

# 1974-79 FUEL SYSTEMS

## Kugelfischer Fuel Injection

2-205

**BMW: 1974 2002 Tii**

### DESCRIPTION

Fuel fed to the fuel injection pump is kept under pressure and enters high pressure chamber during downward travel of injection plunger. When plunger is at lowest point a valve prevents further entry of fuel. When plunger travels upward, pressure is increased and opens a spring loaded delivery valve. A passage to the injectors is opened and pressure is delivered. The injector opens at an exact opening pressure and fuel is injected into the engine.

### TROUBLE SHOOTING

#### ENGINE WILL NOT START WHEN COLD

Fuel pump pressure too low. Starter valve does not inject or injects insufficient quantity. Spark plugs fouled.

#### ENGINE WILL NOT START WHEN WARM

Actuation period of starter valve too short. Fuel pump pressure too low. Start valve not cutting off.

#### UNEVEN IDLE

Idle adjustment too lean. Premature centrifugal advance. Throttle valve setting not synchronized with injection pump. Injection pump incorrectly adjusted. Throttle valve sticking.

#### ENGINE WILL NOT IDLE WHEN COLD

Air regulating cone dirty. Warm-up runner stuck or out of adjustment.

#### ENGINE IDLE SPEED TOO FAST WHEN WARM

Incorrect idle speed setting. Ignition too advanced. Incorrect setting of throttle linkage. Throttle valve setting not properly synchronized with injection pump. Injection pump incorrectly adjusted. Throttle valve sticking.

#### ENGINE IDLE SPEED TOO LOW WHEN WARM

Incorrect idle speed. Ignition retarded. Throttle valve not properly synchronized with injection pump.

### ADJUSTMENTS

#### PUMP & THROTTLE VALVE LINKAGE

- 1) Remove air filter and cover. Back off adjustment screw until it DOES NOT touch eccentric lever, then loosen screw on clamp. See Fig. 1.
- 2) Detach connecting rod. Check or adjust linkage using Gauge (6071) until connecting rod measures 3.34" (85 mm) from centerline of one connector to centerline of other connector. Reinstall connecting rod.
- 3) Insert a .20" (5 mm) diameter Hook (6075), through cutout of pump regulating lever and into hole "A" of pump housing. Now insert .157" (4 mm) Gauge (6070) in hole "B" of housing.
- 4) With light pressure, press eccentric lever with its straight edge against the 4 mm gauge. The idle adjusting screw should NOT touch eccentric lever. Press shaft of eccentric down and tighten screws on clamp.
- 5) Remove hook and press eccentric lightly against 4 mm gauge. You should be able to insert .20" (5 mm) hook without tension into hole of pump regulating lever. If not, repeat adjustment procedure.

#### FULL THROTTLE

Loosen nut on full throttle adjustment screw and turn adjustment screw in. Align cutout at pump lever regulating lever at full throttle with a .20" (5 mm) Hook (6065). See Fig. 2. Turn full throttle adjustment screw out until it touches pump regulating lever and lock with nut.

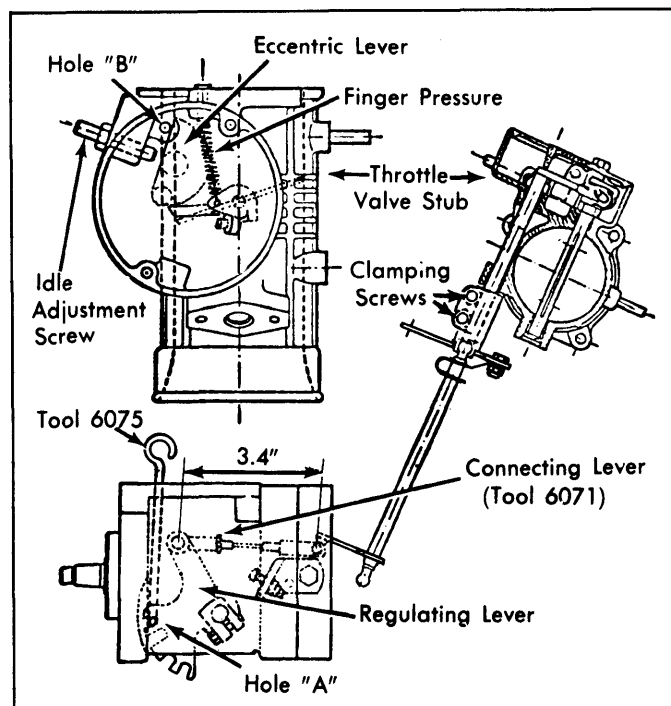


Fig. 1: Pump & Throttle Valve Linkage Adjustment

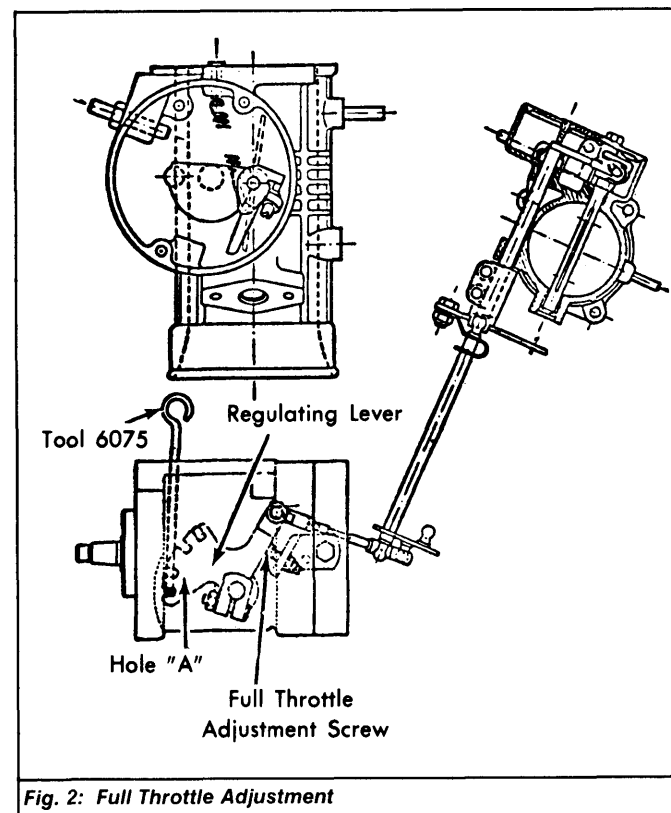


Fig. 2: Full Throttle Adjustment

#### ACCELERATOR LINKAGE

**2-Door & Touring Models** - 1) Remove pin from throttle lever and adjust interconnecting rod to a length of 11.27" (289 mm) between centerlines. Using .20" (5 mm) Hook (6065), insert hook in pump regulating lever at full throttle position.

# 1974-79 FUEL SYSTEMS Kugelfischer Fuel Injection (Cont.)

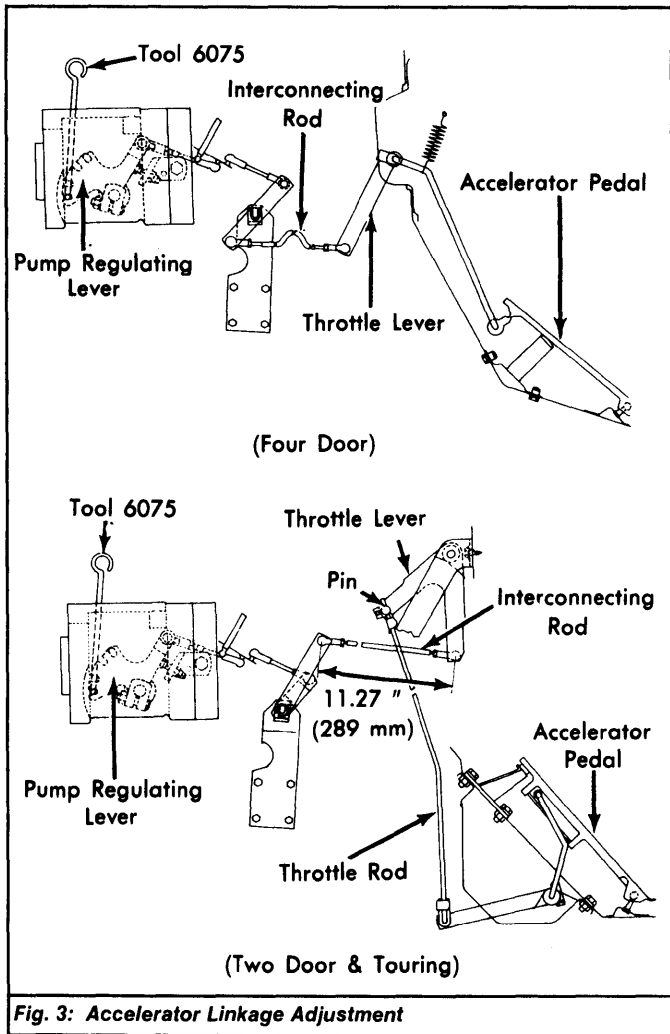


Fig. 3: Accelerator Linkage Adjustment

2) Press accelerator pedal to full throttle position and adjust pin on throttle rod until it lines up with hole in throttle lever. Insert pin, install safety lock, and remove hook. Full throttle stop position should be reached by accelerator pedal before full throttle is reached on injection pump.

**4-Door** - 1) Remove interconnecting lever at firewall. Insert .20" (5 mm) Hook (6065) in pump regulating lever at full throttle position and press accelerator pedal to full throttle position.

2) Adjust length of interconnecting lever until ball joint can be reconnected (to lever on firewall) without changing position of linkage. Remove hook. Full throttle stop should be reached by accelerator pedal before full throttle position is reached on injection pump.

## IDLE SPEED & MIXTURE

1) Warm engine to normal operating temperature. Make sure that clearance "1" is between .35-.39" (9-10 mm) and clearance "2" is .16" (4 mm). See Fig. 4. Check that threaded pin on enrichment lever just touches stop screw.

2) Set idle to 850-950 RPM. With throttle screw, adjust CO% level to 2-3 percent. Accelerate engine 2-3 times and check RPM. If RPM has changed, readjust idle speed and CO% level to specifications.

## REMOVAL & INSTALLATION

### INJECTION PUMP

**Removal & Installation** - 1) Drain coolant and remove air filter housing. Detach all injection lines and fitting ring piece for fuel hoses.

2) Note position of gaskets and seal pressure valves with dust covers. Note sequence in connecting cylinders No. 1 through 4. Detach fuel return, oil feed, and water intake hoses. Remove mounting for oil dipstick, auxiliary air hoses, and attaching bolt.

3) Detach connecting link from pump lever and remove upper dust cap. Set cylinder No. 1 to TDC. Notch in "V" belt pulley must be in line with mark on lower section of dust cover. See Fig. 5. Notch in cogged belt pulley must be in line with mark on pump casting.

4) Loosen attaching nut and, using a puller, remove pump drive pulley. Check that Woodruff key is in cone. Detach injection pump from timing case cover and pull pump out until intermediate shaft can be lifted from warm-up sensor housing.

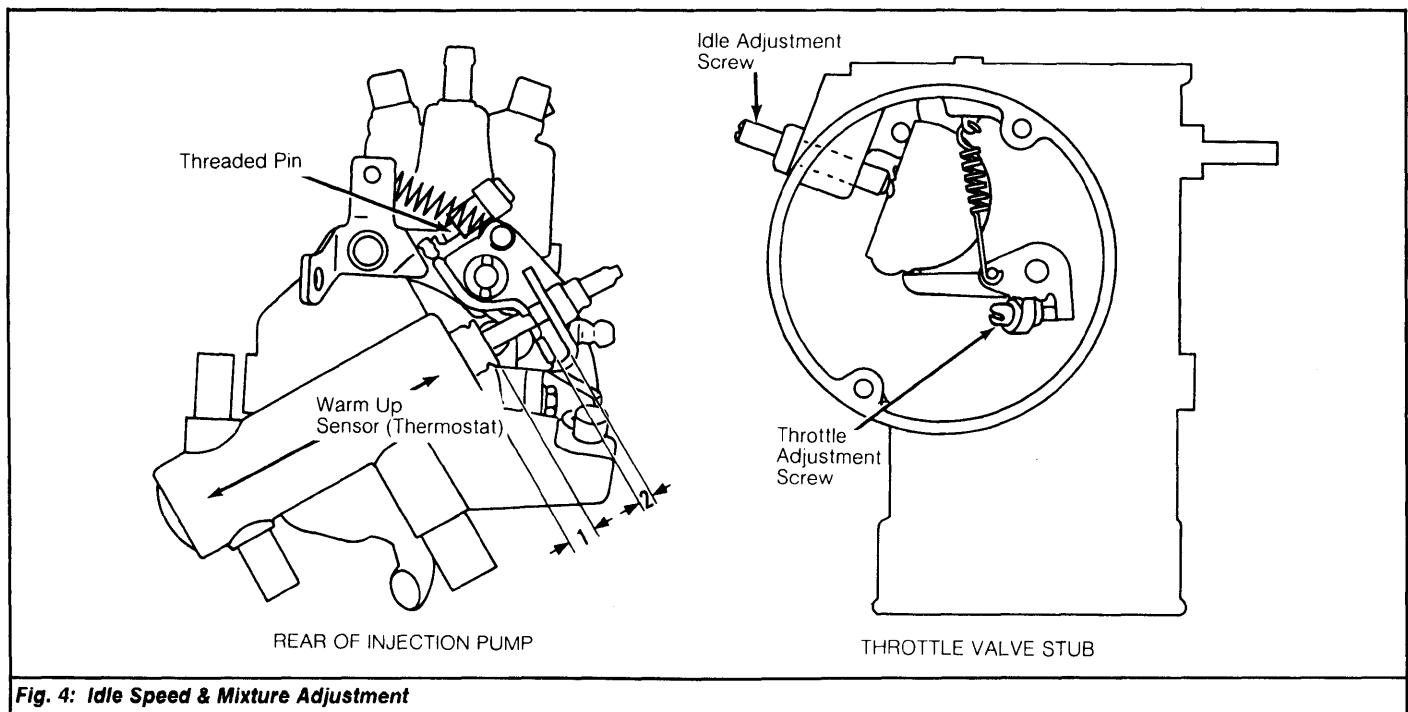


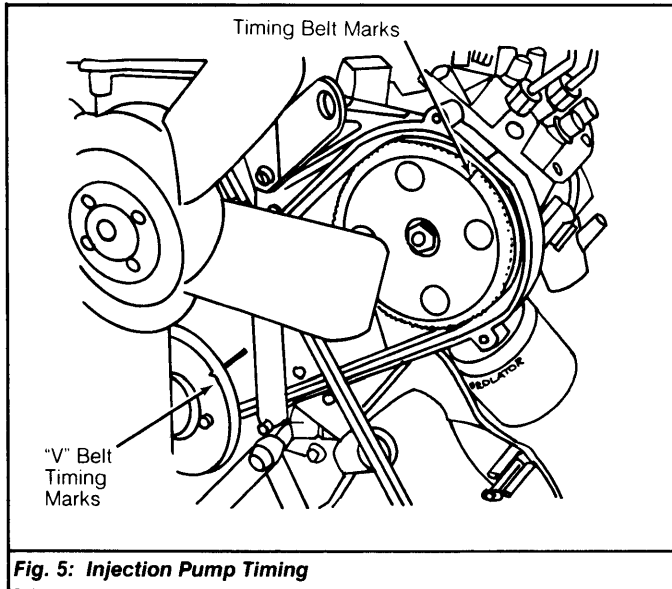
Fig. 4: Idle Speed & Mixture Adjustment

# 1974-79 FUEL SYSTEMS

## Kugelfischer Fuel Injection (Cont.)

2-207

5) To install, reverse removal procedure. Fuel system is bled automatically on reinstallation of injection pump.

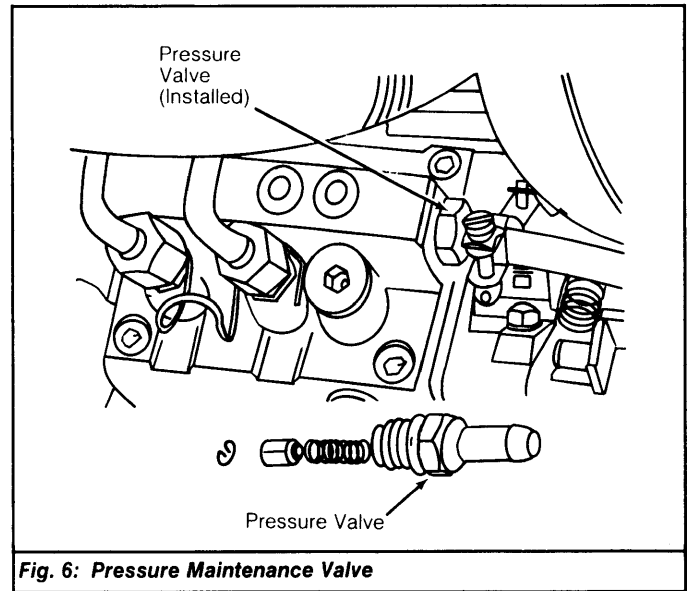


### WARM-UP SENSOR

**Removal & Installation** - Drain coolant and remove filter housing. Detach water hoses and auxiliary air hose. Unhook return spring and loosen screws. Press off warm-up sensor (to rear) with screwdriver and disconnect accelerator linkage. To install, reverse removal procedure.

### PRESSURE MAINTENANCE VALVE

**Removal & Installation** - When fuel pump pressure exceeds 28.4 psi (2.0 kg/cm<sup>2</sup>), remove pressure maintenance valve. To remove, detach fuel return line and unscrew valve. See Fig. 6. Clean or replace valve as necessary. To install, reverse removal procedure.



### TIMING BELT

**Removal & Installation** - 1) Remove air filter hood and detach dust cover. With piston in cylinder No. 1 at TDC, check that "V" belt is in line with timing mark. See Fig. 5. Cogged belt pulley pointer must match notch on casting.

2) Loosen alternator and remove "V" belt, with pulley, from hub. Loosen tensioner bolt and unscrew all other bolts from lower dust cover. Pull dust cover forward and slip off cogged belt. To install, reverse removal procedure.

### THROTTLE VALVE STUB

**Removal & Installation** - 1) Remove air filter housing and detach start valve. Check "O" ring and replace if necessary. Loosen clamping screw and remove attaching bolts.

2) Pull off vacuum hose. Turn intermediate shaft clockwise and pull off throttle valve stub. Replace gasket and readjust synchronization of throttle valve with injection pump. To install, reverse removal procedure.