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80/82 SERIES TRACTOR REPAIR

9280, 9480, 9680, 9880
9282, 9482, 9682, 9882

Vol. 1

40928040

80/82 SERIES TRACTOR REPAIR

9280, 9480, 9680, 9880
9282, 9482, 9682, 9882

Vol. 2

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9280, 9480, 9680, 9880
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80/82 SERIES TRACTOR REPAIR MANUAL CONTENTS

SECTION 0 - INTRODUCTION
SECTION 1 - ENGINE
SECTION 2 - FUEL SYSTEM
SECTION 3 - ELECTRICAL SYSTEM
SECTION 4 - TRANSMISSION
SECTION 5 - AXLES
SECTION 6 - BRAKE SYSTEM
SECTION 7 - POWER TAKE-OFF SYSTEM
SECTION 8 - HYDRAULIC SYSTEM
SECTION 9 - STEERING SYSTEM
SECTION 10 - SHIELDING/FRAMES
SECTION 11 - CAB
SECTION 12 - CLIMATE CONTROL
SECTION 13 - THREE-POINT HITCH SYSTEM

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SECTION 1
ENGINE

CONTENTS

INTRODUCTION 1-2

AIR INDUCTION SYSTEM - DESCRIPTION AND OPERATION 1-3
AIR INDUCTION SYSTEM - SPECIFICATIONS 1-8
AIR INDUCTION SYSTEM - REMOVAL AND REPAIR OF COMPONENTS 1-9
AIR INDUCTION SYSTEM - REPAIR TIME FOR INDIVIDUAL COMPONENTS 1-29

EXHAUST SYSTEM - DESCRIPTION AND OPERATION 1-30
EXHAUST SYSTEM - SPECIFICATIONS 1-33
EXHAUST SYSTEM - REMOVAL AND REPAIR OF COMPONENTS 1-34
EXHAUST SYSTEM - REPAIR TIME FOR INDIVIDUAL COMPONENTS 1-60

ENGINE - DESCRIPTION AND OPERATION 1-61
ENGINE - SPECIFICATIONS 1-63
ENGINE - TROUBLESHOOTING 1-65
ENGINE - ADJUSTMENTS 1-69
ENGINE - REMOVAL AND REPAIR OF COMPONENTS 1-80
ENGINE - REPAIR TIME FOR INDIVIDUAL COMPONENTS 1-148

COOLING SYSTEM - DESCRIPTION AND OPERATION 1-149
COOLING SYSTEM - SPECIAL TOOLS 1-154
COOLING SYSTEM - SPECIFICATIONS 1-155
COOLING SYSTEM - TROUBLESHOOTING AND TESTING 1-156
COOLING SYSTEM - REMOVAL AND REPAIR OF COMPONENTS 1-162
COOLING SYSTEM - REPAIR TIME FOR INDIVIDUAL COMPONENTS 1-188

INDEX 1-189

INTRODUCTION

The engine section of this manual is broken into four separate sections:

- air induction system
- exhaust system
- engine removal and installation
- cooling system

The 80/82 Series tractors use a diesel engine manufactured for New Holland by the Cummins Engine Company and are available in five different sizes with eight different horsepower outputs.

The following chart is a list of tractor models with horsepower and engine classification:

Model	Horsepower	Engine Model
9280	250	L10
9282	260	C8.3
9480	300	14L
9482	310	M11
9680	350	14L
9682	360	N14
9880	400	14L
9882	425	N14

If an internal engine problem arises, that requires engine removal, this section will describe the proper procedure for removal and installation of the engine assembly. The engine will be repaired by an authorized Cummins dealer/distributor.

When contact is made with your Cummins dealer/distributor, it is important that the information contained on the Engine Identification Plate is given.

On the 9280 (Cummins L10 engine) and 9482 (Cummins M11) engines, the Engine Identification Plate is located on the left side of the engine block below the valve cover.

For the 9282 (Cummins C8.3) and 9682 and 9882 (Cummins N14) and the 9480, 9680 and 9880 (Cummins NTA855) tractors, the Engine Identification Plate is located on the left side of the engine ahead of the fuel injection pump.

NOTE: It is very important to include the engine number, engine family, and engine CPL (control parts listing) number when contacting your Cummins Engine Dealer/Distributor.

To locate your nearest Cummins Engine Dealer/Distributor, contact the Cummins Engine Co. at 1-800 DIESELS (North America, excluding Alaska and Hawaii).

AIR INDUCTION SYSTEM - DESCRIPTION AND OPERATION

Figure 1-1

INTRODUCTION

The air induction system is the first section to be covered in the engine section. The air induction system has slight variations for the different engines supplied by the Cummins Engine Company. Though there are a few variations, the components are the same, for all 80/82 Series tractors.

The air induction system consists of a bulb seal, 1, surrounding the front edge of the air induction tube (Some early production tractors may not have the bulb seal installed. If not, install a seal at the time of service.); the air induction tube, 2, is mounted to the upper radiator shell and directs fresh air to the rubber boot, 3. The rubber boot is connected to the precleaner, 4. The precleaner is designed to eliminate larger particles of dirt and debris from entering into the air cleaner, 5.

The air cleaner is comprised of a primary (outer) air filter and a secondary (inner) air filter to ensure that no dirt or debris reaches, and damages, the turbocharger assembly.

The air cleaner is mounted to the rear engine frame by four bolts. Their are eight bolt holes on later production tractors to accommodate orientation of air induction components. When installing the air cleaner, be certain to mount it in the proper holes or the air induction components will not fit the tractor properly.

Figure 1-2

An overview of the air induction system incorporates the pipe work running from the air cleaner to the turbocharger on the right hand side of the engine compartment. The steel tube, 1, is mounted on a rubber boot, 2, where it connects to the air cleaner and a second rubber boot where it connects to the turbocharger, 3.

There will be a slight difference in the size and position of the steel tube running to the turbocharger depending upon the engine being repaired. The removal and installation procedure is the same for all engines.

INDIVIDUAL COMPONENT OPERATION

Air Induction Tube

The air induction tube, 1, is mounted above the engine assembly, under the engine hood and directs fresh air from the front of the tractor to the engine. The air induction tube connects to a rubber boot with hose clamps.

Figure 1-3

The front opening of the air induction tube is mounted to the upper radiator shell of the tractor to allow cooler air to enter the system. The opening is covered with a bulb seal, 1. Some early production tractors did not have the bulb seal installed. If the tractor does not have a bulb seal, install one at the time of service.

Figure 1-4

Rubber Boot

The rubber boot, 1, of the air induction system connects the air induction tube, 2, to the precleaner, 3.

Figure 1-5

Precleaner

The precleaner, 1, for the air induction system is located behind the rubber boot, 2, and before the engine air cleaner, 3. The precleaner has a honeycomb shaped element used to remove dirt from the air and will discharge it through the muffler. Cleaning of the precleaner is required every 500 hours to insure their is no obstruction of air flow to the inner and outer air filters in the air cleaner.

Figure 1-6

Air Cleaner

The cylinder shaped air cleaner, 1, is mounted to the rear hood support and to the precleaner, 2. The air cleaner element houses the inner and outer air filters. The air filters are easily accessible by removing the wing nut, 3, and cover plate, 4, on the left hand side of the air cleaner.

For additional information on the servicing of the air filters see your operators manual for specific instructions.

NOTE: Do not service the inner or outer air filters unless the warning lamp on the dash is illuminated.

Figure 1-7

Air Cleaner to Turbocharger Pipe Work

The air cleaner to turbocharger pipe work delivers clean fresh air from the air cleaner element to the turbocharger. Inspect the clamps and fittings periodically to ensure proper operation of the turbocharger.

9282 (C8.3) air cleaner to turbo pipe work:

1 - Rubber boot

2 - Steel tube

3 - Rubber boot

Figure 1-8

9280 (L10) and 9482 (M11) air cleaner to turbo pipe work:

1 - Rubber boot

2 - Steel tube

3 - Rubber boot

Figure 1-9

9480, 9680, 9880 (14 L) 9682, 9882 (N14) air cleaner to turbo pipe work:

1 - Rubber boot

2 - Steel tube

3 - Rubber boot

Figure 1-10

AIR INDUCTION SYSTEM - SPECIFICATIONS

80 SERIES

AIR INTAKE	9280	9480	9680	9880
Air Intake Precleaner	Exhaust Aspirated with Precleaner			
Air Filter Configuration	Primary (Outer) Secondary (Inner)			
Air Flow cfm @ 2100 rpm	585	890	1000	1060

82 SERIES

AIR INTAKE	9282	9482	9682	9882
Air Intake Precleaner	Exhaust Aspirated with Precleaner			
Air Filter Configuration	Primary (Outer) Secondary (Inner)			
Air flow cfm @ 2100 rpm	660	820	1075	1100

AIR INDUCTION SYSTEM - REMOVAL AND REPAIR OF COMPONENTS

AIR INDUCTION TUBE

WARNING: DO NOT ATTEMPT ANY REPAIRS ON THE AIR INDUCTION SYSTEM UNTIL THE ENGINE HAS HAD AMPLE TIME TO COOL.

Removal

1. Park the tractor on level ground. Set the parking brake and remove the keys from the ignition.
2. Remove the left and right hand side engine shields from the tractor as described in Section 10 - Frame.
3. Remove the hood from the tractor as described in Section 10 - Frame.
4. Remove the four attaching bolts, 1, from the air induction tube where it connects to the front frame of the tractor.

Figure 1-11

5. Remove the two attaching bolts, 1, that secure the air duct, 2, to the upper radiator shell.
6. On tractors with the ether tube wire tied to the air induction tube you must cut the wire tie.

Figure 1-12

7. Loosen the clamp, 1, securing the air induction tube, 2, to the rubber boot, 3.
8. Remove the air induction tube from the tractor.

Figure 1-13

Inspection

1. Inspect the air induction tube for cracks and damage. Replace if needed.

Figure 1-14

2. Inspect the bulb seal, 1, for cracks and wear marks. Replace if needed.

   NOTE: Early production models of the 80 Series tractors did not have the bulb seal installed. If the tractor does not have a seal, install one at this time.

Figure 1-15

Installation

1. Install the clamp, 1, securely on the rubber boot, 2, where it connects to the air induction tube, 3. Tighten the clamp as needed.
2. Install the ether tube to the air induction tube and install tie straps to keep the ether tube secured.

Figure 1-16

3. Install the two attaching bolts, 1, to the upper radiator shell and tighten securely.

Figure 1-17

4. Install the four attaching bolts, 1, to the air induction tube and the front frame of the tractor and tighten them securely. Be certain the bulb seal is positioned properly around the air induction tube opening.
5. Install the hood on the tractor as described in Section 10 - Frames in this manual.
6. Install the engine side shields as described in Section 10 - Frames in this manual.
7. Start the tractor and verify there is no air leakage where the air induction tube connects to the rubber boot.

Figure 1-18

RUBBER BOOT

WARNING: DO NOT ATTEMPT ANY REPAIRS ON THE AIR INDUCTION SYSTEM UNTIL THE ENGINE HAS HAD AMPLE TIME TO COOL.

Removal

1. Park the tractor on level ground. Set the parking brake and remove the keys from the ignition.
2. Remove the clamps, 1, that connect the rubber boot, 2, to the air induction tube, 3, and the precleaner, 4.

Figure 1-19

3. Rotate and slide the boot, 1, away from the precleaner, 2, and separate the boot from the air induction tube, 3. Remove the boot from the air induction tube.

Figure 1-20

Inspection

1. Inspect the boot for cracks and wear marks, replace if needed.
2. Clean any debris found in the boot.

Installation

1. Install the rubber boot, 1, on to the precleaner, 2, and air induction tube, 3.
2. When the boot is seated properly between the air induction tube and the precleaner, tighten the clamps securely.
3. Start the tractor and verify there is no air leakage where the rubber boot connects to the precleaner and the air induction tube.

Figure 1-21

PRECLEANER

WARNING: DO NOT ATTEMPT ANY REPAIRS ON THE AIR INDUCTION SYSTEM UNTIL THE ENGINE HAS HAD AMPLE TIME TO COOL.

Removal

1. Park the tractor on level ground. Set the parking brake and remove the keys from the ignition.
2. Remove both rubber boot clamps, 1, rotate and slide the boot toward the engine on top of the air induction tube, 2.

Figure 1-22

3. Remove the clamp, 1, from around the precleaner, 2, and cut the wire tie, 3, attaching the wiring, 4, for the air filter restriction unit.

Figure 1-23

4. Loosen the clamps, 1, from the aspirator tube, 2, where it connects to the side of the precleaner, 3, and move the tube out of the way.

Figure 1-24

5. Remove both cap screws, 1, from the top of the precleaner.
6. Remove the precleaner from the air cleaner element.

Figure 1-25

Inspection

1. Inspect the casing weld for cracks and damage, replace if necessary.
2. Clean any debris found in the precleaner by using compressed air.

Figure 1-26

3. Insert your finger in the hole, 1, and make certain that the flapper door, 2, is not bound or seized.

Figure 1-27

Installation

1. Mount the precleaner on the air cleaner element.
2. Be certain that the precleaner is seated properly on the air cleaner housing.
3. Install the two cap screws, 1, on top of the precleaner and tighten them securely.

Figure 1-28

4. Install the clamp, 1, and replace the wire tie, 2, for the air filter restriction unit.

   Install the aspirator tube onto the precleaner and tighten the hose clamps securely.

Figure 1-29

5. Install the rubber boot, 1, on the precleaner, 2, and tighten the clamps, 3, securely.
6. Start the tractor and verify there is no air leakage where the precleaner connects to the rubber boot and the air cleaner element.

Figure 1-30

AIR CLEANER

WARNING: DO NOT ATTEMPT ANY REPAIRS ON THE AIR INDUCTION SYSTEM UNTIL THE ENGINE HAS HAD AMPLE TIME TO COOL.

Removal

1. Park the tractor on level ground. Set the parking brake and remove the keys from the ignition.
2. Loosen both rubber boot clamps, 1, rotate and slide the boot, 2, toward the radiator on top of the air induction tube, 3, away from the precleaner, 4.

Figure 1-31

3. Remove the clamp, 1, from around the precleaner, 2, and cut the wire tie, 3, for the air filter restriction wiring, 4.

Figure 1-32

4. Loosen the clamps, 1, from the aspirator tube, 2, where it connects to the precleaner, 3, and move the aspirator tube away.

Figure 1-33

5. Remove both cap screws, 1, from the top of the precleaner.
6. Remove the precleaner from the air cleaner element.

Figure 1-34

7. Loosen the band clamp, 1, from the right hand side of the air cleaner element and move the pipe work, 2, away from the air cleaner.

Figure 1-35

8. Place a shop rag, 1, on the air cleaner to turbo opening.

   NOTE: Damage to the turbocharger is highly possible if any debris enters the air cleaner to turbo pipe work.

Figure 1-36

9. Remove the four attaching bolts, 1, holding the air cleaner, 2, to the rear hood support of the tractor while supporting the air cleaner element.

   NOTE: The air cleaner housing weighs approximately 13 - 18 kg (30 - 40 lbs).

10. Remove the air cleaner element from the tractor.

Figure 1-37

Disassembly

1. Unscrew the wing nut, 1, from the air cleaner cover plate, 2, and remove the cover plate from the air cleaner, 3.

Figure 1-38

2. Remove the wing nut and the outer filter, 1, from the air cleaner, 2.

Figure 1-39

3. Remove the wing nut and inner filter, 1, from the air cleaner, 2.

Figure 1-40

Inspection

1. Inspect the rubber seals on the wing nuts, 1, and the air cleaner cover plate, 2. If they are cracked or deteriorated, replace them.

Figure 1-41

2. Inspect the air cleaner strap tack welds, 1, for any damage and replace the air cleaner element if damage is found.
3. Inspect the outlet plate, 2, of the air cleaner for evidence of uniformed contact of the air cleaner filters (inner and outer filters). You should see a circular sealing mark on the plate. This indicates that the rubber seal on the end of each filter element is contacting the filter canister.
4. Clean the inside of the air cleaner with a non-residue cleaning solvent (such as part # L22355DS).

Figure 1-42

Reassembly

1. Properly secure the inner filter, 1, in the air cleaner, 2, and tighten the wing nut.

Figure 1-43

2. Properly secure the outer filter, 1, in the air cleaner, 2, and tighten the wing nut.

Figure 1-44

3. Install the air cleaner cover plate, 1, and tighten the wing nut, 2.

Figure 1-45

Installation

1. With the help of an assistant, install the air cleaner on the tractor using the proper holes, 1, in the rear hood support. Torque the bolts to 36 N·m (27 ft lbs).

   NOTE: Additional bolt holes were added to the rear hood support of the tractor for the 82 Series to accommodate the orientation of air induction components. Make sure you install the air cleaner into the proper bolt holes as follows:

Model	Hole #1	Hole #2
9280	X	
9282		X
9480	X	
9482		X
9680	X	
9682		X
9880	X	
9882		X

Figure 1-46

2. Remove the shop rag from the opening on the air cleaner for the air cleaner to turbo pipe work and install the pipe work, 1. Tighten the band clamp, 2, securely.

Figure 1-47

3. Lift the precleaner into position on the air cleaner. Install the two upper cap screws, 1, on the precleaner and tighten securely.

Figure 1-48

4. Install the band clamp, 1, securing the precleaner, 2, to the air cleaner, and replace the wire tie, 3, for the wiring harness, 4.

Figure 1-49

5. Install the aspirator tube, 1, to the base of the precleaner, 2, and tighten the clamps, 3, securely.

Figure 1-50

6. Slide the rubber boot, 1, back on to the precleaner opening and tighten the two band clamps securely.
7. Start the engine and verify there is no air leakage where the air cleaner connects to the precleaner and the pipe work to the turbo.

Figure 1-51

AIR CLEANER TO TURBO PIPE WORK

9282 (C8.3) 9280 (L10) and 9482 (M11) Models

WARNING: DO NOT ATTEMPT ANY REPAIRS ON THE AIR INDUCTION SYSTEM UNTIL THE ENGINE HAS HAD AMPLE TIME TO COOL.

Removal

1. Park the tractor on level ground. Set the parking brake and remove the keys from the ignition.
2. The air cleaner to turbo pipe work consists of the following major components:
   - Upper boot, 1, (connected to the air cleaner and steel tube)
   - Steel tube, 2
   - Lower boot, 3, (connecting the steel tube to the turbo)

Figure 1-52

3. Loosen the band clamps, 1, connecting the upper boot, 2, to the air cleaner, 3 and separate the boot from the air cleaner.

Figure 1-53

4. Place a shop rag, 1, over the opening for the air cleaner housing.

Figure 1-54

5. Loosen the band clamps, 1, connecting the lower rubber boot, 2, to the turbocharger inlet, 3.
6. Remove the pipe work from the tractor.

Figure 1-55

7. Place a shop rag, 1, over the turbocharger inlet port to ensure no debris enters the turbo.

   NOTE: Damage to the turbo is highly possible if any foreign material or debris enters the turbocharger chamber.

Figure 1-56

Inspection

1. Inspect the pipe work for any cracks or dirt on the inside. Replace the pipe if necessary.

   NOTE: Any dirt on the inside of the pipe work indicates an air leak in the air induction system. Correct the air leak concern.

2. Inspect the boots for cracks and holes, if any damage is found, replace the boot.

Installation

1. Remove the shop rag from the turbo inlet port and install the lower boot. Make certain that the boot is seated properly. Do not tighten the band clamps at this time.
2. Remove the shop rag from the air cleaner and install the upper boot, 1. Once the boot is seated properly, tighten all band clamps securely.
3. Start the tractor and verify there is no air leakage where the pipe work connects to the turbo and the air cleaner.

Figure 1-57

AIR CLEANER TO TURBO PIPE WORK

9480-9680-9880 (14L) and 9682-9882 (N14) Models

WARNING: DO NOT ATTEMPT ANY REPAIRS ON THE AIR INDUCTION SYSTEM UNTIL THE ENGINE HAS HAD AMPLE TIME TO COOL.

Removal

1. Park the tractor on level ground. Set the parking brake and remove the keys from the ignition.
2. The air cleaner to turbo pipe work consist of the following components:
   - Upper boot, 1 (connecting the air cleaner and steel tube)
   - Steel Tube, 2
   - Air filter restriction unit , 3, (unit is located on the steel tube)
   - Lower boot, 4, (connecting the steel tube to the turbo inlet)

Figure 1-58

3. Disconnect the wiring, 1, for the air filter restriction unit.

Figure 1-59

4. Loosen the band clamps, 1, connecting the upper rubber boot, 2, to the air cleaner, 3, and separate the boot from the air cleaner.

Figure 1-60

5. Place a shop rag, 1, over the opening on the air cleaner housing.

Figure 1-61

6. Loosen the band clamps, 1, connecting the lower rubber boot to the turbocharger, 2.
7. Place a shop rag over the turbocharger inlet port to ensure no debris enters the turbo.

   NOTE: Damage to the turbo is highly possible if any foreign material or debris enters the turbocharger chamber.

8. Remove the pipe work from the tractor.

Figure 1-62

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Inspection

1. Inspect the steel tube for any cracks or dirt. Replace the tube if necessary.

   NOTE: Any dirt on the inside of the pipe work indicates a leak in the air induction system. Correct the air leak concern.

2. Inspect the boots for cracks and holes, if any damage is found, replace the boot.

Installation

1. Remove the shop rag from the turbo inlet port and install the lower boot. Make certain that the boot is seated properly. Do not tighten the band clamps at this time.
2. Remove the shop rag, 1, from the air cleaner and install the boot. Once the boot is seated properly, tighten all band clamps securely.

Figure 1-63

3. Install the wiring, 1, for the air filter restriction unit.
4. Start the tractor and verify there is no air leakage where the pipe work connects to the air cleaner and the turbo.

Figure 1-64

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