# TUNE-UP

## ENGINE IDENTIFICATION

Engine is 198" 6 cylinder in-line diesel. Engine serial number is stamped on right front side behind injection pump.

## MODEL IDENTIFICATION

### VEHICLE IDENTIFICATION NUMBER

Vehicle Identification Number is located on left frame rail front and on a plate on the right door hinge pillar.

## TUNE-UP NOTES

**NOTE** – *Due to production changes, always refer to Engine Tune-Up Decal in engine compartment before attempting tune-up. In the event of a conflict between specifications given in this manual and decal specifications, use the decal specifications.*

**CAUTION** – *Adjustment of injectors or internal adjustments of injection pump must be done in a properly equipped injector shop with perfectly clean environment.*

## ENGINE COMPRESSION

Remove all nozzle lines and holder assemblies. Place transmission shift lever in "NEUTRAL" and install compression gauge (SE-2482 or equivalent). Crank engine and check pressure.

| | |
|---|---|
| Compression Ratio | 22:1 |
| Compression Pressure @ 200 RPM | 375-425 psi |
| Maximum Pressure Variation | 50 psi |
| Recommended Fuel | |
| Preferred | No. 2 |
| Permitted | No. 1 |

## VALVE TAPPET CLEARANCE

| Application | ①Clearance |
|---|---|
| Intake & Exhaust | .014" |

① – With engine either hot or cold.

## GLOW PLUG RESISTANCE

Measure resistance of glow plug and replace those which do not meet specifications.

| Application | Glow Plug Resistance |
|---|---|
| All | 1.6±.15 ohms |

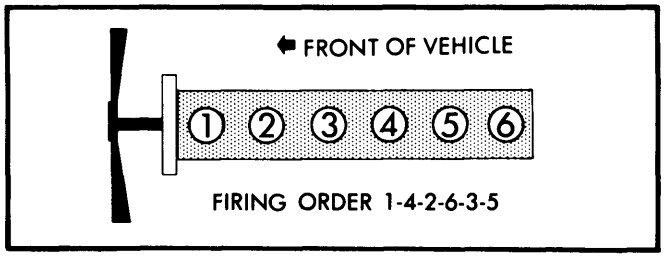


***Fig. 1 198" Firing Order Identification***

## INJECTOR TIMING

**1) Remove No. 1 cylinder pumping element delivery valve holder, delivery valve and spring. Reinstall delivery valve holder. Install drip spout (made from injection line). Secure control lever in forward position.**

**2)** Bring No. 1 piston to 20° BTDC by aligning first mark (in direction of normal rotation) on crankshaft pulley with cast pointer on engine front cover. Supply fuel to injection pump by manually priming pump.

**3)** One drop of fuel should flow from drip spout every 3 to 5 seconds. If not, loosen pump retaining nuts and rotate pump assembly as required to achieve fuel drops at 3 to 5 second intervals. Then tighten pump in place.

**4)** Check alignment of injection pump with front end plate marks at front of pump. If provided marks are not aligned, scribe new mark (horizontal line) on front end plate opposite injection pump original (vertical line) mark.

**5)** Remove injection pump delivery holder and reinstall spring and valve. Install holder and tighten to 22-25 ft. lbs. Reinstall fuel line. Start engine and check for leaks.

## HOT (SLOW) IDLE RPM

Normal curb idle speed is adjusted at low idle adjusting screw at rear of fuel injection pump. To adjust, start engine and run at normal operating temperature. Observe tachometer. If not within specifications (700-750 RPM), back out buffer screw and loosen lock nut on low idle adjustment. Turn low idle adjusting screw to obtain correct idle speed. Tighten lock nut on low idle adjustment. Turn buffer screw in until it touches and takes effect. Using buffer screw, increase engine speed 10-25 RPM above specified speed. Back off one full turn, then tighten lock nut.

**NOTE** – *After adjustment, accelerate engine two or three times. Allow engine to return to idle speed and check tachometer. If idle is not within specified range, check accelerator linkage for binding and back off buffer adjustment one full turn.*

**Hot (Slow) Idle RPM**

| Application | RPM |
|---|---|
| 198" 6 Cylinder Diesel | 700-750 |

## FAST IDLE (MAXIMUM) SPEED

**1)** After initial fast idle adjustment on a calibration stand, on-vehicle adjustments may be made by turning high idle screw at rear of governor housing.

**2)** With engine at normal operating temperature, push control lever forward against full load stop bolt. Read tachometer and note highest RPM. If not within specified speed range, loosen lock nut and adjust high idle screw. Turning clockwise increases RPM. Tighten lock nut and recheck high idle speed. Reseal lock nut when speed is within specifications.

**Fast Idle RPM**

| Application | RPM |
|---|---|
| 198" 6 Cylinder Diesel | 3800-4150 |

## FUEL PUMP PRESSURE & VOLUME

| | |
|---|---|
| Pressure | 15-23 psi |
| Volume (at 1000 RPM) | .63 pts. in 15 seconds |

# GENERAL SERVICING

## FUEL INJECTION

| Application | Type |
|---|---|
| All | IHC Diesel Fuel Inj. |

**Other Data & Specifications** – *See Tune-Up and IHC Diesel 6 Cylinder Fuel Injection in FUEL SYSTEMS Section.*

## ELECTRICAL

### BATTERY

**12 Volt** – Negative Ground.

| Application | Cold Cranking Amps |
|---|---|
| Standard | 625 |

### STARTER

| | |
|---|---|
| Hitachi | Enclosed Shift Lever |
| Free Speed Voltage | 12 at 4500 RPM |
| Free Speed Amperage | 80 (Max.) at 4500 RPM |

**Other Data & Specifications** – *See Hitachi Starters in ELECTRICAL Section.*

### ALTERNATOR

All models use Hitachi Alternator.

| Application | Rated Amp. Output |
|---|---|
| All Models | 40 |

**Other Data & Specifications** – *See Hitachi Alternators in ELECTRICAL Section.*

### ALTERNATOR REGULATOR

All models use Hitachi Alternator Regulator.

**Other Data & Specifications** – *See Hitachi Alternator Regulators in ELECTRICAL Section.*

## ENGINE

### INTAKE MANIFOLD TIGHTENING

Manifold bolts are tightened to 11-13 ft. lbs.

## CAPACITIES

| Application | Quantity |
|---|---|
| Cooling (Including Heater) | 14.0 qts. |
| Crankcase (Including Filter) | 11 qts. |
| Man. Trans. (SAE 20W-30) | 7.0 pts. |
| Transfer Case (SAE 90W mineral oil) | 3.5 pts. |
| Front Axle (SAE 85W-140) | 4.0 pts. |
| Rear Axle (SAE 85W-140) | 3.0 pts. |
| Fuel Tank | 19.0 gals. |

## FILTERS & CLEANERS

| Filter or Cleaner | Service Interval (Miles) |
|---|---|
| Oil Filter | ①Replace 5000 |
| Fuel Filter | Clean 2500<br>Replace 15,000 |
| Air Cleaner | Replace 15,000 |

① – First change at 2500 miles.

## BELT TENSION

Adjust belts so no more than ½" deflection is measured when belt is pressed with 20 lbs. force (between crank and fan pulleys).