

Chapter 7

Braking and hydraulic systems

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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



Specifications

General

System type	Discs front, drums rear on Visa models. Discs all round on BX models. Cable-operated handbrake on rear wheels for Visa models and front wheels for BX models.
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Front brakes (Visa models)

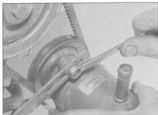
Disc diameter	247.0 mm
Minimum disc thickness	8.0 mm
Maximum disc run-out	0.07 mm
Maximum variation of disc thickness	0.02 mm
Minimum disc pad lining thickness	2.0 mm

Rear brakes (Visa models)

Maximum drum internal diameter:	
Saloon	181.0 mm
Van	229.6 mm
Brake limiter adjustment (Van models):	
Cable clamp-to-lever contact faces clearance	4.0 to 5.0 mm

Torque wrench settings (Visa models)

	Nm	lbf ft
Brake vacuum pump (direct-driven from camshaft)	25	18
Cross-tube brackets	14	10
Master cylinder	8	6
Rear hub nut (Saloon models)	190	140
Servo unit	8	6



1.2A HP pump adjusting bolt on BX models



1.2B HP pump pivot bolt on BX models



1.2C HP pump mounting bracket on BX models

1 Description - general

1 In Visa models the braking system is similar to that for petrol engine models, but there is insufficient vacuum for a vacuum servo unit. A vacuum pump, driven from the camshaft, is therefore used. The vacuum servo unit and master cylinder are located on the left-hand side of the bulkhead. A cross-tube mounted inside the passenger compartment links the brake pedal to the vacuum servo unit.

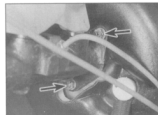
2 On BX models the hydraulic braking system is virtually identical to that on petrol-engined models. The high pressure pump is belt-driven from a pulley attached to the end of the camshaft. The pump mounting bracket is bolted to the top of the transmission as also is the adjusting link (see illustrations).

3 Apart from the different location of the high pressure pump, the hydraulic system components and procedures are as described in the main BX manual.

2 Master cylinder (Visa models) - general

1 The master cylinder is located on the servo unit on the left-hand side of the bulkhead (see illustrations).

2 Removal and refitting procedures can be



2.1 Master cylinder mounting nuts (arrowed) on Visa models

found in the main manual, but before starting work remove the air cleaner and battery.

3 Servo unit (Visa models) - general

1 The servo unit is located on the left-hand side of the bulkhead.

2 Removal and refitting procedures are given in the main manual, but access to the mounting nuts is gained by extracting the cross-head screws and removing the left-hand side shelf (see illustrations).

4 Pedal cross-tube (Visa models) - removal and refitting

Removal

- 1 Disconnect the battery negative lead.
- 2 Extract the cross-head screws and remove the right-hand side shelf (see illustrations). Similarly remove the left-hand side shelf.
- 3 Remove the steering column as described for petrol-engined models.
- 4 Disconnect the accelerator cable from the pedal.
- 5 Disconnect the clutch cable from the pedal.
- 6 Remove the clevis pin and disconnect the servo unit pushrod from the cross-tube.
- 7 Disconnect the wiring from the stop-lamp switch.
- 8 Unscrew the nuts and detach the left and



3.2A Extract the shelf cross-head screws ...

right-hand brackets from the bulkhead.

9 Extract the spring clips and disconnect the link from the brake pedal and cross-tube.

10 Withdraw the brackets from each end of the cross-tube, then withdraw the cross-tube from the vehicle.

Refitting

11 Refitting is a reversal of removal, but adjust the clutch and accelerator cables.

5 Brake vacuum pump (Visa models) - removal and refitting

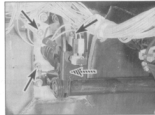
Note: This section describes the procedure for models with belt driven vacuum pumps. Refer to Section 7, for camshaft driven types.

Removal

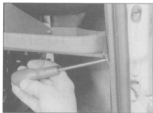
- 1 Remove the air cleaner and ducting.
- 2 Disconnect the inlet and outlet hoses.
- 3 Loosen the pivot and adjustment link bolts and nuts, swivel the vacuum pump upwards and slip the drivebelt from the pulleys.
- 4 Unscrew the bolts and remove the vacuum pump from the mounting bracket and adjustment link.

Refitting

5 Refitting is a reversal of removal, but swivel the pump downwards until the drivebelt tension is as given in the Specifications before tightening the pivot and adjustment link bolts and nuts. With the vehicle on level ground, unscrew the filler/level plug and check that



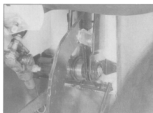
3.2B ... for access to the servo unit mounting nuts (arrowed)



4.2A Removing the right-hand shelf side ...



4.2B ... and centre screws



4.2C Brake pedal and cross-tube with shelf removed

the oil level is up to the bottom of the hole. If not, top-up with the correct grade of oil then refit and tighten the plug.

6 Brake vacuum pump (C15 Van) - general

General

1 For the period from December 1989 to January 1991, C15 Vans were fitted with a vane-type brake vacuum pump, driven directly from the rear of the camshaft. This modification resulted in a modified cylinder head, incorporating mounting bolt holes for the pump, and an oil channel that passes oil from the engine lubrication system to the pump. The end of the (shorter) camshaft also incorporates a slot for engagement with the pump drive dog.

2 On models between January 1991 and early 1993, the original (longer) camshaft is fitted, with the original belt-driven vacuum pump driven from a pulley on the end of the camshaft.

3 From early 1993, the XUD 7 engine featured an improved (second generation) direct-driven vane-type brake vacuum pump, and the engine was modified as described in paragraph 1.

7 Brake vacuum pump (C15 Van) - removal and refitting

Note: This section describes the procedure for models with vacuum pumps that are driven directly from the camshaft. Refer to Section 5, for belt driven types.

Removal

1 Loosen the clip and disconnect the vacuum hose from the vacuum pump (see illustration).

2 Unscrew the mounting bolts and remove the brake vacuum pump from the end of the cylinder head (see illustrations).

3 Extract the two O-rings from the grooves in the pump (see illustrations).

4 Using a small screwdriver, extract the filter from the oil lubrication channel in the vacuum pump.

Refitting

5 Before refitting the pump, clean the O-ring grooves, and also clean the mating surfaces of the pump and cylinder head. Clean the filter, or if necessary renew it.

6 Locate the filter in the oil lubrication channel.

7 Fit new O-rings in the grooves on the pump, and lightly oil them.

8 Locate the pump on the end of the cylinder head, making sure that the dog engages correctly with the end of the camshaft. To avoid the O-rings being displaced, align the slot in the end of the camshaft with the dog on the vacuum pump before refitting the pump.

9 Insert the mounting bolts, and tighten them to the specified torque.

10 Connect the vacuum hose and tighten the clip

11 Start the engine, and check that the brake

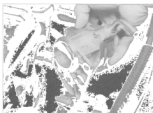
pedal operates correctly, with assistance from the vacuum pump. Check around the pump for signs of oil leakage.



7.1 Disconnecting the vacuum hose from the vacuum pump



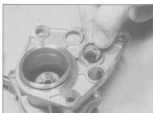
7.2A Unscrew the mounting bolts ...



7.2B ... and remove the vacuum pump



7.3A Removing the large O-ring ...



7.3B ... and small O-ring from the grooves in the pump