Synchronizing CV Carburetors

Symptoms of Out-of-Sync Carburetors

If your carburetors are out of sync, you may notice:

- **Uneven idle**
- **Surging at cruising speed**
- **Noticeable temperature differences between exhaust pipes** (check with an infrared temperature gun)
- **Excessive revving when letting the clutch out**

Preparation

- Work in a **well-ventilated area**, preferably outdoors, to prevent overheating and exposure to exhaust fumes.
- Use a **remote fuel tank** for easy carburetor access. If unavailable, a separate fuel container or long fuel and vacuum lines can work.

Bench Sync (Preliminary Adjustment)

If the carburetors were recently disassembled, start with a **bench sync** before installing them on the bike:

1. **Set the idle mixture screws** to the manufacturer's specification (typically **1.5–2.5 turns out**). If unavailable, **1.25 turns out** is a good starting point.
2. **Reassemble the carburetors**, ensuring all mounting screws, choke linkages, and tubes are properly connected.
3. **Adjust the idle speed screw:**
    - Back it out until it no longer touches the stop.
    - Turn it in until it makes contact, then add one full turn.
4. **Align the butterfly plates:**
    - Start with the inner two carburetors. Loosen the adjustment screws until the plates fully close, then turn them in **¾ of a turn**.
    - Repeat for the outer two carburetors.
    - Use a **feeler gauge** to check plate clearances—they should be within a few thousandths of each other.
    - Lock all adjusters in place and verify nothing has moved.
5. **Final check:**
    - Back the idle speed screw out until the butterfly plates **just barely close**.

    - Hold the carburetors up to a light and check for **equal light passing through each throttle plate**.

This should provide a rough sync, allowing the bike to start.

On-Bike Synchronization

1. **Install the carburetors back on the motorcycle.**
2. **Ensure proper ventilation**—work in a well-ventilated area with a fan to prevent overheating and carbon monoxide exposure.
3. **Connect synchronization gauges** to the vacuum ports on each carburetor.
4. **Prepare your tools**:
    - Ensure all adjustment screws are accessible.
    - Practice reaching them on a cold engine to avoid burns, as some screws are near hot components.
    - Wear **heat-resistant gloves** or other PPE if necessary.
5. **Connect the remote fuel tank** and plug the vacuum line if your bike's petcock requires it.
6. **Start the engine and let it warm up.**
    - Adjust the **idle speed screw** to keep the bike running.
    - Once at operating temperature, **gradually lower the idle until the engine stumbles slightly**, then increase RPM slightly to keep it running on the **idle circuits only**.
7. **Adjust the pilot mixture screws** until all vacuum gauges read the same.
    - Fine-tune until the readings are equal.
    - If one carburetor is significantly off and cannot be adjusted with the mixture screw, **adjust its throttle plate accordingly**.
8. **Set the engine RPM** to the manufacturer's specification.
9. **Confirm synchronization** by checking exhaust temperatures with an infrared temperature gun.

Final Step

Your carburetors are now synced—take the bike for a ride and enjoy the smoother performance!
