TM115-TM165 REPAIR MANUAL COMPLETE CONTENTS

The following pages are the collation of the contents pages from each section and chapter of the TM Series Repair manual.

The sections used through out all New Holland product Repair manuals may not be used for each product. Each Repair manual will be made up of one or several books. Each book will be labeled as to which sections are in the overall Repair manual and which sections are in each book.

The sections listed above are the sections utilized for the TM Series Tractors.

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GENERAL INSTRUCTIONS

IMPORTANT NOTICE

All maintenance and repair operations described in this manual should be carried out exclusively by New Holland authorised workshops. All instructions should be carefully observed and special equipment where indicated should be used.

Anyone who carries out service operations described without carefully observing these prescriptions will be directly responsible for any damage caused.

NOTES FOR EQUIPMENT

Equipment which NEW HOLLAND proposes and shows in this manual is:

- studied and designed expressly for use on NEW HOLLAND tractors;
- necessary to make a reliable repair;
- accurately built and strictly tested to offer efficient and long-lasting working life.

NOTICES

The words “front”, “rear”, “right hand”, and “left hand” refer to the different parts as seen from the operator’s seat oriented to the normal direction of movement of the tractor.

SAFETY RULES

PAY ATTENTION TO THIS SYMBOL

This warning symbol points out important messages involving personal safety.
Carefully read the safety rules contained herein and follow advised precautions to avoid potential hazards and safeguard your safety.
In this manual you will find this symbol together with the following key-words:

WARNING *- it gives warning about improper repair operations and potential consequences affecting the service technician’s personal safety.*

DANGER *- it gives specific warning about potential dangers for personal safety of the operator or other persons directly or indirectly involved in the operation.*

TO PREVENT ACCIDENTS

Most accidents and personal injuries taking place in workshops are due from non-observance of some essential rules and safety precautions.

The possibility that an accident might occur with any type of machines should not be disregarded, no matter how well the machine in question was designed and built.

A wise and careful service technician is the best precautions against accidents.

Careful observance of this only basic precaution would be enough to avoid many severe accidents.

DANGER

Never carry out any cleaning, lubrication or maintenance operations when the engine is running.

SAFETY RULES

Generalities

- Carefully follow specified repair and maintenance procedures.
- Do not wear rings, wristwatches, jewels, unbuttoned or flapping clothing such as ties, torn clothes, scarves, open jackets or shirts with open zips which could get caught on moving parts. Use approved safety clothing such as anti-slipping footwear, gloves, safety goggles, helmets, etc.
- Wear safety glasses with side guards when cleaning parts using compressed air.
- Damaged or frayed wires and chains are unreliable. Do not use them for lifting or towing.
- Wear suitable protection such as approved eye protection, helmets, special clothing, gloves and footwear whenever welding. All persons standing in the vacinity of the welding process should wear approved eye protection. **NEVER LOOK AT THE WELDING ARC IF YOUR EYES ARE NOT SUITABLY PROTECTED.**
- Never carry out any repair on the machine if someone is sitting on the operator's seat, except if they are qualified operators assisting in the operation to be carried out.
- Never operate the machine or use attachments from a place other than sitting at the operator's seat or at the side of the machine when operating the fender switches.
- Never carry out any operation on the machine when the engine is running, except when specifically indicated. Stop the engine and ensure that all pressure is relieved from hydraulic circuits before removing caps, covers, valves, etc.
- All repair and maintenance operations should be carried out with the greatest care and attention.
- Disconnect the batteries and label all controls to warn that the tractor is being serviced. Block the machine and all equipment which should be raised.
- Never check or fill fuel tanks or batteries, nor use starting liquid if you are smoking or near open flames as such fluids are flammable.
- The fuel filling gun should always remain in contact with the filler neck. Maintain this contact until the fuel stops flowing into the tank to avoid possible sparks due to static electricity build-up.
- To transfer a failed tractor, use a trailer or a low loading platform trolley if available.
- To load and unload the machine from the transportation means, select a flat area providing a firm support to the trailer or truck wheels. Firmly tie the machine to the truck or trailer platform and block wheels as required by the transporter.
- Always use lifting equipment of appropriate capacity to lift or move heavy components.
- Chains should always be safely fastened. Ensure that fastening device is strong enough to hold the load foreseen. No persons should stand near the fastening point.
- The working area should be always kept CLEAN and DRY. Immediately clean any spillage of water or oil.
- Never use gasoline, diesel oil or other flammable liquids as cleaning agents. Use non-flammable non-toxic proprietary solvents.
- Do not pile up grease or oil soaked rags, as they constitute a great fire hazard. Always place them into a metal container.

START UP

- Never run the engine in confined spaces which are not equipped with adequate ventilation for exhaust gas extraction.
- Never bring your head, body, arms, legs, feet, hands, fingers near fans or rotating belts.

ENGINE

- Always loosen the radiator cap very slowly before removing it to allow pressure in the system to dissipate. Coolant should be topped up only when the engine is stopped.
- Do not fill up fuel tank when the engine is running.
- Never adjust the fuel injection pump when the tractor is moving.
- Never lubricate the tractor when the engine is running.

ELECTRICAL SYSTEMS

- If it is necessary to use auxiliary batteries, cables must be connected at both sides as follows: (+) to (+) and (-) to (-). Avoid short-circuiting the terminals. GAS RELEASED FROM BATTERIES IS HIGHLY FLAMMABLE. During charging, leave the battery compartment uncovered to improve ventilation. Avoid sparks or flames near the battery area. Do no smoke.
- Do not charge batteries in confined spaces.
- Always disconnect the batteries before performing any type of service on the electrical system.

HYDRAULIC SYSTEMS

- Some fluid coming out from a very small port can be almost invisible and be strong enough to penetrate the skin. For this reason, NEVER USE YOUR HANDS TO CHECK FOR LEAKS, but use a piece of cardboard or a piece of wood for this purpose. If any fluid is injected into the skin, seek medical aid immediately. Lack of immediate medical attention may result in serious infections or dermatitis.

- Always take system pressure readings using the appropriate gauges.

WHEELS AND TYRES

- Check that the tyres are correctly inflated at the pressure specified by the manufacturer. Periodically check for possible damage to the rims and tyres.

- Stay at the tyre side when inflating.

- Check the pressure only when the tractor is unloaded and tyres are cold to avoid wrong readings due to over-pressure.

- Never cut, nor weld a rim with the inflated tyre assembled.

- To remove the wheels, block both front and rear tractor wheels. Raise the tractor and install safe and stable supports under the tractor in accordance with regulations in force.

- Deflate the tyre before removing any object caught into the tyre tread.

- Never inflate tyres using flammable gases as they may originate explosions and cause injuries to bystanders.

REMOVAL AND INSTALLATION

- Lift and handle all heavy components using lifting equipment of adequate capacity. Ensure that parts are supported by appropriate slings and hooks. Use lifting eyes provided to this purpose. Take care of the persons near the loads to be lifted.

HEALTH AND SAFETY

CONTENT

HEALTH AND SAFETY PRECAUTIONS

Many of the procedures associated with vehicle maintenance and repair involve physical hazards or other risks to health. This section lists, alphabetically, some of these hazardous operations and the materials and equipment associated with them. The precautions necessary to avoid these hazards are identified.

The list is not exhaustive and all operations and procedures and the handling of materials, should be carried out with health and safety in mind.

ACIDS AND ALKALIS - see Battery acids, e.g. caustic soda, sulphuric acid.

Used in batteries and cleaning materials.

Irritant and corrosive to the skin, eyes, nose and throat. Causes burns.

Avoid splashes to the skin, eyes and clothing. Wear suitable protective gloves and goggles. Can destroy oridnary protective clothing. Do not breathe mists.

Ensure access to water and soap is readily available for splashing accidents.

ADHESIVES AND SEALERS - see Fire

Highly Flammable, Flammable, combustible.

Generally should be stored in "No Smoking" areas; cleanliness and tidiness in use should be observed, e.g. disposable paper covering benches; should be dispensed from applicators where possible; containers, including secondary containers, should be labelled.

Solvent based Adhesives/Sealers - See Solvents.

Follow manufacturers instructions.

Water based Adhesives/Sealers

Those based on polymer emulsions and rubber lattices may contain small amounts of volatile toxic and harmful chemicals. Skin and eye contact should be avoided and adequate ventilation provided during use.

Follow manufacturers instructions.

Resin based Adhesives/Sealers - e.g. epoxide and formaldehyde resin based.

Mixing should only be carried out in well ventilated areas as harmful or toxic volatile chemicals may be released.

Skin contact with uncured resins and hardeners can result in irritation; dermatitis and absorption of toxic or harmful chemicals through the skin. Splashes can damage the eyes.

Provide adequate ventilation and avoid skin and eye contact. Follow manufacturers instructions.

Anaerobic, Cyanoacrylate and other Acrylic Adhesives

Many are irritant, sensitizing or harmful to the skin. Some are eye irritants.

Skin and eye contact should be avoided and the manufacturers instructions followed.

Cyanoacrylate adhesives (super-glues) must not contact the skin or eyes. If skin or eye tissue is bonded cover with a clean moist pad and get medical attention. do not attempt to pull tissue apart. Use in well ventilated areas as vapours can cause irritation of the nose and eyes.

For two-pack systems see Resin based adhesives/sealers.

Isocyanate (Polyurethane) Adhesives/ Sealers - see Resin based Adhesives.

Individuals suffering from asthma or respiratory allergies should not work with or near these materials as sensitivity reactions can occur.

Any spraying should preferably be carried out in exhaust ventilated booths removing vapours and spray droplets from the breathing zone. Individuals working with spray applications should wear supplied air respirators.

ANTIFREEZE - see Fire, Solvents e.g. Isopropanol, Ethylene Glycol, Methanol.

Highly Flammable, Flammable, Combustible.

Used in vehicle coolant systems, brake air pressure systems, screenwash solutions.

Vapours given off from coolant antifreeze (glycol) arise only when heated.

Antifreeze may be absorbed through the skin in toxic or harmful quantities. Antifreeze if swallowed is fatal and medical attention must be found immediately.

ARC WELDING - see Welding.

BATTERY ACIDS - see Acids and Alkalis.

Gases released during charging are explosive. Never use naked flames or allow sparks near charging or recently charged batteries.

BRAKE AND CLUTCH FLUIDS (Polyalkylene Glycols) - see Fire.

Combustible.

Splashes to the skin and eyes are slightly irritating. Avoid skin and eye contact as far as possible. Inhalation of vapour hazards do not arise at ambient

SECTION 10 - ENGINE

Chapter 1 - Engine

CONTENT

GROUP 10 - GENERAL FEATURES AND SPECIFICATIONS

Model (T = Turbocharged)		TM115	TM125 (T)	TM135 (T)	TM150 (T)	TM165 (T)
No of Cylinders		6	6	6	6	6
Bore	ins	4.4	4.4	4.4	4.4	4.4
	(mm)	111.8	111.8	111.8	111.8	111.8
Stroke	ins	5.0	5.0	5.0	5.0	5.0
	(mm)	127.0	127.0	127.0	127.0	127.0
Displacement	cu in	456	456	456	456	456
	(cu cm)	7472	7472	7472	7472	7472
Compression Ratio		17:5-1	17:5-1	17:5-1	17:5-1	17:5-1
Cylinder Bore Compression at cranking speed of 200 R.P.M.	lbs in^2	375	375	375	375	375
	bar	25.5	25.5	25.5	25.5	25.5
Firing Order		153624	153624	153624	153624	153624
Idle Speed R.P.M		750 - 850	750 - 850	750 - 850	750 - 850	750 - 850
Maximum no Load Speed R.P.M		2350 - 2400	2350 - 2400	2350 - 2400	2350 - 2400	2460 - 2510
Rated Engine Speed		2200	2200	2200	2200	2300

CYLINDER BLOCK

Taper of Cylinder Bore	0.025mm (0.001 in) Repair Limit 0.127mm (0.005 in) Wear Limit
Cylinder Bore out of Round	0.030mm (0.0015 in) Repair Limit 0.127mm (0.0050 in) Wear Limit
Cylinder Bore Diameters	111.778-111.841mm (4.4007-4.4032 in)
Rear Oil Seal Bore Diameter	140.77-140.87mm (5.542-5.546 in)
Block to Head Surface Flatness	0.08mm (0.003 in) in any 152mm (6 in) 0.03mm (0.001 in) in any 25.40mm (1 in)

CYLINDER HEAD

Valve Guide Bore Diameter	9.469-9.495mm (0.3728-0.3738 in)
Head to Block Surface Flatness	0.03mm (0.001 in) in any 25.40mm (1 in), or 0.127mm (0.005 in) overall limit

EXHAUST VALVES

Face Angle	44°15'-44°30' Relative to the Head of Valve
Stem Diameter	Std : 9.401-9.421mm (0.3701-0.3709 in)
	0.076mm (0.003 in) Oversize : 9.477-9.497mm (0.3731-0.3739 in)
	0.38mm (0.015 in) Oversize : 9.781-9.802mm (0.3851-0.3859 in)
	0.76mm (0.030 in) Oversize : 10.163-10.183mm (0.4001-0.4009 in)
Head Diameter	42.88-43.13mm (1.688-1.698 in)
Stem to Guide Clearance	0.048-0.094mm (0.0019-0.0037 in)
Lash Clearance (Cold)	0.43-0.53mm (0.017-0.021 in)

INTAKE VALVES

Face Angle	29°15'-29°30' Relative to Head of Valve
Stem Diameter	Std : 9.426-9.446mm (0.3711-0.3719 in)
	0.076mm (0.003 in) Oversize : 9.502-9.522mm (0.3741-0.3749 in)
	0.381mm (0.015 in) Oversize : 9.807-9.827mm (0.3861-0.3869 in)
	0.762mm (0.030 in) Oversize : 10.188-10.208mm (0.4011-0.4019 in)
Head Diameter	47.37-47.63mm (1.865-1.875 in)
Stem to Guide Clearance	0.023-0.069mm (0.0009-0.0027 in)
Lash Clearance (Cold)	0.36-0.46mm (0.014-0.018 in)

VALVE SPRINGS

Number per Valve	1
Free Length	60.70mm (2.390 in)
Length, loaded at 27.7-31.3kg (61-69 lb)	48.26mm (1.900 in)
Length, loaded at 61-69kg (135-153 lb)	35.69mm (1.405 in)

VALVE TIMING

Intake Opening	12° Before Top Dead Centre
Intake Closing	38° After Bottom Dead Centre
Exhaust Opening	48° Before Bottom Dead Centre
Exhaust Closing	12° After Top Dead Centre

VALVE INSERTS

Insert Oversize	Exhaust Valve Insert Counterbore Diameter in Cylinder Head	Intake Valve Seat Insert Counterbore Diameter in Cylinder Head
0.254mm (0.010 in)	44.17-44.20mm (1.739-1.740 in)	50.01-50.04mm (1.969-1.970 in)
0.508mm (0.020 in)	44.42-44.45mm (1.749-1.750 in)	50.27-50.29mm (1.979-1.980 in)
0.762mm (0.030 in)	44.68-44.70mm (1.759-1.760 in)	50.52-50.55mm (1.989-1.990 in)

VALVE SEATS

Exhaust Valve Seat Angle	45°00' - 45°30'
Intake Valve Seat Angle	30°00' - 30°30'
Interference Valve Face Angle to Valve Seat Angle	0°30' - 1°15'
Concentricity With Guide Diameter	0.051mm (0.002 in) Total Indicator Reading Max
Seat Width Exhaust Valve	1.8-2.3mm (0.072-0.092 in)
Intake Valve	1.9-2.5mm (0.078-0.098 in)

CAMSHAFT IDLER GEAR

Number of teeth	47
End Play	**0.051-0.18mm (0.002-0.007 in)**
Bushing Inside Diameter	50.813-50.838mm (2.005-2.0015 in)
Adaptor Outside Diameter	50.762-50.775mm (1.9985-1.9990 in)
Backlash with Crankshaft Gear	**0.15-0.45mm (0.006-0.018 in)**
Backlash with Camshaft Gear	**0.15-0.45mm (0.006-0.018 in)**
Backlash with Fuel Injection Pump	0.10-0.15mm (0.004-0.006 in)

CAMSHAFT GEAR

Number of Teeth	52
Timing Gear Backlash with idler	**0.15-0.45mm (0.006-0.018 in)**

ROCKER ARM SHAFT

Shaft Diameter	1.000-1.001 in (25.40-25.43mm)
Shaft Support Internal Diameter	1.002-1.004 in (25.45-25.20mm)

ROCKER ARM

Inside Diameter	1.003-1.004 in (25.48-25.50mm)

TAPPETS

Clearance to Bore	0.0006-0.0021 in (0.015-0.053mm)
Tappet Diameter	25.118-25.130mm (0.9889-0.9894 in)
Tappet Bore Diameter	25.15-25.17mm (0.9900-0.9910 in)

CAMSHAFT

Bearing Journal Diameter	60.693-60.719mm (2.3895-2.3905 in)
Bearing Clearance	0.025-0.076mm (0.0010-0.0030 in)
End Play	0.051-0.18mm (0.0020-0.0070 in)

LUBRICATION SYSTEM

Lubrication of the engine, Figure 1, is maintained by a rotor type oil pump mounted in the rear of the engine block, forward of the flywheel on the left hand side of the engine. The oil pump is driven from the rear of the camshaft and draws oil from the engine oil pan through a tube and screen assembly.

A spring loaded relief valve is integral with the oil filter body mounted on the left hand side of the engine block, and prevents over pressurisation of the system.

A spin on type oil filter is mounted externally to its support housing, on the left hand side of the engine. Oil flows from the filter to the main oil gallery, which runs the length of the cylinder block, which also intersects the camshaft follower chamber.

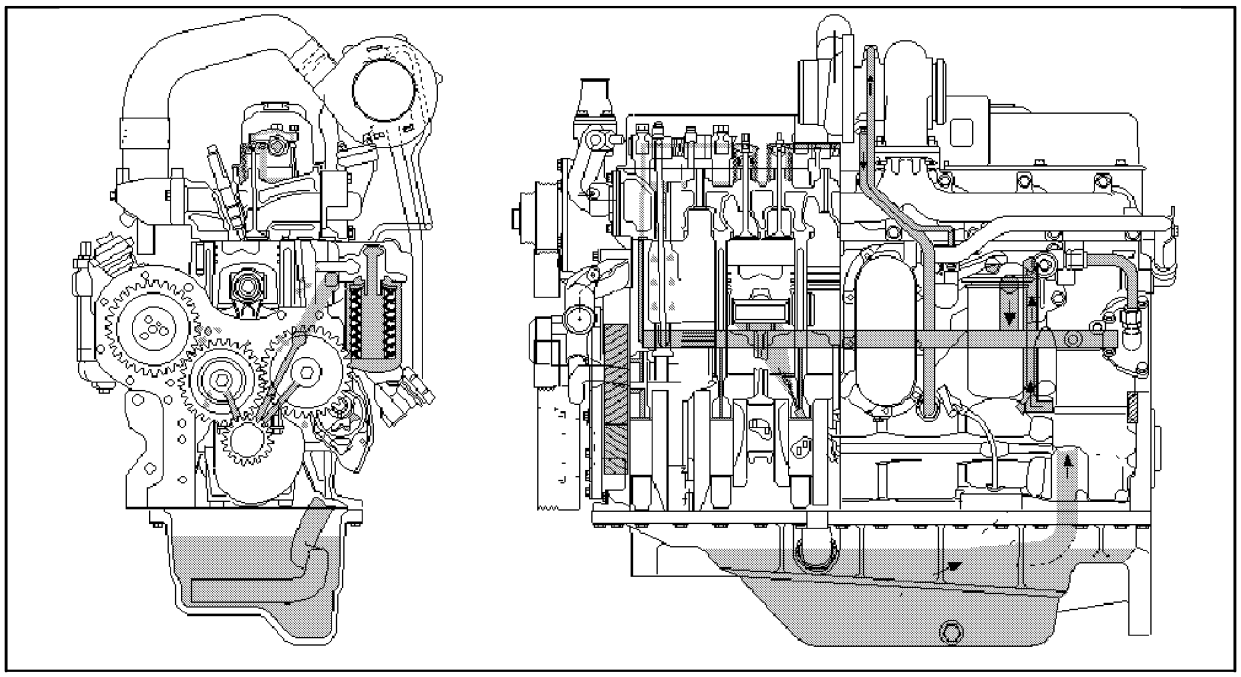
The main gallery also supplies oil to the crankshaft main bearings and connecting rods both big and small ends. The underside of the pistons and pins, are lubricated by oil pressure jets mounted adjacent to each main journal housing.

The camshaft drive gear bushing is pressure lubricated through a drilled passage from the front main bearing. The gear has small oil passages machined on both sides allowing excess oil to escape.

Timing gears are lubricated by splashed oil from the cam follower chamber, and the pressure lubricated camshaft drive gear bushing.

An intermittent flow of oil is directed to the valve rocker arm shaft assembly via a drilled passage in the cylinder block. This is located vertically above No.1 camshaft bearing, and aligns to a hole in the cylinder head. The rotation of the camshaft allows a controlled intermediate flow of lubrication.

The turbocharger where fitted, is supplied with oil from the oil filter support housing, mounted on the left hand side of the engine.



1

Engine Lubrication System With Turbocharger Fitted

COOLING SYSTEM

The function of the water pump mounted at the front of the engine, is to maintain a continuous flow of water around the cooling system. This is essential to ensure correct engine temperature, and performance, during vehicle operation.

The pump is driven by a "Poly V"Belt from the crankshaft pulley, when the engine is running. The fan belt tension is maintained by a spring loaded belt tensioner, bolted to the front cover of the engine.

The cooling system for the new generation of engines, is of the recirculating by-pass type with full length water jackets for each cylinder. The coolant is drawn from the bottom tank of the radiator by the water pump, which passes the coolant to the cylinder block. This coolant then flows through cored passages to cool the cylinder walls.

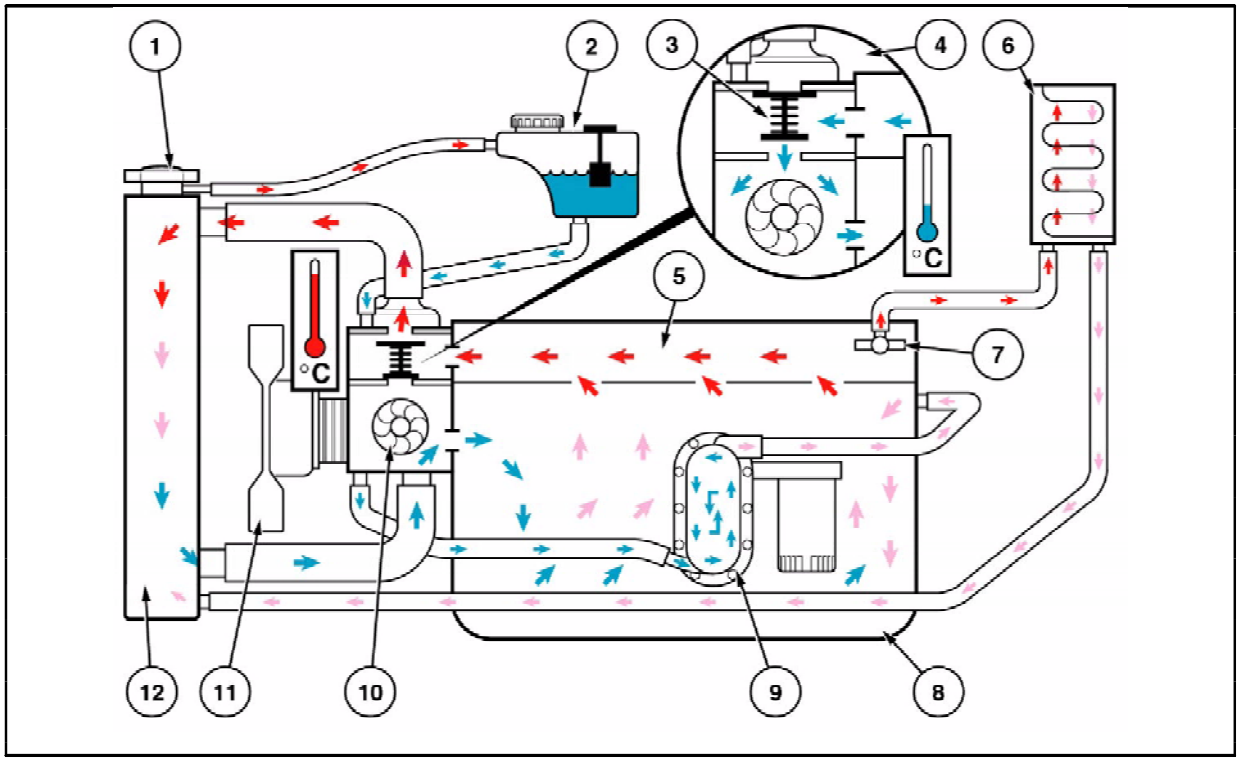
Passages in the cylinder head gasket allow coolant to flow from the cylinder block, into the cylinder head. Cored passages also conduct the coolant to the fuel injector nozzle locations, before re-entering the water pump below the thermostat.

The thermostat is located in the top of the water pump body, and controls the flow of the water as required by temperature changes.

NOTE: *A faulty thermostat may cause the engine to operate at too high (hot), or Low (cold) an operating temperature. If not replaced this could result in a damaged engine, or impaired engine performance.*

When the thermostat is closed a recirculating by-pass is provided to allow the coolant to recirculate from the head to the block to effect a faster warm-up.

Once the engine has reached its normal operating temperature, the thermostat will open and allow water to be drawn through the radiator by the pump action. Cooled water then returns to the engine system.



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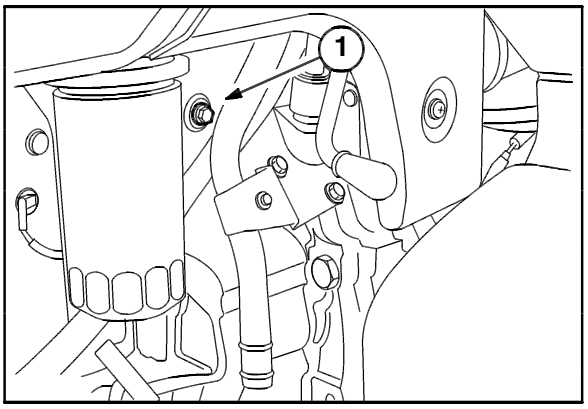
Cooling System

1. Radiator blanking cap
2. Header tank with pressure cap and water level sensor
3. Thermostat
4. Cold water operation-Thermostat in bypass position
5. Cylinder head
6. Cab heater core
7. Cab heater tap
8. Engine block
9. Engine oil cooler, turbo models only
10. Water pump
11. Fan and viscous unit
12. Radiator

Cooling occurs as the coolant passes down through the radiator cores, which are exposed to the air as it is drawn through the radiator by the fan.

NOTE: *Do not operate an engine without a thermostat. It is recommended that a solution of a 50% clean water, and 50% recommended antifreeze, see specifications, is used.*

The cooling system incorporates a drain plug (1), Figure 3, on the left hand side of the cylinder block. The system pressure cap is located on the header tank. The cap on the radiator is a blanking cap and should not be removed unless refilling the system from empty. Normal topping up should occur at the header tank.



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The engine cooling fan is mounted on a viscous drive hub (1), Figure 4, which is belt driven from the crankshaft. The viscous drive allows the fan to operate only when required by the cooling system permitting a faster engine warm up, reduced parasitic power loss when the fan is not engaged and reduced noise levels.

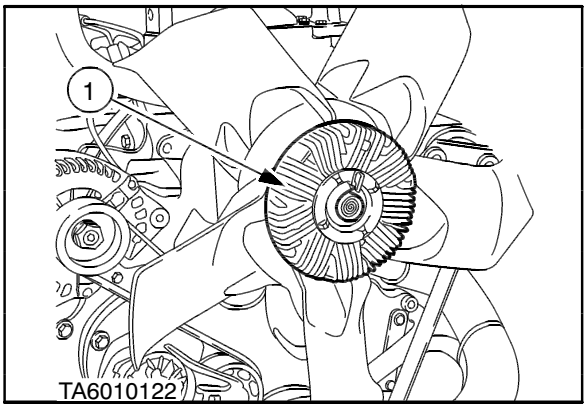

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Figure 5 - A, Cool air from radiator, fan idling

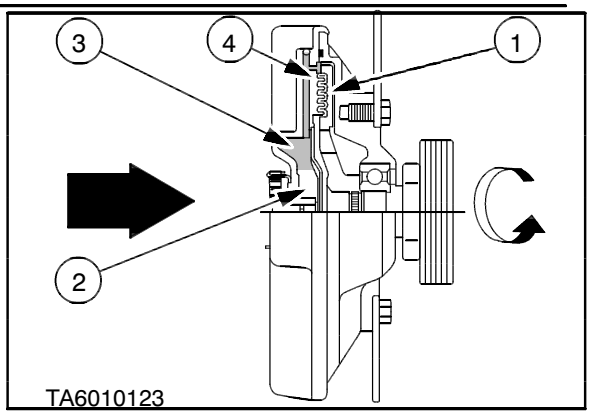

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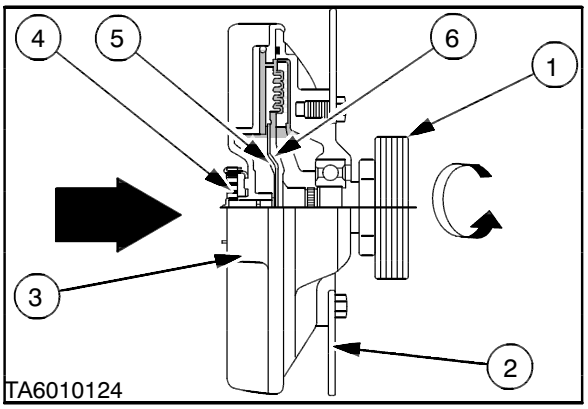
Figure 6 - B, Hot air from radiator, fan driving



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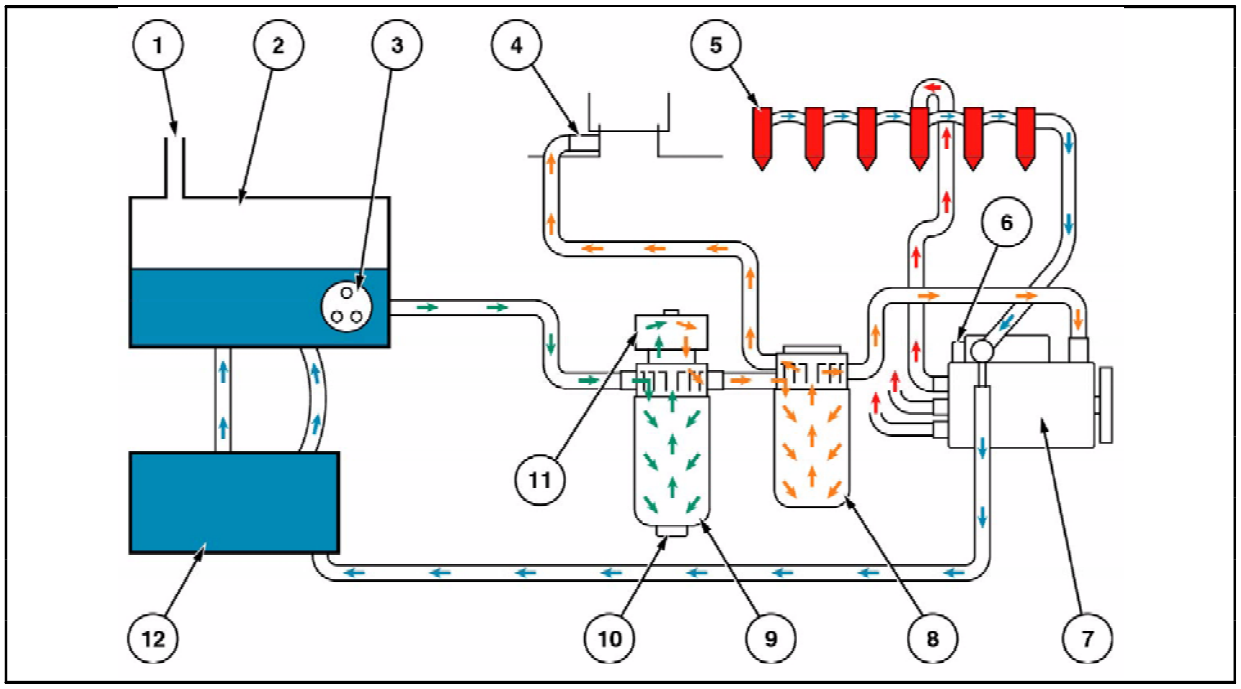
Air temperature behind the radiator is sensed by a Bi-metallic coil (4), Figure 6, located in the centre of the fan hub face. As the temperature increases the coil gradually opens a valve (5), Figure 6, within the hub (3), Figure 6, which allows a modulated flow of viscous fluid (3), Figure 5, to pass from an integral reservoir (2), Figure 5, to the drive area, due to centrifugal force, providing a gradual take up of fan drive.

Within the drive area are two sets of interlocking annular fins, one set on the drive member (1), Figure 5, and the other on the free-wheeling hub body (4), Figure 5, to which the fan blade assembly (2), Figure 6, is attached. Viscous liquid passes between the interlocking blades and the resulting drag transmits torque to the fan. The fluid is then recirculated to the reservoir by a pump plate (6), Figure 6, incorporated in the drive member (1), Figure 6.

When the air temperature behind the radiator drops sufficiently, the Bi-metallic coil closes the valve preventing fluid from entering the drive area and the fan hub is allowed to idle with respect to the drive member.

FUEL SYSTEM



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Fuel System

1. Fuel tank vent
2. Main fuel tank
3. Fuel level sender
4. Thermostart
5. Injectors x6
6. Fuel shut off solenoid
7. Fuel injection pump
8. Fuel filter
9. Fuel sedimenter
10. Water in fuel sensor connection
11. Fuel pump
12. Auxiliary fuel tank

The diesel fuel system consists of fuel tank, fuel sedimenter, electric lift pump, fuel filter, BOSCH VE distributor type fuel injection pump, fuel injectors, and interconnecting tubes and lines, Figure 7.

The fuel injection pump is pressure fed from an electric lift pump. Fuel flows from the fuel tank to the sediment separator, through the electric lift pump and then through the fuel filter. From the filter the fuel passes to the transfer pump which is an integral part of the fuel injection pump.

The transfer pump delivers fuel to the injection pump to supply fuel at high pressure to each injector and also provides extra fuel which lubricates and cools the injection pump.

This extra fuel is recirculated, via a fitting on the fuel injection pump governor control housing to the fuel tank, by means of the injector leak off line.

On all models excess fuel that leaks past the needle valve of the injectors is directed back into the fuel tank, by means of the injection leak off line.

Fuel Shut Off (Injection Pump)

All fuel injection pumps are equipped with an electrically operated fuel shut off solenoid.

The fuel shut off solenoid is energised by operation of the ignition switch mounted in the instrument panel.

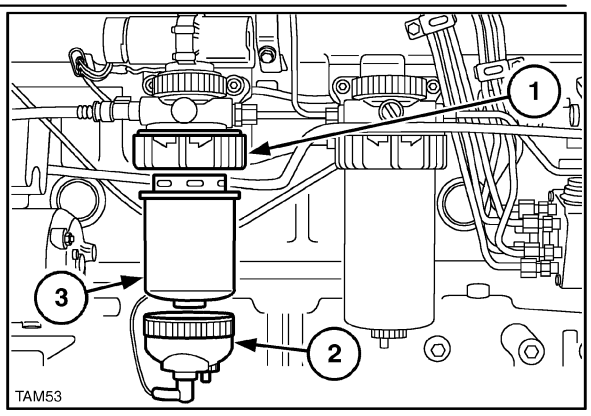
With the ignition switched “OFF” a spring loaded plunger in the solenoid (held in position by the spring tension), prevents fuel flowing into the pump from the main fuel feed port.

With the ignition switched “ON” the magnetised plunger is energised by an internal coil and is drawn up into the body of the solenoid. Fuel is then allowed to flow through the open port into the pump.

Fuel Sedimenter/Primary Filter

The sedimenter/primary filter, Figure 8 is positioned between the fuel tank, and the electric lift pump, on the right hand side of the engine. The fuel enters the sedimenter/filter and flows into the head, to be directed down, and around the edges of the sediment separator cone.

The larger particles of dirt and water (which are heavier than fuel oil), are separated out and sink to the collecting bowl which can be removed and cleaned. The clean fuel is then drawn back through the filter to the top of the unit by the electric lift pump and on to the secondary fuel filter.



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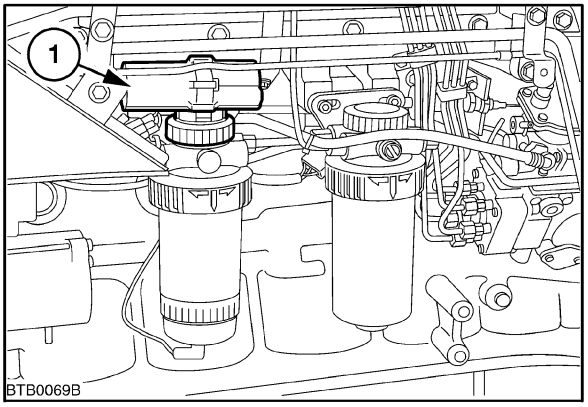
Electric Lift Pump

An electric fuel lift pump is fitted to all models. Located in the head of the sedimenter, (1) Figure 9, the pump draws fuel from the tank, via the sedimenter/filter and passes fuel under pressure to the secondary filter and onto the fuel injection pump.



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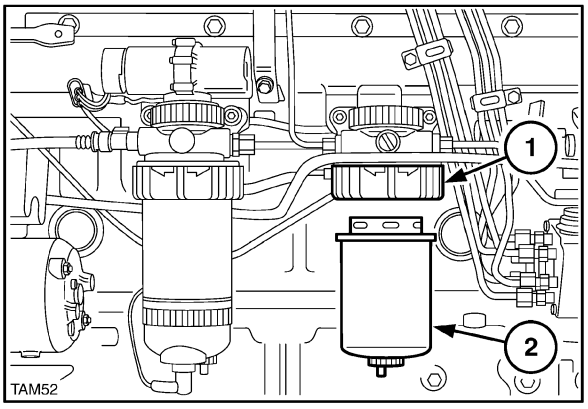
Secondary Fuel Filter

The secondary fuel filter situated to the right hand side of the engine, close to the sedimenter/primary filter, receives the clean fuel from the electric pump. From the filter head the fuel is directed down, through the filter paper and into the base chamber, Figure 10.

The filtered fuel then flows up the centre tube of the element to the filter head outlet, and into the injection pump.



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Thank you so much for reading

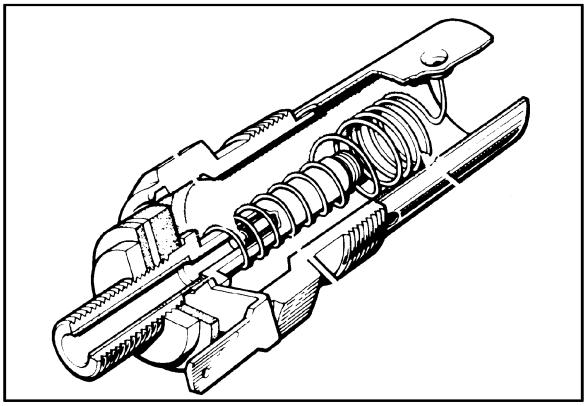
Thermostart

To aid engine starting in cold weather conditions, a thermostart is standard on all models, Figure 11.

The thermostart is screwed into the inlet of the intake manifold. A fuel line connects the thermostart to the secondary fuel filter head and the electrical terminal is connected to the ignition switch via the electronic management unit which controls the duration of thermostart operation.

When electrical current is applied, by operating the ignition switch, the heater coil is energised.

As the coil heats up a check valve opens which allows fuel to flow over the hot coil. The fuel is ignited by the coil producing a flame in the manifold which heats the intake air prior to it entering the combustion chamber.



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