1975-79 TUNE-UP PROCEDURES
International Harvester 4-Cylinder Tune-Up

ENGINE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

Vehicle Identification Number (VIN) appears on left front frame rail and on a plate attached to right door hing pillar. Engine is identified by 5th character of VIN code.

ENGINE IDENTIFICATION CODE

The engine identification code is located on the upper front corner of left side of block. The number of cylinders and cubic inch displacement is indicated by first 4 characters of engine code.

ENGINE CODE

Application	Code
All Models	4-196

TUNE-UP NOTES

NOTE: When performing tune-up on vehicles equipped with a catalytic converter, do not allow or create a condition of engine misfire in one or more cylinders for an extended period of time. Damage to converter from overheating may occur due to loading with unburned fuel.

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.

ENGINE COMPRESSION

Check compression with engine at normal operating temperature, spark plugs removed, and compression gauge installed. Remove and ground distributor secondary coil wire. Block carburetor throttle open and crank engine through 5 compression strokes.

ENGINE COMPRESSION SPECIFICATIONS

Application	Specification
Compression Ratio	8.02:1
Compression Pressure	[1]
Recommended Fuel	Unleaded (87 AKI Minimum)

[1] - Lowest cylinder pressure should be at least 75% of highest cylinder.

VALVE CLEARANCE

Hydraulic Lifters - Zero lash.

VALVE ARRANGEMENT

Information not available from manufacturer.

SPARK PLUGS

SPARK PLUG TYPE

Application	Champion No.
All Models	RJ-10Y

SPARK PLUG INSTALLATION

Application	Gap	Torque
All Models	.035"	28-30 Ft. Lbs.

HIGH TENSION WIRE RESISTANCE

Carefully remove distributor cap and spark plug wires at spark plugs. Connect an ohmmeter to inside of spark plug terminal boot and to terminal inside distributor cap. If resistance is greater than 8,000 ohms per foot or if reading fluctuates from infinity to any value, replace wire.

DISTRIBUTOR

All 1975-77 models use Holley Breakerless Ignition systems. The 1978-79 models are equipped with Prestolite Electronic Breakerless Ignition systems. Service distributor every 12,000 miles by applying light oil to felt wick under rotor.

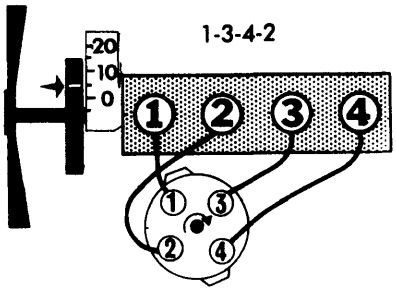

Fig. 1: 196" Firing Order & Timing Mark Identification

IGNITION TIMING

1975-78 Models - Check or adjust ignition timing with engine at normal operating temperature, with hot (slow) idle speed set, distributor vacuum advance line disconnected and plugged and transmission in Neutral.

1979 Models - 1) Connect timing light. Disconnect and plug vacuum advance hose. Start engine and operate until it reaches normal operating temperature. Observe engine idle speed and compare to specifications.

2) Adjust idle speed if necessary. Observe ignition timing. To adjust, loosen distributor clamp and turn distributor until timing is correct. Tighten clamp and recheck timing. Stop engine and reconnect vacuum hose. Remove timing light.

IGNITION TIMING SPECIFICATIONS

Application	Timing
All Models	TDC

HOT (SLOW) IDLE RPM

1975-78 Models - With engine at normal operating temperature, transmission in Neutral, A/C off, and vapor canister hose disconnected at canister (if equipped), set idle speed to specification.

1979 Models - 1) Apply parking brake. With air cleaner in place, transmission in Neutral, A/C off, and engine at normal operating temperature, connect tachometer.

2) With engine running and solenoid energized, turn curb idle adjusting screw in or out against solenoid plunger to obtain specified RPM. Then adjust low curb idle speed screw until end of screw just touches stop. Back off screw $^1/_2$ turn to obtain correct low curb idle speed setting.

HOT (SLOW) IDLE RPM SPECIFICATIONS

Application	RPM
1975-78 Models	525-575
1979 Models	675-725

IDLE MIXTURE

1975-78 Models - 1) Disconnect air injection hose at air manifold check valve and plug check valve. Disconnect vapor canister hose at canister and plug hose. Warm engine to normal operating temperature.

2) With engine at specified curb idle, insert exhaust gas analyzer probe into tailpipe. Adjust mixture screw to obtain specified CO value at specified curb idle RPM.

1975-79 TUNE-UP PROCEDURES
International Harvester 4-Cylinder Tune-Up (Cont.)

1979 Models - 1) Set parking brake. With air cleaner installed, transmission in Neutral and A/C off, disconnect and plug vacuum purge hose at charcoal canister. If canister is equipped with vacuum controlled bowl vent switch, be sure vacuum supply is still connected to switch.
2) Do not idle engine continuously for more than 3 minutes at a time. After each 3 minutes of idling, run engine at 2000 RPM for 1 minute and continue. In winter months make idle mixture check as soon as possible after engine will run without choke.

NOTE: Use steps 3) through 5) if using exhaust gas analyzer to check idle mixture. If not using analyzer, use steps 6) through 8) to check idle mixture.

3) Connect tachometer to engine. Disconnect air injection hoses at check valve and plug valves. Operate engine at normal operating temperature and adjust curb idle speed to specifications.
4) Insert exhaust sample probe from Exhaust Gas Analyzer (SE-2507) into tailpipe. Observe CO level and adjust to specifications. Readjust idle speed and mixture screws to specification.
5) If specified CO level cannot be achieved, remove limiter caps by filing (do not pry off). Adjust idle speed and mixture screws equal number of turns to provide specified CO level. Install new limiter caps with tabs at mid-position. Disconnect test equipment and reconnect air injection check valve hoses.
6) Connect tachometer. Note position of idle mixture screws. File off (do not pry off) limiter caps. Set idle screws to position noted before cap removal.
7) Run engine at normal operating temperature. Adjust to curb idle speed. Carefully adjust screws counterclockwise (equally) to provide maximum idle speed. Do not turn screws past point where highest RPM is first obtained (lean best idle).
8) Carefully adjust curb idle speed screw to 40 RPM over specifications. Turn mixture screws clockwise (equally) to obtain 40 RPM lean drop. Adjust curb idle speed screws to specifications. Install new plastic limiter caps with tabs in mid-position.

IDLE MIXTURE SPECIFICATIONS

Application	CO%
1975-78 Models	0.5-2.0
1979 Models	0.3-1.5

COLD (FAST) IDLE RPM

1) With engine at normal operating temperature, remove air cleaner. Disconnect and plug hose at EGR valve. Connect tachometer and check timing. Set curb idle speed.
2) With engine stopped, open throttle and move choke plate to fully closed position. While holding choke closed, close throttle. Fast idle screw should now be resting on high step of fast idle cam.
3) Without touching accelerator, start engine. Allow engine speed to stabilize and observe tachometer to determine fast idle RPM. If necessary, adjust fast idle speed screw to specifications. If accelerator linkage moves during this procedure, repeat steps **2)** and **3)**.

COLD (FAST) IDLE RPM SPECIFICATIONS

Application	RPM
1975-78 Models	2000
1979 Models	2200

AUTOMATIC CHOKE ADJUSTEMENT

Loosen choke cover retaining screws. Rotate cover to specified setting and tighten cover retaining screws.

NOTE: If improper choke operation, poor fuel economy, or dilution of crankcase oil with fuel is a problem, correct problem by installing Electric Choke Kit (1700160C92). Used on 1979 Scouts, the electric choke assist will improve engine driveability during cold driving conditions.

AUTOMATIC CHOKE SETTING

Application	Setting
1975-78 Models	1NR
1979 Models	1NL

THROTTLE MODULATOR ADJUSTMENT

With tachometer connected to engine, manually apply vacuum to throttle modulator unit and check that speed increases to specifications. If not, loosen lock nut and adjust position of modulator to achieve specified RPM. See THROTTLE MODULATOR ADJUSTMENT SPECIFICATIONS table.

THROTTLE MODULATOR ADJUSTMENT SPECIFICATIONS

Application	RPM
1975-78 Models	1300-1400
1979 Models	1850

FUEL PUMP

Make all tests at specified RPM. For pressure test, pinch off fuel return line, if equipped. Connect pressure gauge to fuel line at carburetor, then hold gauge at level of pump outlet during test. For volume test, use short hose from pump outlet into container.

FUEL PUMP SPECIFICATIONS

Application	Specification
Pressure (At 1000 RPM)	4.0-5.5 psi
Volume In 1 Min. (At 2000 RPM)	3.2 pts.

IGNITION SYSTEM

DISTRIBUTOR

All 1975-77 models use Holley Breakerless Ignition systems. The 1978-79 models are equipped with Prestolite Electronic Breakerless Ignition systems.
Other Data & Specifications - See Holley or Prestolite Distributors in DISTRIBUTORS & IGNITION SYSTEMS section.

IGNITION COIL

IGNITION COIL SPECIFICATIONS

Application	Specification
Primary Resistance (at 70°F)	1.2-1.4 Ohms
Secondary Resistance (at 70°F)	9400-11,100 Ohms
Minimum Coil Output (at 2500 RPM)	20,000 Volts

FUEL SYSTEM

CARBURETORS

Application	Model
All Models	Holley 1940 1-Bbl.

Other Data & Specifications - See Holley Carburetors in FUEL SYSTEMS section.