CATERPILLAR®

Service Repair Manual

Models

135H NA Motor Grader

Tools Needed	A	B	C	D	E	F	G
4C-8156 Fixture	1						
9U-7479 Tube		1					
2P-8312 Pliers			1				
4C-5653 Adapter				2			
1P-2322 Puller					1		
8B-7548 Puller						1	
8B-7550 Leg						2	
5P-9736 Link Bracket							3

Tools Needed	H	I
8H-0663 Puller	1	
4C-8157 Fixture		2

Start By:

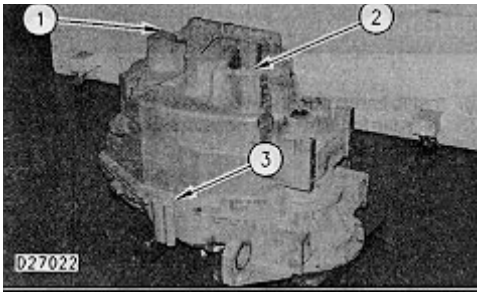
a. remove transmission hydraulic control valve.

b. remove parking brake

c. remove transmission speed sensor

d. remove transmission oil pump

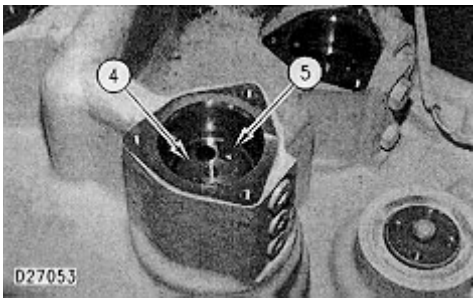
e. remove transmission magnetic filter screen base.



1. Place transmission level on floor as shown.

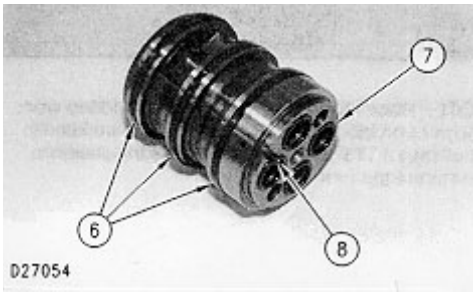
2. Remove twelve bolts (1). Remove four covers (2) and their O-ring seals from the transmission case.

3. Remove 43 bolts (3) from the transmission case flange.



4. Identify the location of seal carrier (4) in the transmission case for assembly purposes. Remove two bolts (5) from seal carrier (4). Install an **8mm Eyebolt** in seal carrier (4). Remove seal carrier (4) and its O-ring seals from the transmission case bore.

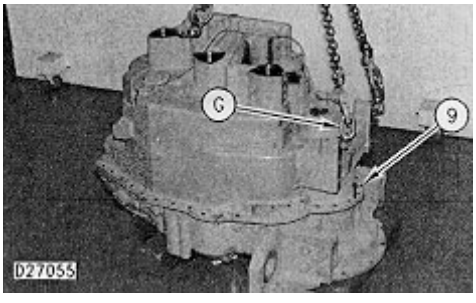
5. Repeat Step (4) on the three remaining seal carriers.



6. Remove three seal rings (6) from seal carrier (4).

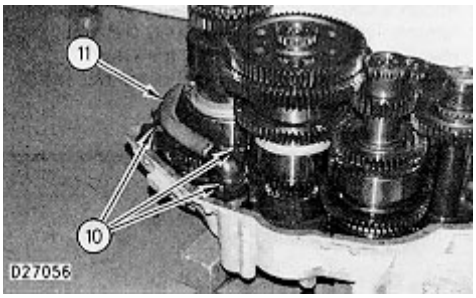
7. Remove three, or four O-ring seals (7) from seal carrier (4). Remove locating pin (8) from seal carrier (4).

8. Repeat Steps (6) and (7) for the remaining three seal carriers.



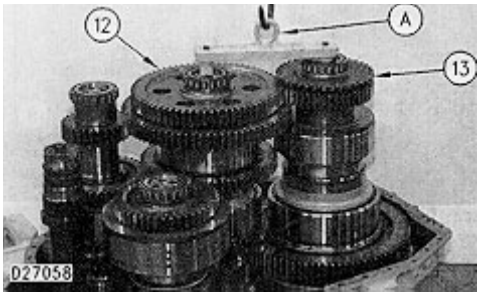
9. Install two **10 x 1.5 mm Forcing Bolts** (9) in the transmission case flange. Tighten them evenly to separate the transmission cases.

10. Install Tool (G), attach lifting chains and a hoist to the transmission case, as shown. Slowly raise the upper portion of the transmission case from the lower portion of the transmission case. Be careful not to bind the transmission case during separation.



11. Remove three bolts (10) from tube (11). Remove tube (11) from the transmission case.

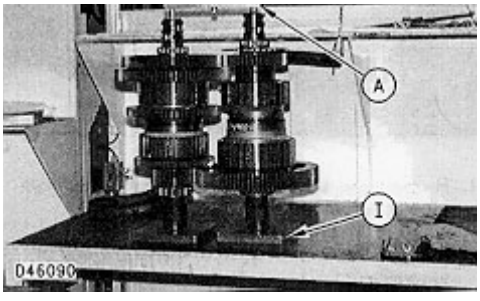
12. Remove the O-ring seal from the elbow end of tube assembly (11).



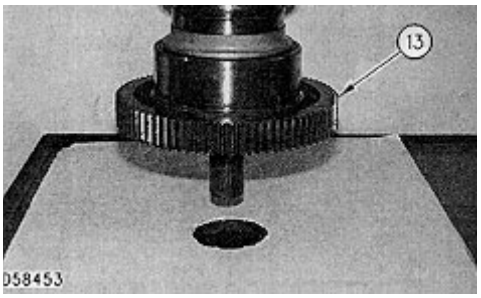
NOTE: First/Third shaft assembly (12) and High/Low shaft assembly (13) must be removed together.

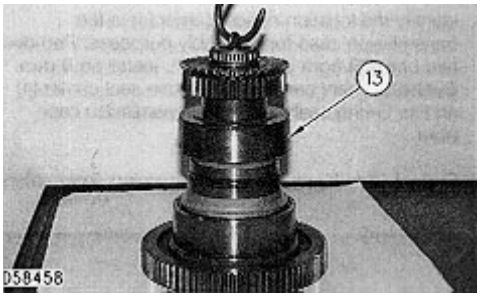
13. Install Tool (A) on First/Third shaft assembly (12) and High/Low shaft assembly (13). Use one **8 x 1.25 x 75 mm Bolt** and one **8 x 1.25 x 50 mm Bolt**, in order to hold Tool (A) on First/Third shaft assembly (12) and High/Low shaft assembly (13) as shown. First/Third shaft assembly (12) and High/Low shaft assembly (13) must be removed together.

14. Attach a suitable lifting device to Tool (A). Carefully remove First/Third shaft assembly (12) and High/Low shaft assembly (13) from the transmission case. The weight of the two shaft assemblies is **177 kg (390 lb)**.

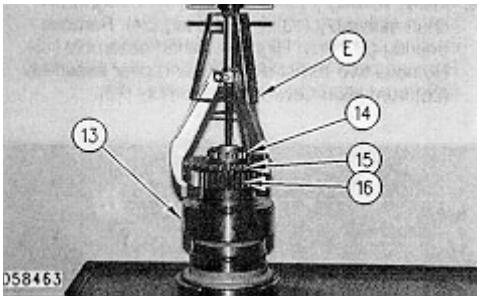


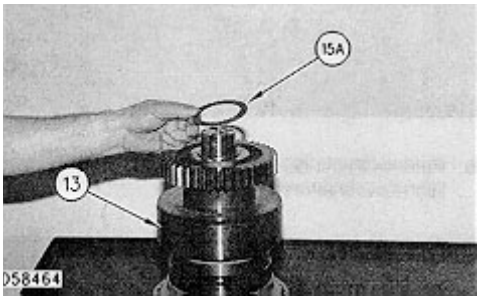
15. Place First/Third shaft assembly (12) and High/Low shaft assembly (13) on Tooling (I) or on blocks and remove Tool (A). Carefully separate First/Third shaft assembly (12) and High/Low shaft assembly (13). The weight of each shaft assembly is **88.530 kg (195 lb)**





NOTE: Place High/Low shaft assembly (13) in a modified work bench or on blocks. Modify a substantial workbench by cutting a **116 ± 2 mm (4.6 ± .08 in)** clearance hole in the top of the bench.





NOTICE

Do not attach Tooling (E) to rotor (15). The rotor is cast iron, and will be broken if pressure is applied to it with the puller. Attach the tooling to gear assembly (16).

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16. With High/Low shaft assembly (13) on the modified work bench or on blocks, use Tooling (E) in order to remove bearing (14), rotor (15) and gear assembly (16) from shaft assembly (13). Bearing (14) and rotor (15) are press fit on High/Low shaft assembly (13).

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