
Compressors

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24A

General description

The Clayton Dewandre 159 or 229 compressor is fitted to a drive assembly which is fitted to the rear face of the timing case on the left side of the engine. The drive assembly has two gears of equal size on a common shaft. The forward gear is driven by the engine idler gear and the gear at the rear of the drive assembly drives the compressor gear.

The cylinder head of the single cylinder compressor is cooled by coolant from the engine. The compressor is lubricated from the lubrication system of the engine. Oil passes through an external pipe from the engine pressure rail to the compressor crankcase. The oil passes to the main bearings and the big end bearings of the compressor and also to the rear bush for the drive shaft. Oil which drains from the compressor crankcase into the drive housing, lubricates the drive gears and the bearing. The oil returns to the engine sump through the timing case.

Operation

As the piston moves down the cylinder, air pressure above the piston is reduced. The reduction in air pressure opens the inlet valve and allows air to enter the cylinder above the piston. As the piston moves up the cylinder, air pressure under the valve and the action of the valve spring, closes the valve. The increase in air pressure under the delivery valve, opens the valve and air is discharged to the reservoir. Air pressure in the reservoir is controlled by an unloader valve which, at a certain pressure, holds the inlet valve of the compressor open until air pressure in the reservoir is reduced.

Compressor

To remove and to fit
compressor and drive housing

24A-01

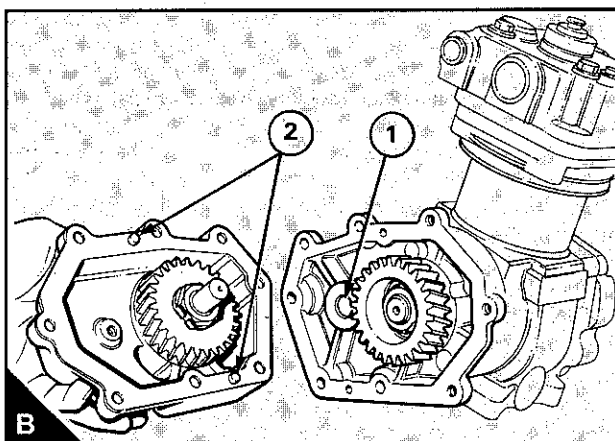
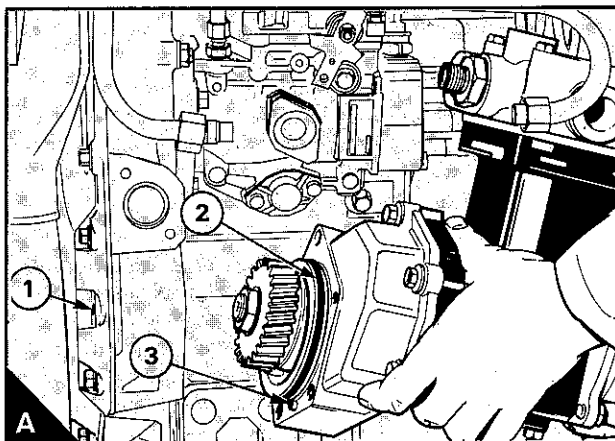
To remove

The compressor and its drive housing can be removed from the engine as an assembly or the compressor only can be removed.

- 1 Drain the engine cooling system.
- 2 Release the air pressure in the air system and disconnect all the pipe connections to and from the cylinder head of the compressor.
- 3 Remove the lubricating oil pipe which is fitted between the compressor and the engine cylinder block.
- 4 If necessary, remove the power steering pump from the rear of the compressor.
- 5 Remove the support bracket which is fitted between the bottom of the compressor and the cylinder block.
- 6 If the drive housing is to be removed, release the setscrew that passes through the timing case from the front (A1) and release the five setscrews which are fitted through the compressor flange into the timing case from the rear. If only the compressor is to be removed, release the five setscrews which are fitted through the compressor flange from the rear and release the three setscrews which are fitted through the drive housing flange from the front.
- 7 Remove the compressor or the compressor and its drive housing (A). Ensure that the dowel(s) (A3 or B2) are still in position.

To fit

- 1 If the compressor drive housing has been removed, fit a new "O" ring (A2) in its recess and lubricate it with clean engine lubricating oil.
- 2 Ensure that the dowel(s) (A3 or B2) are correctly fitted. Fit the compressor or the compressor and drive housing assembly and tighten the setscrews.
- 3 Fit the compressor support bracket, ensure that force is not applied to the compressor when the support bracket is fitted.
- 4 If necessary, fit the power steering pump to the rear of the compressor.
- 5 Fit the oil pipe between the compressor and the cylinder block of the engine.
- 6 Connect all the pipe connections to the cylinder head of the compressor.
- 7 Fill the engine cooling system.
- 8 Operate the engine and check for any leakage of oil or coolant.



Compressor drive

To remove and to fit

24A-02

To remove

- 1 Remove the compressor and the drive housing assembly from the engine, operation 24A-01.
- 2 Release the setscrews and separate carefully the drive housing from the compressor (B).

To fit

- 1 Check the drive gears, and the bearing for wear or for damage. Renew components if necessary.
- 2 Check for wear the bush (B1) which is fitted in the compressor casing and renew it, if necessary. Ensure that the dowels (B2) are fitted correctly and that the joint faces are clean.
- 3 Lubricate lightly, with clean engine lubricating oil, the bush in the compressor casing. Put a new joint in position, fit the drive housing to the compressor and tighten the setscrews.
- 4 Fit the compressor and drive assembly to the engine, operation 24A-01.

To dismantle

- 1 Release the tab washer (A2) from the nut (A1) which is outside the housing (A8). Prevent movement of the shaft (A5) and remove the nut. Discard the tab washer.
- 2 With a suitable puller, remove the gear (A3).
- 3 Release the circlip (A4) which retains the bearing (A7).
- 4 Turn the housing upside down and release the tab washer (A12) from the nut (A13) inside the housing. Prevent movement of the shaft and remove the nut. Discard the tab washer.
- 5 Provide a suitable support for the timing case side of the housing, protect the compressor end of the shaft and press the shaft and bearing assembly out through the timing case side of the housing.
- 6 Remove the gear (A11) from the housing.
- 7 Remove the keys (A6) and the spacer (A10) - 159 compressor only - from the shaft. With the collar of the shaft towards the bottom, provide a suitable support for the inner ball guide of the bearing. Protect the end of the shaft and press the shaft out of the bearing.

To assemble

- 1 Clean the components and check them for wear or for damage, renew the components as necessary.
- 2 Provide a suitable support for the inner ball guide of the bearing (A7). Put a suitable adaptor on to the collar of the shaft (A5) and press the shaft into the bearing.
- 3 If necessary, remove the dowels (A9) from the compressor flange of the housing (A8). Put the housing with its compressor flange on a suitable support that will allow enough space below the housing for the shaft protrusion.
- 4 Lubricate lightly the bearing location in the housing with clean engine lubricating oil. Put the bearing on the bearing housing with the threaded end of the shaft at the top. Put a suitable adaptor on the outer ball guide of the bearing and press the bearing into position on the shoulder of the bearing housing.
- 5 Fit the circlip (A4) correctly in its groove.
- 6 Put the spacer (A10) - Clayton Dewandre 159 compressors only - on the bearing (A7) and fit the keys (A6) in the keyways on the shaft.
- 7 Ensure that the keys are aligned correctly with the keyways in the gears (A3 and A11) and put the gears in position on the shaft. The gear (A11) which is used with Clayton Dewandre 229 compressors has a boss which must be towards the bearing when the gear is fitted.
- 8 Turn the housing upside down and support the outer gear. Apply pressure to the gear inside the housing and press both of the gears into position on the shaft.
- 9 Fit new tab washers (A2 and A12), ensure that the peg on the tab washers is located correctly in the keyway of the gears. Fit and tighten the nuts (A1 and A13) to the torque recommended in section 11B. Bend the tab washers to prevent the release of the nuts.
- 10 Fit the dowels into the compressor flange of the housing.

