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Ford Sierra

Service and Repair Manual






Automatic Transmission

For modifications, and information applicable to later models, see Supplement at end of manual

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Degrees of difficulty

Easy , suitable for novice with little experience 	Fairly easy , suitable for beginner with some experience 	Fairly difficult , suitable for competent DIY mechanic 	Difficult , suitable for experienced DIY mechanic 	Very difficult , suitable for expert DIY or professional 
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Specifications

Type	Ford (Bordeaux) C3 three forward speeds and one reverse, epicyclic geartrain with hydraulic control and torque converter	
Ratios		
1st	2.47:1	
2nd	1.47:1	
3rd	1.0:1	
Reverse	2.11:1	
Torque converter	2.15:1	
Lubrication		
Fluid type/specification	ATF to Ford spec SQM-2C 9010-A	
Fluid capacity	6.3 litres (11.1 pints)	
Torque wrench settings	Nm	lbf ft
Driveplate to converter	30 to 40	22 to 30
Sump	13 to 21	10 to 16
Downshift cable bracket	16 to 24	12 to 18
Starter inhibitor switch	10 to 14	7 to 10
Brake band adjusting screw locknut	47 to 61	35 to 45
Oil cooler pipe to connector	22 to 24	16 to 18
Oil pipe connector to transmission	24 to 31	18 to 23
Transmission to engine	30 to 37	22 to 27
Drain plug	27 to 40	20 to 30

1 General description

The automatic transmission which is fitted to 2.3 models in the Ford Bordeaux C3 type.

The unit has a large aluminium content, which helps to reduce its overall weight and it is of compact dimensions. A transmission oil cooler is fitted as standard and ensures cooler operation of the transmission under trailer towing conditions. A vacuum connection to the inlet manifold provides smoother and more consistent downshifts under load than is the case with units not incorporating this facility. The system consists of two main components:

- (a) A three element hydrokinetic torque converter coupling, capable of torque multiplication.
- (b) A torque/speed responsive and hydraulically operated epicyclic gearbox, comprising planetary gearsets providing three forward ratios and one reverse ratio. Due to the complexity of the automatic transmission unit, if performance is not up to standard, or overhaul is necessary, it is imperative that this be left to the local main agents who will have the special equipment for fault diagnosis and rectification.

The content of the following sections is therefore confined to supplying general information and any service information and instruction that can be used by the owner.

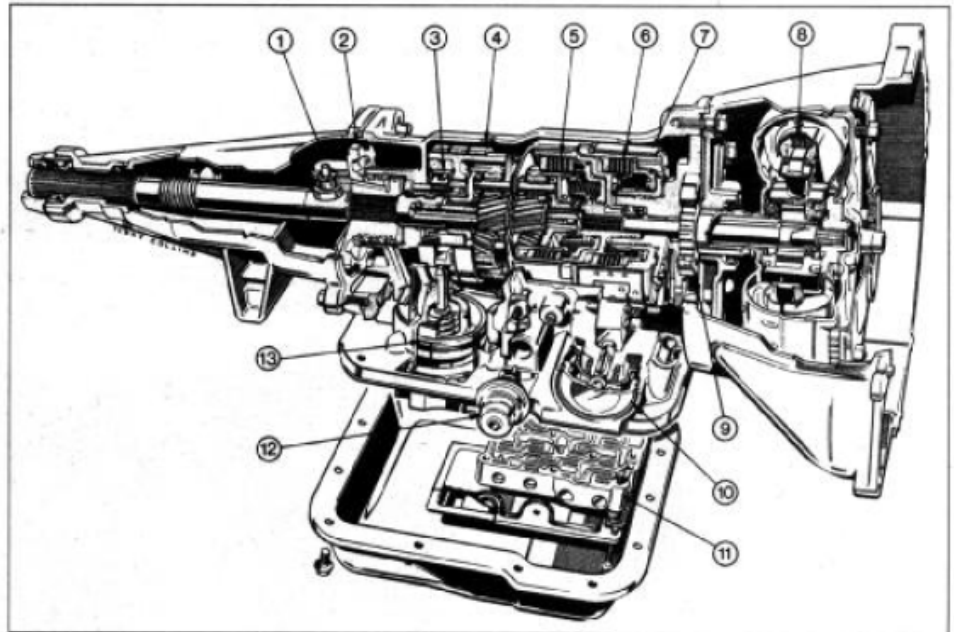


Fig. 1 Cutaway view of the C3 automatic transmission (Sec 1)

- | | | | |
|------------------------|-------------------------------|--------------------|---------------------|
| 1 Centrifugal governor | 4 Rear brake band | 7 Front brake band | 11 Valve body |
| 2 Parking gear | 5 Forward clutch | 8 Torque converter | 12 Vacuum diaphragm |
| 3 One way clutch | 6 Reverse and top gear clutch | 9 Hydraulic pump | 13 Rear servo |
| | | 10 Front servo | |

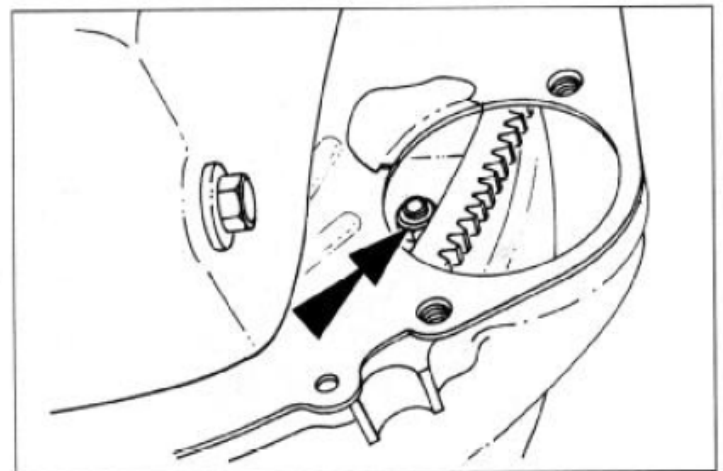


Fig. 2 Driveplate nut positioned in the starter motor aperture (Sec 3)

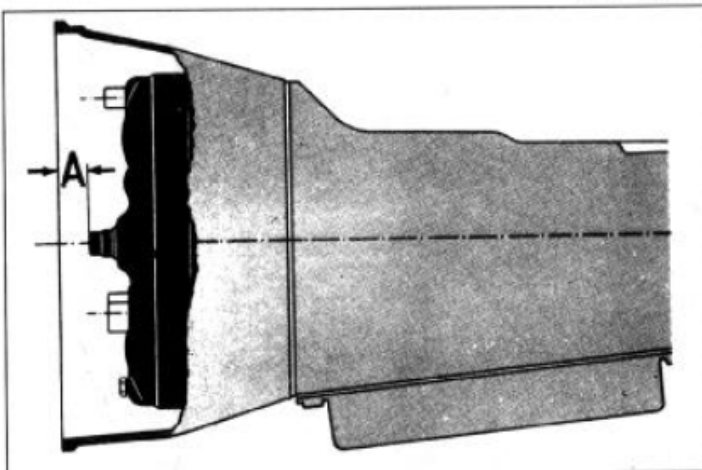


Fig. 3 With torque converter correctly fitted, dimension A should be 10.0 mm (0.4 in) minimum (Sec 3)

2 Fluid level checking

- 1 Locate the car on level ground and apply the handbrake.
- 2 Start the engine and let it idle, then apply the footbrake pedal and move the selector lever through all positions three times, ending at position P.

- 3 Wait for approximately one minute, then with the engine still idling withdraw the transmission dipstick, wipe it clean with non fluffy rag, reinsert it and withdraw it again. The fluid level should be between the MIN and MAX marks. If necessary top up the level with the correct specified fluid through the dipstick.
- 4 Refit the dipstick and switch off the engine.

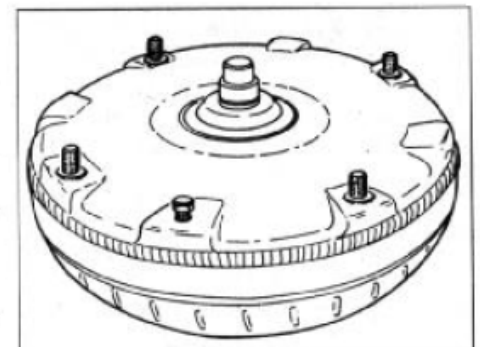


Fig. 4 Torque converter studs and drain plug (Sec 3)

3 Removal and refitting

Note: Any suspected faults must be referred to the main agent or specialist before unit removal, as with this type of transmission the fault must be confirmed using specialist equipment before it has been removed from the car.

- 1 Disconnect the battery negative lead.
- 2 Working in the engine compartment unscrew the four upper transmission-to-engine bolts, noting the location of the earth lead, vacuum line bracket, and dipstick tube bracket.
- 3 Jack up the car and support on axle stands. Make sure that there is sufficient working room beneath the car.
- 4 Remove the exhaust system
- 5 Remove the propeller shaft
- 6 Bend back the lock tabs, then unscrew and remove the bolts from the anti-roll bar rear mounting clamps, and lower the anti-roll bar as far as possible.
- 7 Remove the oil filler tube and plug the aperture.
- 8 Unscrew the unions and disconnect the oil cooler pipes from the transmission. Plug the pipe ends and apertures. Remove the bracket from the engine mounting if necessary.
- 9 Remove the starter motor
- 10 Unclip and remove the selector rod.

- 11 Unscrew the locknut and disconnect the downshift cable from the transmission.
- 12 Disconnect the wiring plug from the starter inhibitor switch.
- 13 Unscrew the bolt and remove the speedometer cable from the extension housing.
- 14 Support the transmission with a trolley jack.
- 15 Unscrew the central mounting bolt from the crossmember and remove the cup.
- 16 Unscrew the bolts and remove the mounting crossmember from the underbody.
- 17 Lower the transmission three or four inches.
- 18 Disconnect and unclip the vacuum line.
- 19 Working through the starter motor aperture, unscrew the driveplate nuts. There are four nuts, and it is necessary to turn the engine to locate each one in turn in the aperture.
- 20 Unbolt the engine adaptor plate, then unscrew the remaining transmission-to-engine bolts.
- 21 With the help of an assistant lift the transmission from the engine, using the trolley jack to take most of the weight. Make sure that the torque converter is held firmly in contact with the transmission oil pump, otherwise it could fall out and fluid would be spilled.

HAYNES
HiNT *The car must be adequately supported since it will be necessary to rock the transmission a little to release it.*

- 22 Refitting is a reversal of removal, but first make sure that the torque converter is fully engaged with the oil pump by checking the distance shown in Fig. 3. The torque converter drain plug must be aligned with the cut-out in the driveplate. Adjust the downshift cable as described in Section 6, and the selector rod as described in Section 7. Check, and if necessary top up, the transmission fluid level as described in Section 2.

4 Front brake band - adjustment

- 1 Apply the handbrake, then jack up the front of the car and support on axle stands.
- 2 Disconnect the downshift cable from the transmission.
- 3 Loosen the adjustment screw locknut and back off the screw several turns.
- 4 Using a suitable torque wrench tighten the screw to 14 Nm (10 lbf ft), then back off two complete turns and tighten the locknut.
- 5 Reconnect the downshift cable.

5 Starter inhibitor switch - removal and refitting

- 1 Apply the handbrake, then jack up the front of the car and support on axle stands.
- 2 Disconnect the wiring plug from the switch.
- 3 Unscrew the switch and remove the O-ring.
- 4 Refitting is a reversal of removal. Taking the necessary safety precautions, check that the engine will only start with the selector lever in positions P and N, and that the reversing light only glows in position R.

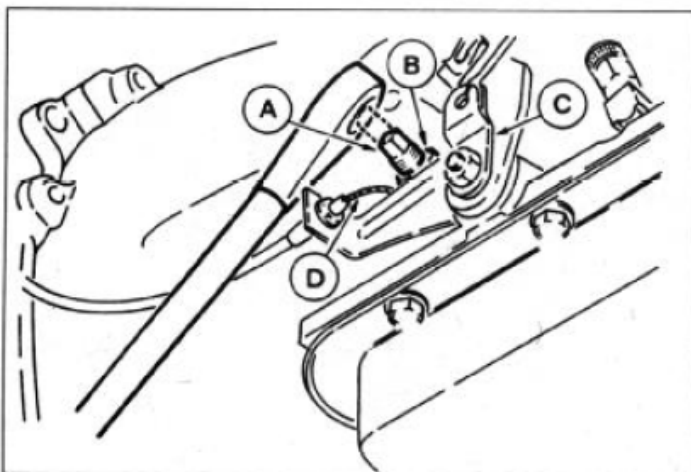


Fig. 5 Adjusting the front brake band (Sec 4)

- | | |
|--------------------|-------------------|
| A Adjustment screw | C Downshift lever |
| B Locknut | D Downshift cable |

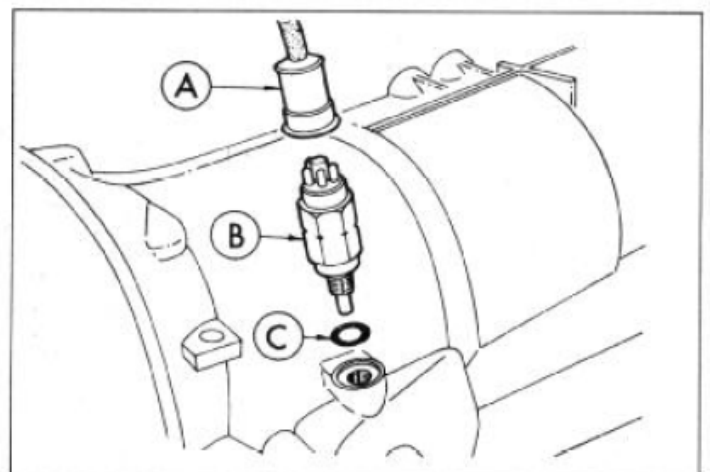


Fig. 6 Starter inhibitor switch components (Sec 5)

- | | | |
|---------------|----------|----------|
| A Wiring plug | B Switch | C O-ring |
|---------------|----------|----------|

6 Downshift cable - removal, refitting and adjustment

- 1 Disconnect the downshift inner cable from the carburettor by removing the clip and pin.
- 2 Unscrew the locknut and release the cable from the carburettor bracket.
- 3 Apply the handbrake, then jack up the front of the car and support on axle stands.
- 4 Unscrew the locknut and disconnect the cable from the transmission bracket and lever.
- 5 Withdraw the downshift cable from the car.
- 6 Refitting is a reversal of removal, but adjust it as follows before lowering the car to the ground.
- 7 To adjust the cable, first check that the carburettor throttle fully opens when the accelerator pedal is depressed. While an assistant depresses the accelerator pedal, turn the lever on the transmission to the kickdown position and lock it in this position. Adjust the cable locknuts to give the dimension shown in Fig. 7, then tighten the locknuts.

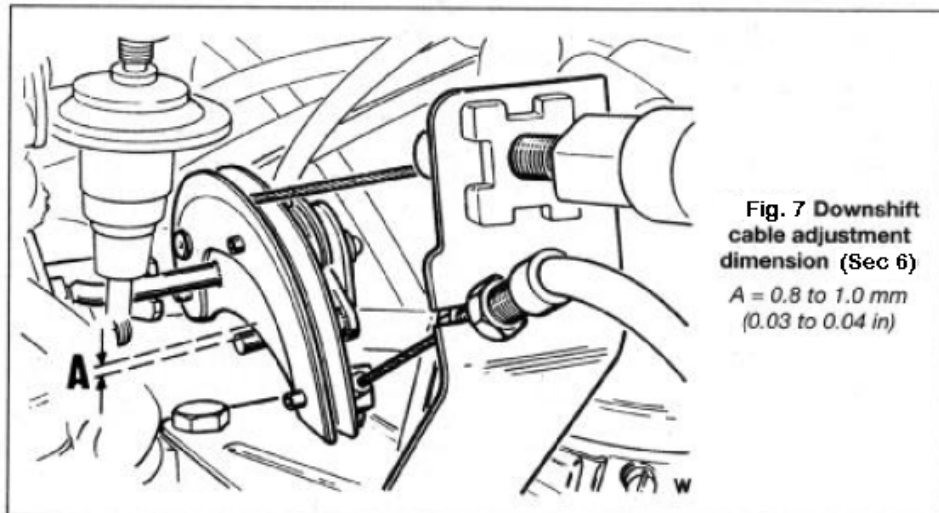


Fig. 7 Downshift cable adjustment dimension (Sec 6)

A = 0.8 to 1.0 mm
(0.03 to 0.04 in)

7 Selector rod - removal, refitting and adjustment

- 1 Apply the handbrake, then jack up the front of the car and support on axle stands.
- 2 Unclip and remove the selector rod.
- 3 Move the selector lever to position 'D' and move the transmission lever two notches from the front stop. Fit the selector rod to the transmission lever, then adjust the rod so that it locates directly on the selector lever. Tighten the locknut.

8 Selector lever - removal, overhaul and refitting

- 1 Apply the handbrake, then jack up the front of the car and support on axle stands.
- 2 Pull off the clip and remove the selector rod from the selector lever.
- 3 Working inside the car unscrew the selector lever handle.
- 4 Remove the centre console.
- 5 Remove the gate cover and unclip the bulbholder.
- 6 Unscrew the four screws and withdraw the gate and selector lever assembly from the transmission tunnel.

- 7 Pull off the clip and push through the link pin to disconnect the upper and lower assemblies. Recover the two bushes and spring.

- 8 Pull off the clip and slide out the lower selector lever and shaft. Lift out the upper selector lever assembly and recover the washer and two guide bushes.

- 9 Remove the selector lever and spring from the guide.

- 10 Clean all the components and examine them for wear and damage. Renew them as necessary.

- 11 Reassembly is a reversal of dismantling, but lightly grease the bushes.

- 12 Refit using a reversal of the removal procedure, and finally adjust the selector rod with reference to Section 7.



Fig. 8 Removing the gate (A) and selector lever assembly (B) (Sec 8)

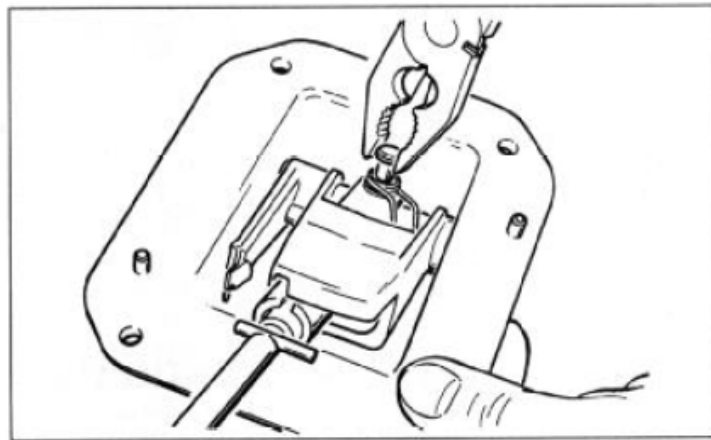


Fig. 9 Removing the link pin (Sec 8)

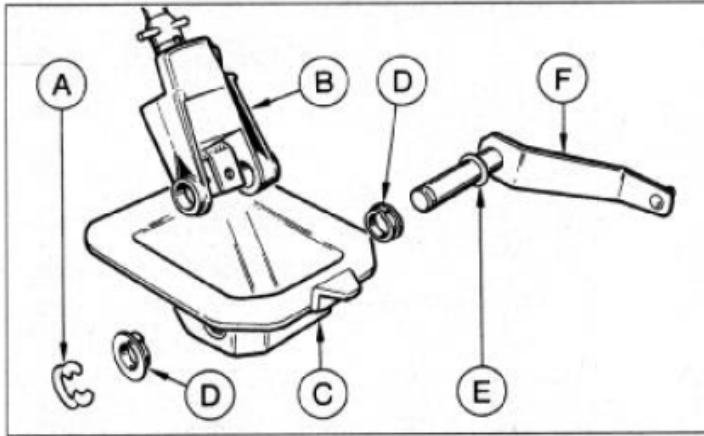


Fig. 10 Selector lever components (Sec 8)

- | | |
|------------------------|-------------------------|
| A Clip | D Guide bushes |
| B Upper lever assembly | E Washer |
| C Housing | F Lower lever and shaft |

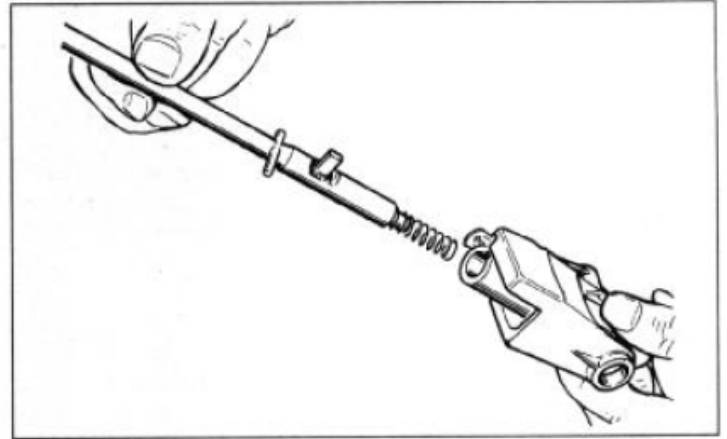


Fig. 11 Upper selector lever and spring removal (Sec 8)

FAULT FINDING OVERLEAF

Fault finding – automatic transmission

Faults in these units are nearly always the result of low fluid level, or incorrect adjustment of the selector linkage or downshift mechanism. Internal faults should be diagnosed by a main Ford dealer who has the necessary equipment to carry out the work.