4 lb ft)
	7T	2.0	104 - 131 N·m (76.7 - 96.9 lb ft)	1.5	117 - 148 N·m (86.1 - 109 lb ft)
	11T		139 - 175 N·m (102 - 129 lb ft)		147 - 186 N·m (108 - 137 lb ft)
M16	4T		86.3 - 110 N·m (63.6 - 81.0 lb ft)		91.2 - 115 N·m (67.3 - 84.6 lb ft)
	7T	2.0	140 - 184 N·m (110 - 136 lb ft)	1.5	157 - 192 N·m (116 - 142 lb ft)
	11T		206 - 255 N·m (152 - 188 lb ft)		221 - 270 N·m (163 - 199 lb ft)
M18	4T		114 - 141 N·m (83.9 - 104 lb ft)		131 - 163 N·m (96.9 - 120 lb ft)
	7T	2.0	196 - 235 N·m (145 - 174 lb ft)	1.5	230 - 279 N·m (170 - 206 lb ft)
	11T		275 - 333 N·m (203 - 246 lb ft)		299 - 368 N·m (221 - 271 lb ft)
M20	4T		144 - 179 N·m (106 - 132 lb ft)		172 - 211 N·m (127 - 156 lb ft)
	7T	2.5	240 - 289 N·m (177 - 213 lb ft)	1.5	275 - 333 N·m (203 - 246 lb ft)
	11T		363 - 441 N·m (268 - 325 lb ft)		397 - 485 N·m (293 - 358 lb ft)

Engine - Special tools

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

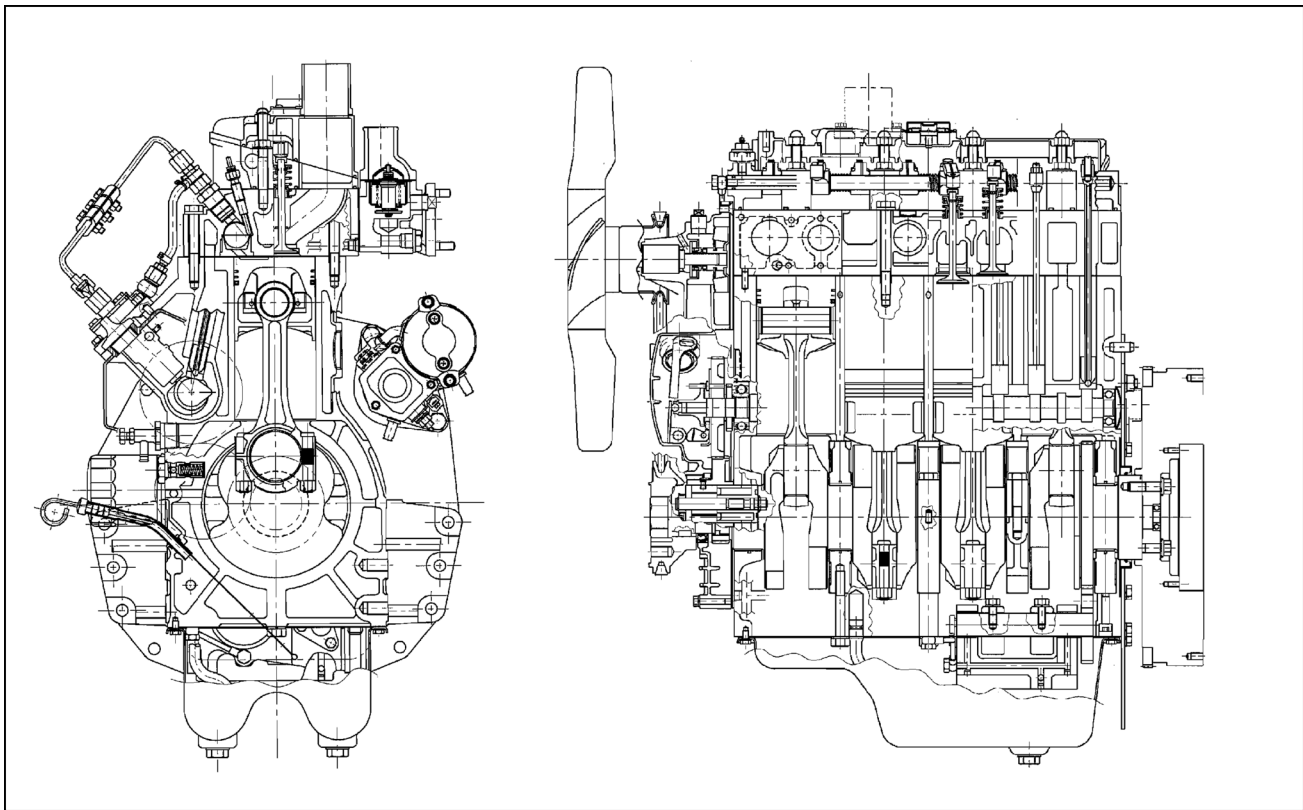
Cylinder head - Static description

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Cylinder Head and Valve Train Components

The cylinder head incorporates the valve assemblies, rocker arms, rocker shaft, push rods, and lifters. A swirl chamber located between the injector assembly and the main combustion chamber of the cylinders provides improved starting and greater fuel efficiency. Initial combustion starts in the precombustion chamber and as the expansion occurs a strong swirl pattern is created in the main combustion chamber for more complete combustion of the air-fuel mixture. The air intake manifold is separate from the cast aluminum valve cover on all these engines. The exhaust manifold is bolted on the left-hand side of the cylinder head on each of the models. Cylinder heads have integral valve guides. Standard size valves only are used.

The cylinder block assembly contains the pistons, connecting rods, crankshaft, timing gears, and engine oil pump. The crankshaft is supported on five main bearings. The front bearing is positioned in a bore in front of the block. The other bearings are split liners located in holders bolted to the block. The camshaft is supported on four ball bearings located in the block.



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Engine models ISM N844 and ISM N844L

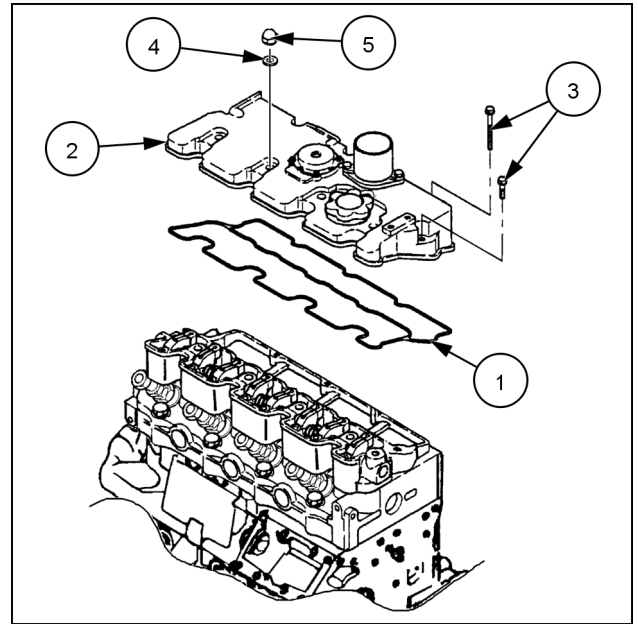
Valve cover - Install

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Prior operation:

Valve drive and gears - Clearance (Valves) (10.106).

1. Install a new gasket (1) and position the valve cover (2) over the rocker arms.
2. Install the valve cover retaining bolts (3), and tighten to **12 - 16 N·m (9 - 19 lb ft)**.
3. Install and tighten the seal washer (4), and cap nuts (5).



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Next operation:

Water pump - Install (with Cooling Fan) (10.400).

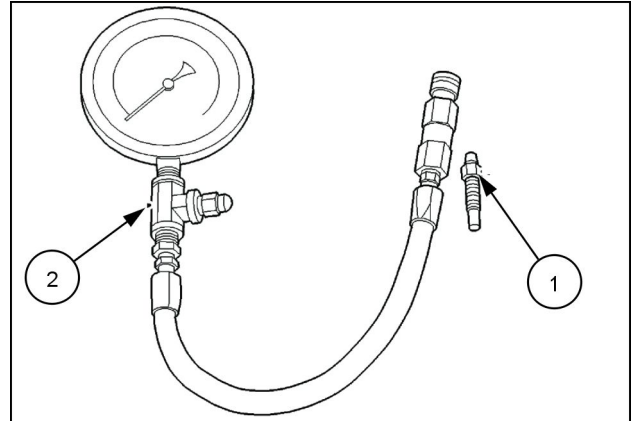
Cylinder head - Compression test

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Compression test is performed through the glow plug ports. The test adapter tool **(1)**, is equipped with quick coupler ends for easy installation of the hose and gauge.

The procedures to perform a compression test are as follows:

1. Remove the wire lead from the fuel injection pump solenoid.
2. Remove the glow plug electrical wire and wire connector from top of the glow plugs.

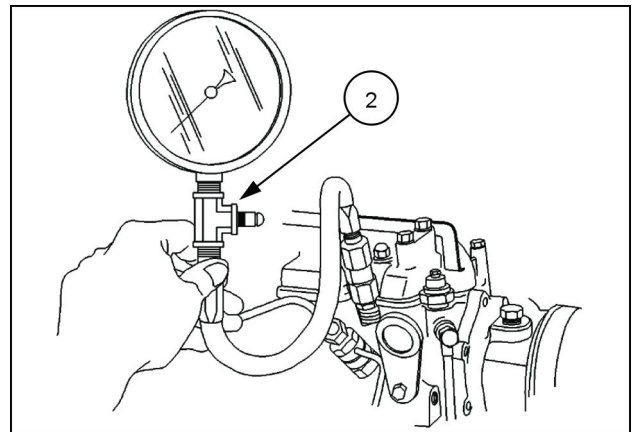


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3. Remove all of the glow plugs.

NOTE: Be sure all the glow plugs are removed before starting the compression tests.

4. Install the adapter Tool No. **FNH00120** , hose and gauge assembly OEM1074 **(2)**, in each port and crank the engine until pressure stabilizes. The gauge should read **2944 kPa (427 psi)**) plus or minus **345 kPa (50 psi)** .



SECT10C01PG17_2 2

NOTE: It may be necessary to remove some injector fuel lines to install the adapter tool.

NOTE: There should not be more than **345 kPa (50 psi)** variation between the cylinders.

5. When all cylinders have been tested, reinstall the glow plugs and electrical connections.



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Cylinder head - Remove

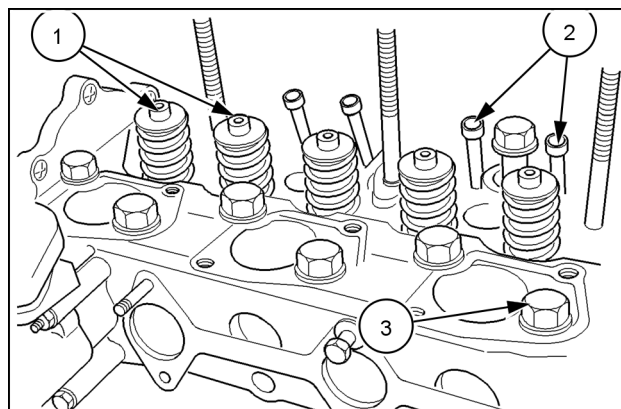
Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Prior operation:

Rocker Arm Shaft and Support Bracket - Remove; See: "Engine Disassemble"..

1. Remove the valve stem caps (1), and push rods (2).
2. To remove the cylinder head, remove the cylinder head bolts (3), by alternately loosening a half turn at a time to prevent warping the head.

NOTE: Keep all valve components in separately marked containers for reassembly in their original location.



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Next operation:

Valve Tappet - Removal; See: "Engine Disassemble".

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