

MDF0730A

T4020 Deluxe – T4020 Supersteer – T4030 Deluxe – T4030 Supersteer – T4040 Deluxe – T4040 Supersteer – T4050 Deluxe – T4050 Supersteer TRACTORS SERVICE MANUAL

SECTIONS GENERAL GUIDELINES 00 ENGINE 10 CLUTCH 18 TRANSMISSIONS 21 DRIVE LINES 23 FRONT MECHANICAL TRANSMISSION 25 REAR MECHANICAL TRANSMISSION 27 POWER TAKE-OFF 31 BRAKES 33 HYDRAULIC SYSTEMS 35 STEERING 41 AXLE AND WHEELS 44 CAB AIR CONDITIONING SYSTEM 50 ELECTRICAL SYSTEM 55 PLATFORM, CAB, BODYWORK 90

T E C H N I C A L S U P P O R T

## INTRODUCTORY NOTES

- *This manual is divided into sections identified by two-figure numbers and each section has independent page numbering.*
- *The different sections can easily be found by consulting the table of contents on the following pages.*
- *The document number of the manual and the edition/update dates are given at the bottom of each page.*
- *Pages updated in the future will be identified by the same document number followed by an additional digit: first edition standard manual 87666787A – 1st update 87666787A1 – 2nd update 87666787A2 – etc. The update pages can replace or supplement the pages of the standard manual; the information necessary for the procedure for adding or replacing pages is given on the title page of the update. The publication will be completed with an appropriate index. If it is necessary to issue a new updated manual (2nd edition) it will have document number 87666787B, this indicates that the manual is composed of the standard version 87666787A completed with all the updates: 1st update 87666787A1 – 2nd update 87666787A2 – etc.*
- *The information contained in this manual was current on the date printed on each section. As NEW HOLLAND constantly improves its product range, some information may be out of date subsequent to modifications implemented for technical or commercial reasons, or to meet legal requirements in different countries. In the event of conflicting information, consult the NEW HOLLAND Sales and Service Departments.*

## IMPORTANT WARNINGS

- *All maintenance and repair work described in this manual must be performed exclusively by NEW HOLLAND service technicians, in strict accordance with the instructions given and using any specific tools necessary.*
- *Anyone performing the operations described herein without strictly following the instructions is personally responsible for any eventual injury or damage to property.*
- *The Manufacturer and all organisations belonging to the Manufacturer's distribution network, including but not restricted to national, regional or local distributors, will accept no responsibility for personal injury or damage to property caused by abnormal function of parts and/or components not approved by the Manufacturer, including those used for maintenance and/or repair of the product manufactured or marketed by the Manufacturer. In any case, the product manufactured or marketed by the Manufacturer is covered by no guarantee of any kind against personal injury or damage to property caused by abnormal function of parts and/or components not approved by the Manufacturer.*

No part of the text or illustrations  
may be reproduced



PRINTED IN FRANCE

© CNH GLOBAL N.V.

CONTENT

	Page	Date		Page	Date
<b>00 – GENERAL GUIDELINES</b>			Engine disassembly– assembly .....	33–34–35– 36–37–38– 39–40–41– 42–43–44– 45–46–47– 48–49–50– 51–52–53– 54–55–56– 57–58–59– 60–61–62– 63–64–65– 66	11–07
General instructions .....	1–2	11–07			
Safety regulations .....	3–4–5	11–07			
Tractor refuelling .....	6	11–07			
<b>10 – ENGINE</b>					
<b>CHAPTER 1 – Engine T4040 and T4050 models</b>					
Summary .....	1	11–07	Checks and measurements – cylinder block and liners	67–68–69	11–07
General specifications .....	2–3–4	11–07	Checks and measurements – crankshaft, bearings and flywheel .....	70–71	11–07
Fuel system data .....	4	11–07	Checks and measurements – connecting rods .....	72–73	11–07
Engine block data .....	5	11–07	Checks and measurements – pistons .....	74–75–76– 77	11–07
Crankshaft data .....	5	11–07	Checks and measurements – camshaft, tappets and valves .....	78–79–80– 81	11–07
Connecting rod data .....	6	11–07	Checks and measurements – cylinder head	82	11–07
Piston data .....	6–7	11–07	Checks and measurements – lubrication system .....	83	11–07
Timing gear data .....	7	11–07	Checks and measurements – cooling system .....	84	11–07
Cylinder head data .....	8–9	11–07	Removal–Installation – crankshaft front seal .....	85–86	11–07
Tightening torques .....	10–11	11–07	Replacing crankshaft rear seal .....	87–88–89	11–07
Tools .....	12	11–07	Valve clearance adjustment .....	90–91	11–07
Engine diagrams .....	13	11–07	Removal–Installation – in- jectors .....	92–93–94	11–07
Lubrication diagrams .....	14	11–07	Removal – Installation – Bosch injection pump .....	95–96–97	11–07
Cooling diagram .....	15	11–07	Bosch injection pump – tim- ing .....	98–99–100	11–07
Additional counterweight diagrams .....	16	11–07	Bosch injection pump – air bleeding .....	100	11–07
Exhaust gas recirculation system (EGR) .....	17	11–07			
Fault finding .....	18–19–20– 21	11–07			
Engine removal–installa- tion .....	22–23–24– 25–26–27– 28–29–30– 31–32	11–07			

	Page	Date		Page	Date
Removal-Installation – coolant pump .....	101-102	11-07	<b>21 – TRANSMISSIONS</b>		
Removal-Installation – thermostat valve .....	103-104	11-07	<b>CHAPTER 1 – Transmission and range gear (16x16)</b>		
Removal-Installation – radiator .....	105-106- 107-108	11-07	Data .....	1-2	11-07
Coolant pump and gener- ator drive belt .....	109-110	11-07	Tightening torques .....	2-3	11-07
<b>CHAPTER 2 – Engine T4020 and T4030 models</b>			Tools .....	4-5-6-7	11-07
Summary .....	1	03-08	Sections .....	8-9-10-11	11-07
General specifications ....	2-3	03-08	Description and operation	12	11-07
Engine removal-installation .....	4-5-6-7-8 -9-10-11- 12-13-14- 15-16-17	03-08	Fault finding .....	12-13	11-07
<b>18 – CLUTCH</b>			Removal-Installation – rear transmission – gear- box casing .....	14-15-16- 17-18-19- 20	11-07
Data .....	1-2	11-07	Disassembly-Assembly – transmission-gearbox cas- ing .....	21-22-23- 24-25-26- 27-28	11-07
Tightening torques .....	2	11-07	Gearbox driving and driven shafts end float adjustment	29	11-07
Tools .....	2-3	11-07	Sealing compound applica- tion diagram .....	30	11-07
Sections .....	3-4	11-07	Gearbox control lever. Re- moval – Installation .....	31	11-07
Fault finding .....	5	11-07	Range gear control lever. Removal – Installation ....	32	11-07
Removal-Installation – clutch .....	6-7-8-9- 10-11-12- 13-14-15	11-07	Shuttle control lever. Re- moval – Installation .....	33	11-07
Clutch Overhaul .....	16-17-18- 19-20	11-07	Fuel tank. Removal – In- stallation .....	34-35	11-07
Checks and measurements – clutch .....	21-22	11-07	<b>CHAPTER 2 – Mechanical transmission and splitter</b>		
Adjustments – clutch disen- gagement levers .....	22-23	11-07	Data .....	1-2	11-07
Adjustments – clutch pedal	24	11-07	Tightening torques .....	2	11-07
PTO control adjustment ..	25	11-07	Tools .....	2	11-07
Sectional view of PTO clutch servo control .....	26	11-07	Sections .....	3-4-5	11-07
Description and operation of PTO servo control .....	27-28	11-07	Description and operation .	6	11-07
PTO servo control adjust- ment .....	29	11-07	Fault finding .....	7	11-07
PTO engaged switch ad- justment .....	30	11-07	Splitter device and creeper unit casing, shafts and bearings disassembly ....	8-9-10	11-07

	Page	Date
<b>CHAPTER 3 – Power Shuttle transmission with dual command (2 Speed Power Shift) function</b>		
Data .....	1-2	11-07
Tightening torques .....	3	11-07
Tools .....	4-5-6	11-07
Sections .....	7-8-9-10-11	11-07
Clutch control pressure test	10	11-07
Description and operation .	12	11-07
Fault finding .....	12	11-07
Disassembly-Assembly – transmission-gearbox casing .....	13-14	11-07
Disassembly-Reassembly – Power Shuttle control valve .....	15-16-17	11-07
Disassembly-Assembly – accumulator .....	18	11-07
Gearbox control valve solenoid valve. Removal – Installation .....	19-20	11-07
Disassembly-Assembly – clutch casing .....	21-22-23-24	11-07

**CHAPTER 4 – Power Shuttle transmission (16 + 16 and 8 + 8 versions)**

Data .....	1	11-07
Tightening torques .....	2	11-07
Sections .....	3-4-5-6	11-07
Clutch control pressure test	6	11-07

**23 – DRIVE LINES**

Data .....	1	11-07
Tightening torques .....	2	11-07
Tools .....	3-4	11-07
Sections .....	5-6-7	11-07
Description and operation .	8-9	11-07
Fault finding .....	9	11-07
Drive shafts and guard. Disassembly- Assembly ..	10-11-12	11-07
Removal-Installation – drive gear casing .....	13-14	11-07

Disassembly-Assembly – drive gear casing .....	15-16-17-18	11-07
--	-------------	-------

**25 – FRONT AXLE MECHANICAL TRANSMISSION**

**CHAPTER 1 – Front mechanical transmission (mod. T4040 Supersteer and T4050 Supersteer)**

Data .....	1-2-3	11-07
Tightening torques .....	4-5-6	11-07
Tools .....	7-8-9	11-07
Sections .....	10-11-12-13	11-07
Description and operation	13-14	11-07
Fault finding .....	15	11-07
Removal-Installation – front axle .....	16-17-18-19	11-07
Removal-Installation – front axle differential and bevel drive support .....	20-21-22-23	11-07
Overhaul – front axle bevel drive .....	24-25	11-07
Adjustments – bevel drive	26-27-28-29-30-31	11-07
Overhaul – front differential	32	11-07
Overhaul – differential lock unit .....	33-34-35	11-07
Disassembly-Assembly – front epicyclic final drive with brake .....	36-37-38-39	11-07
Disassembly-Assembly – front epicyclic final drive ..	40-41-42	11-07
Wheel hub seal. Renew ..	43	11-07
Wheel hub and steering knuckle. Disassembly- Assembly .....	44	11-07
Adjustments – steering knuckle bearings .....	45	11-07
Replacing steering knuckle pins and bearings .....	46	11-07
Lead-drive wheel position check .....	47	11-07

	Page	Date		Page	Date
<b>CHAPTER 2 – Front mechanical transmission (mod. T4040 Deluxe and T4050 Deluxe)</b>			Adjustments – differential lock engagement sleeve position .....	20	11-07
Data .....	1-2	11-07	Adjustments – bevel drive	21-22-23- 24-25	11-07
Tightening torques .....	3-4	11-07	Removal-Installation – final drive casing .....	26-27-28- 29	11-07
Tools .....	5-6	11-07	Disassembly-Assembly – drive wheel shaft .....	29-30-31	11-07
Sections .....	7-8	11-07	Disassembly-Assembly – epicyclic final drive .....	31	11-07
Description and operation	8-9	11-07			
Fault finding .....	10	11-07			
Removal-Installation – front axle .....	11-12-13- 14	11-07			
Front axle. Disassembly- Assembly .....	15-16-17- 18-19-20- 21-22-23	11-07			
Overhaul – differential lock unit .....	24-25	11-07			
Replacing steering knuckle pins and bearings .....	26	11-07			
Adjustments – steering knuckle bearings .....	27-28	11-07			
Adjustments – bevel drive	29-30-31- 32-33-34- 35	11-07			
Overhaul – front differential	36	11-07			
LIM-SLIP self-locking dif- ferential .....	37-38	11-07			
Checking leading wheel alignment .....	39	11-07			
Disassembly-Assembly – front epicyclic final drive ..	40-41	11-07			
Disassembly-Assembly – front epicyclic final drive with brake .....	42-43-44	11-07			
<b>27 – REAR MECHANICAL TRANSMISSION</b>					
Data .....	1-2	11-07			
Tightening torques .....	3-4	11-07			
Tools .....	5-6-7-8	11-07			
Sections .....	9-10	11-07			
Description and operation .	11-12	11-07			
Fault finding .....	12-13	11-07			
Disassembly-Assembly – transmission-gearbox cas- ing .....	14-15-16- 17-18-19	11-07			
			<b>31 – POWER TAKE-OFF</b>		
			<b>CHAPTER 1 – Mechanical power take-off</b>		
			Data .....	1-2-3	11-07
			Tools .....	4	11-07
			Tightening torques .....	5-6	11-07
			Sections .....	7-8	11-07
			Description and operation .	9-10-11	11-07
			Fault finding .....	11	11-07
			Disassembly – Assembly – power take-off .....	12-13-14- 15	11-07
			<b>33 – BRAKES</b>		
			Data .....	1-2	11-07
			Tightening torques .....	2	11-07
			Sections .....	3-4-5	11-07
			Tools .....	5-6	11-07
			Description and operation .	6	11-07
			Fault finding .....	7-8	11-07
			Removal-Installation – ser- vice brake .....	9-10	11-07
			Removal-Installation – ser- vice brake pump .....	11-12-13- 14	11-07
			Adjustments – service brake pedals travel .....	15-16	11-07
			Service brake circuit air bleeding .....	16-17-18	11-07
			Removal-Installation – parking brake .....	19-20	11-07

	Page	Date
Adjustments – parking handbrake travel .....	21	11-07

**35 – HYDRAULIC SYSTEMS**

**CHAPTER 1 – Rear mechanical hydraulic lift**

Data .....	1-2-3	11-07
Tightening torques .....	3-4	11-07
Tools .....	5-6	11-07
Sections .....	7-8-9-10-11	11-07
Description and operation .	12-13-14-15	11-07
Fault finding .....	16-17	11-07
Lift internal controls. Disassembly- Assembly .....	18-19-20-21	11-07
Adjusting the lift .....	22-23-24-25-26-27-28-29-30-31	11-07
Lift cylinder and arms shaft. Disassembly- Assembly ..	32-33-34-35	11-07
Disassembly-Assembly – lift control valve .....	36-37-38-39	11-07
Lift pressure relief valve ..	40	11-07

**CHAPTER 2 – Open centre system auxiliary control valves**

Data .....	2	11-07
Tools .....	2	11-07
Tightening torques .....	2	11-07
Sections .....	3-4	11-07
Description and operation .	5-6-7-8	11-07
Lift electronic control unit. Renew .....	9	11-07
Auxiliary control valves. Disassembly- Assembly ..	10-11-12	11-07

**CHAPTER 3 – Trailer brakes auxiliary control valves**

Sections .....	1	11-07
Description and operation .	1-2-3-4-5-6-7	11-07
Fault finding .....	8-9-10	11-07

	Page	Date
Removal-Installation – trailer brake valve .....	11	11-07

**CHAPTER 4 – Electronically controlled hydraulic lift**

Data .....	2-3	11-07
Tightening torques .....	4	11-07
Tools .....	4-5-6	11-07
Sections .....	7-8-9	11-07
Location of Components ..	10-11-12	11-07
Description and operation .	13-14-15-16-17-18	11-07
Removal-Installation – lift .	19-20-21-22-23	11-07
Draft sensor support. Removal – Installation .....	24	11-07
Replacement – control unit	25	11-07
Lift arm potentiometer. Renew .....	26-27	11-07
Replacement – draft sensor .....	28-29	11-07
Electronically controlled hydraulic lift. Disassembly-Assembly .....	30-31-32-33-34	11-07
Removal-Installation – hydraulic control valve .....	35	11-07
Hydraulic control valve. Disassembly- Assembly ..	36-37-38	11-07

**CHAPTER 5 – Constant flow gear pump**

Data .....	1-2	11-07
Description and operation .	2	11-07
Diagrams .....	3	11-07
Disassembly-Assembly – lift oil pump .....	4	11-07

**CHAPTER 6 – Electronic lift and front Power Take-Off**

Main specifications of front lift .....	1-2-3	11-07
Tightening torques .....	3-4-5	11-07
Cross-sectional views of implement linkage .....	6-7	11-07
Cross-sectional views of front PTO .....	8-9-10	11-07

	Page	Date		Page	Date
Description and operation .	11-12-13-14	11-07	Description and operation of front electronic lift hydraulic control valve . . . . .	17-18-19-20	03-08
Front lift hydraulic diagram	15	11-07	Fault finding . . . . .	21-22	03-08
Front lift troubleshooting . .	16-17	11-07	Front electronic lift operating instructions . . . . .	23-24-25-26	03-08
Removal-Installation -			Front electronic lift calibration . . . . .	27-28-29	03-08
Front power take-off transmission shaft . . . . .	18-19-20-21-22-23-24-25	11-07	Removal-Installation - front mechanical/electronic lift . . . . .	30-31	03-08
Disassembly-Assembly -			Removal-Installation - front power take-off . . . . .	32-33	03-08
Front PTO transmission shaft . . . . .	26	11-07	Disassembly-Assembly - front power take-off . . . . .	34-35	03-08
Front PTO casing cross-sectional view . . . . .	27	11-07	Removal-Installation - front electronic lift control unit . . . . .	36	03-08
Removal-Installation -			Removal-Installation - front electronic lift hydraulic control valve . . . . .	37	03-08
Front PTO electromagnetic coupling . . . . .	28-29-30	11-07	Fault code indication . . . . .	38	03-08
Disassembly-Assembly -			Diagnostics . . . . .	39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56	06-09
Front PTO electromagnetic coupling . . . . .	31-32-33-34	11-07			
Removal-Installation -					
Front lift support . . . . .	35-36-37	11-07			
<b>CHAPTER 7 – Front lift and power take-off (for mod. T4030 Deluxe, T4040 Deluxe and T4050 Deluxe)</b>					
Data . . . . .	1-2	03-08			
Tightening torques . . . . .	3-4	03-08			
Sections . . . . .	5-6	03-08			
Description and operation of front power take-off . . .	7	03-08			
Front power take-off control adjustment . . . . .	8	03-08			
Front power take-off control valve . . . . .	9	03-08			
Sectional view of front power take-off clutch . . . .	10	03-08			
Front mechanical lift . . . . .	11	03-08			
Electronic front lift . . . . .	12-13-14	03-08			
Front electronic lift hydraulic control valve diagram . . . . .	15	03-08			
Front electronic lift hydraulic control valve . . . . .	16	03-08			
<b>41 – STEERING</b>					
<b>CHAPTER 1 – Steering</b>					
Data . . . . .	2	11-07			
Tightening torques . . . . .	2	11-07			
Tools . . . . .	2	11-07			
Description and operation .	3-4-5	11-07			
View of hydrostatic steering control valve components .	6	11-07			
Fault finding . . . . .	7-8	11-07			
Replacement – hydrostatic steering wheel . . . . .	9	11-07			
Removal-Installation – hydrostatic steering control valve . . . . .	10-11-12	11-07			



	Page	Date		Page	Date
Disassembly–Assembly – hydrostatic control valve . . . . .	13–14–15–16–17–18–19–20–21–22–23–24–25–26–27–28	11–07	Conditioning system components . . . . .	6–7–8–9–10	11–07
Hydrostatic steering control valve bench testing . . . . .	29–30	11–07	Cab controls . . . . .	11–12–13	11–07
Pressure relief valve testing	31	11–07	Testing operation and cooling . . . . .	14–15	11–07
Steering control cylinder. Removal – Installation . . . . .	32–33	11–07	Air conditioning system maintenance . . . . .	16–17	11–07
Steering control cylinder. Disassembly–Assembly . . . . .	34–35	11–07	Fault finding . . . . .	18–19–20–21	11–07
<b>CHAPTER 2 – Constant flow gear pump</b>			Refrigerant recovery – recycling and evacuation – charging stations . . . . .	22–23	11–07
Data . . . . .	1–2	11–07	Dehydration, recharging and refrigeration check . . . . .	24–25–26–27–28–29–30	11–07
Diagrams . . . . .	3–4	11–07	Checking for and eliminating any gas leaks . . . . .	31–32	11–07
Description and operation . . . . .	4	11–07	Compressor drive belt tension adjustment . . . . .	33	11–07
Disassembly–Assembly – hydrostatic steering oil pump . . . . .	5	11–07	Cab air infeed vents. Removal – Installation . . . . .	34	11–07
<b>44 – AXLES AND WHEELS</b>			Cab heating/air-conditioning system. Removal – Installation . . . . .	35–36	11–07
Data . . . . .	1–2	11–07	Cab heater. Disassembly–Assembly . . . . .	37	11–07
Front wheel track diagram	2	11–07	Cab air conditioning system evaporator unit. Disassembly– Assembly . . . . .	38	11–07
Sections . . . . .	3	11–07	Cab electric fan unit. Disassembly– Assembly . . . . .	39	11–07
Tightening torques . . . . .	4–5–6	11–07	<b>55 – ELECTRICAL SYSTEM</b>		
Tools . . . . .	6–7	11–07	<b>CHAPTER 1 – Instruments</b>		
Fault finding . . . . .	7	11–07	Analogue instrumentation . . . . .	1–2–3–4	11–07
Disassembly–Assembly – wheel axle hub . . . . .	8–9–10	11–07	Digital instrumentation . . . . .	5–6–7–8–9	11–07
Removal–Installation – front axle . . . . .	11–12–13	11–07	Transmitters, sensors and switches . . . . .	10–11–12–13–14–15–16–17	11–07
Stub axle hub overhaul . . . . .	14–15–16–17	11–07	<b>CHAPTER 2 – Components</b>		
Checking leading wheel alignment . . . . .	18	11–07	Introduction . . . . .	1	11–07
<b>50 – CAB AIR CONDITIONING SYSTEM</b>					
Safety regulations . . . . .	2	11–07			
Data . . . . .	3	11–07			
Tools . . . . .	4	11–07			
Operating principles . . . . .	5	11–07			

	Page	Date		Page	Date
Components .....	1-2-3-4-5 -6-7	11-07			
Service .....	8-9-10-11 -12	11-07			
<b>CHAPTER 3 – Starting System</b>					
Technical data .....	1	11-07			
Description and operation .	2	11-07			
Fault finding .....	3	11-07			
System testing .....	4-5-6	11-07			
View of starter motor components .....	7	11-07			
Revision .....	8-9	11-07			
Starter motor testing .....	9-10	11-07			
<b>CHAPTER 4 – Charging system</b>					
Technical data .....	1	11-07			
Tightening torques .....	1	11-07			
Description and operation .	2-3	11-07			
System testing .....	4-5-6-7-8 -9	11-07			
Removal-Installation and Overhaul – alternator ....	9-10-11- 12-13-14- 15-16	11-07			
<b>CHAPTER 5 – Battery</b>					
Technical data .....	1	11-07			
Description and operation .	1	11-07			
Removal-Installation – battery .....	2	11-07			
Battery Service .....	3	11-07			
Battery charging .....	4-5-6	11-07			
Battery troubleshooting ...	6	11-07			
<b>CHAPTER 6 – Electrical circuits for tractors with cab</b>					
Index .....	1	06-09			
<b>CHAPTER 7 – Electrical circuits for tractors with platform</b>					
Index .....	1	11-07			
<b>CHAPTER 8 – Connectors</b>					
Index .....	1	11-07			
<b>CHAPTER 9 – Error codes</b>					
Index .....	1	06-09			
<b>CHAPTER 10 – HH Menu and calibrations</b>					
Index .....	1	06-09			
<b>CHAPTER 11 – Front electronic lift (mod. T4030 Deluxe, T4040 Deluxe and T4050 Deluxe)</b>					
Index .....	1	03-08			
Electrical circuit components .....	2-3	03-08			
Wiring diagrams .....	4	03-08			
Wiring diagrams .....	6-7-8-9- 10-11	03-08			
Connectors .....	14-15-16- 17-18-19- 20	03-08			
<b>90 – PLATFORM, CAB, BODYWORK</b>					
<b>CHAPTER 1 – Cab</b>					
Hood. Removal – Installation .....	2	11-07			
Instrument panel lower guard. Removal – Installation ....	3	11-07			
Platform assembly. Removal – Installation ....	4-5-6-7- 8-9-10	11-07			
Canopy for rops. Removal – Installation .....	11	11-07			
Cab assembly with platform. Removal – Installation ....	12-13-14- 15-16-17- 18-19	11-07			
Cab windows. Renew ....	20-21-22	11-07			
Right/left-hand upright seals. Removal – Installation ....	23	11-07			
Cab ceiling fitting. Removal – Installation ....	24-25	11-07			
Sunshade. Removal – Installation ....	26	11-07			

## GENERAL INSTRUCTIONS

### IMPORTANT NOTICE

All maintenance and repair work described in this manual must be performed exclusively by NEW HOLLAND service technicians, in strict accordance with the instructions given and using any specific tools necessary. Anyone performing the operations described herein without strictly following the instructions is personally responsible for any eventual injury or damage to property.

### BATTERY

Before carrying out any kind of service operation disconnect and isolate the battery negative lead, unless otherwise requested for specific operations (e.g.: operations that require the engine running). Once the specific operation has been completed, disconnect the lead in order to complete the operation.

### SHIMMING

For each adjustment operation, select adjusting shims and measure individually using a micrometer, then add up the recorder values: Do not rely on measuring the entire shimming set, which may be incorrect, or the rated value indicated for each on shim.

### ROTATING SHAFT SEALS

For correct rotating shaft seal installation, proceed as follows:

- before assembly, allow the seal to soak in the oil it will be sealing for at least thirty minutes;
- thoroughly clean the shaft and check that the working surface on the shaft is not damaged;
- position the sealing lip facing the fluid; with hydrodynamic lips, take into consideration the shaft rotation direction and position the grooves so that they will deviate the fluid towards the inner side of the seal;
- smear the sealing lip with a thin layer of lubricant (use oil rather than grease) and fill the gap between the sealing lip and the dust lip on double lip seals with grease;
- insert the seal in its seat and press down using a flat punch; do not tap the seal with a hammer or mallet;
- whilst inserting the seal, check that the it is perpendicular to the seat; once settled, make sure that it makes contact with the thrust element, if required;
- to prevent damaging the seal lip on the shaft, position a protective guard during installation operations.

### O-RING SEALS

Lubricate the O-RING seals before inserting them in the seats, this will prevent them from overturning and twisting, which would jeopardise sealing efficiency.

### SEALING COMPOUNDS

Apply one of the following sealing compounds on the mating surfaces marked with an X: RTV SILMATE, RHODORSIL CAF 1 or LOCTITE PLASTIC GASKET.

Before applying the sealing compound, prepare the surfaces as follows:

- remove any incrustations using a wire brush;
- thoroughly de-grease the surfaces using one of the following cleaning agents: trichlorethylene, petrol or a water and soda solution.

### BEARINGS

When installing bearings it is advised to:

- heat the bearings to 80 ÷ 90 °C before fitting on the shafts;
- allow the bearings to cool before installing them from the outside.

### SPRING PINS

When fitting split socket elastic pins, ensure that the pin notch is positioned in the direction of the force required to stress the pin.

Spiral spring pins do not require special positioning

### SPARE PARTS

Use genuine parts only.

Only genuine spare parts guarantee the same quality, duration and safety as they are the same parts that are assembled during production.

Only **genuine parts** can offer this guarantee.

When ordering spare parts, always provide the following information:

- tractor model (commercial name) and frame number;
- engine type and number;
- part number of the ordered part, which can be found in the "Microfiches" or the "Spare Parts Catalogue", used for order processing.

### NOTES FOR EQUIPMENT

The tools that NEW HOLLAND propose and illustrate in this manual are:

- specifically researched and designed for use with NEW HOLLAND vehicles;
- necessary to make reliable repair;
- accurately built and strictly tested to offer efficient and long-lasting working means.

By using these tools, repair personnel will benefit from:

- operating in optimal technical conditions;
- obtaining the best results;
- saving time and effort;
- working in safe conditions.

### IMPORTANT NOTES

Wear limit values indicated for certain parts are recommended, but not binding. The terms "front", "rear", "right-hand" and "left-hand" (when referred to different parts) are intended as seen from the driving position with the tractor in the normal direction of movement.

### MOVING THE TRACTOR WITH THE BATTERY REMOVED

External power supply cables should only be connected to the respective positive and negative cable terminals, using efficient clamps that guarantee adequate and secure contact.

Disconnect all services (lights, windshield wipers, etc.) before starting the vehicle.

If the vehicle electrical system requires checking, carry out operations with the power supply connected; once checking is completed, disconnect all services and switch off the power supply before disconnecting the cables.

## SAFETY REGULATIONS

### WARNING AND DANGER SYMBOL

This warning symbol points out important messages concerning your safety.

Carefully read the following safety regulations and observe advised precautions in order to avoid potential hazards and safeguard your health and safety.

In this manual the symbol is accompanied by the following key-words:

**WARNING** - Warnings concerning unsuitable repair operations that may jeopardise the safety of Repair personnel.

**DANGER** - Specific warnings concerning potential hazards for operator safety or for other persons directly or indirectly involved.

### TO PREVENT ACCIDENTS

Most accidents or injuries that occur in workshops are the result of non-observance of simple and fundamental safety regulations. For this reason, IN MOST CASES THESE ACCIDENTS CAN BE AVOIDED: by foreseeing possible causes and consequently acting with the necessary caution and care.

Accidents may occur with all types of vehicle, regardless of how well it was designed and built.

A careful and judicious service technician is the best guarantee against accidents.

Precise observance of the most basic safety rule is normally sufficient to avoid many serious accidents.

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

## SAFETY REGULATIONS

### GENERAL

- Carefully follow specified repair and maintenance procedures.
- Do not wear rings, wristwatches, jewellery, unbuttoned or loose articles of clothing such as: ties, torn clothing, scarves, open jackets or shirts with open zips that may remain entangled in moving parts. It is advised to wear approved safety clothing, e.g.: non-slip footwear, gloves, safety goggles, helmets, etc.



1

- Do not carry out repair operations with someone sitting in the driver's seat, unless the person is a trained technician who is assisting with the operation in question.
- Do not operate the vehicle or use any of the implements from different positions, other than the driver's seat.
- Do not carry out operations on the vehicle with the engine running, unless 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 must be carried out using extreme care and attention.
- Service steps and platforms used in a workshop or in the field should be built in compliance with the safety rules in force.
- Disconnect the batteries and label all controls to indicate that the vehicle is being serviced. Block the machine and all equipment which should be raised.
- Do not check or fill fuel tanks, accumulator batteries, nor use starting liquid when smoking or near naked flames, as these fluids are inflammable.
- Brakes are inoperative when manually released for repair or maintenance purposes: Use blocks or similar devices to control the machine in these conditions.
- The fuel nozzle should always be in contact with the filling aperture: Maintain this contact until the fuel stops flowing into the tank to avoid possible sparks due to static electricity build-up.

- Only use specified towing points for towing the vehicle. Connect parts carefully: make sure that all pins and/or locks are secured in position before applying traction. Never remain near the towing bars, cables or chains that are operating under load.
- Transport vehicles that cannot be driven using a trailer or a low-loading platform trolley, if available.
- When loading or unloading the vehicle from the trailer (or other means of transport), select a flat area capable of sustaining the trailer or truck wheels. Firmly secure the vehicle to the truck or trailer and lock the wheels in the position used by the carrier.
- Electric heaters, battery-chargers and similar equipment must only be powered by auxiliary power supplies with efficient ground insulation to avoid electrical shock hazards.
- Always use suitable hoisting or lifting devices when raising or moving heavy parts.
- Take extra care if bystanders are present.
- Never pour petrol or diesel oil into open, wide or low containers.
- Never use gasoline, diesel oil or other inflammable liquids as cleaning agents: use non-inflammable, non toxic commercially available solvents.
- Wear safety goggles with side guards when cleaning parts with compressed air.
- Limit the air pressure to a maximum of 2.1 bar, according to local regulations.
- Do not run the engine in confined spaces without suitable ventilation.
- Do not smoke, use naked flames, or cause sparks in the area when fuel filling or handling highly inflammable liquids.
- Never use naked flames for lighting when working on the machine or checking for leaks.
- All movements must be carried out carefully when working under, on or near the vehicle. Wear protective equipment: helmets, goggles and special footwear.
- When carrying out checks with the engine running, request the assistance of an operator in the driver's seat. The operator must maintain visual contact with the service technician at all times.
- If operating outside the workshop, position the vehicle on a flat surface and lock in position. If working on a slope, lock the vehicle in position. Move to a flat area as soon as is safely possible.
- Damaged or bent chains or cables are unreliable: do not use them for lifting or towing. Always use suitable protective gloves when handling chains or cables.
- Chains should always be safely secured: make sure that the hitch-up point is capable of sustaining the load in question. Keep the area near the hitch-up point, chains or cables free of all bystanders.
- Maintenance and repair operations must be carried out in a CLEAN and DRY area. Eliminate any water or oil spillage immediately.
- Do not create piles of oil or grease-soaked rags: as they represent a serious fire hazard. Always store rags in a closed metal container. Before starting the tractor or its attachments, check, adjust and block the operator's seat. Also check that there are no persons within the vehicle or implement range of action.
- Empty pockets of all objects that may fall unobserved into the vehicle parts.
- In the presence of protruding metal parts, use protective goggles or goggles with side guards, helmets, special footwear and gloves.
- When welding, use protective safety devices: tinted safety goggles, helmets, special overalls, gloves and footwear. All persons present in the area where welding is taking place must wear tinted goggles. NEVER LOOK DIRECTLY AT THE WELDING ARC WITHOUT SUITABLE EYE PROTECTION.
- Metal cables tend to fray with repeated use: always use suitable protective devices (gloves, goggles, etc.) when handling cables.
- Handle all parts with great care. Do not put your hands or fingers between moving parts. Always wear suitable safety clothing - safety goggles, gloves and shoes.

## START UP

- Never run the engine in confined spaces that are not equipped with adequate ventilation for exhaust gas extraction.
- Never place the head, body, limbs, feet, hands or fingers near fans or rotating belts.

## ENGINE

- Always loosen the radiator cap slowly before removing it to allow any remaining pressure in the system to be discharged. Filling up with coolant should only be carried out with the engine stopped or idling (if hot).
- Never fill up with fuel when the engine is running, especially if hot, in order to prevent the outbreak of fire as a result of fuel spillage.
- Never check or adjust fan belt tension when the engine is running.  
Never adjust the fuel injection pump when the vehicle is moving.
- Never lubricate the vehicle when the engine is running.

## ELECTRICAL SYSTEMS

- If it is necessary to use auxiliary batteries, remember that both ends of the cables must be connected as follows: (+) with (+) and (-) with (-). Avoid short-circuiting the terminals. **GAS RELEASED FROM BATTERIES IS HIGHLY INFLAMMABLE.** During charging, leave the battery compartment uncovered to improve ventilation. Never check the battery charge using "jumpers" (metal objects placed on the terminals). Avoid sparks or flames near the battery zone. Do not smoke to prevent explosion hazards.
- Before servicing operations, check for fuel or current leaks: eliminate any eventual leaks before proceeding with work.
- Do not charge batteries in confined spaces: make sure that there is adequate ventilation in order to prevent accidental explosion hazards as a result of the accumulation of gases released during charging operations.
- Always disconnect the batteries before performing any kind of servicing on the electrical system.

## HYDRAULIC SYSTEMS

- A liquid leaking from a tiny hole may be almost invisible but, at the same time, be powerful enough to penetrate the skin. **NEVER USE HANDS TO CHECK FOR LEAKS:** but use a piece of cardboard or wood for this purpose. If any liquid penetrates skin tissue, call for medical aid immediately. Failure to treat this condition with correct medical procedure may result in serious infection or dermatosis.
- In order to check the pressure in the system use suitable instruments.

## WHEELS AND TYRES

- Make sure that the tyres are correctly inflated at the pressure specified by the manufacturer. Periodically check the rims and tyres for damage.
- Stand away from (at the side of) the tyre when checking inflation pressure.
- Only check pressure when the vehicle is unloaded and the tyres are cold, to avoid incorrect readings as a result of over-pressure. Do not use parts of recovered wheels as incorrect welding brazing or heating may weaken and eventually cause damage to the wheel.
- Never cut or weld a rim mounted with an inflated tyre.
- To remove the wheels, lock both the front and rear vehicle wheels. After having raised the vehicle, position supports underneath, according to regulations in force.
- Deflate the tyre before removing any object caught in the tyre tread.
- Never inflate tyres using inflammable gases; as this may result in explosions and injury to bystanders.

## REMOVAL AND RE-FITTING

- Lift and handle all heavy parts using suitable hoisting equipment. Make sure that parts are sustained by appropriate hooks and slings. Use the hoisting eyebolts for lifting operations. Extra care should be taken if persons are present near the load to be lifted.
- Handle all parts extremely carefully. Do not put your hands or fingers between parts. Wear suitable safety clothing – safety goggles, gloves and shoes.
- Avoid twisting chains or metal cables. Always wear safety gloves when handling cables or chains.

## CONSUMABLES

COMPONENT TO BE FILLED OR TOPPED UP	QUANTITY dm <sup>3</sup> (litres)	RECOMMENDED NEW HOLLAND PRODUCT	NEW HOLLAND SPECIFICATION	INTERNATIONAL SPECIFICATION
Cooling system: less cab: .....	14.0	Water and <b>AMBRA AGRIFLU fluid 50% + 50%</b>	NH 900 A	-
with cab .....	16.0			
Windscreen wash reservoir	2.0	Water and antifreeze	-	-
Fuel tank: .....	88	Decanted, filtered diesel fuel	-	-
Engine oil sump: without filter: .....	8.9	<b>Oil AMBRA MASTERGOLD HSP</b>	NH 324H (SAE 10W-30) NH 330H (SAE 15W-40))	API CI-4/CH-4 ACEA E7/E5
with filter: .....	9.5			
Brake circuit .....	0.7	<b>AMBRA BRAKE LHM oil</b>	NH 610 A	ISO 7308
With front brakes .....	1.0			
Front axle: axle housing .....	4.5	<b>AMBRA MULTI G oil</b>	NH 410 B	API GL4 ISO 32/46 SAE 10W-30
final drives without brakes (each) .....	1.0			
final drives with brakes (each) .....	1.5			
Rear transmission (bevel drive, final drives and brakes), gearbox, hydraulic lift, PTO and hydraulic steering: .....	42			
Grease fittings .....	-	<b>AMBRA GR9 grease</b>	NH 710 A	NLGI 2
Air conditioning system - coolant .....	- 0.80	-	-	R-134a SP20
- oil .....	0.15			



**SECTION 10 - ENGINE****Chapter 1 - Engine****CONTENT**

<b>Section</b>	<b>Description</b>	<b>Page</b>
<b>10 000</b>	General specifications .....	2
	Specifications .....	4
	Torque settings .....	10
	Tools .....	12
	Cross-sectional views .....	13
	Schematic diagrams .....	14
	Troubleshooting .....	17
<b>10 001 10</b>	Engine Removal-Installation .....	22
<b>10 001 54</b>	Engine Disassembly - Assembly .....	33
<b>10 102 70</b>	Crankshaft front seal - Replacement .....	85
<b>10 102 74</b>	Crankshaft rear seal - Replacement .....	87
<b>10 106 12</b>	Valve/rocker arm clearance .....	90
<b>10 218 30</b>	Engine injectors Removal-Installation .....	92
<b>10 246 14</b>	Bosch injection pump Removal-Installation, timing and air bleeding .....	95
<b>10 402 10</b>	Coolant pump Removal-Installation .....	101
<b>10 402 30</b>	Thermostatic valve Removal/Installation .....	103
<b>10 406 10</b>	Radiator Removal-Installation .....	105
<b>10 414 10</b>	Coolant pump and generator drive belts Adjusting tension .....	109

<b>GENERAL SPECIFICATIONS</b>	
Engine, technical type:	
- Model T4040 type F4CE9484N*J601 (BOSCH pump) . . . .	
- Model T4050 - type F4CE9484M*J601 (BOSCH pump) . .	
Cycle . . . . .	diesel, 4-stroke
Fuel injection . . . . .	Direct
Number of cylinders in line . . . . .	4
Piston diameter . . . . .	104 mm
Piston stroke . . . . .	132 mm
Total displacement . . . . .	4485 cm <sup>3</sup>
Compression ratio . . . . .	16.5:1
Maximum Power Output:	
- Model T4040 - type F4CE9484N*J601 . . . . .	63 kW (86 Hp)
- Model T4050 - type F4CE0454C*D600/*D603 . . . . .	71 kW (97 Hp)
Maximum power speed . . . . .	2300 rpm
- Maximum torque: Model T4040 - type F4CE9484N*J601 .	370 Nm
- Maximum torque: Model T4050 - type F4CE9484M*J601	418 Nm
Maximum torque speed . . . . .	1300 rpm
Number of main bearings . . . . .	5
Sump pan . . . . .	structural, cast iron
<b>Lube</b> . . . . .	forced, with lobe pump
Pump drive . . . . .	from crankshaft
Engine speed/oil pump speed ratio . . . . .	1:1
Oil filtration . . . . .	mesh screen on oil pick-up and filter cartridge in delivery line
Normal oil pressure with motor warmed-up	
at slow idling . . . . .	1.2 bar
at fast idling . . . . .	3.9 bar

(continued)

(overleaf)

<b>GENERAL SPECIFICATIONS</b>	
<b>Cooling</b> .....	coolant circulation
Radiator .....	4 lines of vertical pipes with copper fins
Fan, attached to the pulley .....	intake, in plastic with 11 blades
Coolant pump .....	centrifugal vane-type
Engine speed/coolant pump speed ratio .....	1:1.977
Coolant thermometer .....	coloured scale divided into three sections
Temperature ranges corresponding to each section:	
- Initial blue section .....	40° ÷ 60 °C
- Middle green section (normal working conditions) .....	60° ÷ 110 °C
- Final red section .....	110° ÷ 120 °C
Temperature Control .....	via thermostat valve
- initial opening .....	81 ± 2 °C
<b>Valve Timing</b> .....	overhead valves operated by tappets, rods and rocker arms via the camshaft located in the engine block; the camshaft is driven by the crankshaft using straight-tooth gears
Intake:	
- start: before T.D.C. ....	10° ± 30'
- end: after B.D.C. ....	10° ± 30'
Exhaust:	
- start: before B.D.C. ....	64°
- end: after T.D.C. ....	26°
Clearance between valves and rocker arms with engine cold:	
- intake .....	0.25 ± 0.05 mm
- exhaust .....	0.50 ± 0.05 mm
<b>Power supply</b>	
Air filtering .....	dual cartridge dry air filter, with clogged filter indicator with centrifugal pre-filter and automatic dust ejector
Fuel pump .....	with double diaphragm
Fuel filtration .....	through wire filter in fuel supply pump, and replaceable cartridge on delivery line to injection pump
Minimum fuel flow rate with pump shaft rotating at 1800 rpm .	127.6 l/h
Cam operated .....	via engine timing

(continued)

(overleaf)

<b>GENERAL SPECIFICATIONS</b>	
BOSCH Injection pump .....	rotating distributor type
All-speed governor, incorporated in pump: BOSCH .....	centrifugal counterweights
Automatic advance regulator, incorporated in pump: BOSCH .....	hydraulic
Turbocharger: - type .....	HOLSET HX25
Injection pump .....	rotating distributor with speed governor and advance variator incorporated
BOSCH pump: - Model T4040 - type F4CE9484N*J601 .....	VE 4/12 F1150-2856534
- Model T4050- type F4CE9484M*J601 .....	VE 4/12 F1150-2856537
Direction of rotation .....	anticlockwise
Injection order .....	1-3-4-2 (for all models)

**SPECIFICATIONS**

BOSCH-type injectors: F4CE9484N*J601/F4CE9484M*J601 .....	2856255
Number of nozzle holes .....	6
Nozzle hole diameter mm: F4CE9484N*J601/F4CE9484M*J601 .....	0.237
Calibration pressure bar .....	260 ÷ 274



CONNECTING ROD DATA	mm
Connecting rods .....	printed in steel, oblique-cut type
Diameter of small end bushing seat .....	40.987 ÷ 41.013
Outside diameter of small end bushing .....	41.279 ÷ 41.553
Interference between small end bushing and seat .....	0.266 ÷ 0.566
Internal diameter of small end bushing (after press-fitting) .....	38.019 ÷ 38.033
Diameter of seat for bearing shells on connecting rod .....	72.987 ÷ 73.013
Connecting rod-crankpin end float .....	0.100 ÷ 0.330

PISTON DATA	mm
Pistons .....	light alloy with three compression rings, including two seal rings and one scraper ring
Standard piston diameter, measured at 61 mm from skirt base and perpendicularly to the gudgeon pin axis .....	103.714 ÷ 103.732
Piston clearance in cylinder liner .....	0.268 ÷ 0.310
Spare piston oversizes .....	0,400
Piston protrusion at T.D.C. from cylinder block face .....	0.280 ÷ 0.520
Gudgeon pin diameter .....	37.994 ÷ 38.000
Diameter of gudgeon pin seat in piston .....	38.010 ÷ 38.016
Gudgeon pin to seat clearance .....	0.010 ÷ 0.022
Gudgeon pin to small end bearing clearance .....	0.019 ÷ 0.039
Piston ring seat depth:	
- 1st ring (measured on a diameter of 99 mm) .....	2.705 ÷ 2.735
- 2nd ring .....	2.440 ÷ 2.460
- 3rd ring .....	4.030 ÷ 4.050
Piston ring thickness:	
- 1st ring .....	2.560 ÷ 2.605
- 2nd ring .....	2.350 ÷ 2.380
- 3rd ring .....	3.970 ÷ 3.990

(continued)

(overleaf)

<b>PISTON DATA</b>	<b>mm</b>
Piston ring groove clearance (measured vertically):	
- 1st ring .....	0.100 ÷ 0.175
- 2nd ring .....	0.060 ÷ 0.110
- 3rd ring .....	0.040 ÷ 0.080
Assembly clearance between piston ring ends in cylinder sleeves:	
- 1st ring .....	0.30 ÷ 0.40
- 2nd ring .....	0.60 ÷ 0.80
- 3rd ring .....	0.30 ÷ 0.55
Spare piston ring oversizing .....	0.400

<b>VALVE TIMING GEAR DATA</b>	<b>mm</b>
Internal diameter of camshaft support bushings (press-fitted and finished in seats):	
- front .....	54.083 ÷ 54.147
- mid .....	54.083 ÷ 54.147
- rear .....	54.083 ÷ 54.147
Diameter of camshaft journals:	
- front .....	53.995 ÷ 54.045
- mid .....	53.995 ÷ 54.045
- rear .....	53.995 ÷ 54.045
Clearance between camshaft journals and bushings .....	0.038 ÷ 0.152
Camshaft end float .....	0.230 ± 0.130
Crankshaft to camshaft teeth clearance .....	0.076 ÷ 0.280

<b>TAPPET DATA</b>	<b>mm</b>
Tappet bore in crankcase .....	16.000 ÷ 16.030
Outside diameter of standard tappets .....	15.929 ÷ 15.959
Tappet running clearance .....	0.041 ÷ 0.101

<b>ROCKER ARM - VALVE DATA</b>	<b>mm</b>
Rocker-arm shaft diameter .....	18.963 ÷ 18.975
Rocker-arm shaft seat diameter .....	19.000 ÷ 19.026
Rocker arm bore to shaft clearance .....	0.025 ÷ 0.063
Valve clearance for normal running (engine cold):	
- inlet valve .....	0.25 ± 0.05
- exhaust valve .....	0.50 ± 0.05
Cam lift:	
- inlet valve .....	6.045
- exhaust valve .....	7.239

<b>CYLINDER HEAD DATA</b>	<b>mm</b>
Cylinder head .....	in cast iron with fitted valve seats and seats for injectors and thermostat valve
Maximum face re-grinding depth, that can be removed from the cylinder head in the event of reboring .....	0.130
Diameter of valve stem seat in cylinder head .....	8.019 ÷ 8.039
Valve stem diameter .....	7.960 ÷ 7.980
Assembly clearance between valve stem and seat .....	0.039 ÷ 0.079
Valve seat angle in head:	
- inlet valve .....	60°
- exhaust valve .....	45°
Valve face angle:	
- inlet valve .....	60°
- exhaust valve .....	45°
Diameter on head for fitting valve seat:	
- inlet valve .....	46.987 ÷ 47.013
- exhaust valve .....	43.637 ÷ 43.663
Valve seat insert outside diameter:	
- inlet valve .....	47.063 ÷ 47.089
- exhaust valve .....	43.713 ÷ 43.739
Valve stand-in relative to cylinder head face:	
- inlet valve .....	1.00 ÷ 1.52
- exhaust valve .....	1.00 ÷ 1.52
Interference between valve seat and head:	
- inlet valve .....	0.050 ÷ 0.102
- exhaust valve .....	0.050 ÷ 0.102

(continued)



*(overleaf)*

CYLINDER HEAD DATA	mm
Valve head diameter:	
- inlet valve .....	44.870 ÷ 45.130
- exhaust valve .....	41.870 ÷ 42.130
Inlet and exhaust valve springs:	
- spring free length .....	63.500
- length under load of 329 N .....	49.020
- length under load of 641 N .....	38.200
Injector protrusion relative to head face:	
● BOSCH injectors 2856255 .....	Not adjustable

TORQUE SETTINGS WITH ANGLE				
PARTS TO BE TIGHTENED	Thread	Tightening torque		Angle
		Nm	kgm	
Main bearing cap bolts				
phase 1 .....	M12 x 1.5	50 ± 6	5.0 ± 0.6	-
phase 2 .....	M12 x 1.5	80 ± 6	8.0 ± 0.6	-
phase 3 .....	M12 x 1.5	-	-	90° ± 5°
Big-end cap bolts				
phase 1 .....	M 10 x 1.25	30 ± 3	3.0 ± 0.3	-
phase 2 .....	M 10 x 1.25	60 ± 5	6.0 ± 0.5	-
phase 3 .....	M 10 x 1.25	-	-	60° ± 5°
Bolts securing cylinder head .....	M 12 x 1.75 x 70	50 ± 5	5.0 ± 0.5	90°
<b>Note:</b> For the tightening sequence, see page 56, Fig. 124.	M 12 x 1.75 x 140	40 ± 5	4.0 ± 0.5	180°
	M 12 x 1.75 x 180	70 ± 5	7.0 ± 0.5	180°
Bolts securing engine flywheel .....	M 12 x 1.25	30 ± 4	3.0 ± 0.4	60° ± 5°

<b>TORQUE WRENCH SETTINGS</b>			
PARTS TO BE TIGHTENED	Thread	Tightening torque	
		Nm	kgm
Bolts fastening pulley on crankshaft .....	M 12 x 1.75	110 ± 5	11.0 ± 0.5
Flywheel casing retaining bolts .....	M 12 x 120	85 ± 10	8.5 ± 1
	M 12 x 80	85 ± 10	8.5 ± 1
	M 10 x 80	49 ± 5	4.9 ± 0.5
	M 10 x 40	49 ± 5	4.9 ± 0.5
Oil sump retaining bolts .....	M 8 x 1.25	24 ± 4	2.4 ± 0.4
	M 8 x 1.50	60 ± 9	6 ± 0.9
Oil sump threaded plugs .....	M 22 x 1.5	50 ± 5	5 ± 0.5
Rocker arm support retaining bolts .....	M 8 x 1.25	24 ± 4	2.4 ± 0.4
Tappet cover retaining bolts .....	M 8 x 1.25	24 ± 4	2.4 ± 0.4
Exhaust manifold retaining bolts .....	M 10 x 1.50	53 ± 6	4.3 ± 0.6
Intake manifold retaining bolts .....	M 8 x 1.25	24 ± 4	2.4 ± 0.4
Oil cooler retaining bolts .....	M 8 x 1.25	24 ± 4	2.4 ± 0.4
Coolant pump retaining bolts .....	M 8 x 1.25	24 ± 4	2.4 ± 0.4
Coolant inlet manifold retaining bolts .....	M 10 x 1.50	24 ± 4	2.4 ± 0.4
Thermostat valve assembly retaining bolts .....	M 8 x 1.25	24 ± 4	2.4 ± 0.4
Fan support retaining bolts .....	M 8 x 1.25 x 50	10 ± 2	1 ± 0.2
	M 10 x 1.50 x 25	43 ± 6	4.3 ± 0.6
Injector fastener .....	-	60 ± 5	6.0 ± 0.5
Fuel pump retaining bolts .....	M 8 x 1.25	24 ± 4	2.4 ± 0.4
Nuts securing turbine mod. T4050 .....	M 10 x 1.25	43 ± 6	4.3 ± 0.5
Alternator retaining bolts .....	M 8 x 1.50	24 ± 4	2.4 ± 0.4
Starter motor retaining bolts .....	M 10 x 1.50	49 ± 5	4.9 ± 0.5
Camshaft plate retaining bolts .....	M 8 x 1.25	24 ± 4	2.4 ± 0.4
Injection pump retaining bolts .....	M 8 x 1.25	12 ± 5	1.2 ± 0.5
Oil pump gear casing retaining bolts .....	M 8 x 1.25	24 ± 4	2.4 ± 0.4
Additional counterweight retaining bolts .....	M 10 x 1.5	48 ± 8	4.8 ± 0.8
Bolts securing camshaft gear .....	M 8 x 1.25	36 ± 4	3.6 ± 0.4

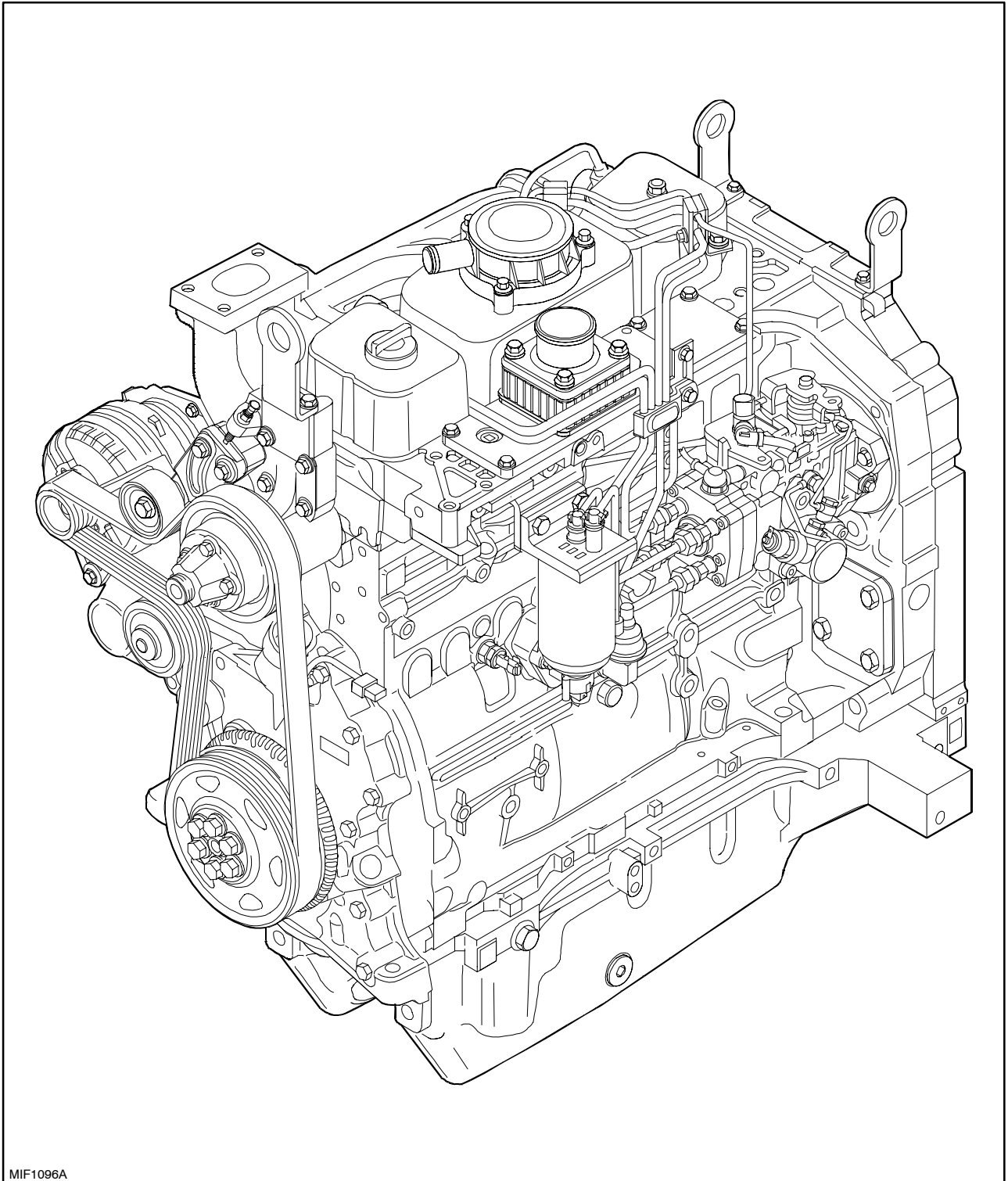
**SPECIAL TOOLS**

**Warning** - The operations described in this section can only be carried out with **ESSENTIAL** tools indicated by an **(X)**.

To work safely and efficiently and obtain the best results, it is also necessary to use the recommended specific tools listed below and certain other tools, which are to be made according to the drawings included in this manual.

**List of specific tools required for the various operations described in this Section.**

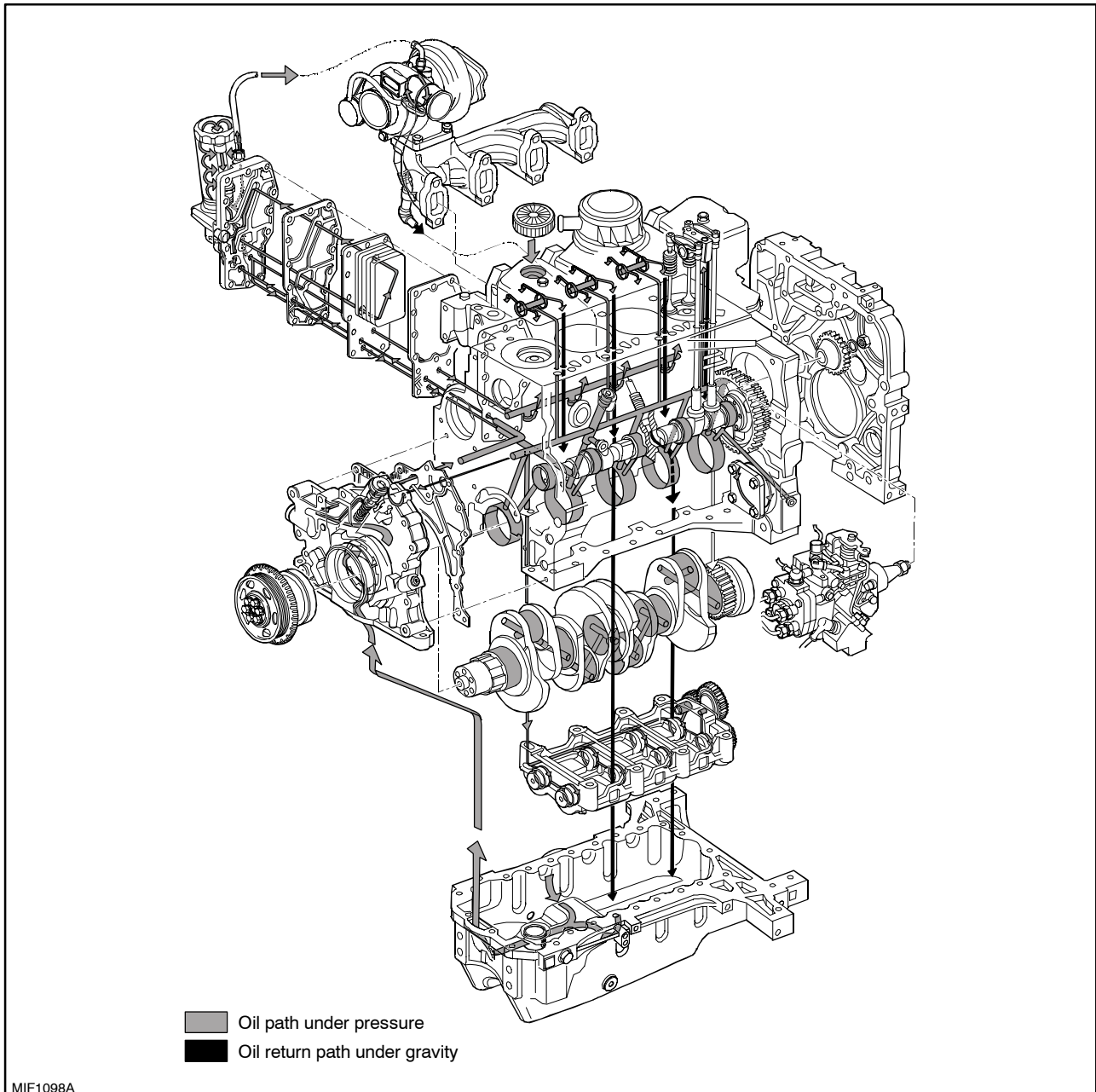
<p><b>X 380000216</b> Engine removal and installation tool.</p> <p><b>380000220</b> Clamp for fitting piston in cylinder liner (60-125 mm).</p> <p><b>X 380000221</b> Pliers for piston ring disassembly and reassembly (65-110 mm).</p> <p><b>380000301</b> Rotating stand for overhaul operations (capacity 1000 daN, torque 120 daN/m).</p> <p><b>X 380000302</b> Tool for engine valve disassembly and reassembly.</p> <p><b>380000304</b> Pair of gauges for angular tightening with 1/2" and 3/4" square connection.</p> <p><b>380000362</b> Crankshaft lifting tool.</p> <p><b>X 380000364</b> Dial gauge base for various measurements (use with <b>380000228</b>).</p> <p><b>380000569</b> Movable tool for dismantling tractors with bracket <b>380000500</b> and adapter plate <b>380000844</b>.</p> <p><b>X 380000661</b> Engine mounting brackets for rotating stand <b>380000301</b>.</p> <p><b>X 380000663</b> Tool to extract crankshaft rear seal.</p>	<p><b>X 380000664</b> Splining tool for fitting rear seal on crankshaft.</p> <p><b>X 380000665</b> Tool to extract crankshaft front seal.</p> <p><b>X 380000666</b> Splining tool for fitting front seal on crankshaft.</p> <p><b>X 380000667</b> Drift for camshaft bushing disassembly and reassembly (use with <b>380000668</b>).</p> <p><b>380000668</b> Grip for interchangeable drifts.</p> <p><b>X 380000669</b> Gasket extraction tool.</p> <p><b>X 380000670</b> Tool for cartridge filter disassembly.</p> <p><b>380000671</b> Injector extraction tool.</p> <p><b>380000975</b> Box with full set of tools to regrind valve seats.</p> <p><b>380000976</b> Spring load test appliance.</p> <p><b>380001003</b> Complete square to check for connecting rod distortion.</p> <p><b>380001268</b> Belt tension gauge.</p> <p><b>Injection pump bench test.</b></p> <p><b>380000228</b> Dial gauge (0-5 mm).</p> <p><b>X 380000732</b> Tool for engine flywheel rotation (use with <b>380000988</b>).</p> <p><b>X 380000914</b> Dial-gauge holder tool for rotary injection pump timing (use with <b>380000228</b>).</p> <p><b>X 380000988</b> Plate for engine flywheel rotation tool with flywheel timing pin (use with <b>380000732</b>).</p>
---	---



MIF1096A

Engine view

1

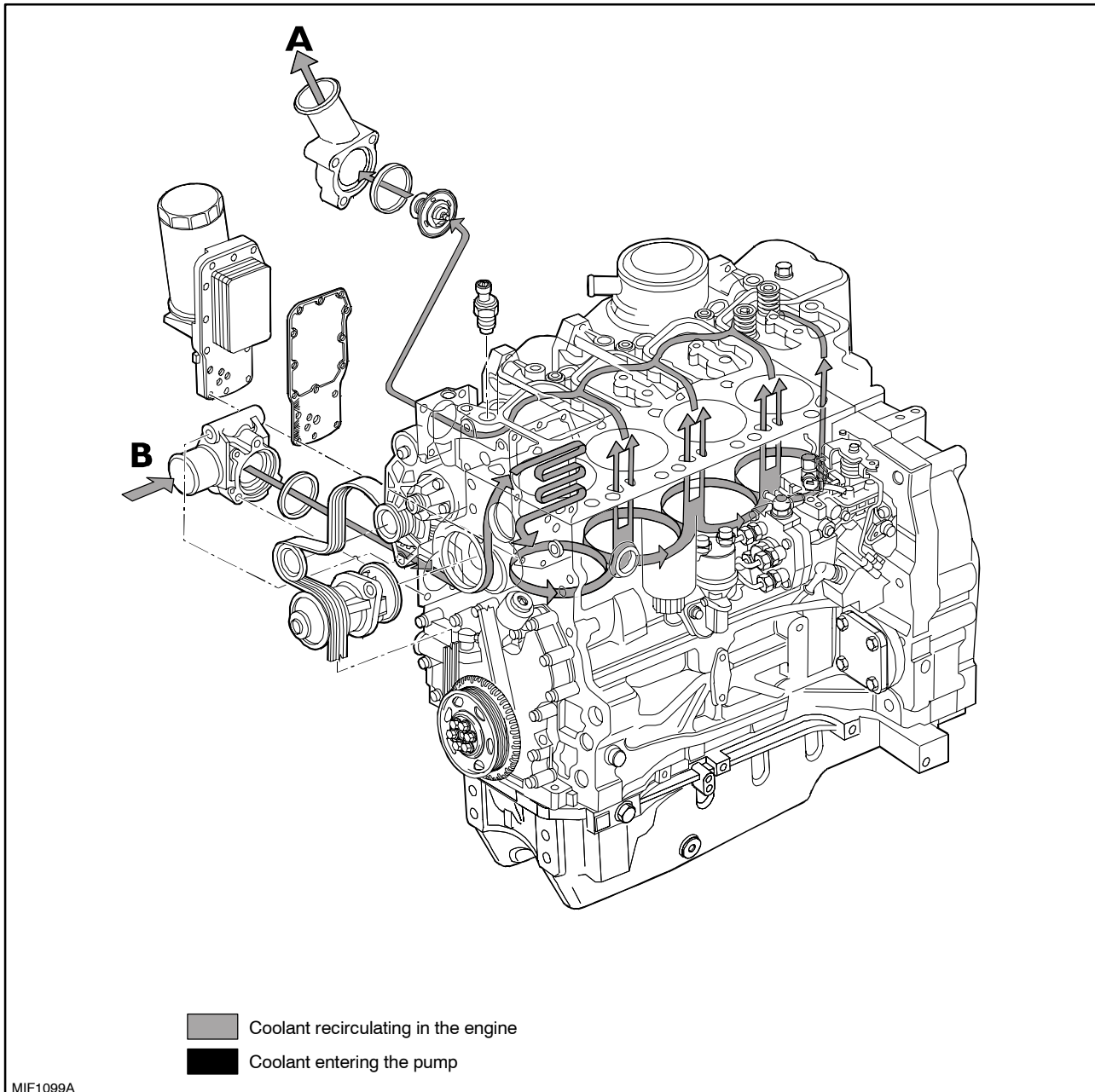


2

### Engine lubrication diagram

Forced-circulation lubrication is accomplished by the following components:

- oil pump, housed at the front of the crankcase, driven by the grooved bushing keyed onto the shank of the crankshaft;
- water / oil cooler, housed in the crankcase;
- oil pressure control valve incorporated in the cooler assembly;
- by-pass valve to cut off clogged oil filter, incorporated in the cooler assembly;
- cartridge oil filter.

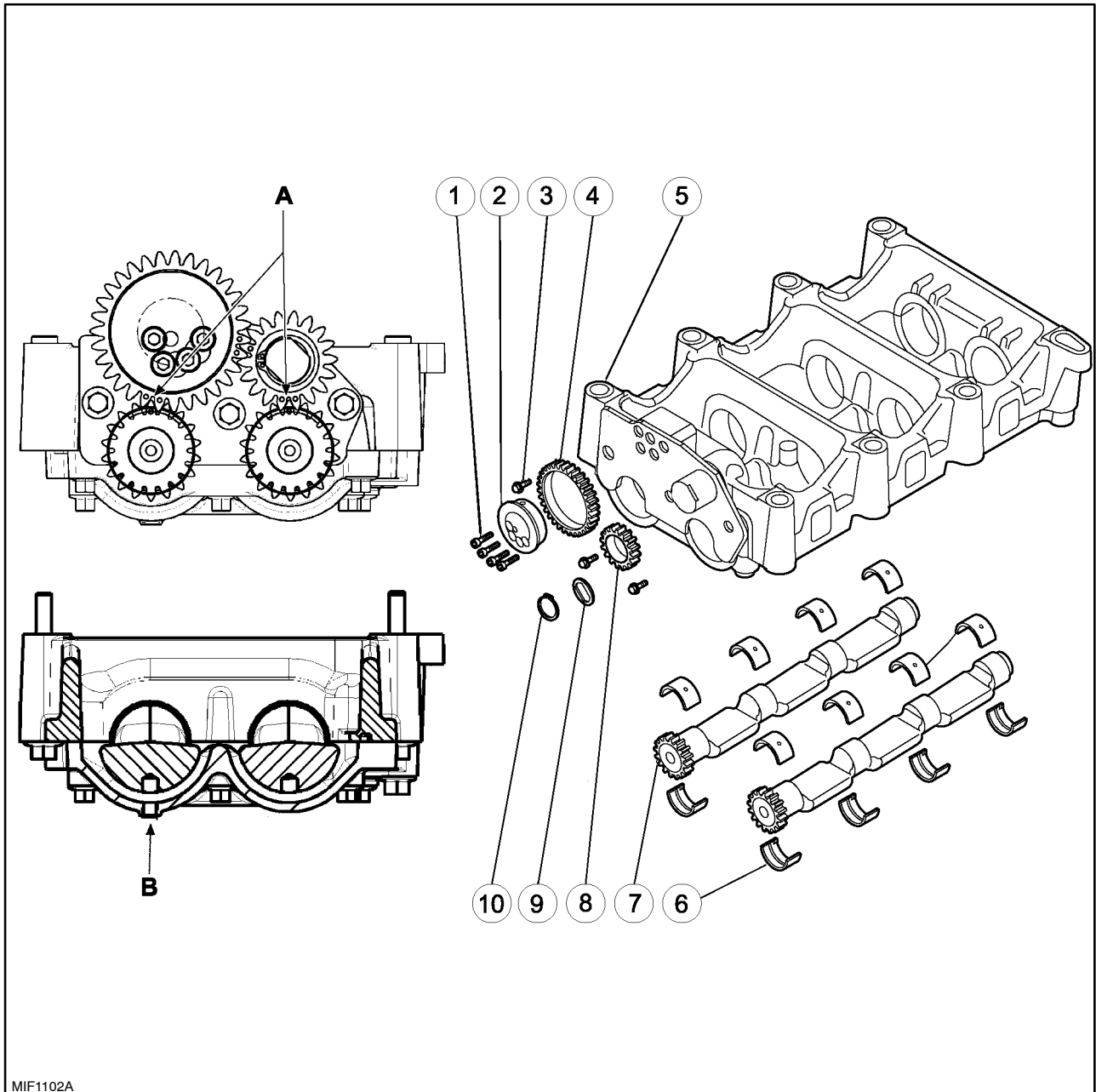


3

### Cooling diagram

The forced circulation, closed-circuit engine cooling system is composed of the following components:

- a lubricating oil cooler;
- a centrifugal coolant pump housed at the front of the crankcase;
- a thermostat valve governing coolant circulation.

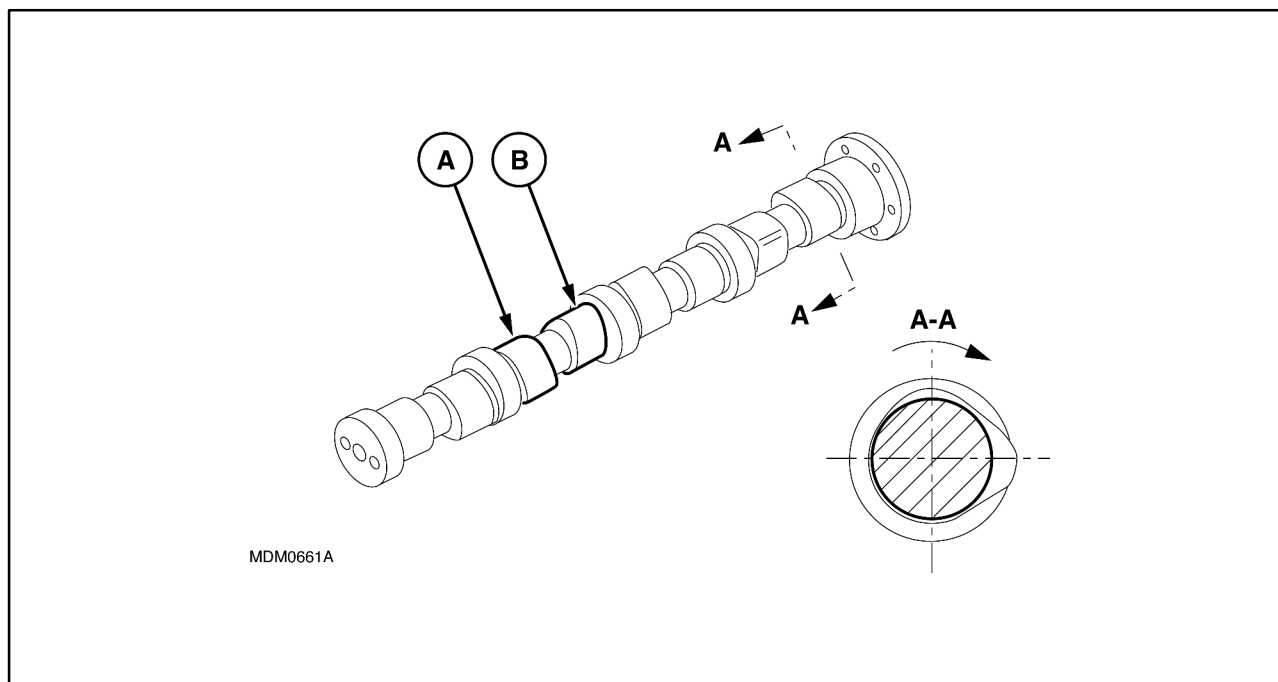


MIF1102A

**Additional counterweight diagram**

- |                     |                  |
|---------------------|------------------|
| 1. Retaining bolts  | 6. Half bearings |
| 2. Support          | 7. Counter-shaft |
| 3. Retaining bolts  | 8. Gear          |
| 4. Gear             | 9. Ring          |
| 5. Balancing weight | 10. O-rings      |





5

#### Camshaft view

A. Inlet valve cam.

B. Exhaust valve cam.

### EXHAUST GAS RECIRCULATION SYSTEM (EGR)

On the TIER 3 version, the exhaust cam profile has been modified to permit partial opening of the related valve during the inlet phase (exhaust gas recirculation EGR) with the consequent re-introduction of some of the exhaust gases into the engine cylinders.

The exhaust gases can be partially redirected into the cylinders in order to reduce the maximum combustion temperature values which are responsible for the production of nitrogen oxide ( $\text{NO}_x$ ).

The exhaust gas recirculation system (EGR), reducing the temperature of combustion by decreasing the concentration of oxygen in the combustion chamber, is therefore an effective system to control emissions of  $\text{NO}_x$ .

The internal EGR system is not provided with any electronically controlled elements: the system is always on.

Its configuration needs no additional elements such as control valves, pipes or heat exchangers.

The exhaust cam (B) in addition to the main lobe has another lobe (see sect. A-A, fig. 5) with respect to the configuration without EGR.

The additional lobe, during the inlet phase of the cylinder under examination, permits briefly opening the exhaust valve generating recirculation due to the exhaust gases returning caused by the lower pressure created in the inlet phase inside the cylinder.

## TROUBLESHOOTING

Problems	Possible Problem	Solutions
<b>Engine does not start.</b>	1. Battery partially discharged.	Check and recharge batteries. Replace if necessary.
	2. Battery terminal connections corroded or loose.	Clean, inspect and tighten terminal nuts. Replace terminals and nuts if excessively corroded.
	3. Injection pump timing incorrect.	Adjust injection pump timing on the engine.
	4. Impurities or water in fuel lines.	Disconnect fuel lines from injection pump and clean thoroughly. If necessary clean and dry the fuel tank.
	5. No fuel in tank.	Fill tank.
	6. Fuel supply pump malfunction.	Check and replace pump if necessary.
	7. Air in fuel system.	Check fuel lines, unions, supply pump, filters and injection pump for air, then bleed system; then bleed the air from the circuit.
	8. Starter motor faulty.	Repair or replace starter motor.
	9. Thermostarter faulty.	Check and replace thermostarter if necessary.
<b>Engine stalls.</b>	1. Slow idling speed too low.	Adjust slow idling speed.
	2. Injection pump delivery irregular.	Check delivery on the test bench.
	3. Impurities or water in fuel lines.	Disconnect fuel lines from injection pump and clean thoroughly. If necessary clean and dry the fuel tank.
	4. Fuel filters clogged.	Replace the filter cartridges.
	5. Incorrect valve - rocker arm clearances.	Adjust the clearance between the rocker arms and the valves.
	6. Burnt or cracked valves.	Replace the valves.
	7. Air in fuel system.	Check fuel lines, unions, supply pump, filters and injection pump for air, then bleed system; then bleed the air from the circuit.
	8. Injection pump drive mechanism damaged.	Replace damaged parts.

(continued)

(overleaf)

Problems	Possible Problem	Solutions
<b>Engine overheating.</b>	<ol style="list-style-type: none"> <li>1. Coolant pump malfunction.</li> <li>2. Thermostat faulty.</li> <li>3. Radiator inefficient.</li> <li>4. Deposits in cylinder head and crankcase coolant passages.</li> <li>5. Coolant pump and fan drive belt slack.</li> <li>6. Coolant level low.</li> <li>7. Incorrect engine timing.</li> <li>8. Injection pump calibration incorrect - delivering too much or too little fuel.</li> <li>9. Air filter clogged.</li> </ol>	<p>Overhaul pump and replace if necessary.</p> <p>Replace thermostat.</p> <p>Remove internal deposits by flushing. Check for leaks and repair.</p> <p>Flush out coolant system.</p> <p>Check and adjust belt tension.</p> <p>Top up expansion tank with specified coolant mixture.</p> <p>Check and adjust engine timing.</p> <p>Calibrate pump on test bench to values specified in calibration tables.</p> <p>Clean the assembly and, if necessary, replace the filtering element.</p>
<b>Engine lacks power and runs unevenly.</b>	<ol style="list-style-type: none"> <li>1. Injection pump timing incorrect.</li> <li>2. Auto advance regulator in injection pump damaged.</li> <li>3. Control valve journal worn.</li> <li>4. Injection pump delivery irregular.</li> <li>5. All-speed governor damaged.</li> <li>6. Injectors partially obstructed or damaged.</li> <li>7. Impurities or water in fuel lines.</li> </ol>	<p>Adjust injection pump timing on the engine.</p> <p>Overhaul injection pump and adjust on test bench to values specified in calibration table.</p> <p>Overhaul injection pump and adjust on test bench to values specified in calibration table.</p> <p>Overhaul injection pump and adjust on test bench to values specified in calibration table.</p> <p>Overhaul injection pump and adjust on test bench to values specified in calibration table.</p> <p>Clean, overhaul and calibrate injectors.</p> <p>Disconnect fuel lines from injection pump and clean thoroughly. If necessary clean and dry the fuel tank.</p>

(continued)

(overleaf)

Problems	Possible Problem	Solutions
<p><b>The engine makes anomalous knocking noises.</b></p>	8. Fuel supply pump damaged.	Replace fuel supply pump.
	9. Incorrect valve - rocker arm clearances.	Adjust the clearance between the rocker arms and the valves.
	10. Cylinder compression low.	Test compression and overhaul engine if necessary.
	11. Air filter clogged.	Clean the assembly and, if necessary, replace the filtering element.
	12. Tie-rod in linkage between accelerator and injection pump incorrectly adjusted.	Adjust to correct length.
	13. Fast idling speed screw on injection pump incorrectly adjusted.	Adjust fast idling speed screw.
	1. Injectors partially obstructed or damaged.	Clean, overhaul and calibrate injectors.
	2. Impurities accumulating in fuel lines.	Clean fuel lines and replace severely dented pipes; clean injection pump if necessary.
	3. Injection pump timing incorrect.	Adjust injection pump timing on the engine.
	4. Crankshaft knocking due to excessive play in one or more main or big-end bearings or excessive endfloat.	Re-grind crankshaft journals and crankpins. Fit oversize shell bearings and thrust washers.
5. Crankshaft out of balance.	Check crankshaft alignment and balance; replace if necessary.	
6. Flywheel bolts loose.	Replace any bolts that have worked loose and tighten all bolts to the specified torque + angle values.	
7. Connecting rod axes not parallel.	Straighten connecting rods, check axes parallelism; replace con rods if necessary.	
8. Pistons knock due to excessive wear.	Rebore cylinder liners and fit oversize pistons.	
9. Noise caused by excessive play of gudgeon pins in small-end and piston bushings. Loose fit of small-end bushing.	Fit oversize gudgeon pin, rebore piston seats and small-end bushings. Replace with new bushings.	
10. Excessive tappet / valve noise.	Check for broken springs or excessive play between valve stems and guides, tappets and bores; adjust the clearance between valves and rocker arms.	

(continued)

(overleaf)

Problems	Possible Problem	Solutions
<b>The engine produces abnormal smoke: black or dark grey.</b>	1. Maximum delivery of injection pump too high.	Calibrate pump on test bench to values specified in calibration tables.
	2. Injection pump delivery excessively retarded or automatic advance regulator damaged.	Adjust injection pump timing or check automatic advance regulator.
	3. Injection pump delivery excessively advanced.	Adjust injection pump timing on the engine.
	4. Injectors partially or totally obstructed or incorrectly adjusted.	Clean, overhaul and calibrate injectors; replace them if necessary.
	5. Air filter clogged.	Clean the assembly and, if necessary, replace the filtering element.
	6. Loss of engine compression due to: - piston rings sticking; - cylinder liner wear; - worn or incorrectly adjusted valves.	Replace damaged parts or, if necessary, overhaul the engine.
	7. High-pressure fuel lines damaged.	Inspect and replace if necessary.
<b>Blue, grey-blue or grey-white smoke.</b>	1. Injection pump delivery excessively retarded or automatic advance regulator damaged.	Adjust injection pump timing or check automatic advance regulator.
	2. Injectors obstructed or damaged.	Clean, overhaul and calibrate injectors, replace if necessary.
	3. Oil leaking past piston rings due to sticking rings or cylinder liner wear.	Replace damaged parts or, if necessary, overhaul the engine.
	4. Oil leaking through the inlet valve guides due to guide or valve stem wear.	Overhaul cylinder head.
	5. Engine does not reach correct operating temperature (thermostat faulty).	Replace thermostat.
<b>Engine runs on after switching off.</b>	1. Engine stop electromagnet damaged.	Replace electromagnet.
	2. All-speed governor damaged.	Overhaul injection pump and adjust on test bench to values specified in calibration table.

**Op. 10 001 10**  
**ENGINE Removal-Installation**



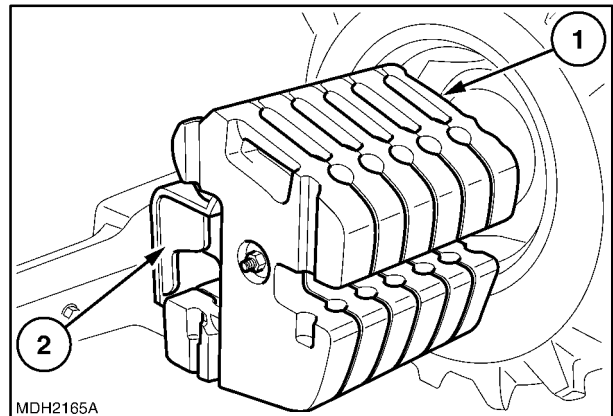
Lift and handle all heavy parts using suitable lifting equipment.

Make sure that assemblies or parts are supported by means of suitable slings and hooks. Ensure that no-one is in the vicinity of the load to be lifted.



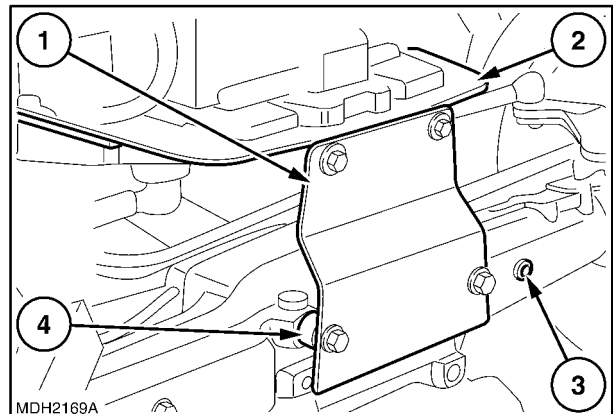
Use suitable tools to align the holes. **NEVER USE FINGERS OR HANDS.**

1. Remove the bonnet as described in operation **90 100 22**.
2. Extract the fixing pin and remove the ballast (1); unscrew the retaining screws and retrieve the ballast support (2).



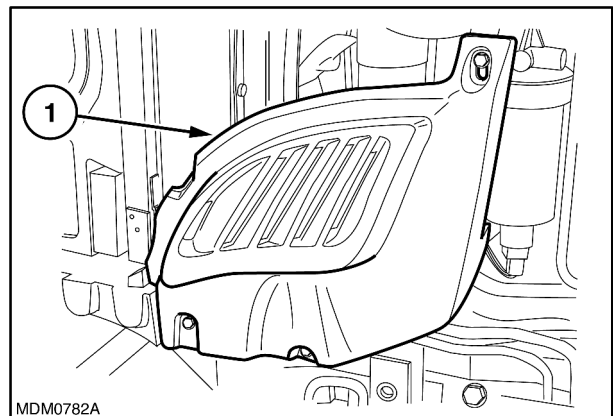
6

3. If the tractor is a T4040 Supersteer or T4050 Supersteer model, position and secure the bracket **380001613** (1) together with the spacers **50162** (4) on the front axle (3) and associated support (2).



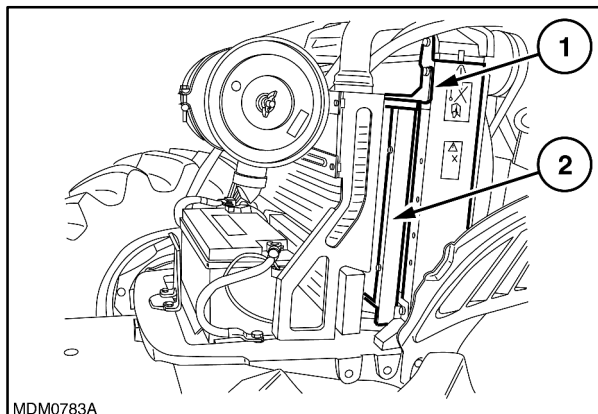
7

4. Unscrew the retaining bolts and remove the side grille (1). Perform this operation on the other side of the tractor too.



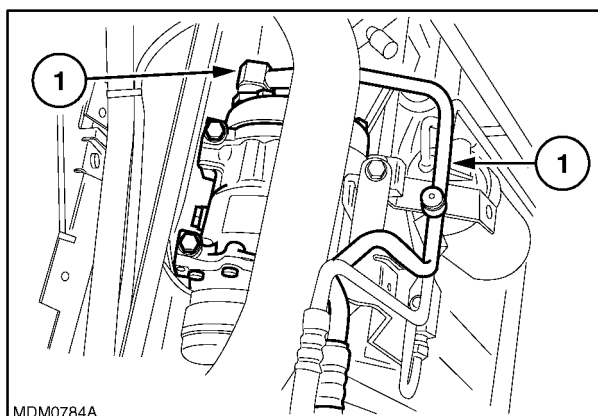
8

5. Unscrew the related retaining bolt and loosen the guide (1), unhook the catch and take out the condenser (2).



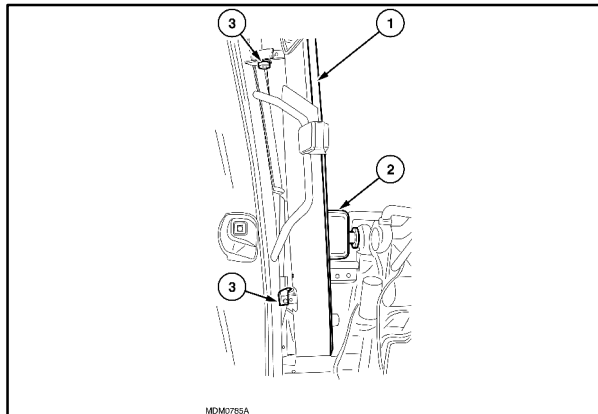
9

6. Disconnect the electrical connection from the compressor (1) and unscrew the related retaining bolts. Remove the brackets fixing the pipes of the air conditioning system and take the condenser, compressor and pipes under the transmission without disconnecting the pipes.



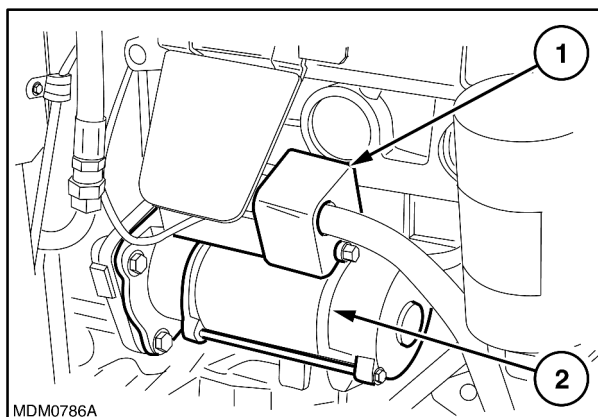
10

7. Unscrew the bolts (3) securing the exhaust pipe (1), unscrew the exhaust silencer retaining bolts (2) and remove the entire assembly. Unscrew the retaining bolts and remove the heat shield.



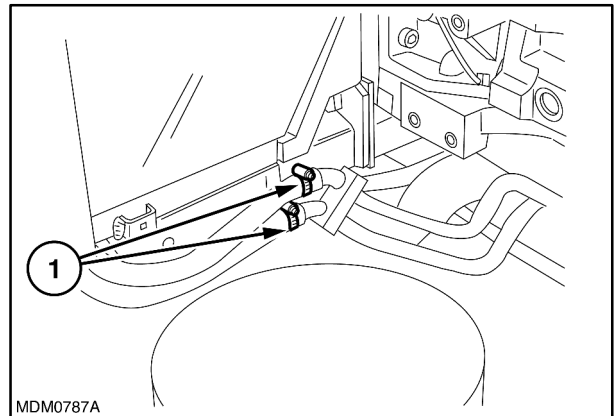
11

8. Remove the guard (1) and disconnect the cables from the starter motor (2).



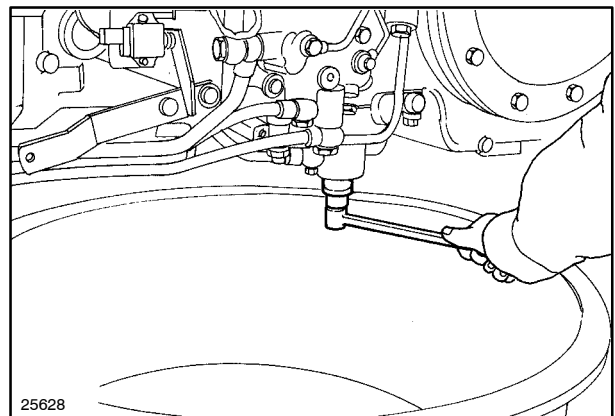
12

9. Disconnect the pipes (1) of the cab heating system and drain the engine cooling system.



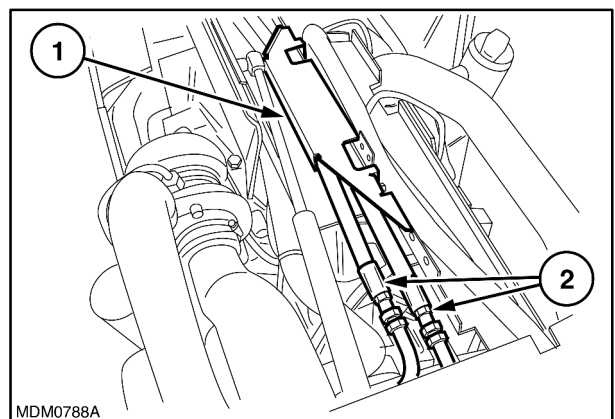
13

10. Unscrew the plug and drain the oil from the rear transmission casing (the prescribed quantity is 42 litres).



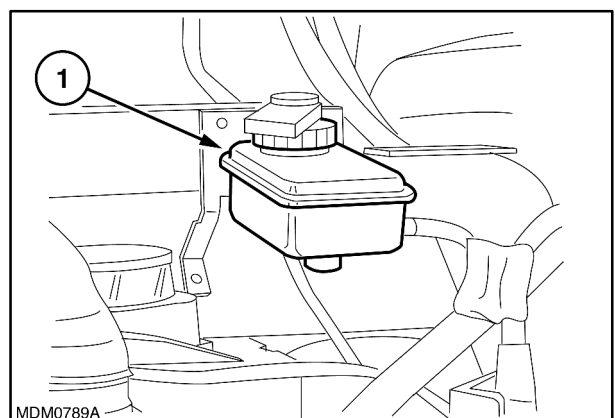
14

11. Disconnect the power steering pipes (2), unscrew the related retaining bolts and remove the bracket (1).



15

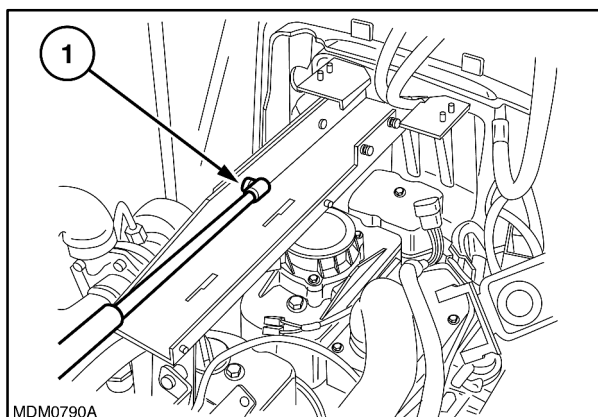
12. Disconnect the electrical connection from the brake fluid reservoir (1), unscrew the retaining bolts and remove the reservoir from the supporting bracket.



16

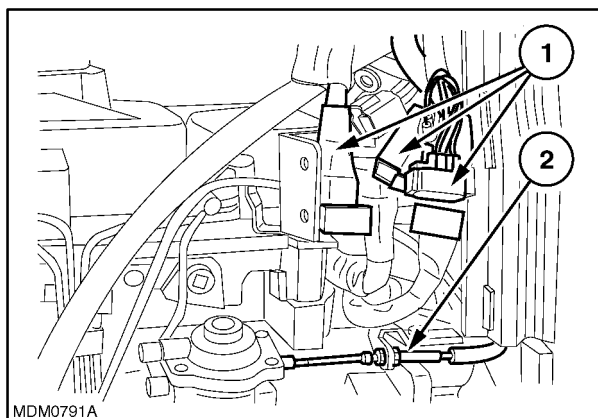


13. Unscrew the retaining bolts and remove the bonnet bracket (1).



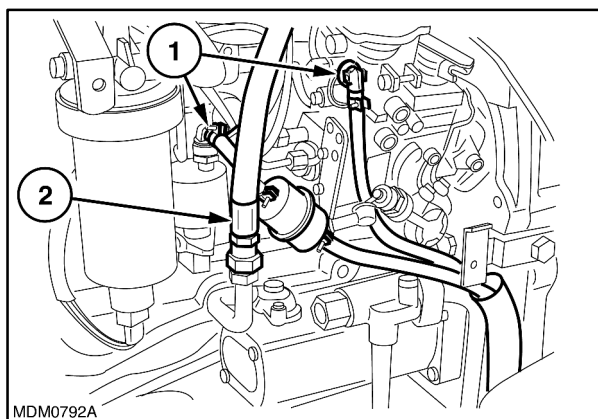
17

14. Disconnect: the main electrical connections (1), the connection of the steering sensor and the cab ground, disconnect the throttle cable (2) from the injection pump.



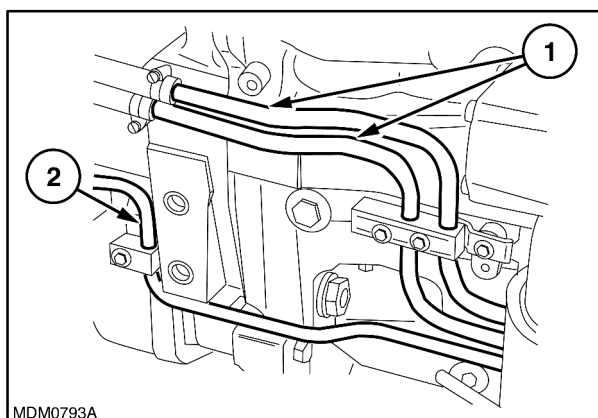
18

15. Disconnect the diesel pipes (1) from the injection pump. Disconnect the pipe (2) from the pump.



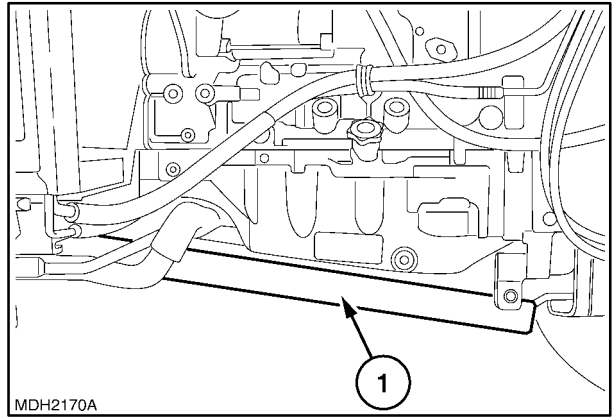
19

16. Disconnect: the transmission oil cooler pipes (1) and the front axle differential lock pipe (2).



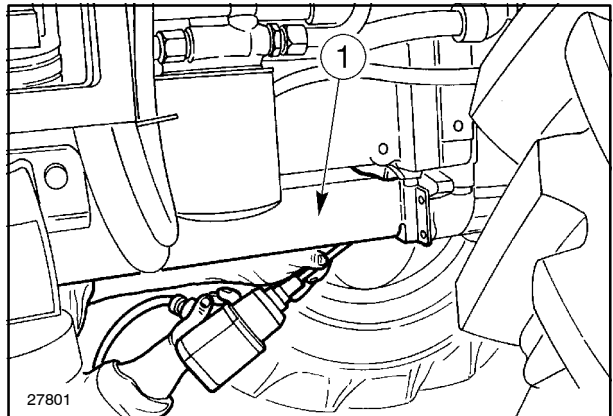
20

17. If the tractor is a T4040 Supersteer or T4050 Supersteer model, unscrew the front and rear retaining bolts, unscrew the front pivot pin retaining screw and remove the bracket (1). Unscrew the relative retaining bolts and remove the rear guard.



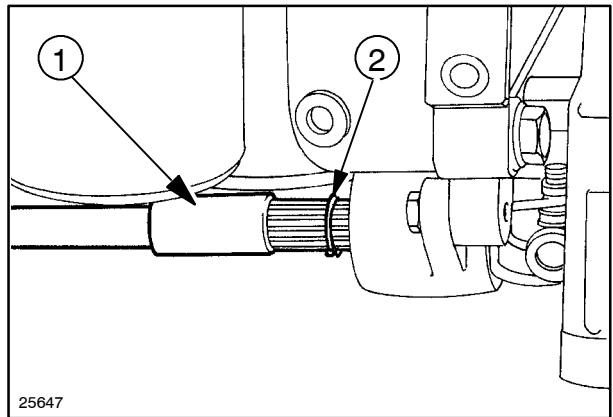
21

18. If the tractor is a T4040 Deluxe or T4050 Deluxe model, unscrew the front, central and rear retaining bolts and remove the guard on the propeller shafts (1).



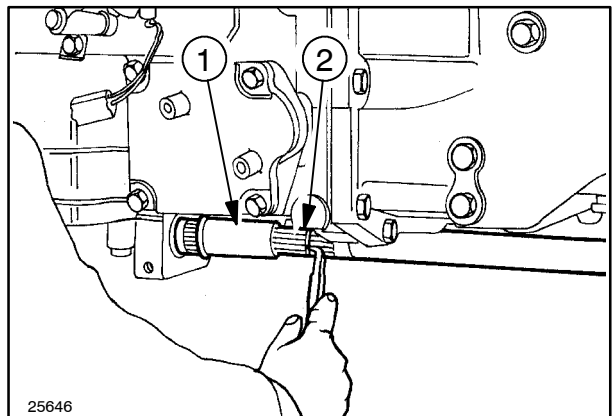
22

19. Remove the circlip (2) and move the front sleeve (1) backwards in order to free it from the groove on the front axle.



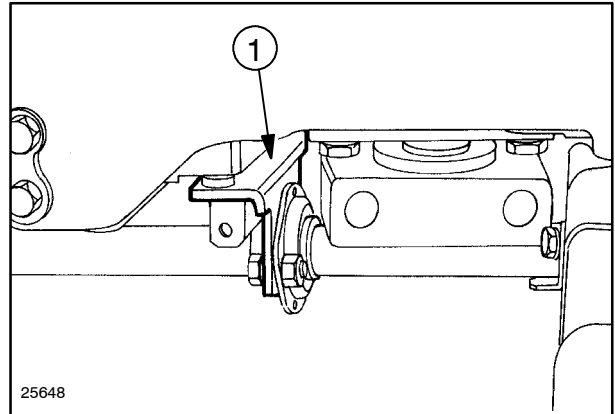
23

20. Remove the circlip (2) and move the rear sleeve (1) in order to release it from the groove on the drive.



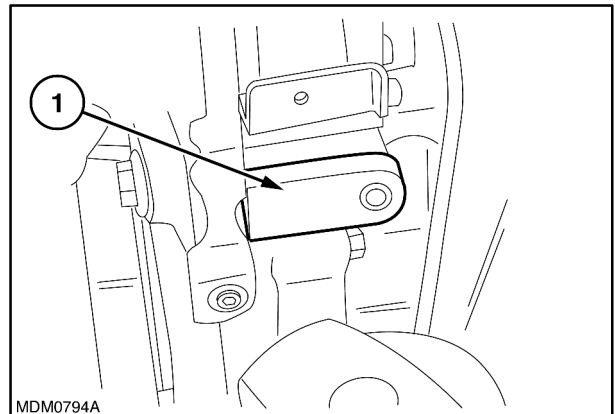
24

21. Remove the propeller shaft central support (1) retaining bolts and extract the shaft together with the support.



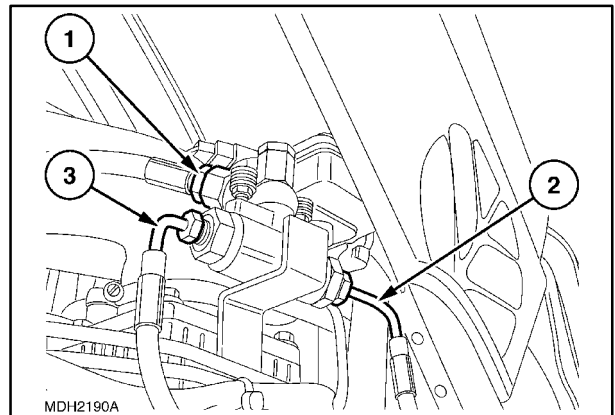
25

22. Loosen the retaining bolt and turn the bracket (1) through 90°.



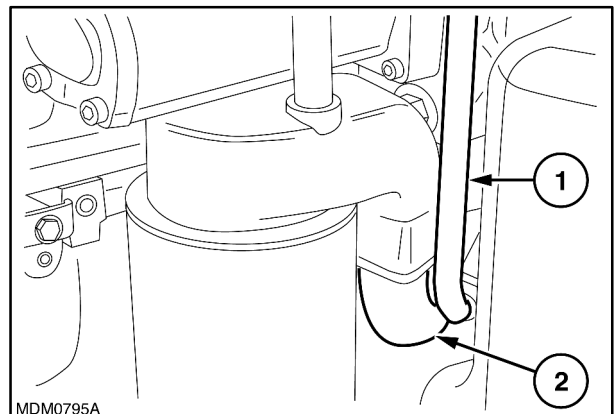
26

23. For models fitted with brakes on the front axle it is necessary to drain the brake fluid tank and disconnect the pipes (1, 2 and 3) from the block.



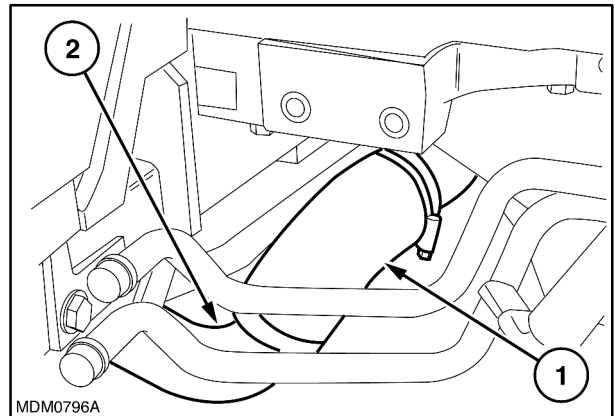
27

24. Unscrew: the retaining bolts of the pipe (1) delivering oil to the pump and the bolts retaining the pipe (2) to the filter support.



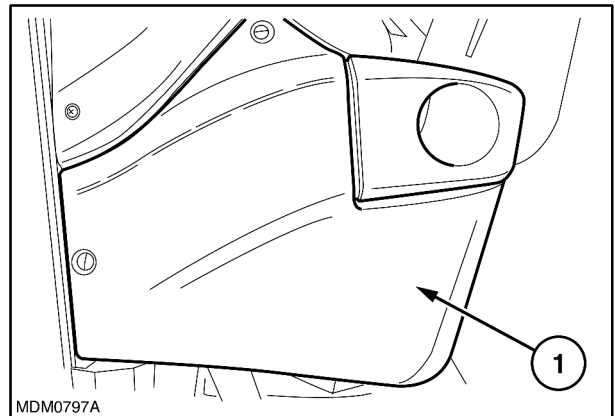
28

25. Loosen the related clamps and remove the sleeve (2) from the pipe (1) and remove the transmission oil inlet pipe together with the above-mentioned sleeve.



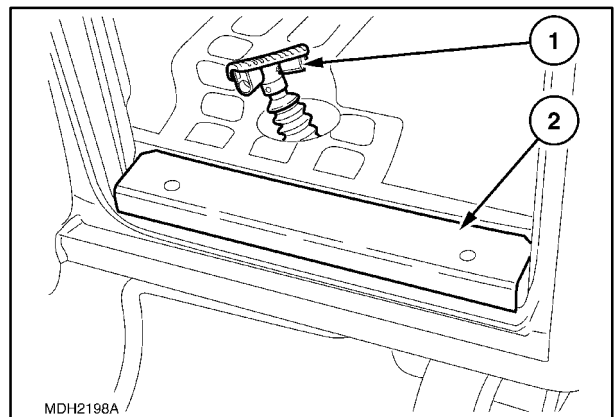
29

26. Unscrew the retaining bolts and remove the guard (1). Do this on both sides.



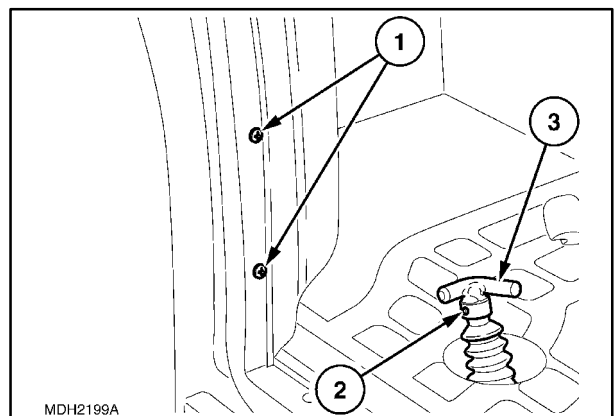
30

27. Unscrew the retaining bolts and remove the cab mat guard (2). Remove the plastic pedal (1).



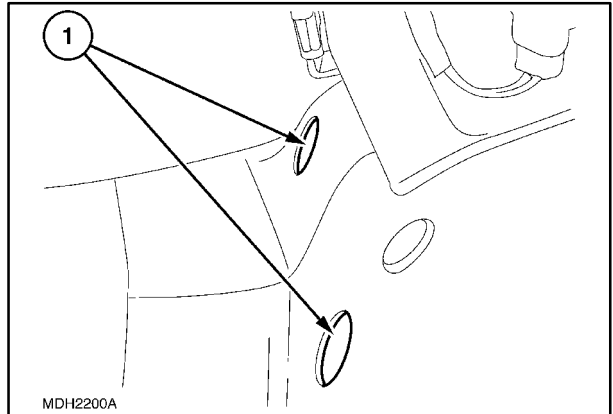
31

28. Unscrew the bolts (1) (on both sides), extract the spring pin (2) and remove the throttle pedal (3).



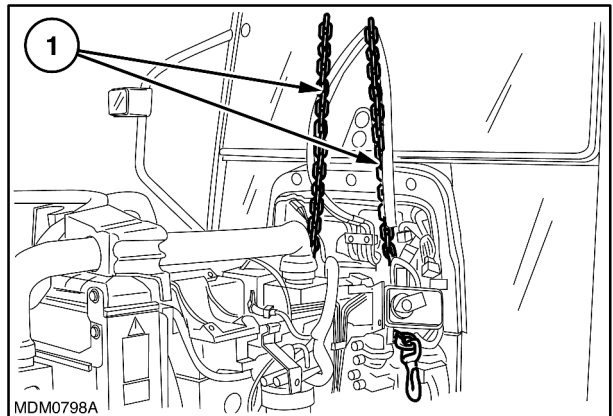
32

29. Raise the front part of the cab mat; remove the two plastic plugs and, through the hole (1), unscrew the four upper bolts securing the engine to the clutch casing.



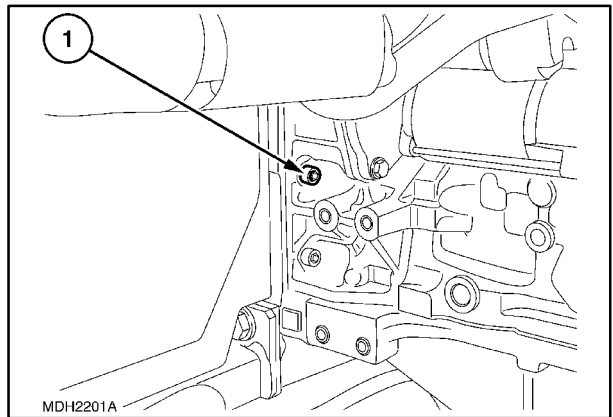
33

30. Place a stand under the clutch casing, attach the rear portion of the engine to a hoist, using chains (1).



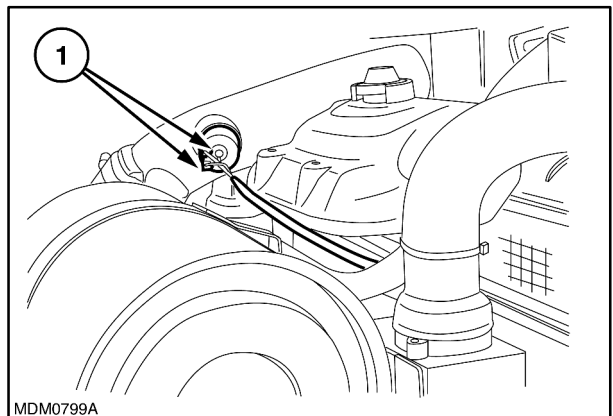
34

31. Unscrew the remaining bolts (1) securing the engine to the clutch casing and separate the engine with the front axle from the clutch casing.



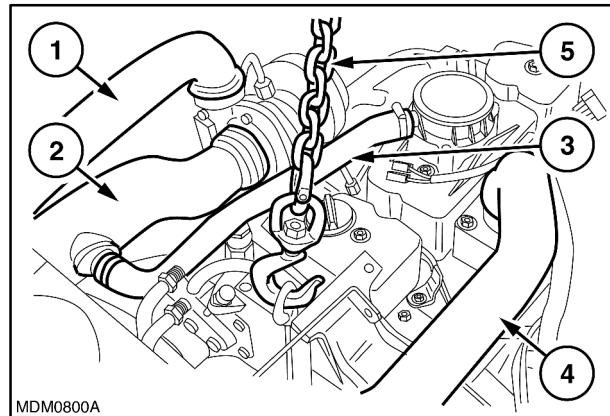
35

32. Disconnect the connections (1) from the clogged air filter sensor.



36

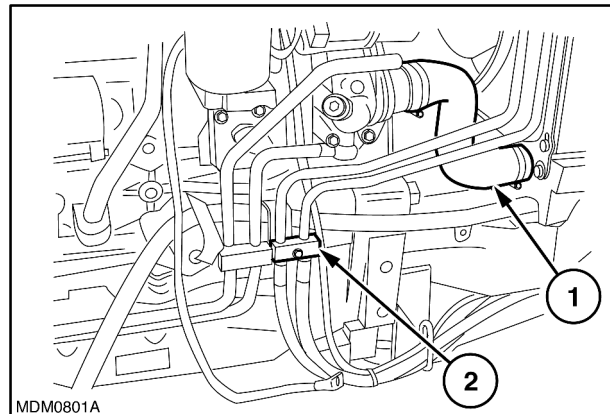
33. Place a stand under the rear portion of the bevel drive casing (T4040 Supersteer or T4050 Supersteer) or two stands: one under the axle support at the rear and the other under the front side. (models with standard front axle). Keeping the chains (1, fig. 34) connected, join one chain (5) to the front of the engine. Unscrew the clamps and remove: the engine oil vapour recirculation pipe (3), turbocharger intake pipe (2), and the intake air cooler pipes (1 and 4).



MDM0800A

37

34. Disconnect the lower (1) and upper sleeves from the radiator, remove the bracket (2) fastening the power steering pipe.



MDM0801A

38

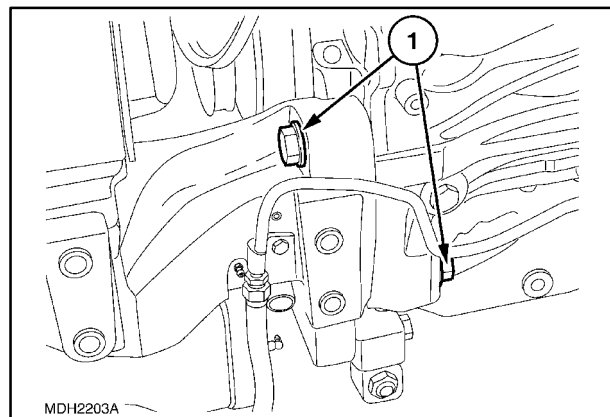
35. For the T4040 Deluxe or T4050 Deluxe models, insert a wooden wedge on each side between the axle support and the axle itself. For all models, unscrew the bolts (1) on both sides and separate the engine from the axle-support assembly with the radiator and battery.

36. Rest the engine on an adequate support.

37. To re-fit the engine, proceed as follows.

**ATTENTION**

Use suitable tools to align the holes. NEVER USE FINGERS OR HANDS.



MDH2203A

39

- Apply the torque settings listed on page 12.
- Connect the engine, with chains, to the hoist.

- Refit the engine to the axle-support assembly with the radiator, battery, coolers: intake air and transmission oil.
- Connect the upper and lower sleeves of the radiator to the engine.
- Secure the power steering pipes.
- Before refitting the engine to the clutch box carefully clean the mating surfaces and apply sealing compound (2 mm diameter), according to the diagram shown Section 21, Chapter 1, page 30.
- Position the engine on the clutch casing and secure it with the specific bolts.
- Fit the plastic plugs on the cab floor.
- Move the cab mat into the right position and secure it with the two bolts on the upright (do this on both sides).
- Fit the throttle pedal with the plastic part.
- Position and secure the guard of the cab mat (do this on both sides).
- Fit the two lower guards of the control panel (do this on both sides).
- Position, connect and secure the oil delivery pipe to the lift.
- Position, connect and secure the lift control pump oil inlet pipe.
- For models fitted with brakes on the front axle it is necessary to connect the pipes to the related block.
- Position and secure the bracket between the clutch housing and engine.
- Position the propeller shaft, secure the central support, slide the two front and rear sleeves and secure them with the circlips.
- If the tractor is a T4040 Deluxe or T4050 Deluxe model, position the propeller shaft guard and secure it.
- If the tractor is a T4040 Supersteer or T4050 Supersteer model, position the propeller shaft rear guard and secure it.
- If the tractor is a T4040 Supersteer or T4050 Supersteer model, position the propeller shaft front guard and secure it.
- If the tractor is a T4040 Supersteer or T4050 Supersteer model, unscrew the retaining bolts and remove the bracket **380001613** with the spacers **50612**.
- Connect the differential lock control pipe.
- Connect the pipes to the transmission oil cooler pipes.
- Connect the fuel supply and return lines to the injection pump.
- Connect the delivery pipe to the power steering pump.
- Connect all the electrical connections between the cab and engine.
- Position and secure the ground cable between the cab and engine.
- Position and secure the throttle control rod.
- Position the upper engine bracket with the heat guard and secure it.
- Connect the front pipes to the rear pipes delivering coolant to the cab heater.
- Position and secure the brake fluid tank and connect the electrical connection to the above-mentioned part.
- Connect the steering control pipes.
- Connect the electric cable to the starter motor and fit the relevant protection.
- Position and secure the heat shield, exhaust silencer to the engine and to the cab.
- Position and secure: the compressor, condenser and related pipes.
- Connect the electrical connection to the compressor.
- Position and secure the side grille (do this on both sides).
- Secure: the radiator fixing bracket, engine oil vapour recirculation pipe, inlet pipe and intake air cooler pipes.
- Connect the clogged air filter sensor pressure switch and steering sensor connections.
- For models fitted with brakes on the front axle it is necessary to fill the relevant tank (see sect. 00, page 6 for the prescribed product and quantity) and bleed the braking system (see sect. 33).

- Screw the plug on the rear transmission casing and fill up with oil (see sect. 00, page 6 for the prescribed product and quantity).
- Fill up the engine cooling system (see sect. 00, page 6 for the prescribed product and quantity).
- Position and secure the ballast support.
- Position and secure the ballast.
- Install the bonnet as described in operation **90 100 22**.



## Op. 10 001 54

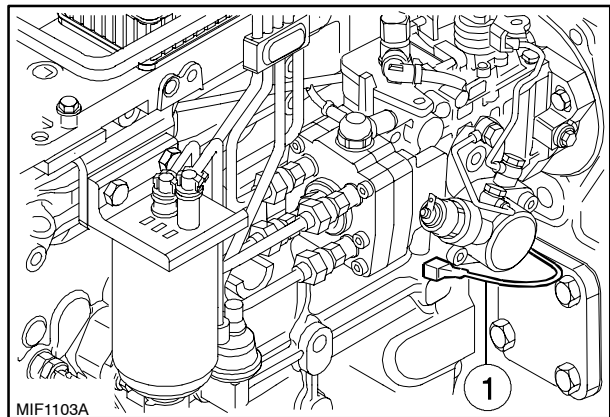
**ENGINE Disassembly - Assembly**

The figures refer to the F4CE9484M\*J601 versions of 71 kW (97 hp) mod. T4050. The revision is to highlight and describe the specific parts of the versions F4CE9484N\*J601 of 63 kW (86 hp) mod. T4040 and their respective variants.

—  **ATTENTION**  —

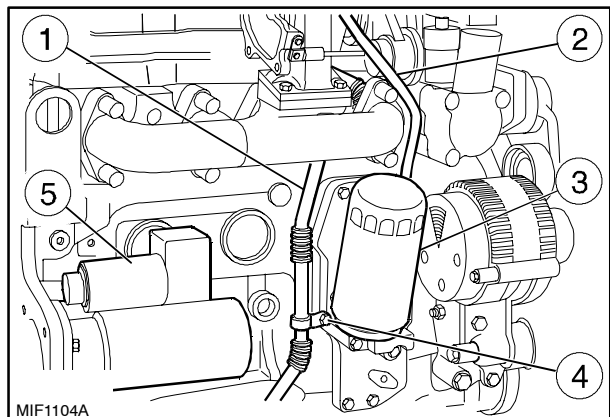
Handle all parts carefully. Do not put your hands or fingers between parts. Wear the prescribed safety clothing, including goggles, gloves and safety footwear.

1. Remove the engine as described in operation **10 001 10**, proceed as follows.
2. Drain off the engine oil by removing the plug from the sump and the oil filler plug.
3. Detach the fan unit from the fan pulley.
4. To be able to fit the bracket **380000661** (for fixing the engine to the overhaul stand) to the crankcase, it is necessary to remove the wiring (1) from the left-hand side of the engine.



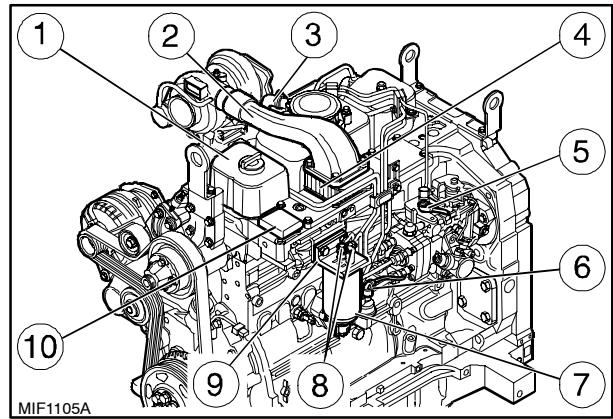
40

5. To be able to fit the bracket **380000661** to the crankcase on the right-hand side, remove the starter motor (5), oil filter (3), clamp (4), and turbine oil return pipe (1).
6. Fix the gearbox to the rotating stand **380000301**. Detach the oil delivery pipe (2).



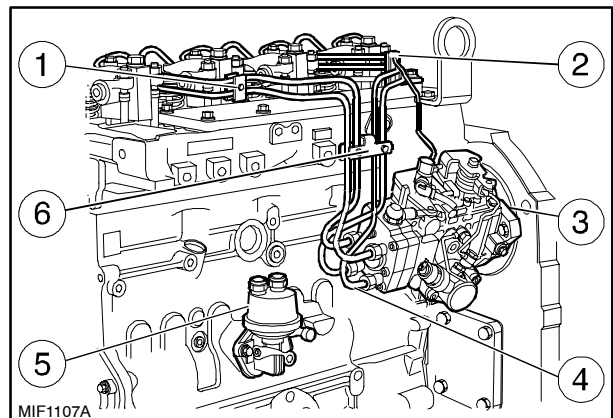
41

7. Remove the intake manifold (2).
8. Disconnect the engine oil vapour recovery pipe from the blow-by (3).
9. Remove the tappet covers (1).
10. Remove the pipes with the quick-fit coupling (6) and (8).
11. Remove the piping from the LDA system (5).
12. Remove the fuel filter (7).
13. Remove the heater (4).
14. Remove the control unit for the heater (10).
15. Remove the fuel filter support (9).



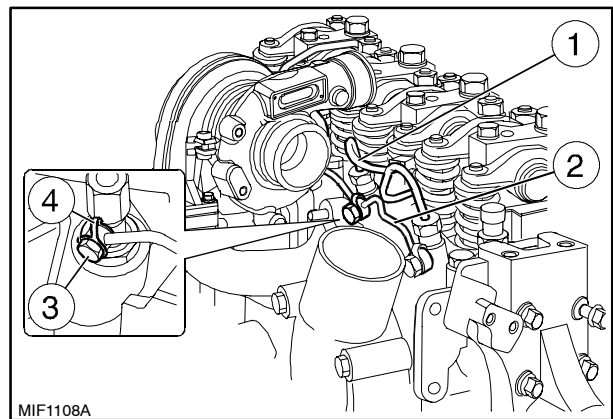
42

16. Remove the injector feed pipe (4) from the injection pump (3).
17. Remove the brackets on the cylinder head of the pipe assembly (1), (2) and (6).
18. Replace fuel supply pump (5).



43

19. Detach the fuel pipe assembly (1) from the injectors.
20. Remove the fuel outlet pipe (2) from the injectors removing the screw (3) and the seal (4).



44

This as a preview PDF file from [best-manuals.com](http://best-manuals.com)



Download full PDF manual at [best-manuals.com](http://best-manuals.com)