

INTERMEDIATE SYSTEM WITH SLIDE TYPE THROTTLE VALVE

When the throttle valve is opened, there is a transition from the *Low Speed System* to an *Intermediate System* which meters fuel from the main fuel discharge jet (needle jet).

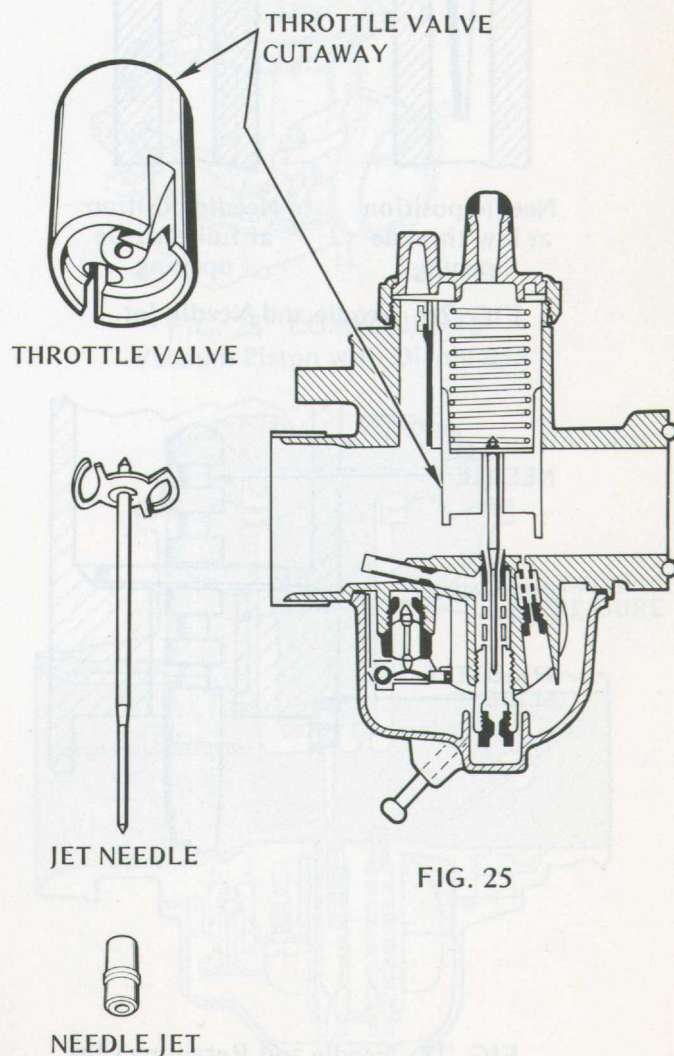
In carburetors with slide type throttle valves, the intermediate system uses a tapered fuel metering rod (jet needle) that works in connection with the variable venturi and choking action of the throttle valve. The jet needle meters fuel flow, maintaining the correct air-fuel mixture ratio through most of the carburetor's operating range. At full throttle opening, the jet needle is fully raised, and fuel flow will be controlled solely by main jet diameter (*High Speed System*).

Throttle Valve Cutaway:

The needle jet begins to discharge fuel at about 1/8 throttle opening and supplants the low speed system as the chief fuel supply. It is important to have a smooth transition from the low speed system to the intermediate system as the throttle is opened. Otherwise, there would be a momentary fuel delivery failure causing a flat spot in acceleration. The height of the throttle valve *cutaway* is crucial in obtaining smooth system transition and good initial acceleration.

While the position of the throttle slide determines the venturi constriction in the carburetor bore, the shape of the bottom edge of the slide determines the extent to which induction port vacuum is maintained at the needle jet.

The bottom edge of the slide, on the upstream side (air cleaner side) of the needle jet acts as a choke, but is *cut away* to a height that will produce the exact degree of choking needed to ensure proper fuel delivery from the needle jet at low throttle openings.



INTERMEDIATE SYSTEM WITH SLIDE TYPE THROTTLE VALVE (continued)

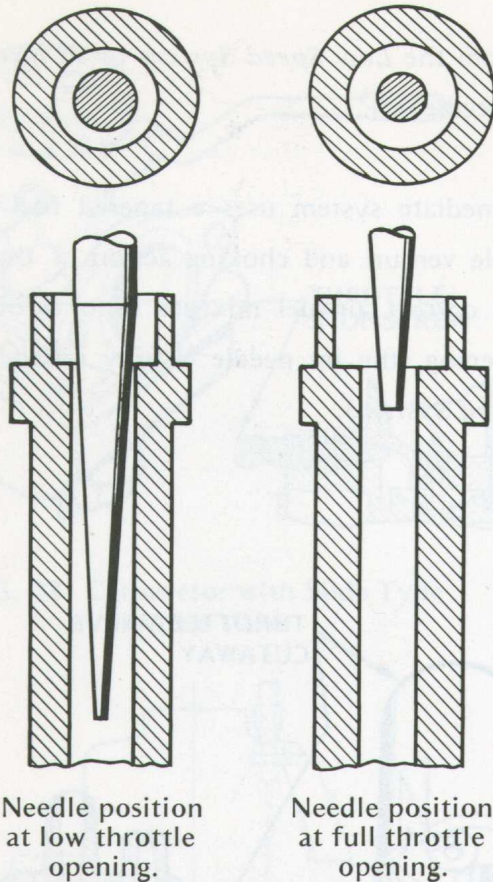


FIG. 26 Needle and Needle Jet

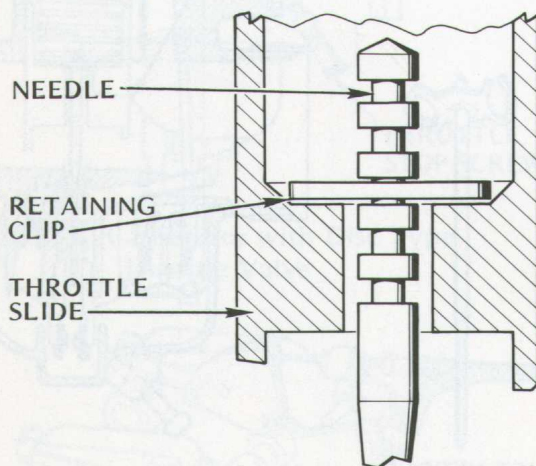


FIG. 27 Needle and Retaining Clip

Increasing the height of the cutaway reduces the choking effect, producing a leaner air-fuel mixture ratio, and vice versa.

The throttle valve cutaway controls the air-fuel mixture ratio primarily at $1/8$ to $1/4$ throttle openings and ceases to have any effect beyond a $1/2$ throttle opening.

Jet Needle:

A tapered metering rod, called the *jet needle*, is attached to the throttle slide and extends downward into the fuel discharge jet (*needle jet*).

At low throttle openings, the wide base of the needle fills most of the fuel jet diameter, reducing fuel flow to a minimum. As the throttle valve is opened, raising the needle, the progressively smaller needle diameter allows more fuel to flow through the jet, matching the increasing volume of air flowing through the carburetor bore (Fig. 26).

Jet needles used with slide type throttle valves usually have a series of grooves at the needle head to permit alternate mounting positions. The jet needle can be raised or lowered in the throttle slide by installing the jet needle retaining clip (Fig. 27) in one of the alternate grooves.

Raising the needle to a higher mounting position allows a greater flow of fuel through the needle jet, creating a richer air-fuel mixture ratio. Lowering the needle creates a leaner air-fuel mixture ratio. The jet needle controls the air-fuel mixture ratio primarily at $1/4$ to $3/4$ throttle openings.