

# IGNITION SYSTEM

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## DESCRIPTION AND OPERATION

### Conventional Ignition System

The ignition system consists of an ignition switch, neutral start switch or clutch start switch, spark plugs, low and high tension wiring, ignition distributor, vacuum advance, contact points, condenser, ignition coil, battery cables and a source of electrical energy, the battery.

The ignition system has two separate circuits. The primary circuit includes the ignition switch, neutral start switch or clutch start switch, primary winding of the ignition coil, distributor contact points and condenser. The secondary or high tension circuit includes the secondary winding of the ignition coil, the high tension wire from the center of the coil to the center of the distributor cap, the distributor cap, rotor, spark plug wires and spark plugs.

The function of the ignition system is to produce high voltage surges and direct them to the spark plugs. When the ignition switch is closed, battery current flows through the primary winding of the ignition coil, closed contact points to ground and back to the battery. As the distributor cam opens the points, current decreases rapidly in the coil primary

winding and a high voltage is induced in the coil secondary winding. This high voltage is transmitted by the rotor, through the plug wires to the spark plugs where it creates an arc across the electrodes to ignite the air-fuel mixture in the engine cylinders to provide the power stroke of the engine. To bring the primary current to a quick controlled stop and in order to greatly reduce the size of the arc for prolonged contact point life, a capacitor (condenser) is connected across the contact points.

The ignition switch is located under the instrument panel on the top left side of the steering column. It is operated through mechanical linkage by the ignition and steering lock assembly.

### Unified Contact Point - Condenser Set

All 1974 Buick V8 engine conventional distributors have the Uni-Set installed in them. The Uni-Set can be installed in Buick V8 distributors back to 1957. Also, in the event the parts department should run out of the Uni-Sets for 1974 distributor usage, the conventional contact points and condensers may be installed. The ignition point shield is not required when the Uni-Set is used. See Figure 1C-2.

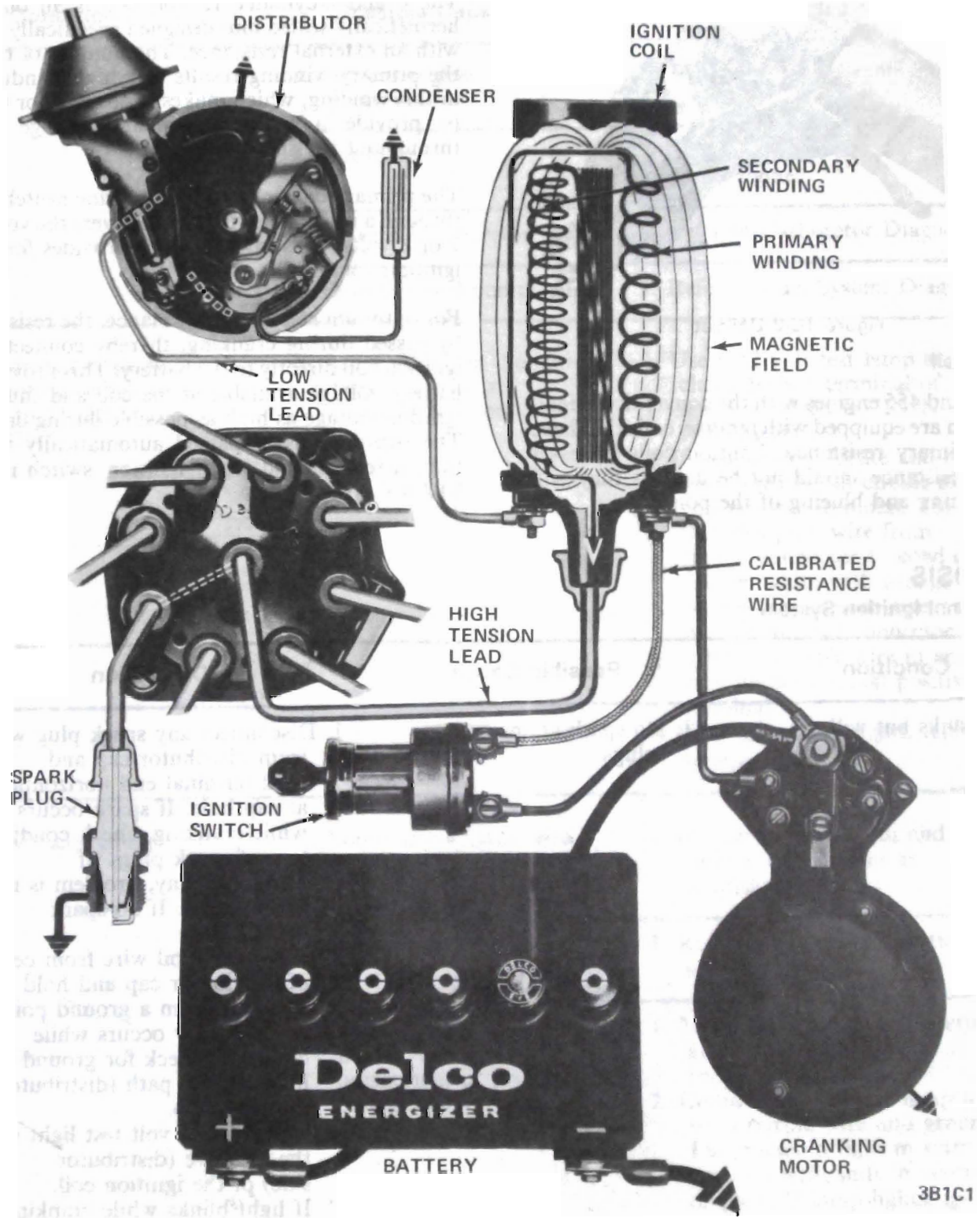


Figure 1C-1 Ignition System



Figure 1C-2 Uni-Set

### Ignition Coil

1974 350 and 455 engines with the conventional ignition system are equipped with ignition coils that have greater primary resistance. Ignition coils of lesser primary resistance should not be used as they will cause burning and blueing of the points.

The 6 and 8-cylinder 12 volt coil is an oil filled, hermetically sealed unit designed specifically for use with an external resistance. The number of turns in the primary winding results in a higher inductance in this winding, which makes it possible for the coil to provide a higher secondary voltage output throughout the speed range.

The primary current from the ignition switch passes through a resistance wire which lowers the voltage to 7 or 8 volts. This lower voltage provides for longer ignition contact life.

For optimum starting performance, the resistance is by-passed during cranking, thereby connecting the ignition coil directly to the battery. This provides full battery voltage available at the coil and thus keeps ignition voltage as high as possible during cranking. The resistance is by-passed automatically through the starter solenoid when ignition switch is in the START position.

## DIAGNOSIS

### Conventional Ignition System

Condition	Possible Cause	Correction
Engine cranks but will not start	1. No spark at spark plugs	1. Disconnect any spark plug wire from distributor cap and hold terminal end horizontally at cap hole. If spark occurs while cranking, check condition of spark plugs (if plugs are okay, problem is in fuel system). If no spark occurs: <ol style="list-style-type: none"> <li>Disconnect coil wire from center of distributor cap and hold 3/8 inch from a ground point. If spark now occurs while cranking, check for ground in high voltage path (distributor cap or rotor).</li> <li>Connect a 12 volt test light to the negative (distributor side) of the ignition coil. If light blinks while cranking, the contact points are okay, check coil and condenser. If light does not blink, points are improperly set or defective.</li> </ol>
	2. Engine timing out of adjustment	1. Reset timing to specifications. For procedure to rough-set timing on an engine that won't run, see setting ignition timing in this Section.

Condition	Possible Cause	Correction
	3. Internal engine problems	1. Refer to engine diagnosis.
	4. Out of gas	1. Put a supply of gas in tank and start engine.
	5. Defective carburetor	1. Refer to Carburetor Diagnosis.
	6. Defective fuel pump	1. Refer to Fuel System Diagnosis
Engine starts but stops when ignition switch is released to "RUN POSITION"	1. An "OPEN" in the ignition circuit or a defective ignition switch	1. Use a 12 volt test lamp and check IGN-1 terminal of ignition switch in "RUN POSITION". a. If lamp lights, locate and repair "OPEN" in circuit to coil positive terminal. This includes pink wire from switch connector to cowl connector, white with orange and purple cross tracer resistance wire from cowl connector to splice and pink wire in engine harness to coil positive terminal. b. If lamp does not light, replace ignition switch.
Engine will not crank	1. Loose or corroded wire or cable connections	1. Inspect for and clean and or tighten connections as necessary.
	2. Discharged battery	1. Refer to diagnosis in battery section.
	3. Neutral start switch defective, out of adjustment or poor connection	1. Make certain connector terminals are clean and connector is properly installed. 2. Connect 12 volt test lamp to solid purple wire and ground. Lamp should light in start position with shift in neutral or park. If lamp lights, ignition and neutral start switch are okay. 3. If lamp did not light on solid purple wire, connect it to purple with white stripe wire. If lamp now lights in start position in neutral or park, adjust or replace neutral safety switch. If lamp did not light, see following ignition switch test.

Condition	Possible Cause	Correction
4. Loose connection at or defective ignition switch.		<ol style="list-style-type: none"> <li>1. Inspect connector to assure clean terminals and proper connection.</li> <li>2. Using 12 volt test lamp check both purple wires at neutral start switch. If lamp does not light at either wire, repair "OPEN" circuit in purple wire to the ignition switch and or replace ignition switch as required.</li> </ol>
5. "OPEN" circuit in wiring to solenoid or defective solenoid		<ol style="list-style-type: none"> <li>1. Using 12 volt test lamp between purple wire at solenoid and ground, lamp should light in start position in neutral or park.               <ol style="list-style-type: none"> <li>a. If lamp does not light, locate and correct "OPEN" in circuit.</li> <li>b. If lamp lights replace solenoid.</li> </ol> </li> </ol>
6. Burned out fusible link.		<ol style="list-style-type: none"> <li>1. Using 12 volt test lamp between No. 10 red wire at cowl connector and ground, lamp should light.               <ol style="list-style-type: none"> <li>a. If lamp does not light, replace fusible link.</li> </ol> </li> </ol>
Engine runs rough, poor power and mileage	1. Burned contact points and or wrong dwell setting	1. Inspect points, replace if necessary and reset dwell.
	2. Defective spark plugs	1. Inspect, clean and adjust or adjust and install new plugs.
	3. Misadjusted timing	1. Adjust timing to specifications.
	4. Inoperative vacuum advance	1. With engine running at part throttle, hold finger on vacuum advance rod and remove vacuum hose. Rod should move toward distributor. If rod does not move, replace advance unit.
	5. Defective centrifugal advance mechanism	1. Inspect for excessive wear. Turn base plate until weights are fully extended and release. Springs should return weights to stop without sticking or excess free movement in retard position. Replace if necessary.

Condition	Possible Cause	Correction
	6. Defective plug wires	1. Clean and inspect wires for a brittle, cracked or loose insulation condition. Resistance value of each wire should not exceed 20,000 ohms. Also inspect for burned, corroded terminals. Clean or replace wire assemblies as necessary including deteriorated nipples or boots.
	7. Faulty carburetion	1. Refer to carburetion diagnosis.
	8. Faulty engine components such as valves, rings, etc.	1. Refer to engine diagnosis.

## MAINTENANCE AND ADJUSTMENTS

Unless an operational problem occurs, only an occasional visual inspection may be performed between regular tune-up intervals.

### L-6 Contact Points and Condenser Replacement

1. Release distributor cap retainers and remove cap.
2. Remove rotor.
3. Disconnect primary and condenser leads from points.
4. Remove the retaining screw and lift out points.
5. Remove condenser and bracket.

**NOTE:** Always rotate sponge lubricator a few degrees to provide cam with new contact face. Apply a trace of petrolatum to the cam. Do not lubricate sponge—always replace, if necessary.

6. Insert new points, and attaching screw.
7. Install condenser and bracket.
8. Connect primary and condenser leads to points.
9. Install rotor.

### Adjusting Point Opening

Loosen distributor clamp bolt and turn distributor until point set fiber block is on high point of cam. Measure point opening with feeler gauge. To change setting, loosen contact set attaching screw see Figure 1C-3. Insert screw driver in adjusting screw slot, and pry to adjust to .016" with used points and .019" with new. Retighten screw securely after setting is made. Reset timing and tighten distributor clamp bolt.

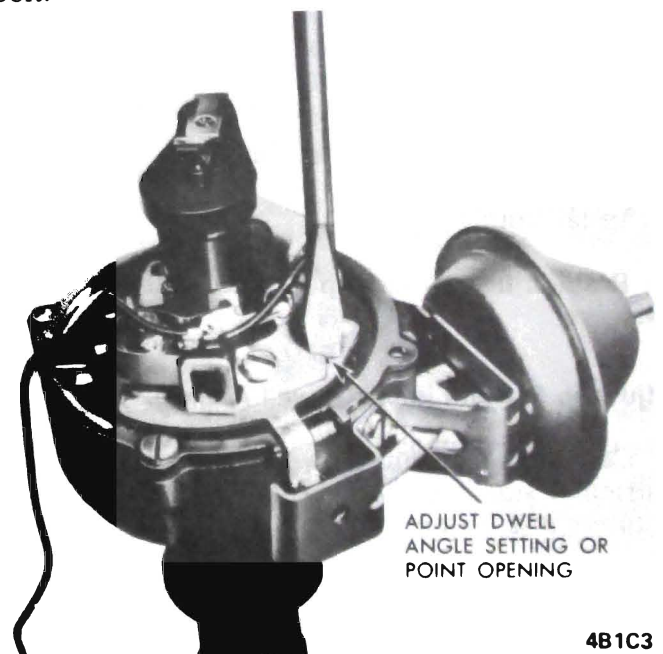


Figure 1C-3 Adjusting Points L-6

Position distributor cap in place and secure the retainers.

**Uni-Set Replacement All V-8's**

1. Remove distributor cap.
2. Remove rotor.
3. Disconnect primary lead from Uni-set.
4. Loosen two retaining screws and lift out Uni-set assembly.
5. Wipe breaker plate clean and rotate lubricator sponge. See Figure 1C-4.

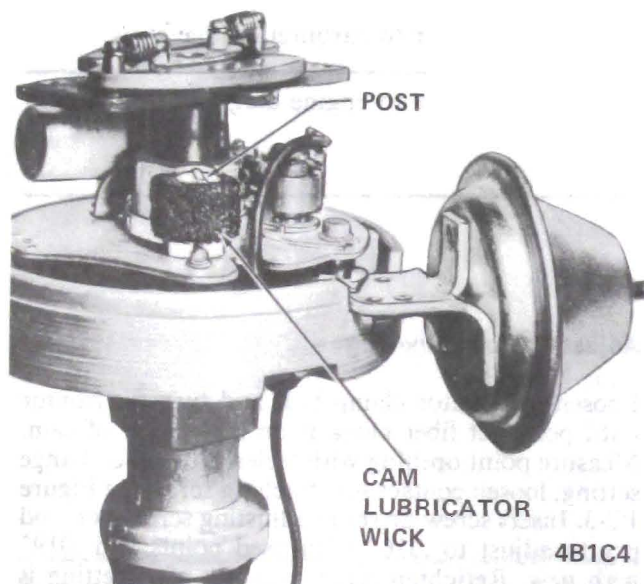


Figure 1C-4 Cam Lubricator Sponge

6. Insert new Uni-set under screws on breaker plate and tighten screws.
7. Connect primary lead to Uni-set.
8. Install rotor.
9. Position distributor cap in place and secure the retainers.

**Adjusting Contact Points (Dwell Angle)**

1. Calibrate and connect dwell-tach meter between distributor side of coil and ground following manufacturers instructions.
2. Start engine and turn meter selector switch to position 8 representing an eight cylinder engine. To check the L-6 engine, turn selector switch to position 6. Dwell angle should read 31°-34°.
3. Lift distributor cap window, insert 1/8" allen wrench or equivalent in adjusting screw and set dwell angle at 30 degrees. See Figure 1C-5.

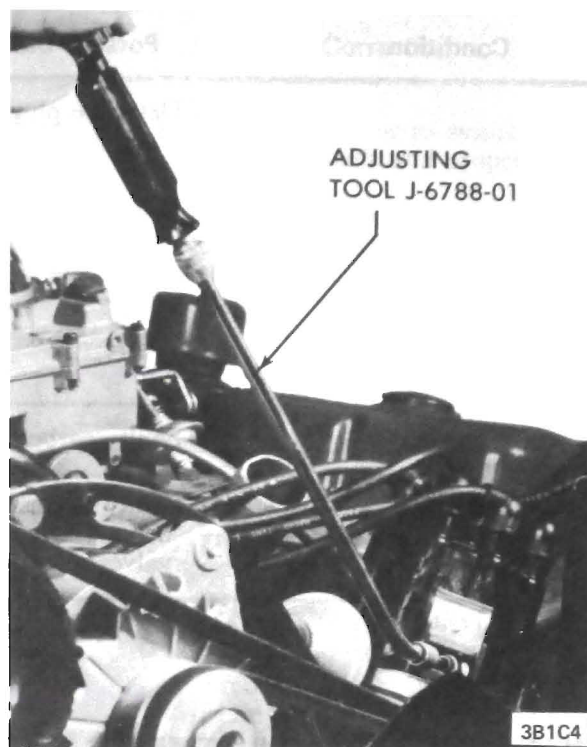


Figure 1C-5 Adjusting Dwell Angle V-8

4. Always check and reset timing if necessary after adjusting dwell angle.

**Setting Ignition Timing (Engine Running)**

Always check dwell angle and adjust if necessary before attempting to set timing.

1. Connect 12 volt power timing light to No. 1 cylinder following instrument manufacturers instructions. Do not insert sharp objects along the boot or nipple. Always use an adapter or inductive pick-up.
2. Calibrate and connect dwell-tach meter between distributor side of coil and ground following manufacturers instructions.
3. Make certain plug wires, boots and nipples are in good condition and properly installed. Loosen distributor clamp bolt.
4. Set parking brake and block a drive wheel front and rear.
5. Start engine and allow to warm up until upper radiator hose is hot, choke valve fully open and air-conditioner turned off if so equipped.
6. With engine at specified idle speed, use 1/8" allen wrench or adjusting tool J-6788-01 and set dwell angle at 30 degrees if necessary.

7. Disconnect and plug hose at distributor vacuum advance.

8. Direct timing light beam on engine timing indicator and mark on harmonic balancer. Slowly rotate distributor until mark on harmonic balancer is aligned with specified degree mark on timing indicator. See Figure 1C-6. Refer to specifications section for proper setting.

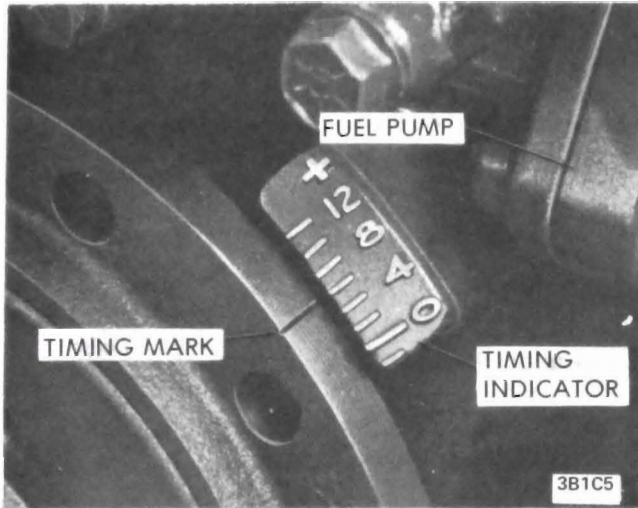


Figure 1C-6 Timing Mark and Indicator.

9. Tighten distributor to engine clamp bolt.

10. Recheck and adjust if necessary the idle speed and timing.

11. Unplug and connect hose to vacuum advance unit.

12. Shut engine off and disconnect timing light and dwell-tach meter.

### Setting Ignition Timing (Engine Won't Run)

1. With No. 1 spark plug removed and with hole plugged, rotate crankshaft in a forward direction using a suitable wrench on the harmonic balancer to crankshaft bolt. When plug blows from No. 1 cylinder, continue rotation until timing mark on balancer is aligned with proper mark on timing indicator. No. 1 cylinder is now in position to fire.

2. If removed, install distributor in engine with rotor in position to fire No. 1 cylinder and with vacuum control in position to connect vacuum hose. Install distributor clamp and bolt with lock washer, leaving bolt just loose enough to allow movement of distributor with hand pressure.

3. Connect primary wire to coil.

4. Rotate distributor counterclockwise slightly until contact points just start to open. This must be done very carefully or the engine will not start.

5. Install distributor cap. Make sure that spark plug wires are correctly installed in distributor cap, through clips on rocker arm covers, and on spark plugs.

### SPARK PLUG AND WIRE SERVICE

Spark plug wire is of special resistance type construction with a carbon impregnated linen core. It is designed to eliminate radio and television interference radiation and is superior in resistance to crossfire. Care must be used when removing spark plug wires to prevent pulling terminals off and or breaking the core.

#### Removal

1. Remove spark plug wires by grasping the boots and not the wire.
2. Remove spark plugs avoiding insulator damage.

#### Inspection

1. Clean spark plug wires with a kerosene moistened cloth and wipe dry. Inspect for broken, brittle or loose insulation and corroded, broken or distorted terminals. Replace as may be required including deteriorated boots.

2. Inspect spark plugs carefully for cracked or broken insulators and worn or burned electrodes. Replace as required. If spark plugs appear to be in good condition except for carbon or oxide deposits, they should be cleaned with a blast type cleaner, adjusted and reinstalled. Plugs with a wet or oily deposit should be cleaned first with a degreasing solvent and thoroughly dried. Manufacturers instructions must be followed when cleaning plugs.

### Adjusting Spark Plug Gap

To accurately adjust spark plug gap use round wire feeler gauge. Adjust gap by bending side electrode only. The specified gap is .035" for L-6 engines and .040" for V-8 engines. Check gap by sliding correct round wire feeler gauge between end of center electrode and side electrode.

### Spark Plug and Wire Installation

1. Install properly gapped spark plugs and tighten to 15-20 ft. lbs. for new plugs or 25 ft. lbs. for used plugs. Do not overtighten as they will be difficult to remove the next time.



2. Install plug wires making sure each spark plug is connected to its respective distributor cap tower. Insure that all boots are properly seated.

### NEUTRAL START AND BACK-UP LAMP SWITCH

#### Removal

1. Disconnect wiring connectors from switch.
2. Remove the two attaching screws and lift switch off column.

#### Installation

##### *WITH MANUAL TRANSMISSION*

1. Position shift lever in REVERSE.
2. Assemble switch to column by inserting switch carrier tang into shift tube slot and installing the retaining screws.
3. Move shift lever out of reverse to shear switch pin and then check operation.
4. If switch needs to be reset, position shift lever in REVERSE, loosen retaining screws, rotate switch slightly on column until gauge hole in back of switch freely admits a No. 41 size drill to depth of 3/8 inch and then secure retaining screws.

##### *WITH AUTOMATIC TRANSMISSION (COLUMN SHIFT)*

1. Position shift lever in NEUTRAL.
2. Assemble switch to column by inserting switch carrier tank into shift tube slot and installing the retaining screws.
3. Move shift lever out of NEUTRAL to extreme position to shear switch pin and then check operation.
4. If switch needs to be reset, position shift lever in NEUTRAL, loosen retaining screws, rotate switch slightly on column until gauge hole in back of switch freely admits a No. 41 size drill to a depth of 3/8 inch and then secure retaining screws.

##### *WITH AUTOMATIC TRANSMISSION (CONSOLE SHIFT)*

1. Since this switch is fixed in PARK position with an internal plastic shear pin, position steering column in LOCK position.

2. Rotate shift bowl clockwise (as viewed from upper end of column) and lightly hold against lock stop.

3. Assemble switch to column by inserting switch carrier tang into shift tube slot and installing the retaining screws.

4. Unlock shift column, move shift lever out of PARK to shear switch pin and check operation.

5. If switch needs to be reset, position shift lever in NEUTRAL, loosen retaining screws, rotate switch on column slightly until gauge hole in back of switch freely admits a No. 41 size drill to a depth of 3/8 inch and then secure retaining screws.

### IGNITION SWITCH

#### Removal

1. Disconnect battery ground cable.
2. Loosen and lower steering column. Refer to Group 3 Section F for procedure.
3. Disconnect electrical connectors from ignition switch.
4. Remove the two ignition switch attaching screws and lift switch off actuating rod.

#### Installation

1. Place shift bowl in any position except "PARK" and rotate lock cylinder counterclockwise until the rack bottoms against the lower surface of the cast in bowl plate.
2. Move the ignition switch slider first to accessory position then two positions in the opposite direction (off unlock position).
3. Fit the slider hole onto the actuator rod and assemble the ignition switch to the steering column being careful not to move the switch out of detent. Use correct screws and tighten to 35 in. lbs.
4. Attach electrical connectors.
5. Assemble steering column to instrument panel following the procedures in Group 3, Section F.

## MAJOR REPAIR

### DISTRIBUTOR OVERHAUL

#### Removal

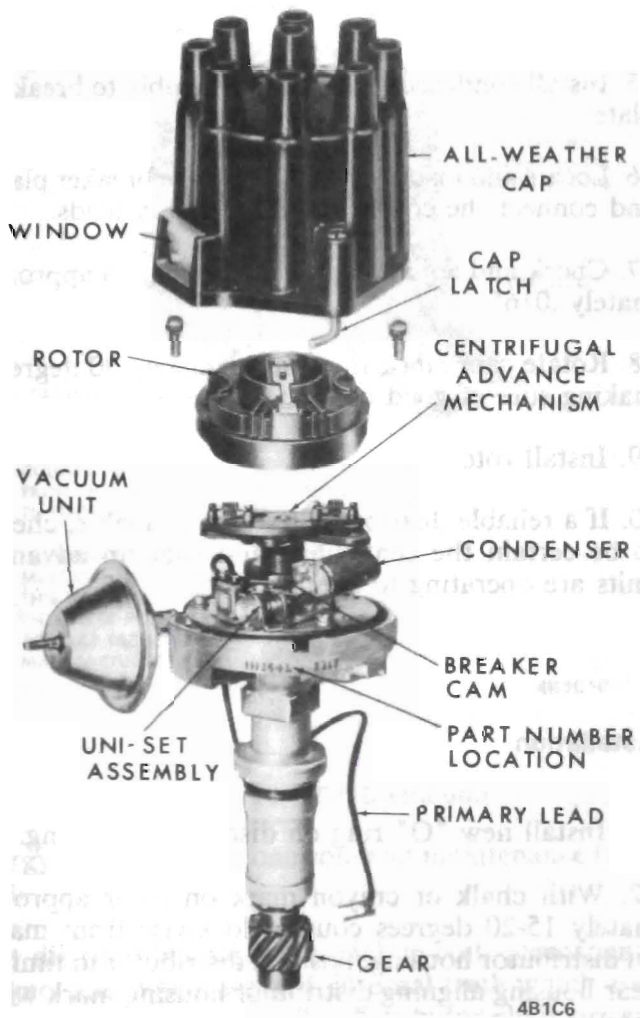


Figure 1C-7 Distributor Assembly V-8

1. Remove plug wires from distributor cap and disconnect distributor primary wire from coil.
2. Release distributor cap retainers and remove distributor cap.
3. Holding a straight edge firmly against distributor housing and water pump housing, make a chalk or crayon mark on rotor, distributor housing and water pump housing to assure proper installation after removal.
4. Remove distributor clamp bolt and clamp and lift distributor out of timing gear housing.

#### Disassembly and Inspection

1. **Distributor Cap** Thoroughly wipe cap with clean cloth and inspect for chips, cracks, carbon paths and or corroded terminal segments and sockets. Light corrosion may be removed using a stiff wire brush. If there are carbon paths, cracks or deeply grooved terminal segments, the distributor cap requires replacement.

2. **Rotor** Remove rotor and wipe off with clean cloth. If upon inspection, the rotor is found to be cracked, the spring contact badly worn or the rotor tip excessively burned, replace the rotor.

3. **Contact Points and Condenser L-6 and Uni-set V-8** Remove contact points, condenser and disconnect primary lead. Inspect primary lead for loose terminals, cracked or deteriorated insulation and replace if necessary. Check condenser on reliable tester. If faulty, replace condenser. Inspect point contacts and rubbing block. If contacts are only slightly burned or pitted, the high spots may be removed with a clean fine point file. If points are excessively blackened, pitted or burned, or the rubbing block is excessively worn, the contact set must be replaced.

4. **Centrifugal Advance** Inspect for excessive wear between centrifugal weights and advance cam or pivot pins by turning and releasing base plate several times allowing weights to fully extend the return to retard position. Weights should operate freely without excess movement in retard position. Also, inspect cam lobes for scoring or excessive wear and weight base plate for bind or excessive looseness on distributor shaft.

5. **Distributor Shaft** Check for excessive wear between shaft and bearings in distributor housing. Using a 1/8" pin punch, remove driven gear roll pin, driven gear, washer and lift distributor shaft out of housing. See Figure 1C-8. Rotate gear on shaft to remove any burrs that might be around roll pin hole before removing gear.

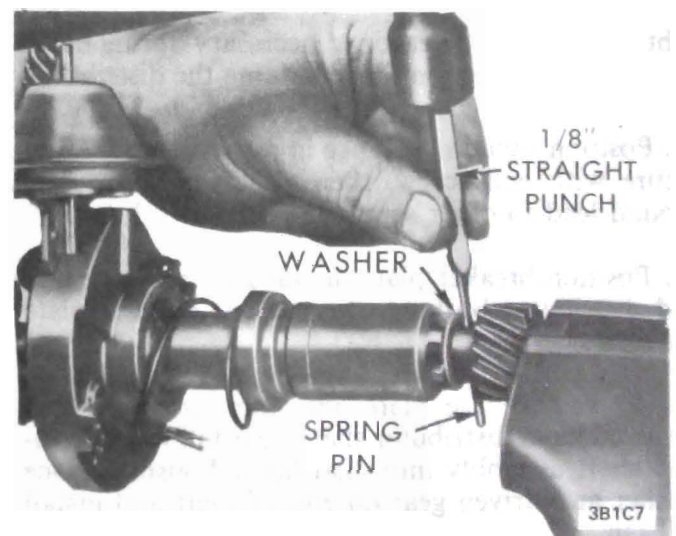


Figure 1C-8 Removing Spring Pin

Check condition of shaft and distributor bushings. If necessary remove advance springs, weights and slide weight base plate and cam assembly off distributor shaft.

6. **Breaker Plate** Attempt rotating breaker plate against vacuum advance to check for excessive wear

at vacuum advance linkage and looseness at distributor bushing. Remove breaker plate retainer, disengage breaker plate from vacuum advance, disconnect ground lead from housing and inspect for good ground lead connection to bottom of breaker plate. See Figure 1C-9.

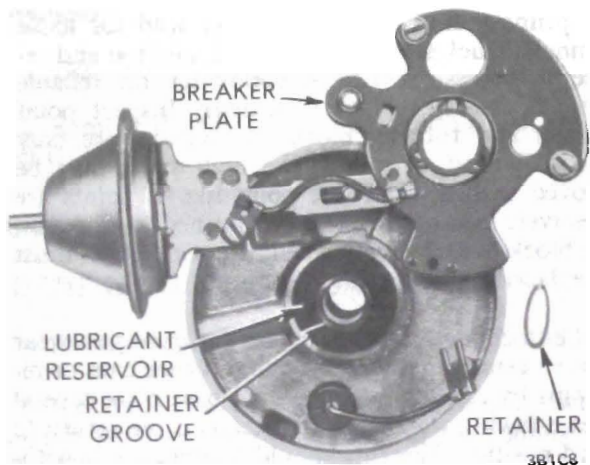


Figure 1C-9 Removing Breaker Plate and Retainer

7. *Vacuum Advance* Remove remaining screw and lift out vacuum advance unit. Attach vacuum unit to a vacuum source and observe its operation. Pinch off connecting hose to determine that a vacuum diaphragm is not leaking.

#### Assembly

Obtain any parts determined necessary during disassembly and inspection for rebuilding the distributor.

1. Position vacuum advance in distributor and first secure with end screw, then attach breaker plate ground lead to other screw and secure in housing.

2. Position breaker plate on vacuum advance link and distributor bushing, then install breaker plate retainer.

3. If weight base plate and cam assembly was removed from distributor shaft, reinstall it and position shaft assembly into distributor housing. Place washer and driven gear on end of shaft and install roll pin.

4. Install balance weights and springs, if removed.

5. Install condenser and clamp assembly to breaker plate.

6. Locate and install contact points on breaker plate and connect the condenser and primary leads.

7. Check and adjust points if necessary to approximately .016".

8. Rotate cam lubricator approximately 90 degrees making sure of good contact with cam.

9. Install rotor.

10. If a reliable distributor tester is available, check to be certain the centrifugal and vacuum advance units are operating to specifications.

#### Installation

1. Install new "O" ring on distributor housing.

2. With chalk or crayon mark on rotor approximately 15-20 degrees counterclockwise from mark on distributor housing, position distributor in timing gear housing aligning distributor housing mark with mark on water pump housing. It may be necessary to lift distributor and turn rotor slightly to align the gears and oil pump drive shaft.

3. With all three chalk or crayon marks aligned, install distributor clamp and bolt finger tight.

4. Install distributor cap and plug wires in proper location.

5. Connect primary wire to coil.

6. Connect dwell-tach meter and timing light to engine.

7. Start engine and set dwell and timing to specifications.

8. Turn engine off, tighten distributor clamp bolt and disconnect dwell tach and timing light.

## HIGH ENERGY IGNITION SYSTEM (H.E.I.)

### DESCRIPTION AND OPERATION

The high energy ignition system is available as an option on all (except high altitude) early production

1974 Buick V-8 engines and will be standard on many late production engines. See Figure 1C-10. This system includes a new magnetic-pulse distributor which features integrated electronics and a high

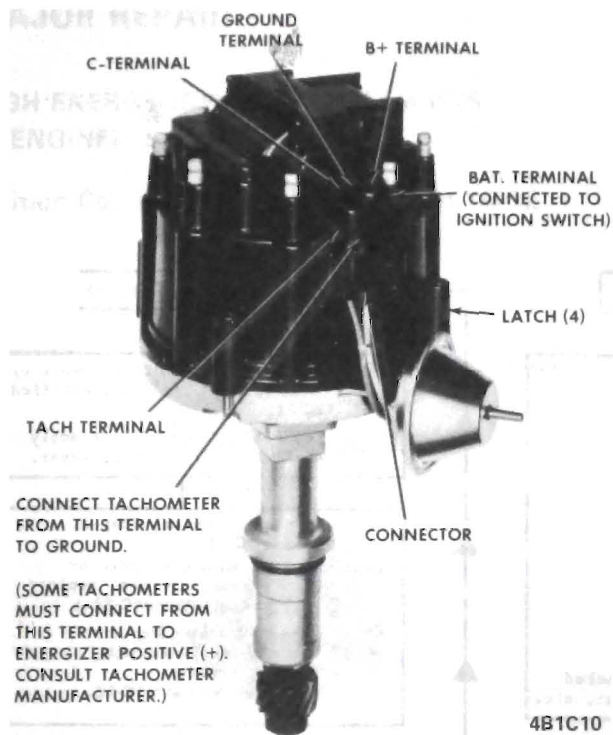


Figure 1C-10 H.E.I. Distributor

energy ignition coil in one compact maintenance free unit.

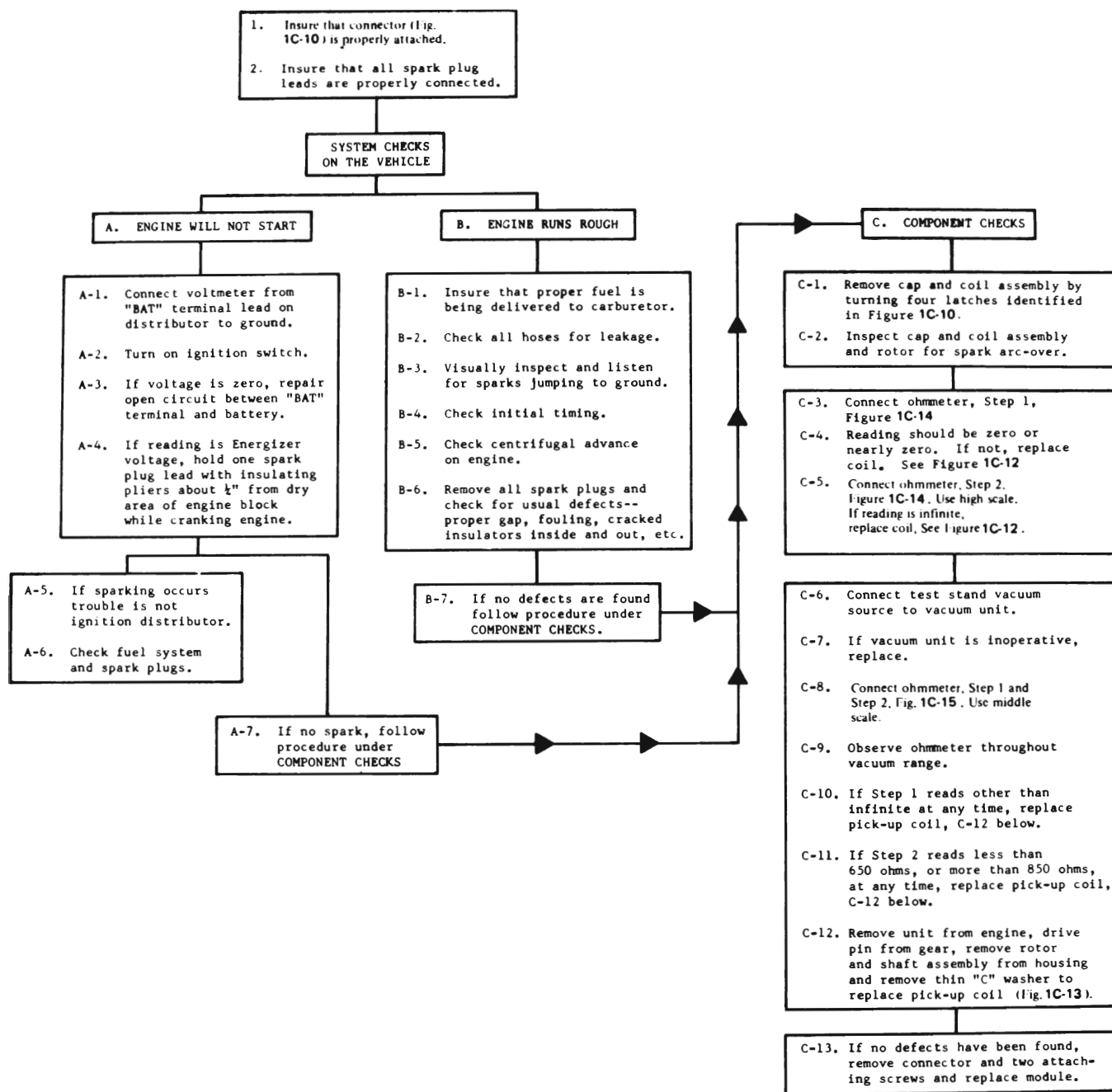
The distributor contains a pickup-coil, permanent magnet and pole piece with internal teeth which are located and retained on the distributor shaft upper

bushing, an electronic module, a condenser for noise suppression only and a vacuum advance unit. Attached to the lower part of the centrifugal advance weight base is a timer core with external teeth.

When the distributor shaft rotates, the teeth of the timer core line up and pass the teeth of the pole piece to induce voltage into the pickup coil which signals the all-electronic module to open the ignition coil primary circuit. Maximum inductance occurs at the moment the timer core teeth are lined up with the teeth on the pole piece. At the instant the timer core teeth start to pass the pole piece teeth, the primary current decreases and a high voltage is induced into the ignition coil secondary winding and is directed through the rotor and high voltage leads to fire the spark plugs. This system does not require a resistance wire. There are no contact points and condenser to replace which eliminates the need for periodic ignition tune-ups.

Spark plugs will last longer because the higher secondary voltage available will fire eroded (wider than normal) spark plug gaps.

H.E.I. provides reliable, constant output for long periods of time and miles without the deterioration associated with contact sets. Engine starting is improved because of the higher voltage output available at lower cranking speeds. There is no periodic lubrication required on this new distributor. Engine oil lubricates the lower bushing and an oil filled reservoir provides lubrication for the upper bushing.



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Figure 1C-11 Diagnosis Chart

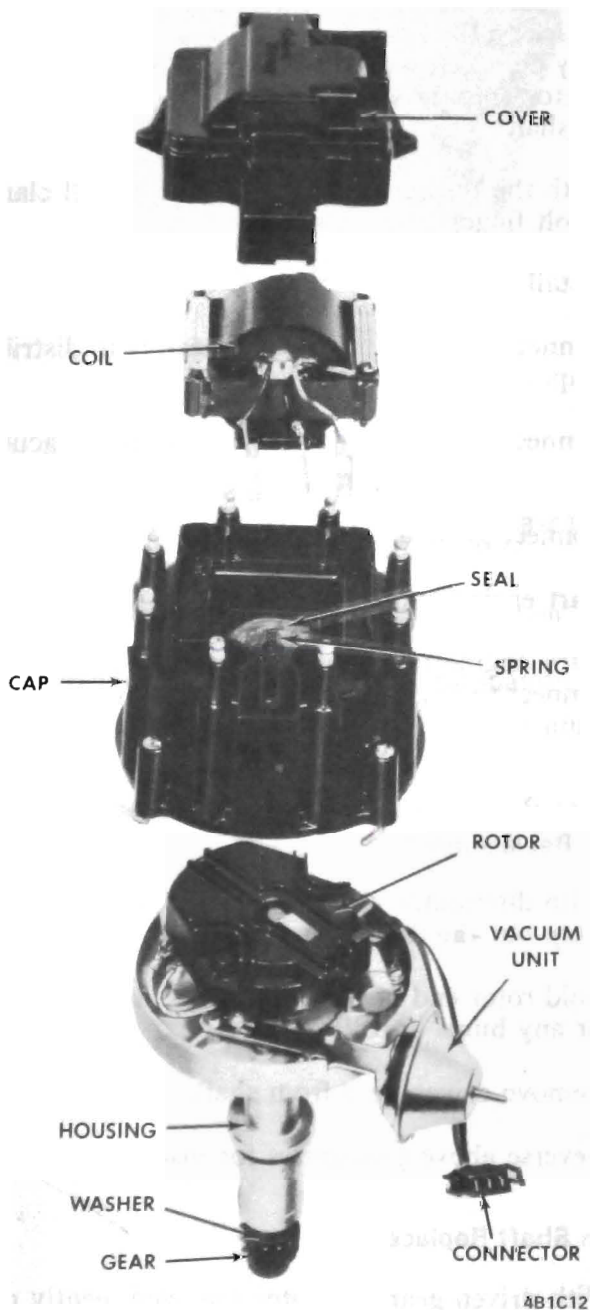
**MAJOR REPAIR****HIGH ENERGY IGNITION SYSTEM (DISTRIBUTOR IN ENGINE)****Ignition Coil Replacement. See Figure 1C-12**

Figure 1C-12 H.E.I. Distributor Internal Parts

1. Disconnect feed and module wire terminal connectors from distributor cap.
2. Remove ignition set retainer.
3. Remove the four coil cover to distributor cap screws and coil cover.
4. Remove the four coil to distributor cap screws.

5. Using a suitable tool press coil wire spade terminals up out of distributor cap.
6. Lift coil up out of distributor cap.
7. Remove and clean coil spring, rubber seal washer and coil cavity of distributor cap.
8. Coat rubber seal with dielectric lubricant furnished in new ignition coil package.
9. Reverse above procedures for installation.

**Distributor Cap Replacement**

1. Remove feed and module wire terminal connectors from distributor cap.
2. Remove retainer and spark plug wires from cap.
3. Depress and release the four distributor cap to housing retainers and lift off cap assembly. See Figure 1C-12.
4. Remove four coil cover screws and cover.
5. Using finger or suitable tool push spade terminals up out of distributor cap.
6. Remove four coil screws, lift coil, coil spring and rubber seal washer out of cap coil cavity.
7. Using new distributor cap reverse above procedures for assembly being sure to clean and lubricate rubber seal washer with dielectric lubricant furnished.

**Rotor Replacement**

1. Disconnect feed and module wire connectors from distributor.
2. Depress and release the four distributor cap to housing retainers and lift off cap assembly.
3. Remove the two rotor attaching screws and rotor. See Figure 1C-12.
4. Reverse above procedures for installation.

**Vacuum Advance Replacement**

1. Remove distributor cap and rotor as previously described.
2. Disconnect vacuum hose from vacuum advance unit.
3. Remove two vacuum advance retaining screws,

pull advance unit outward, rotate and disengage operating rod from tang. See Figure 1C-13.

4. Reverse above procedures for installation.

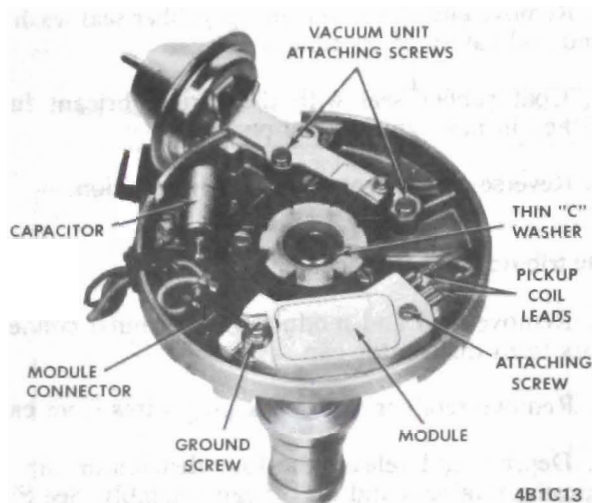


Figure 1C-13 H.E.I. Distributor Housing

#### Module Replacement

1. Remove distributor cap and rotor as previously described.
2. Disconnect harness connector and pickup coil spade connectors from module.
3. Remove two screws and module from distributor housing. See Figure 1C-13.
4. Coat bottom of new module with dielectric lubricant furnished and reverse the above procedures for installation.

#### Distributor Removal

1. Disconnect ground cable from battery.
2. Disconnect feed and module terminal connectors from distributor cap.
3. Disconnect hose at vacuum advance.
4. Depress and release the four distributor cap to housing retainers and lift off cap assembly.
5. Using crayon or chalk make locating marks on rotor and module and on distributor housing and engine for installation purposes.
6. Loosen and remove distributor clamp bolt, clamp and lift distributor out of engine noting relative position of rotor and module alignment marks then make

a second mark on the rotor to align with the one mark on the module.

#### Distributor Installation

1. With new "O" ring on distributor housing, the second mark on the rotor aligned with the mark on the module, install distributor taking care to align the mark on the housing with the one on the engine. It may be necessary to lift the distributor and turn the rotor slightly to align the gears and oil pump drive shaft.
2. With the respective marks aligned, install clamp and bolt finger tight.
3. Install and secure distributor cap.
4. Connect feed and module connectors to distributor cap.
5. Connect timing light to engine and plug vacuum hose.
6. Connect ground cable to battery.
7. Start engine and set timing.
8. Turn engine off, tighten distributor clamp bolt, disconnect timing light, unplug and connect hose to vacuum advance.

#### Service Procedures (Distributor Removed) Driven Gear Replacement

1. With distributor removed, use a 1/8" pin punch and tap out the driven gear roll pin.
2. Hold rotor end of shaft and rotate driven gear to shear any burrs in roll pin hole.
3. Remove driven gear from shaft.
4. Reverse above procedures for installation.

#### Main Shaft Replacement

1. With driven gear and rotor removed, gently pull main shaft out of housing.
2. Remove advance springs, weights and slide weight base plate off mainshaft.
3. Reverse above procedures for installation.

#### Pole Piece, Magnet or Pickup Coil Replacement

1. With main shaft out of housing, remove three retaining screws, pole piece, magnet and or pickup coil. See Figure 1C-13.

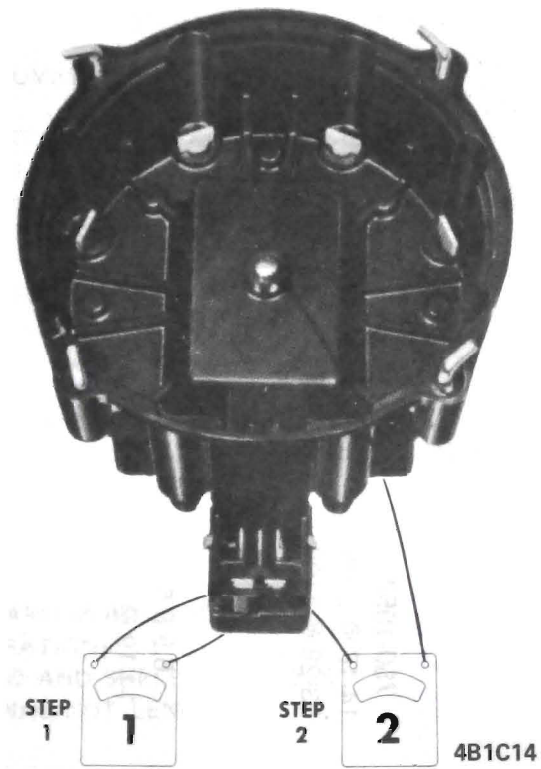


Figure 1C-14 H.E.I. Ohmmeter Test (Coil)

2. Reverse removal procedures for installation mak-

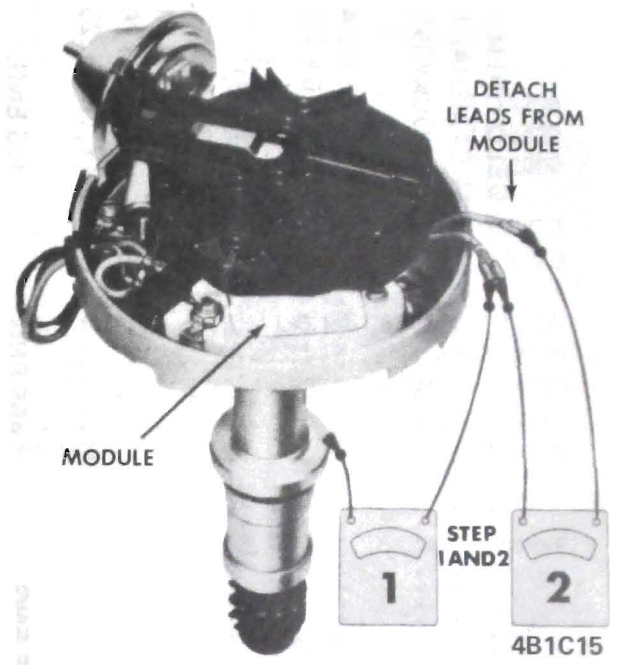


Figure 1C-15 H.E.I. Ohmmeter Test (Pickup Coil)

ing sure the pole piece teeth do not contact the timer core teeth by installing and rotating main shaft. Loosen three screws and realign pole piece if necessary.



SPECIFICATIONS	
DISTRIBUTOR	
MAKE	DELCO REMY
DRIVE	FROM CAMSHAFT
ROTATION, TOPVIEW	CLOCKWISE
FIRING ORDER	
L-6 ENGINES	1 5 3 6 2 4
V-8 ENGINES	1 8 4 3 6 5 7 2
CONTACT POINT OPENING AND DWELL ANGLE (EXCEPT H.E.I.)	
L-6 ENGINES	.019", 31°-34°
V-8 ENGINES	.016", 30°±2°
DWELL VARIATION (EXCEPT H.E.I.)	
BREAKER ARM SPRING TENSION (EXCEPT H.E.I.)	3° MAXIMUM
CONDENSER MAKE AND CAPACITY, MICROFARADS (EXCEPT H.E.I.)	
	L-6 19-23, V8 21 to 25 DELCO-REMY, .18 to .23
DISTRIBUTOR NO. (Less CAP)	
VACUUM CONTROL NUMBER	250 ENG. 350 ENG. 455 ENG. 455 ENG.
	STD. H.E.I. STD. H.E.I. STG. 1(L75) H.E.I. STG. 1(L76) H.E.I.
	1110499 1112541 1112802 1112542 1112803 1112521 1112520
	1973428 1116210 1973476 1973440 1973477 1973476 1973477
TIMING, CRANKSHAFT DEGREES	
(WITH VACUUM DISCONNECTED 8°BTC	@600 A.T. 4°±2° 10°±2° 4°±2°
AND ENGINE IDLING)	@700 C.T.
CENTRIFUGAL ADVANCE, CRANKSHAFT DEGREES, R.P.M.	
START ADVANCE	0° @ 1100 750-1050 750-1050 600-1050 750-1050
MEDIUM ADVANCE	14 @ 2300 11-15 @ 1800 14-18 @ 2100 9-13 @ 1800 14-18 @ 2400
MAXIMUM ADVANCE	21 @ 4100 19-24 @ 3600 23-28 @ 4100 20-24 @ 4600 16-20 @ 3000
VACUUM ADVANCE, CRANKSHAFT DEGREES AND INCHES OF VACUUM	
START ADVANCE	6 6-8 6.5-8.5 6-8 6.5-8.5
MAXIMUM ADVANCE	22 @ 14 14-18 @ 16 14-19 @ 13 14-18 @ 16 14-19 @ 13
	4B1C16

Figure 1C-16 Specifications

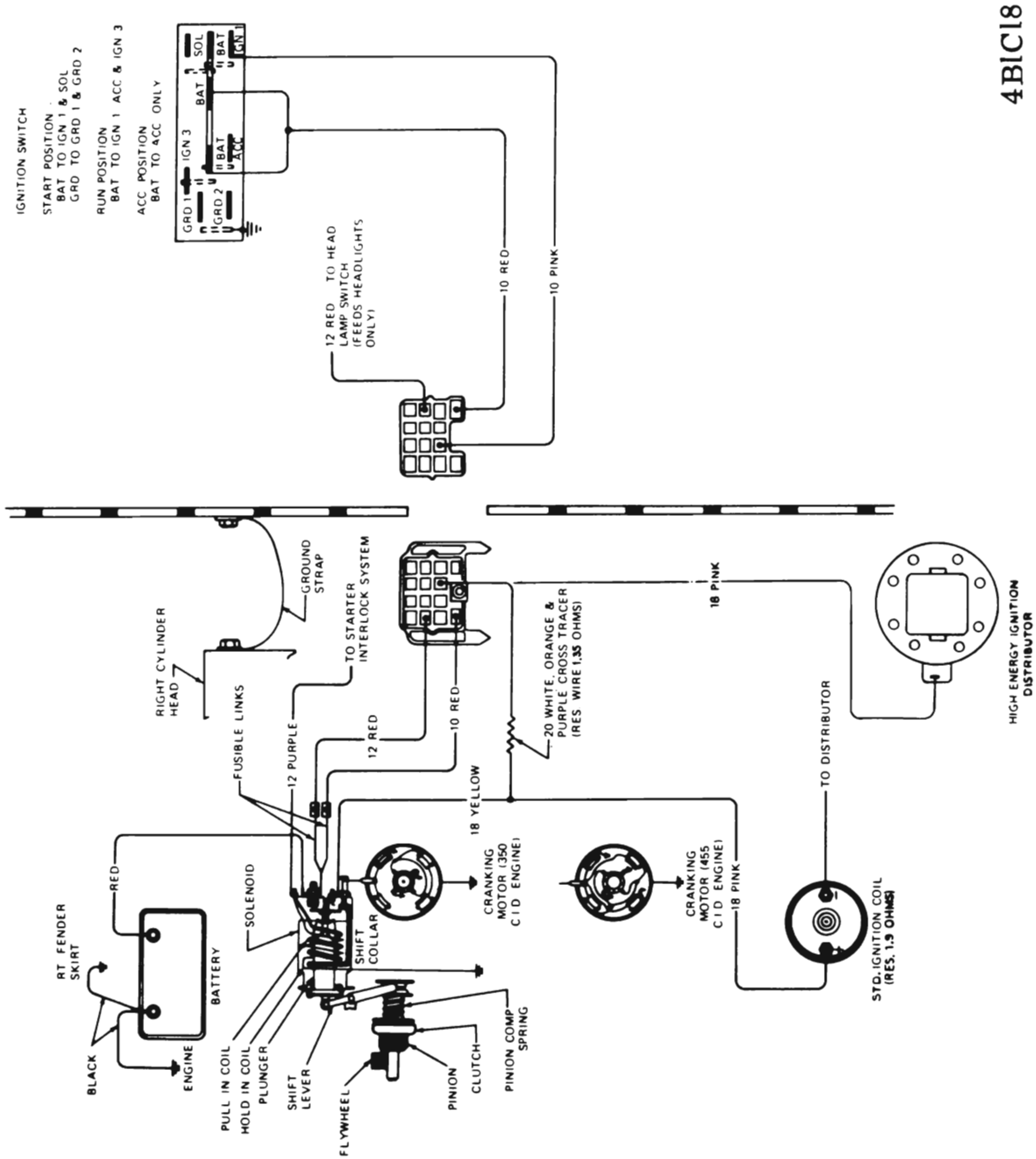
IGNITION COIL AND RESISTOR

MAKE	DELCO REMY	
COIL NUMBER		
L-6 .....		1115208
V-8 STANDARD .....		1115439
V-8 H.E.I. ....		1876209
CURRENT DRAW, AMPERES @ 12.6 VOLTS (EXCEPT H.E.I.)		
ENGINE STOPPED .....	L-6, 4.0	V-8, 3.8
ENGINE IDLING .....	L-6, 3.9	V-8, 2.3
COIL RESISTANCE (OHMS) @ 75°F. (EXCEPT H.E.I.)		
PRIMARY .....	L-6, 1.4-1.65	V-8, 1.77-2.05
SECONDARY .....		3000-20000
RESISTANCE WIRE (NONE WITH H.E.I.) .....	PART OF WIRE HARNESS	
RESISTANCE, OHMS @ 80°F .....		1.35 ± .10
VOLTAGE AT COIL (IGNITION ON AND POINTS CLOSED) (EXCEPT H.E.I.) .....		5 to 5.5

SPARK PLUGS	250 ENGINE	350 ENGINE	455 ENGINE
MAKE AND MODEL (NORMAL OPERATION)	ACR46T		ACR45TS
THREAD AND SHELL HEX. SIZES			14MM, 5/8"
TERMINAL NUT LENGTH			3/8"
GAP AT TIPS	.035"		.040"
TIGHTENING TORQUE (LBS FT.)		15-20 NEW – 25 USED	

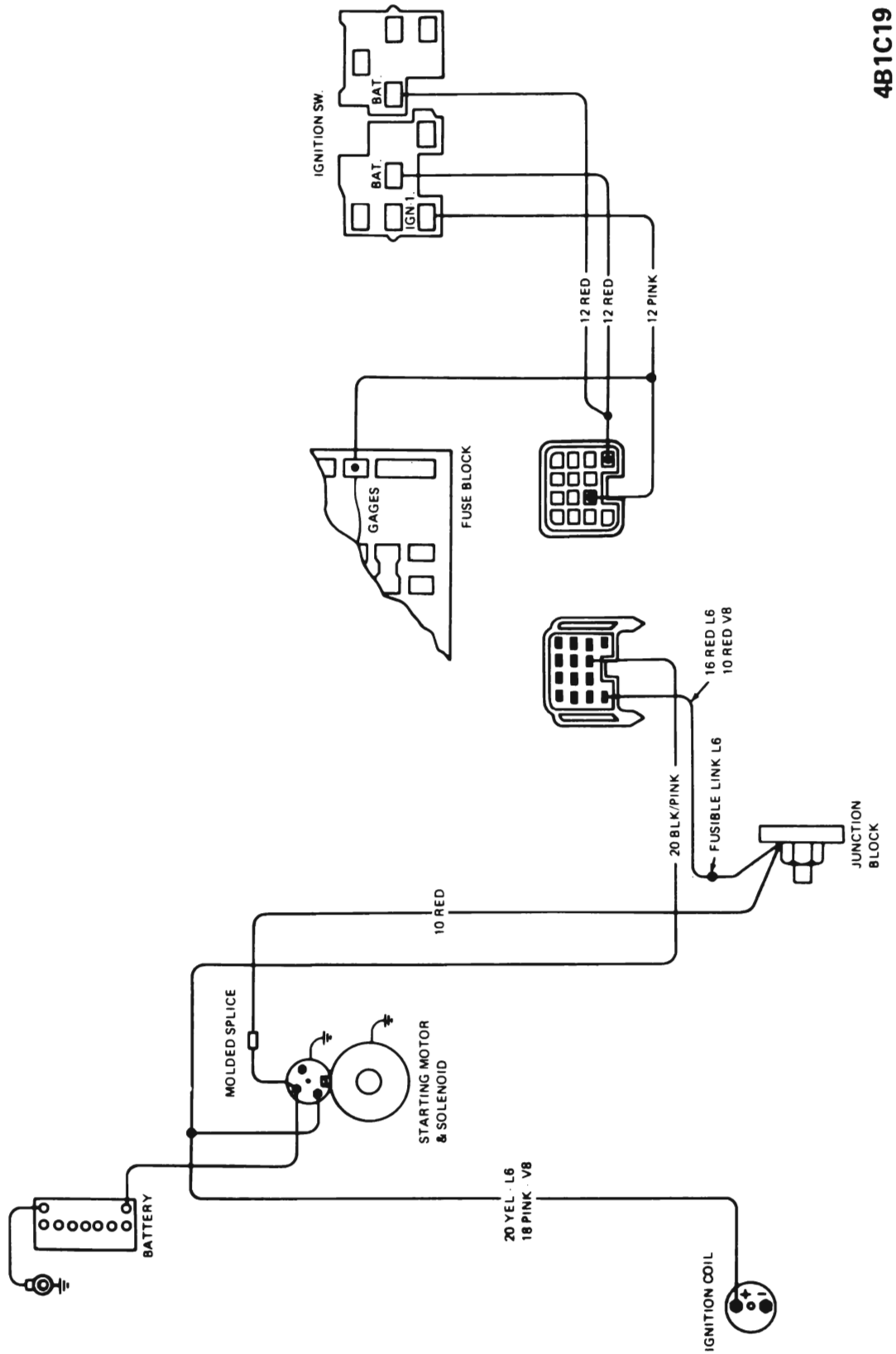
4B1C17

Figure 1C-17 Specifications



4BIC18

Figure 1C-18 A-B-C-E Series Ignition Wiring Diagram



4B1C19

Figure 1C-19 X Series Ignition Wiring Diagram

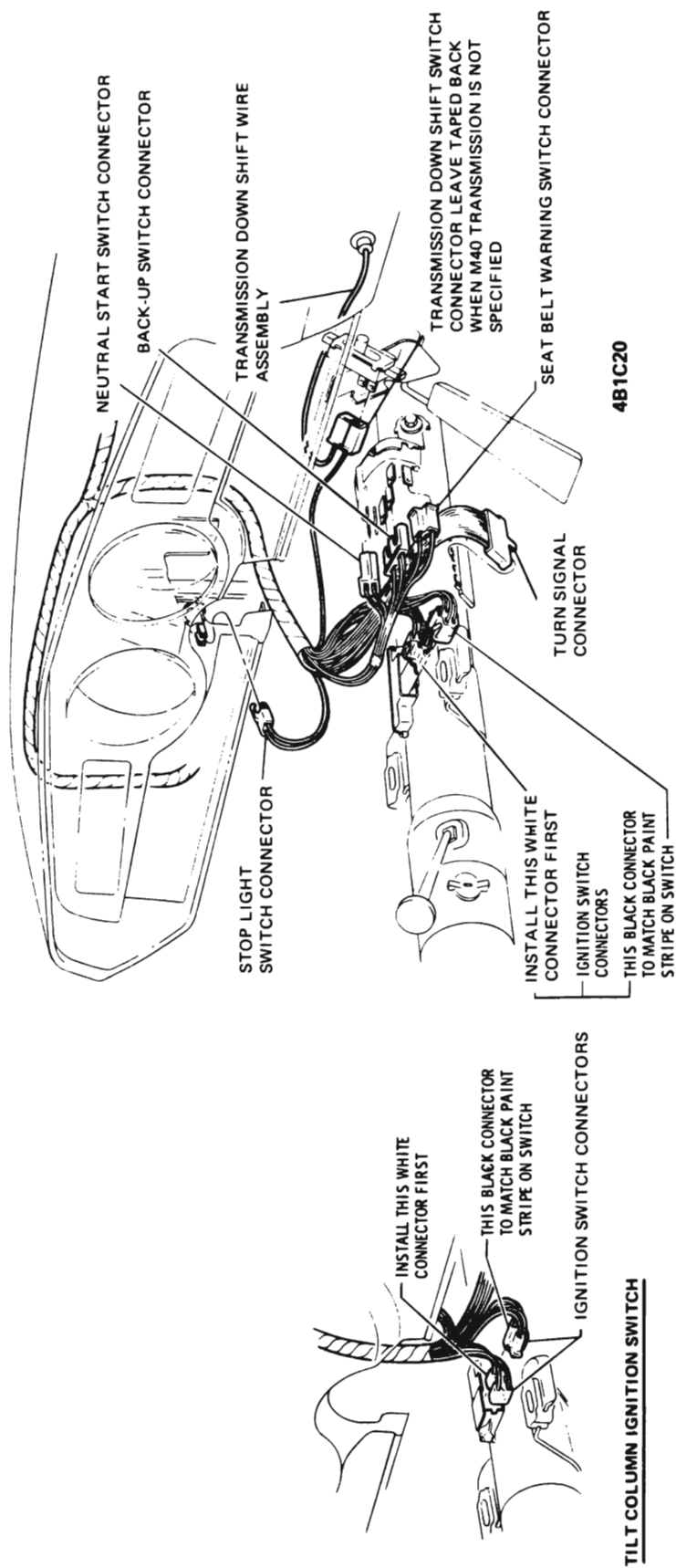
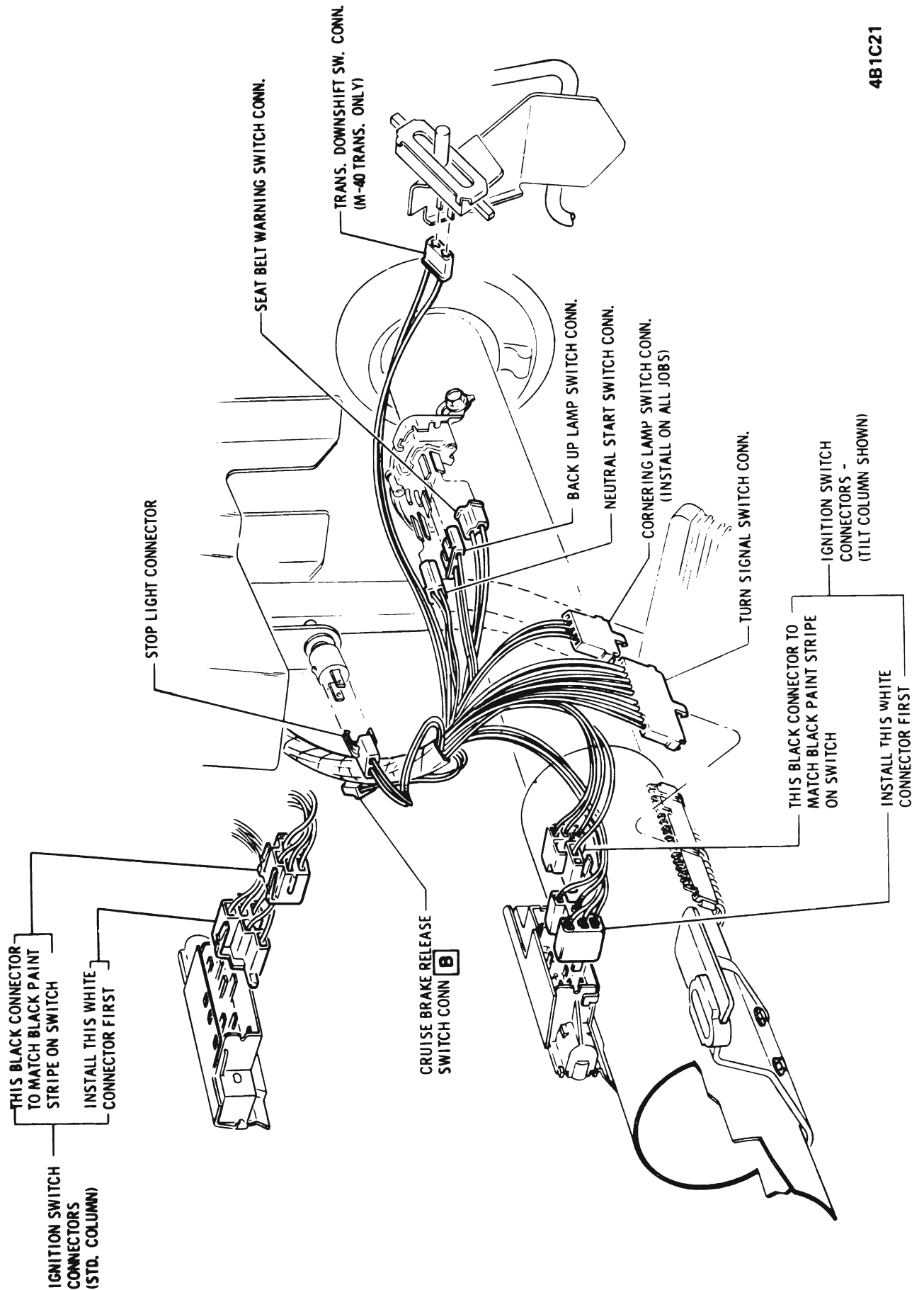


Figure 1C-20 A Series Steering Column Wiring



4B1C21

Figure 1C-21 B-C-E Series Steering Column Wiring