

Ford Ranger · Hydraulic clutch bleeding

1 / Removing the hydraulic system

The installed master cylinder sits at **45°**, which can trap air in its upper section. Conventional bleeding can leave a clutch-release problem that may be mistaken for a faulty kit. Bleed the cylinder **horizontally** to expel all air.

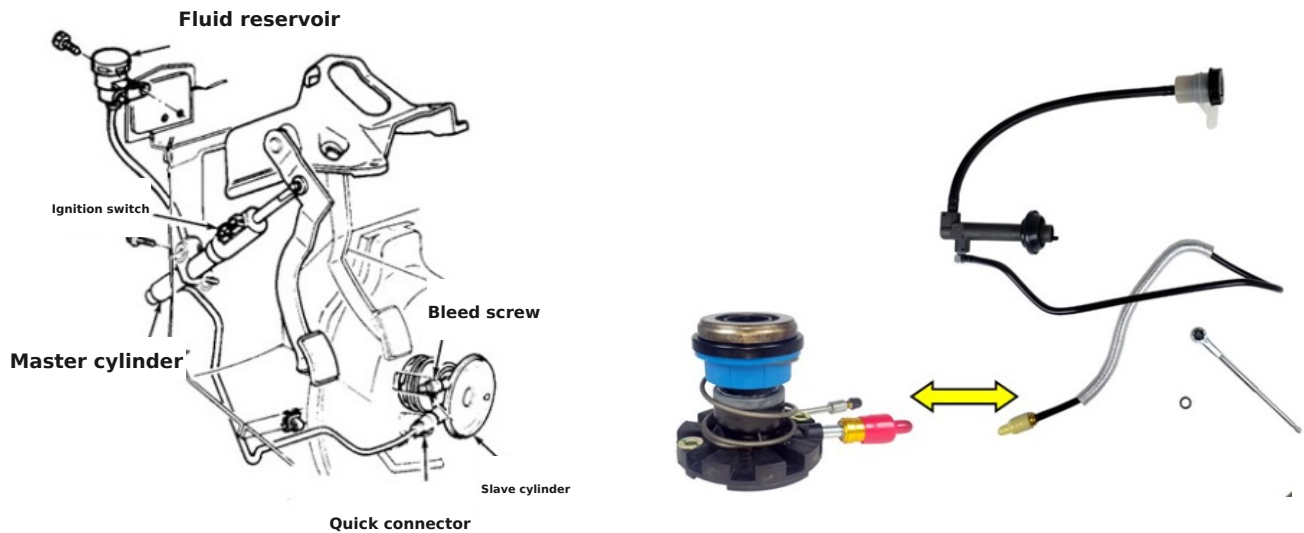
Step 1. Remove the ignition switch from the master-cylinder pushrod at the clutch pedal.

Step 2. Disconnect the master-cylinder pushrod from the clutch pedal.

Step 3. Remove the driver-side firewall dust cover to access and free the master cylinder from the engine side.

Step 4. Push the cylinder against the firewall and turn it **1/4 turn** in either direction to remove it.

Step 5. Disconnect the supply hose from the hydraulic release bearing.

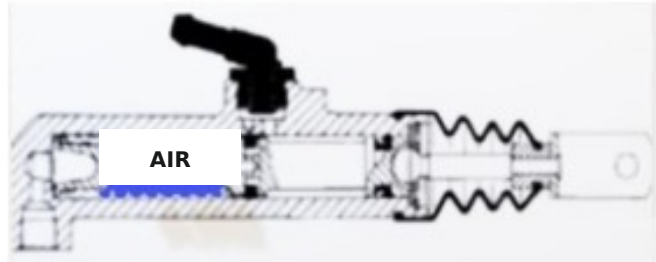


Hydraulic system and connection between the line and release bearing.

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2 / Horizontal bench bleeding

Step 6. Remove the master cylinder from the vehicle and hold it horizontally in a bench vise. This levels the fluid and allows the air to be expelled completely.



Horizontal cylinder: remove trapped air from the upper section.

Step 7. Prepare a container of brake fluid to submerge the hose end containing the check valve. Open the valve **before submerging it**, using a hook as illustrated.

Keep the valve submerged and operate the master-cylinder pushrod. The forward stroke expels fluid and air; the return stroke draws in fluid without air. Repeat until no more bubbles appear when the pushrod is operated.



Hook used to open the valve; operate with the hose end submerged.

When bubbles stop, remove the hook **with the hose still in the container and the pushrod not actuated.**

Remove the hose from the container and operate the pushrod once more. The valve must seal without leaking; replace it if it leaks. If there is no leakage, the pushrod should become firm immediately, indicating that the system is free of air and internal or external leakage.

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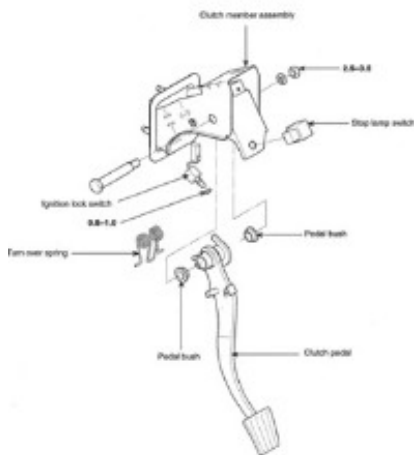
3 / Reinstallation and final checks

Step 8. With the hydraulic system pressurized, reinstall it in the vehicle:

1. Refit the master cylinder to the firewall.
2. Place the pushrod on the pedal pin.
3. Route the hose away from the exhaust so heat does not affect operation.
4. Check the fluid reservoir level.
5. Connect the hose to the release bearing; the O-ring at its tip must be in perfect condition to prevent leakage or air entry.
6. Operate the pedal several times until it reaches its proper operating position.

Inspect the actuation system

Worn or damaged components can limit master-cylinder travel. This reduces hydraulic release bearing travel and can prevent the clutch from disengaging.



Pedal assembly and an example of a polyamide retainer/bushing.

Inspect the polyamide retainers and bushings. Replace excessively worn or damaged parts to prevent clutch-system failure.