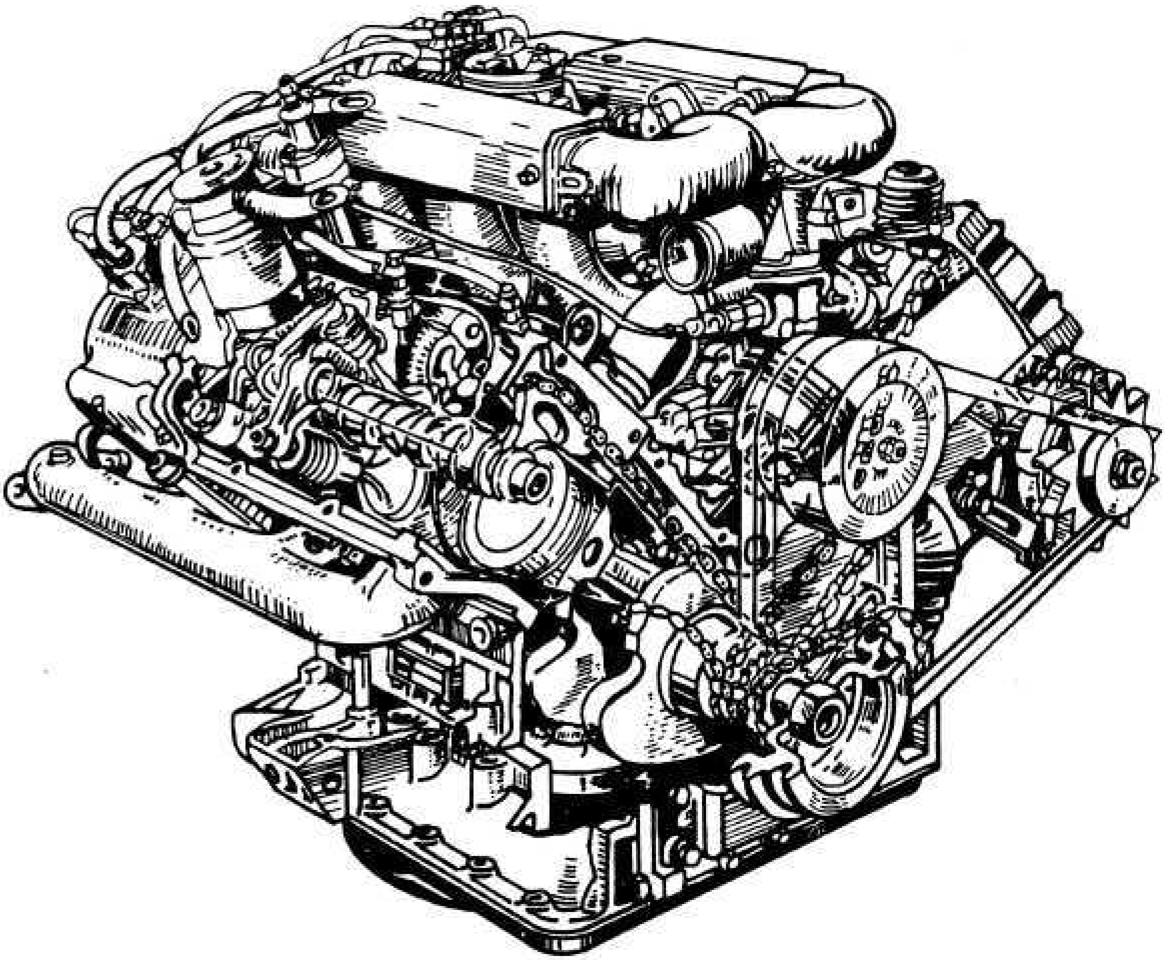


ENGINE

GENERAL DESCRIPTION

The De Lorean is powered by a liquid cooled, 2.8 liter, rear mounted, aluminum alloy 90° V-6 uneven-fire engine with two (2) chain driven overhead camshafts.

The flywheel (or flexplate) end of the engine is referred to as the front of the engine due to the unique rear engine design. Therefore, the timing cover and drive belt pulleys are located at the rear of the engine. The right and left side of the engine is determined as viewed standing at the rear of the vehicle looking into the engine compartment.

Engine firing order is 1, 6, 3, 5, 2, 4.

The #1 cylinder is located at the right front of the engine followed with #2 and #3 cylinders. Cylinder #4 is located at the left front of the engine followed with #5 and #6 cylinders.

CYLINDER CRANKCASE ASSEMBLY: The cylinder crankcase assembly consists of aluminum alloy upper and lower crankcases. The upper crankcase contains six (6) cast iron cylinder liners and houses the crankshaft which is supported by four (4) cast iron main bearing caps. The upper crankcase also contains the chain driven oil pump drive and driven gears. The oil pump body is a machined portion of the upper crankcase. The lower crankcase provides side engine mount locations and completes the crankcase assembly. The aluminum oil pan, which houses the oil splash shield and oil pick up assembly, is secured to the lower crankcase.

CYLINDER HEADS: The aluminum alloy cross-flow cylinder heads, have hemispherical chambers and individual intake and exhaust ports for each cylinder. Both the intake and exhaust valve guides (8 MM) are pressed into the cylinder head.

NOTE: CYLINDER HEAD RESURFACING **IS NOT PERMITTED.**

The steel valve seats are fitted to the cylinder head.

VALVE TRAIN: Each cylinder head has a chain driven overhead camshaft. The camshaft operates both intake and exhaust valves on each bank by means of adjustable rocker arms mounted on a single, common rocker shaft. The rocker arms are positioned and held in place by means of two (2) spacers and one (1) thrust spring per cylinder.

The hollow rocker arm shaft, which also distributes engine oil through calibrated holes to the valve train and camshaft, is mounted and secured to each cylinder head with four (4) rocker shaft supports.

CONCEPT

CAMSHAFT AND DRIVE: Each chain driven cast iron camshaft is supported at four (4) contact areas. Steel crankshaft sprockets drive the timing chains (2) which in turn drive the camshaft sprockets (2).

PISTONS AND CONNECTING RODS: Each aluminum alloy piston uses two (2) compression rings and one (1) oil ring. The steel piston pin has a floating fit in the piston. The pins are retained in the connecting rod by a 'hot' press fit. The connecting rod bearings are lubricated via drilled oil passages located in the crankshaft journals.

CRANKSHAFT: The cast iron crankshaft is supported with four (4) main bearings and main bearing caps. This uneven fire engine crankshaft has three (3) connecting rod journals. Lubrication for the connecting rod journal is delivered via drilled oil passages in the crankshaft, crankshaft main bearings and main bearing journals. The crankshaft is sealed at each end with a lip seal.

There are three (3) steel drive sprockets mounted on the rear of the crankshaft. These three (3) chain sprockets drive:

- right camshaft sprocket
- left camshaft sprocket
- oil pump sprocket

The drive chains and sprockets are covered by a timing chain cover which is secured to the upper and lower crankcase assembly.

ENGINE COOLING: The vehicle has two (2) electric fans for radiator cooling mounted at the front of the vehicle. These fans are activated when the engine coolant temperature exceeds 97°C (206°F) and deactivated at 91°C (195°F) Operation of these fans is controlled by a temperature switch located on the coolant return pipe in the engine compartment.

The water pump, located at the rear of the engine, is belt driven by the crankshaft pulley. The thermostat is housed in the top of the water pump under the thermostat housing cover. The thermostat housing cover is equipped with an air bleed screw used to purge the air from the coolant system when refilling.

Coolant leaving the engine is directed through a series of pipes and hose couplings along the left side of the vehicle center tunnel to the radiator. Coolant leaving the radiator is directed through a series of pipes and hose couplings along the right side of the vehicle center tunnel to the engine.

The coolant expansion tank (fill point) located on the right side of the engine compartment, is connected to the coolant return pipe by a hose.

CONCEPT

TRANSMISSION - MANUAL

GENERAL DESCRIPTION

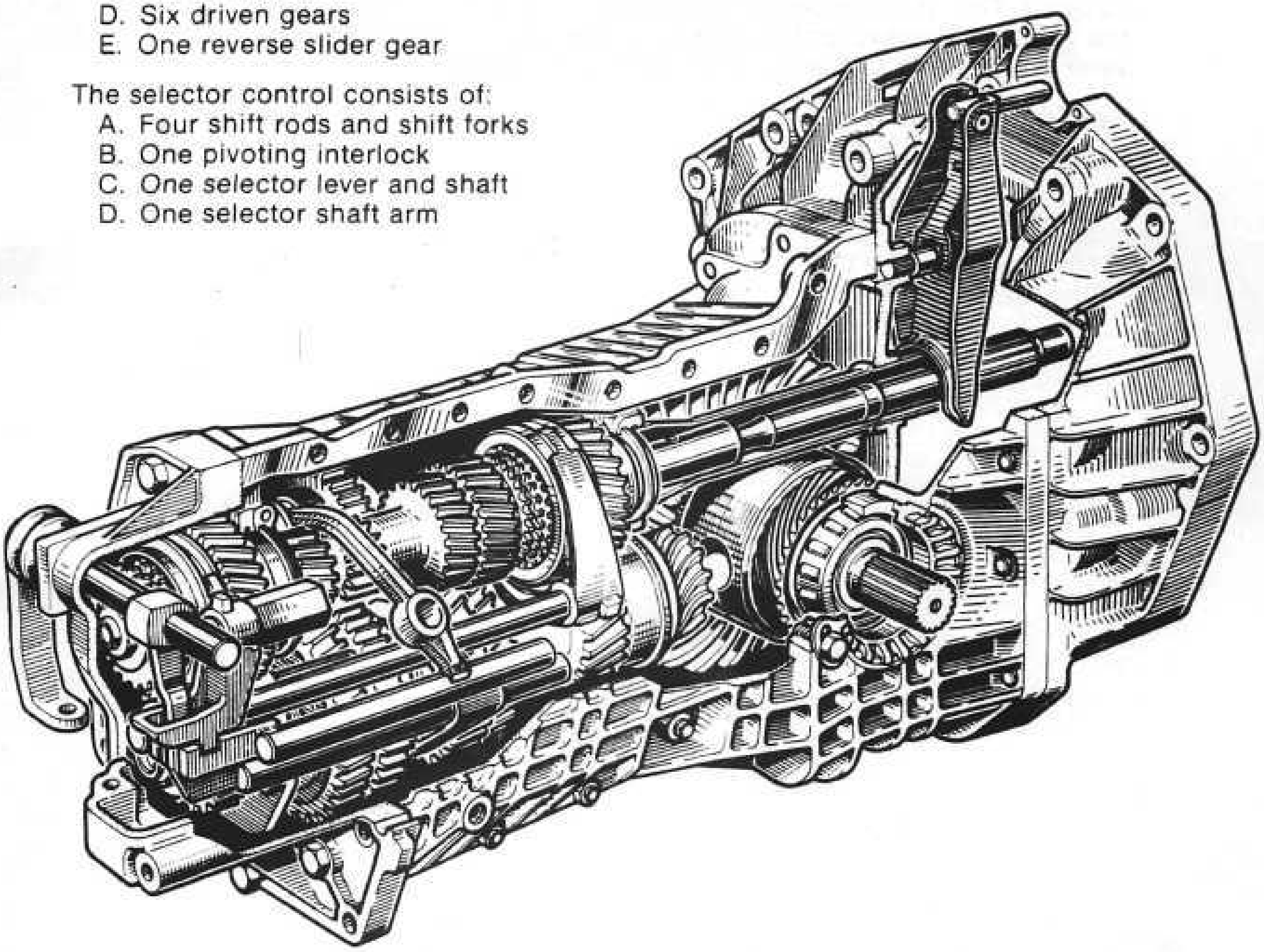
The manual transmission is a constant mesh five speed. All forward gears are fully synchronized for ease of shifting. The aluminum case consists of two halves which, when repair is necessary, can be separated to provide easy access to internal parts. The final drive components are also contained within the transmission case. Both the final drive and transmission use the same lubricant eliminating the need for a separate final drive lube.

The power train consists of:

A. Primary (input) shaft
B. Secondary (output) shaft
C. Six driving gears
D. Six driven gears
E. One reverse slider gear

The selector control consists of:

A. Four shift rods and shift forks
B. One pivoting interlock
C. One selector lever and shaft
D. One selector shaft arm



OPERATION

All forward gear power flow is transferred via:

A. Primary shaft (input)
B. The selected driving gear (primary shaft)
C. The selected driven gear (secondary shaft)
D. Pinion shaft/final drive unit

Reverse gear power flow is transferred by means of:

A. Primary shaft
B. Reverse driving gear
C. Reverse slider gear
D. Reverse driven gear
E. Pinion shaft/final drive unit

All gears are selected manually by the driver using the gearshift lever attached to the selector lever mounted on the side of the transmission rear housing. Inside the rear housing, a selector shaft arm, attached to the selector shaft, fits through a slot in the pivoting interlock. When a gear is selected, the selector shaft arm moves the interlock to the desired position and moves the appropriate shift rod in or out depending on the gear selected. The shift fork attached to the shift rod moves the desired gear into the proper position while the sychronizer ring matches the speed of the two gears being coupled. This shift sequence is repeated for all forward gears. Reverse operation is the same with the exception of the synchronizer ring, which is not required, since the vehicle should be stationary when shifting to reverse.

Gear ratios are as follows:

1st Gear:	3.36
2nd Gear:	2.06
3rd Gear:	1.38
4th Gear:	1.06
5th Gear:	0.82
Reverse Gear:	3.18

CONCEPT

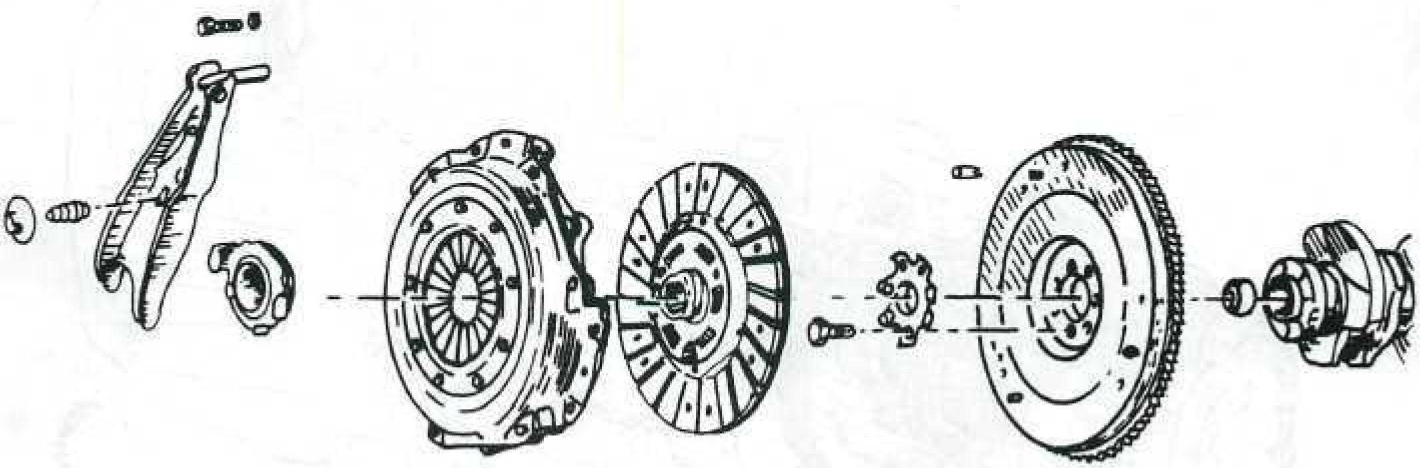
CLUTCH

GENERAL DESCRIPTION

The vehicle, when equipped with the five speed manual transmission, uses a single dry disc type clutch. The clutch is hydraulically operated. The pressure plate is a diaphram spring type and the disc has a spring cushioned hub. A self-aligning, sealed ball-type throw-out bearing is used to depress the diaphram spring. The clutch has its own fluid reservoir and master cylinder which provides hydraulic pressure when the clutch pedal is depressed.

OPERATION

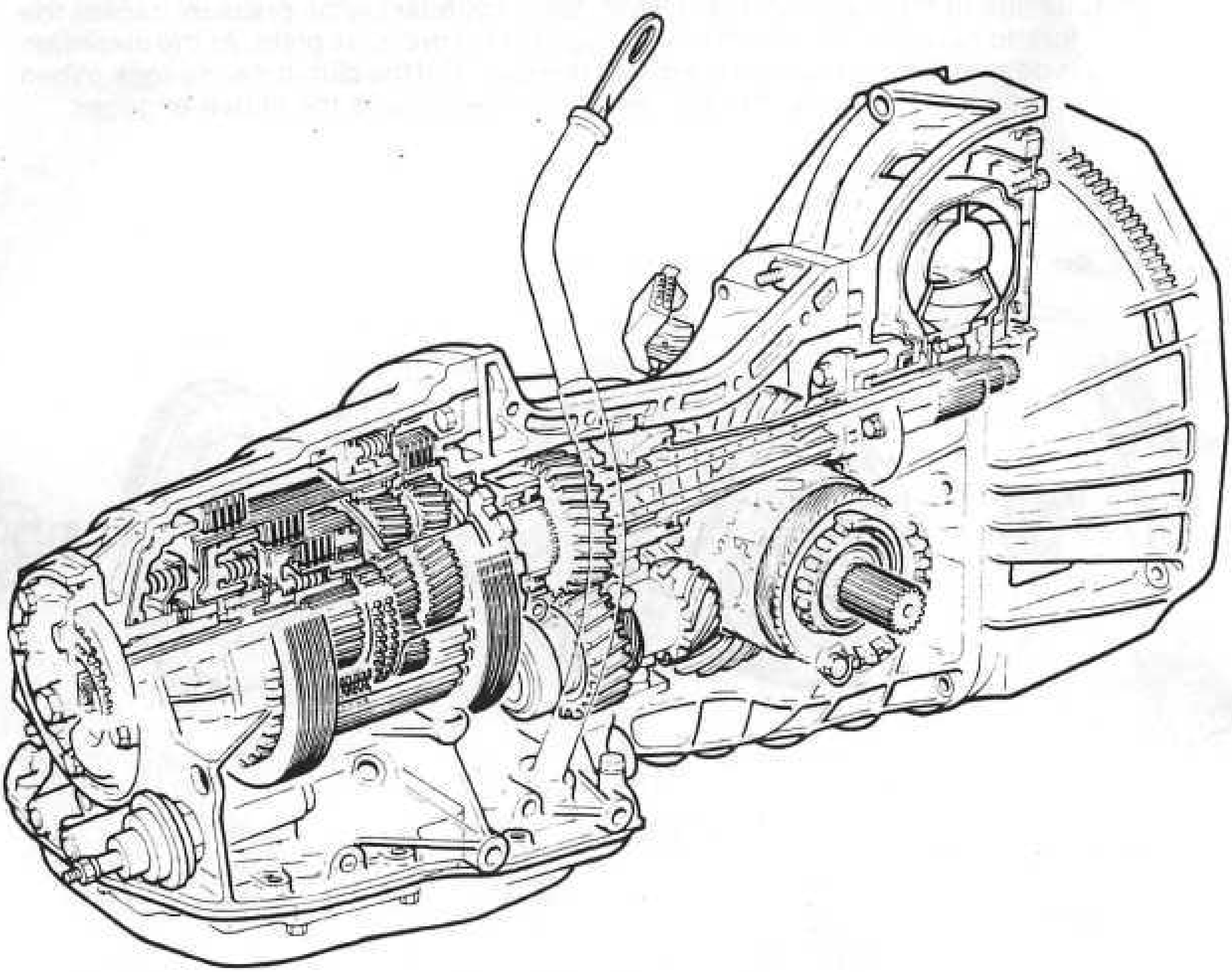
The clutch pedal is connected to the master cylinder with a pushrod. When the pedal is depressed, the pushrod exerts pressure against the master cylinder piston. As the piston begins to move, it draws fluid from the fluid reservoir and forces it through the hydraulic line to the slave cylinder piston. Slave cylinder piston pressure causes the clutch fork to move the throw-out bearing against the pressure plate. As the diaphram spring is depressed, pressure on the disc is released and the clutch disengages. When the clutch pedal is released, the procedure is reversed and the clutch engages.



TRANSMISSION - AUTOMATIC

GENERAL DESCRIPTION

The three (3) speed automatic transmission uses a conventional torque converter. This converter has a single stator supported on a one-way roller clutch. The final drive unit is contained within the transmission case. Gear reduction, direct drive, and reverse are achieved using one (1) planetary gear set, two (2) reaction members, and two (2) internal clutch packs. Hydraulic pressure for this transmission is developed with a crescent gear type oil pump. The pump is driven by a shaft which runs the entire length of the transmission case. This shaft is splined to the converter and turns at engine speed. Main line pressure is regulated by a pressure regulator valve and a vacuum operated actuator. As engine vacuum decreases, the valve increases main line pressure to assure positive application of the clutches and reaction members. The shift valves in the valve body are controlled by a computer governor assembly and two (2) electric solenoids. By comparison, a conventional valve body uses a mechanical governor and a vacuum modulator (or throttle valve) to perform this same function. The valve body is not servicable and must be replaced as a unit if required. The hydraulic transmission is operated and lubricated by automatic transmission fluid while the final drive assembly is in a separate area filled with gear lube.

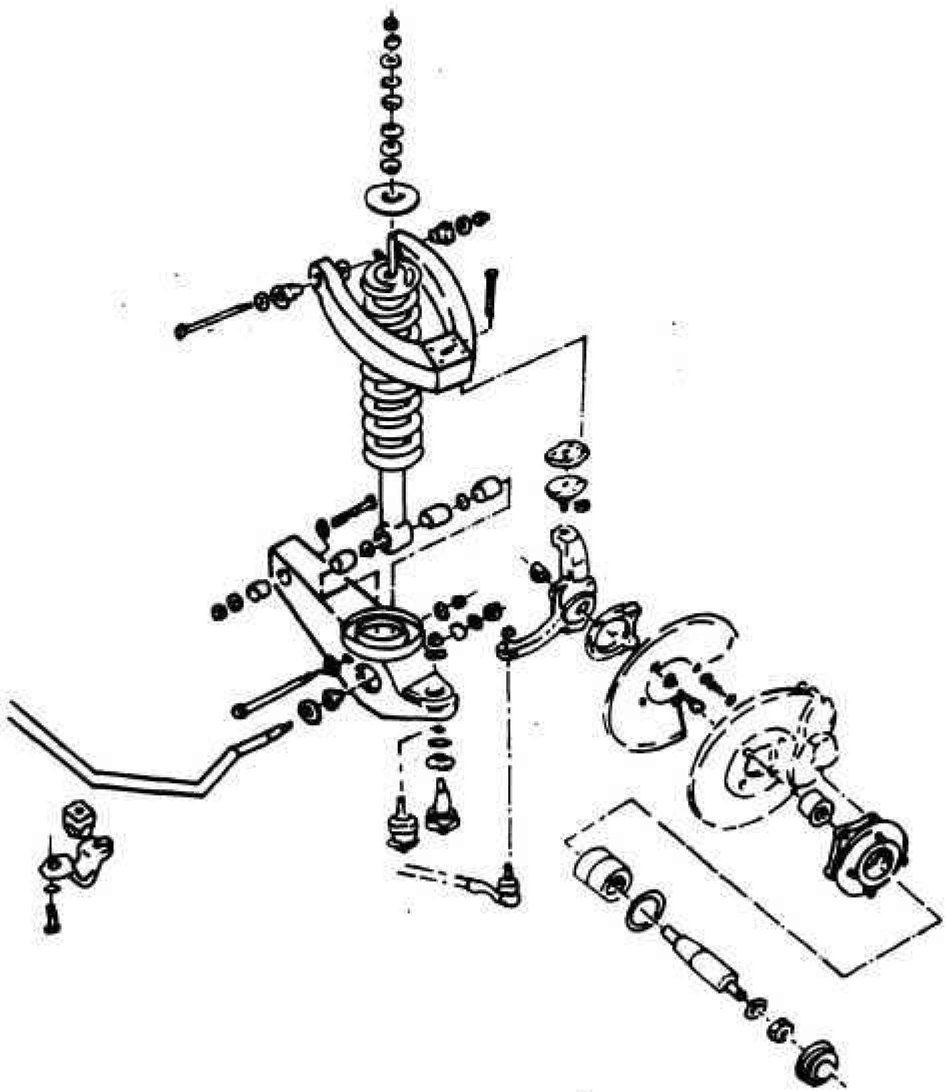


FRONT SUSPENSION

GENERAL DESCRIPTION

The front suspension is a fully independent type with upper and lower control arms, stabilizer bar and steering knuckle assembly. Telescopic shock absorbers, secured to the chassis frame tower at the absorber's upper end and to the lower control arm at the absorber's lower end, are positioned through the coil springs.

The single front hub bearing supports the hub assembly on the spindle which is fastened to the steering knuckle. The steering knuckle is secured to the upper and lower control arms with upper and lower ball joints and to the steering system with an adjustable ball-type tie rod.



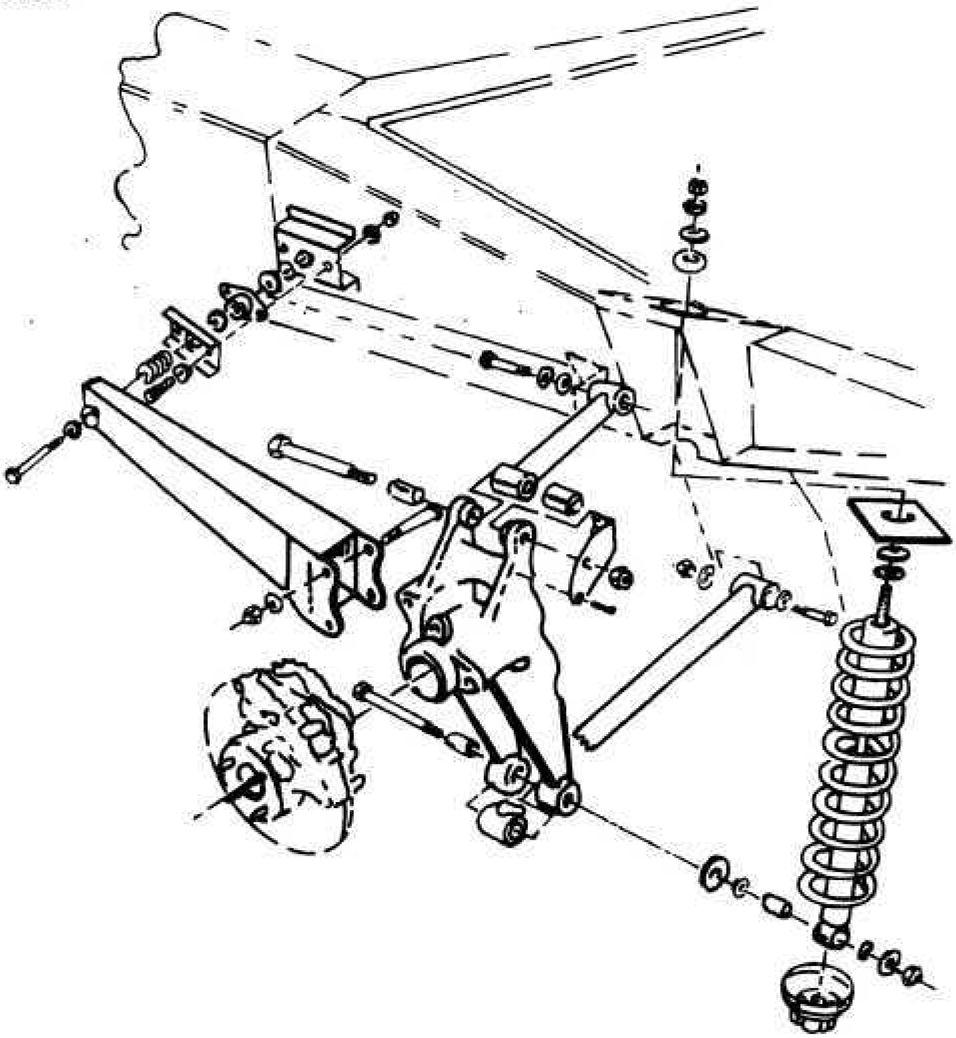
REAR SUSPENSION

GENERAL DESCRIPTION

The rear suspension is a fully independent type with a radius arm (trailing), upper and lower links and a rear hub carrier. Telescopic shock absorbers, secured to the chassis frame at the absorber's upper end and to the rear hub carrier at the absorber's lower end, are positioned through the coil springs.

The rear hub carrier is attached to the chassis frame with upper and lower links as well as the radius arm.

Rear suspension toe-in is achieved by shimming the radius arm at its frame attaching location.



STEERING

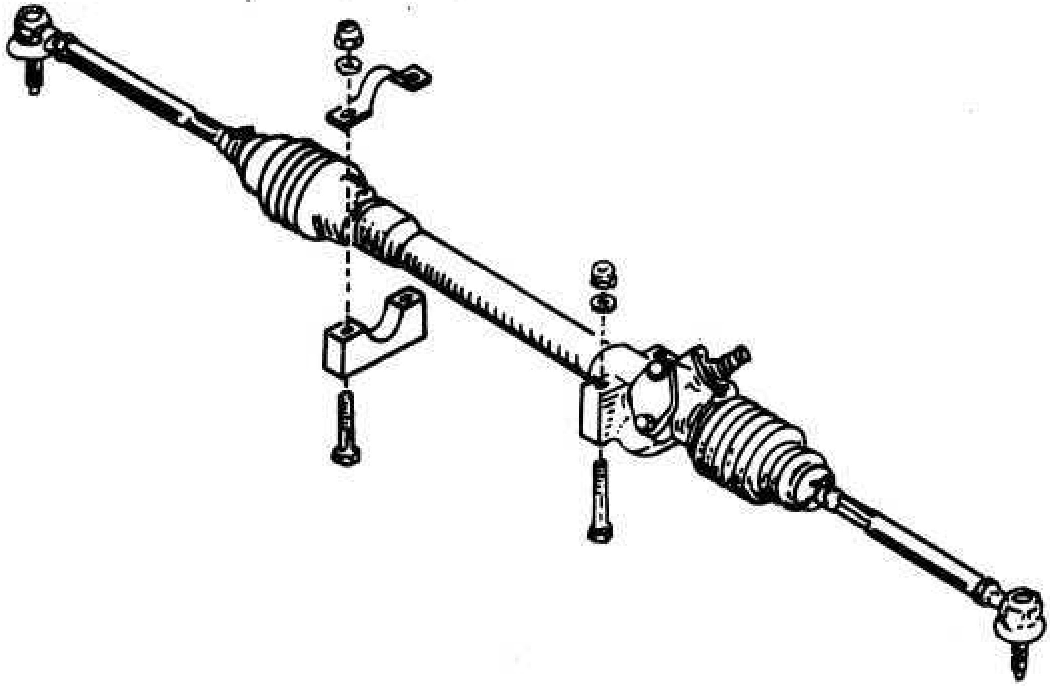
GENERAL DESCRIPTION

The steering system consists of a collapsible steering column assembly, an intermediate shaft assembly and a rack and pinion type steering unit.

The steering column assembly is supported in the passenger compartment with an adjustable (up and down) bracket. Each end of the steering column shaft is splined. The upper splined end is designed to accept the steering wheel. The lower splined end of the steering column shaft fits through an opening in the driver's foot well and is sealed with a gasket and plate.

The lower end of the steering column shaft is secured to the upper universal joint of the intermediate shaft. The lower universal joint of the intermediate shaft is secured to the splined stub shaft of the steering gear.

The steering unit consists of a rack and pinion assembly, tie rod assemblies and tie rod ends. Each end of the rack and pinion assembly is protected from the elements with a flexible rubber boot which is secured with two (2) clamps. The adjustable tie rod ends, for obtaining proper toe-in specifications, are fastened to the steering knuckles.



BRAKES

GENERAL DESCRIPTION

The vehicle is equipped with a four wheel, vacuum assisted, hydraulic disc brake system. The disc brakes are applied with separate front and rear hydraulic circuits. The hydraulic pressure for these circuits originates at a tandem master cylinder which is operated with push rods. Brake application is assisted with the aid of a mechanical/vacuum power servo unit which is activated by brake pedal application. The park brake mechanically operates the rear brakes only.

Each wheel assembly is equipped with a fixed caliper containing two opposing pistons (attached to knuckle or carrier), a brake disc (positioned over the hub and wheel studs) and a set or brake pads.

In addition to the service brake calipers and pads, the rear brakes are equipped with independent and separate park brake caliper and pad assemblies. The park brake calipers and pads are operated with the park brake lever inside the driver's compartment by means of two (2) separate cables to provide park and emergency braking of the rear discs. The park brake caliper and pad assemblies are secured to the rear service brake calipers. The park brake caliper and pad assemblies are self-adjusting by means of a spring loaded racheting pawl incorporated within the caliper apply lever.

The tandem master cylinder consists of two (2) independent cylinders in a single casting. Should one cylinder or system fail, the other system will remain operational. Each hydraulic system (front and rear) has a separate brake fluid supply well in the brake fluid reservoir which is mounted to the top of the master cylinder. The brake fluid reservoir is equipped with a float actuated, low fluid warning indicator. However, this system **is not equipped** with a low pressure indicator, a metering valve, proportioning valve or a combination of these valves.

The power assist from the brake servo unit is developed by engine vacuum. Engine vacuum, obtained from an intake manifold fitting, is applied to both sides of a diaphragm inside the servo unit. Depressing the brake pedal will allow atmospheric pressure to enter one side of the diaphragm. This difference in pressure develops the power assist used in applying the brake systems. The servo unit is located between the brake pedal and master cylinder. The apply pressure is transferred through two (2) in-line push rods. Should a vacuum failure occur, the two (2) push rods will act as a single rod and the brakes will continue to operate in the unassisted, conventional manner; however, additional brake pedal effort will be required. A vacuum check valve is used in the supply line where it connects to the servo unit. This check valve prevents vacuum loss from the servo unit after the engine stops running and provides enough vacuum reserve for emergency brake application.

HEATING AND AIR CONDITIONING SYSTEM

GENERAL DESCRIPTION

The vehicle uses a dual-function air conditioning system which provides both heating and cooling. The air conditioning system is the Cycling Clutch Orifice Tube type (C.C.O.T.). This system uses a pressure sensing switch to prevent evaporator freeze-up by cycling the compressor on and off. Heating is controlled by the amount of air flow through the heater core. This flow is controlled by a temperature door operated with a cable connected to the temperature knob.

OPERATION

CONTROL FUNCTIONS: Air is drawn into the system by a fan either through the fresh air intake (located just ahead of the windshield), or from the interior of the vehicle depending on the position of the re-circulation door. The fan then forces the air through the evaporator core to the temperature door. The position of the temperature door controls the amount of system air directed through the heater core. Two mode doors (mounted on a common shaft) direct the conditioned air to either the footwell/windshield chamber or the door/face level vent chamber, or both. The footwell/windshield chamber contains a horizontally mounted door which directs the conditioned air either to the windshield or the footwell. The door/face level vent also contains a horizontally mounted door which either shuts off face level vents or shuts off a bridging duct connecting with the windshield vent.

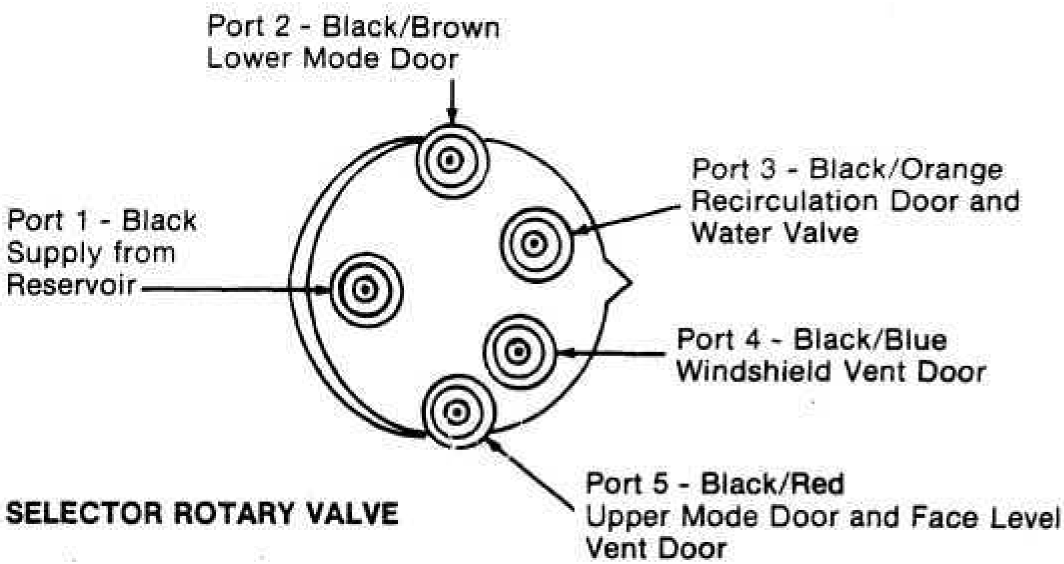
All doors, with the exception of the cable operated temperature door, are vacuum operated by diaphragm actuators. The air conditioning/heater selector switch has two functions. One function is to supply vacuum to the correct door actuators. The other function is to supply electric current to the air conditioning compressor and the blower fan as necessary when the different positions are selected.

The control of vacuum distribution is achieved by means of a five (5) port rotary valve. The rotation of this valve is controlled by air conditioning/heater selector movement. A vacuum hose harness connects all door vacuum actuators to the air conditioning/heater selector. The vacuum hose harness also delivers the operating vacuum source to the five-port rotary valve. Vacuum for this system's operation is supplied by engine vacuum and stored in a vacuum reservoir tank (located in the left rear body section).

Reservoir tank vacuum is maintained after the engine is shut off by means of vacuum supply line check valve. As the five (5) port rotary valve is turned (by selector movement), various vacuum ports will align to either vent or supply vacuum to the proper actuators required for the desired operating mode.

The connection and switching sequence of the selector switch is as follows:

VACUUM CONNECTIONS



SELECTOR ROTARY VALVE

VACUUM SWITCHING

	SELECTOR CONTROL POSITION						
CONNECTION	**OFF**	**MAX**	**NORM**	**BI-LEVEL**	**VENT**	**HEATER**	**DEFROST**
1 Source	Seal	Vac	Vac	Vac	Vac	Seal	Vac
2 Lower mode door	Vent	Vac	Vac	Vent	Vac	Vent	Vent
3 Re-circulation door & water valve	Vent	Vac	Vent	Vent	Vent	Vent	Vent
4 Windshield door	Vent	Vent	Vent	Vent	Vent	Vent	Vac
5 Upper mode door & face level vent	Vent	Vac	Vac	Vac	Vac	Vent	Vent

ELECTRICAL CONTACTS

CONNECTION	SELECTOR CONTROL POSITION						
	OFF	MAX	NORM	BI-LEVEL	VENT	HEATER	DEFROST
2 Supply	Hot	H	H	H	H	H	H
3 Compressor	—	H	H	H	—	—	—
4 Fan speed switch	—	H	H	H	H	H	H

SEQUENCE OF OPERATION

Off: The vacuum supply is sealed off at the rotary valve and the switch contact points are open. All doors are in the vented position; both the compressor and fan speed switch are inoperative.

Ventilation is provided to the foot wells to circulate fresh air through the vehicle.

Max: Vacuum is supplied to the lower mode door (Port 2), upper mode door and face level vent door (Port 5) and to the re-circulation door and water valve (Port 3).

The fresh air vent is closed and the re-circulation vent is opened. The compressor and fan speed switch are energized. Refrigerated re-circulated air is supplied to the door vents and face level vents. The water valve is closed, so that the heater core remains cold.

NOTE: The re-circulation door is designed not to seal the fresh air vent completely. This prevents stale air from developing in the vehicle.

Norm: Vacuum is supplied to the lower mode door (Port 2) and face level vent door (Port 5).

The re-circulation door closes the re-circulation vent and opens the fresh air vent. The water valve is opened. The compressor and fan speed switch are energized.

Refrigerated fresh air is supplied to the door vents and face level vents.

Bi-Level: Vacuum is supplied to the upper mode door and face level vent door only (Port 5). The compressor and fan speed switch are energized.

Refrigerated fresh air is supplied to the footwells, door vents and face level vents.

If the temperature control is turned towards the hot setting, the temperature door will direct a portion of air through the heater core which will then flow to the foot wells.

Vent: Vacuum is supplied to the lower mode door (Port 2) and to the upper mode door and face level vent door (Port 5).

The compressor is off; the fan speed switch is energized.

Ambient fresh air is supplied to the door vents and face level vents.

Heater: The vacuum supply is not present and electrical current is supplied to the fan speed switch only.

As the temperature control is turned towards the maximum hot setting, the temperature door directs an increasing portion of air through the heater core and then to the foot wells. The windshield vent door is designed not to seal completely, a certain amount of the hot air will be directed to the windshield vent, and to the bridging duct to the door vents, for defogging purposes.

Defrost: Vacuum is supplied to the windshield vent door (Port 4). Electrical current is supplied to the fan speed switch only.

With the temperature control turned to the maximum heat setting, air is directed through the heater core and is distributed to the windshield and door vents. A certain amount of hot air will be directed to the foot wells.

NOTES

The heater core water valve is open at all times except when the re-circulation door is operated (maximum setting). Heated air is only available if the temperature control directs air through the heater core.

The selector switch may be removed for access to the vacuum harness or electrical contacts.

REFRIGERANT CYCLE: The refrigerant cycle begins at the compressor where refrigerant enters as a low pressure, low temperature vapor. After being compressed, it leaves as a high pressure, high temperature vapor. This vapor flows to the condenser where it is cooled by air flow through the condenser. As the refrigerant vapor gives up heat, it changes from high pressure, high temperature vapor to high pressure liquid. The liquid then passes through the orifice tube where it becomes a low pressure, low temperature liquid. This liquid enters the evaporator core absorbing heat from the vehicles interior compartment. The absorbtion of heat causes the liquid to change to a low pressure, low temperature vapor. This vapor, and the small amount of low pressure liquid that did not vaporize completely, enters the accumulator where the liquid is separated and trapped until it also vaporizes. From the accumulator, the low pressure vapor returns to the compressor where the cycle begins again. A pressure relief valve is built into the system between the condenser and the orifice tube. This valve is placed in the system as a safety device. This valve is designed to open automatically at approximately 440 psi, thus venting the system to atmosphere and helps prevent any damage from occuring at excessive pressures.

PRESSURE SENSING/CYCLING SWITCH: The pressure sensing switch is located near the top of the accumulator. Its function is to cycle the compressor off at 20 to 28 psi and back on at 41 to 51 psi to maintain cooling and prevent evaporator freeze-up. The pressure switch also turns the compressor off when accumulator pressure falls below approximately 23 psi. This function protects the compressor if system is undercharged or if ambient temperature is below 37°F.

CONCEPT

BODY AND CHASSIS

GENERAL DESCRIPTION

The vehicle's body is made of structural composite glass reinforced plastic (GRP). The upper and lower halves are molded separately, then bonded together to form the body shell. Plastic is laid over pre-formed foam panels. The foam provides a larger surface to cover with plastic which gives more rigidity to the body shell. The body shell is covered with high quality grade 304 brushed stainless steel body panels to give the car its unique appearance. No paint or sealers are used on the exterior body and it is virtually corrosion-free.

The chassis consists of an epoxy coated steel backbone (center tunnel) frame, with front and rear wishbones, supporting crossmembers and 4-wheel fully independent suspension. The front crossmember carries the steering and front suspension components. The rear crossmember is welded to the center backbone and carries the engine and transaxle assemblies. The bumpers, sills, and spoiler are semi-rigid endura polyurethane, capable of considerable flexing without breakage. The doors are counter-balanced gull wing type which use torsion bars for balancing and gas struts for holding them open. Other standard features of the car include:

- Leather seating area
- Air Conditioning
- Electrically operated windows
- Adjustable steering wheel (tilt & telescoping)
- Electrically operated remote control side door mirrors
- Central door locking system
- Tinted glass

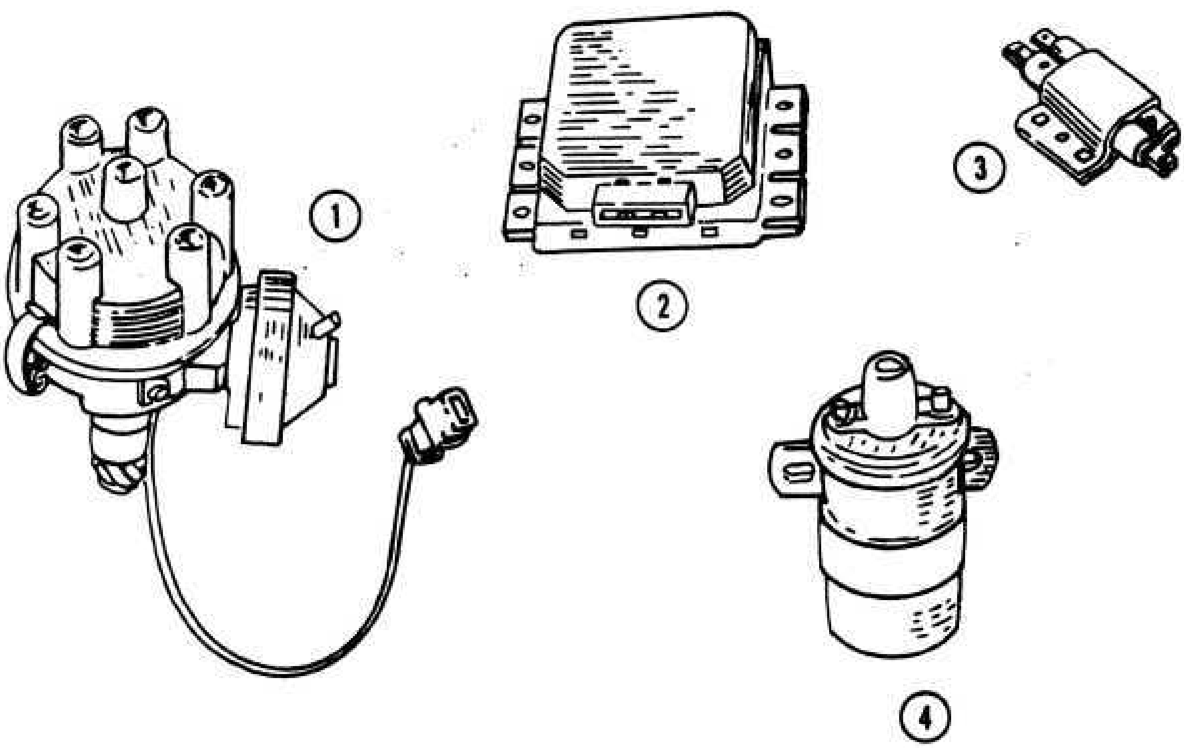
ENGINE ELECTRICAL

ELECTRONIC IGNITION SYSTEM

SYSTEM DESCRIPTION

The De Lorean is equipped with a Bosch electronic ignition system. This breakerless ignition system is similar to a conventional ignition system except for the following modifications.

The breaker points in the distributor have been replaced by a pulse generator consisting of a stator, an induction coil and a trigger wheel. The pulse generator is connected to an electronic control unit (ECU) module in which the signal from the distributor is converted and amplified. The ECU module is connected to a high voltage ignition coil.



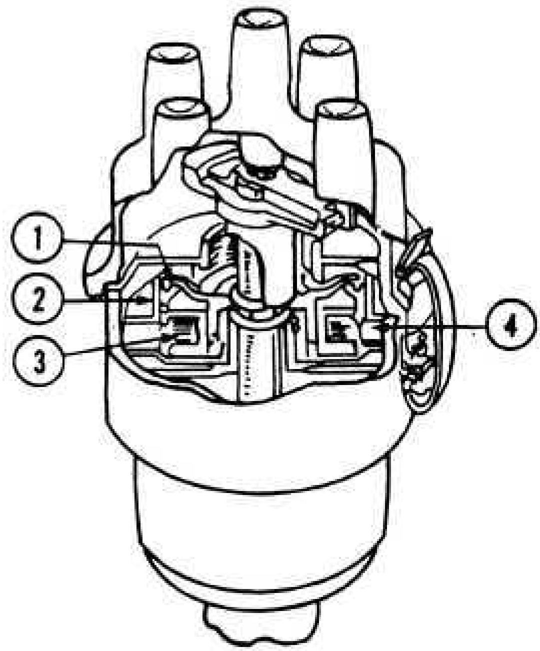
1 - Distributor
2 - ECU module
3 - Compensating resistor
4 - Coil

SYSTEM OPERATION

DISTRIBUTOR: The distributor contains a pulse generator which corresponds to the breaker points in a conventional distributor. The trigger wheel is attached to the distributor shaft and is designed with six fingers (poles). The stator, induction coil, and magnet are formed into one unit which is attached to the distributor plate. The stator is also designed with six fingers (poles).

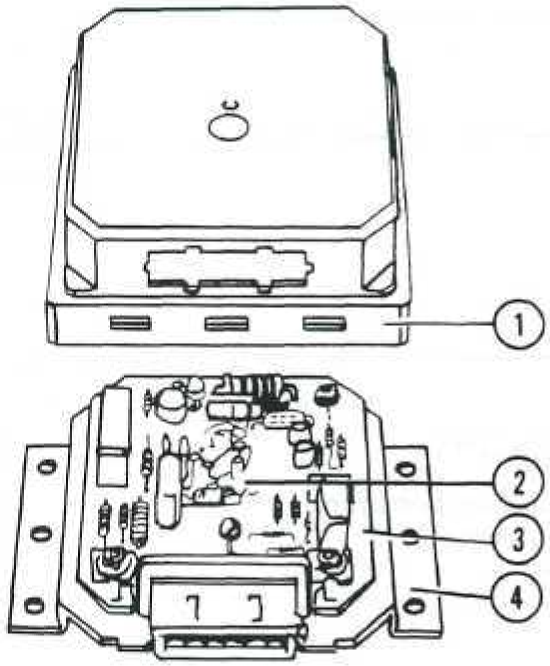
When the trigger wheel rotates, an alternating voltage is produced in the pulse generator. This pulse is transmitted to the ECU module and its voltage will vary between 0.3V and 100V depending on engine speed.

The alternating voltage is produced by the trigger wheel passing through a magnetic field which creates a voltage in the induction coil. As the pole on the trigger wheel approaches the pole on the stator, a positive voltage is produced. The voltage then reverses polarity as the poles separate. The ECU module creates secondary ignition spark when the poles are directly aligned with each other.



1—Trigger Wheel
2—Stator

3—Induction Coil
4—Magnet



1—Cover

2—Output Transistor

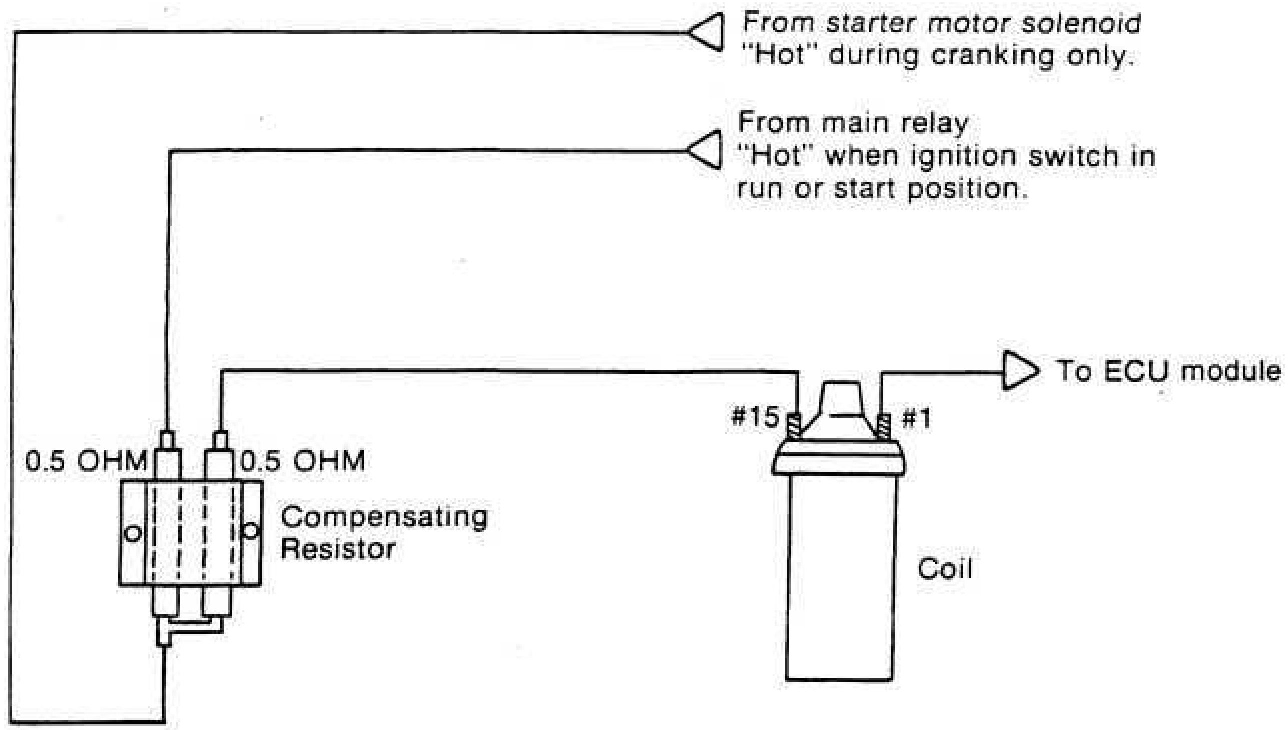
3—Printed Circuit Board

4—Base Plate

ELECTRONIC CONTROL UNIT MODULE: ECU module controls the operation of the ignition coil and determines the proper dwell angle. The module is a fully electronic sealed component which does not utilize any moving parts.

The module monitors engine operation by the varying voltage pulses it receives from the pulse generator in the distributor. This information is electronically analyzed and the proper dwell angle is established for different engine speeds. By varying the dwell angle, the coil is capable of operating at maximum efficiency.

After the dwell angle is determined, the output transistor turns the ignition coil primary circuit on and off. When current is flowing in the primary circuit, a magnetic field is built up within the coil. As current flow stops, the field collapses and the secondary ignition spark takes place. The secondary spark delivered from the coil high tension terminal is routed to the proper cylinder by the distributor rotor and cap.



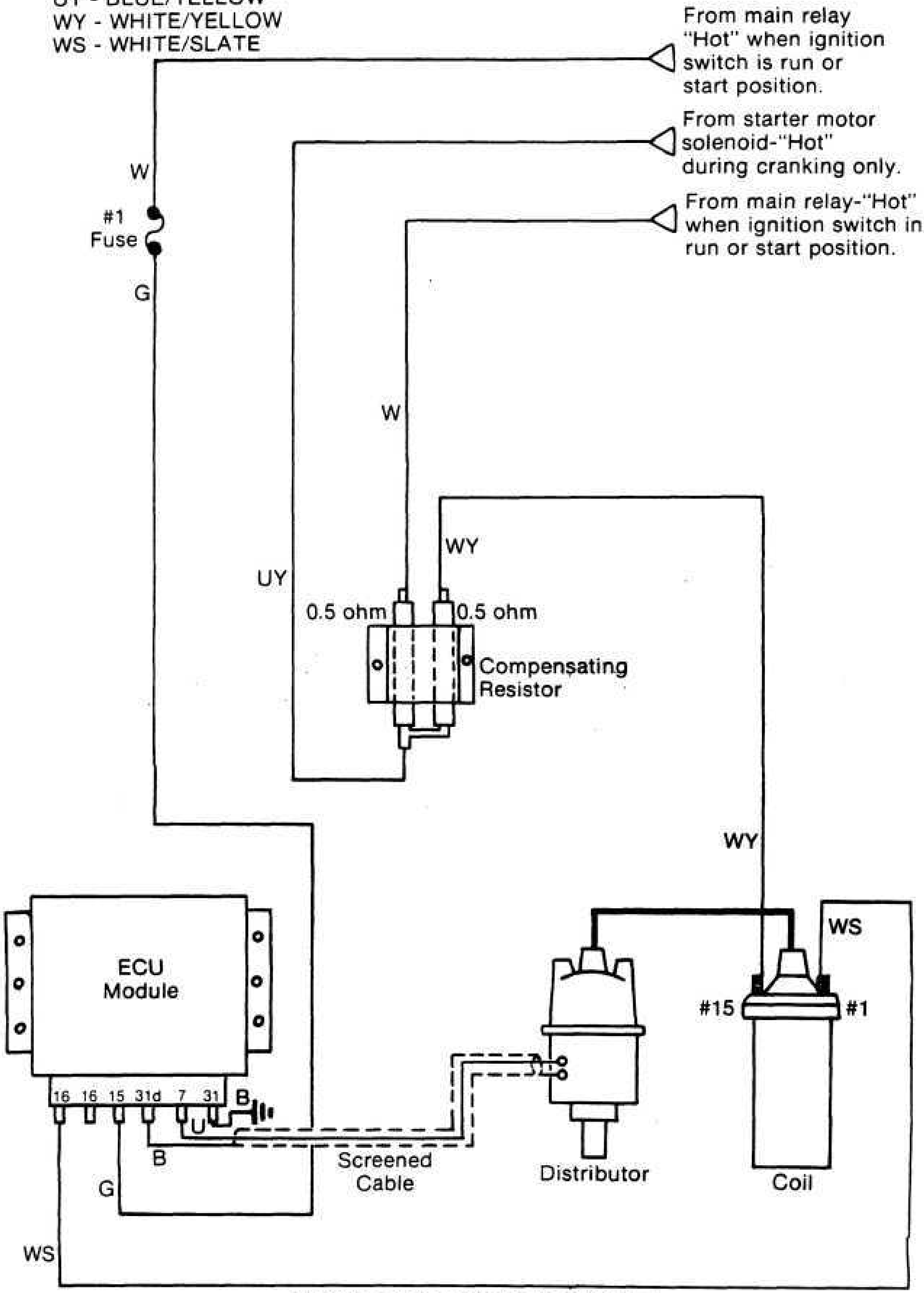
COMPENSATING RESISTOR: A dual resistance ballast resistor is used to control primary circuit voltage and current flow.

When the ignition switch is in the run position, the current flow is reduced by the resistor to prevent overheating of the coil during operation. To provide increased coil voltage for starting the engine, one-half of the resistor is bypassed during the engine cranking process. By reducing the circuit resistance, the coil primary voltage and current will increase, thus increasing the secondary output voltage.

IGNITION TIMING ADVANCE: The Bosch distributor provides timing advance by means of a centrifugal advance unit and a vacuum advance unit the same as a conventional distributor.

SPARK PLUGS AND WIRES: Bosch HR6DS spark plugs are used with copper core secondary wiring. Spark plugs are gapped to 0.6 - 0.7 mm (0.024 - 0.028 in).

U - BLUE
B - BLACK
W - WHITE
G - GREEN
UY - BLUE/YELLOW
WY - WHITE/YELLOW
WS - WHITE/SLATE



ELECTRONIC IGNITION CIRCUIT

SYSTEM REPAIR NOTES

"CAUTION"

When the engine is running, dangerously high voltage which may prove fatal may be present in the primary circuit of the coil and in all wires connected to terminal #1 of the coil.

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1. Before working on the vehicle with the ignition switch in the "run" position and the engine not running, disconnect terminal #15 on the coil.
2. Before working on the ignition system, always ensure that the ignition is in the "off" position.
3. The ignition timing is adjusted in the same manner as a conventional system using the timing marks on the crankshaft pulley and the timing chain cover. Connect timing light to #1 cylinder plug wire.
4. If it is necessary to replace the ignition coil, use the proper replacement part designed for this particular system.
5. The ignition distributor is serviceable and repair parts are available. The cap and rotor can be removed without removing any engine components. To remove the complete distributor, it is necessary to loosen the fuel inlet system to provide sufficient clearance for removal of the distributor assembly.
6. THE ECU module cannot be repaired or adjusted. It is located in the bottom of the module compartment behind the driver's seat. The ignition ECU module is silver in color and is mounted under the black idle speed ECU module.
7. The ignition coil is located behind the black plastic cover in the right front corner of the engine compartment.
8. The compensating resistor is attached to the firewall at the left front corner of the engine.
9. The ignition distributor is located under the intake manifold on the L.H. cylinder head and is driven by the L.H. camshaft.
10. A defective or improperly wired compensating resistor will cause premature ignition coil failure. Before replacing a coil, refer to the wiring diagram for proper wiring and resistance values.
11. When replacing spark plugs, it is extremely important to install the new plugs without lubricating the plug threads and torque tighten them to the proper specification.

CONCEPT

12. Due to the design of the crankshaft used in the PRV V-6 engine, a special distributor is used which has unequal spacing of the ignition secondary terminals. When viewing primary and secondary patterns on a scope, the patterns will have unequal dwell spacing.

13. The ignition dwell angle is electronically controlled and will vary with engine RPM.

CONCEPT

SPECIFICATIONS

DISTRIBUTOR:

Rotation	Clockwise
Firing Order	1-6-3-5-2-4
Compensating Resistor Value	0.5 ohm each (1.0 ohm total)
Basic Ignition Timing	13+2° BTDC at 775 +50 RPM (vacuum advance disconnected)
Induction Coil Resistance	895 - 1,285 ohm
Trigger/Stator Pole Air Gap	0.25 mm (use non-magnetic feeler gauge)
Dwell	Dwell angle is electronically controlled and will vary with engine RPM
Spark Advance-Vacuum (at idle speed)	5 in.hg. = 3° 10 in.hg. = 12° 15 in.hg. = 20°
Spark Advance-Mechanical	1000 RPM (engine) = 0° 2000 RPM (engine) = 10° 3000 RPM (engine) = 14° 4000 RPM (engine) = 20°
Rotor	5000 ohms

COIL:

Primary winding resistance	0.95-1.4 ohm at 20° C
Secondary winding resistance	5.5-8.5 k ohm
Average Current Value Through Primary Winding at Idle	3.2 amps

SPARK PLUGS:

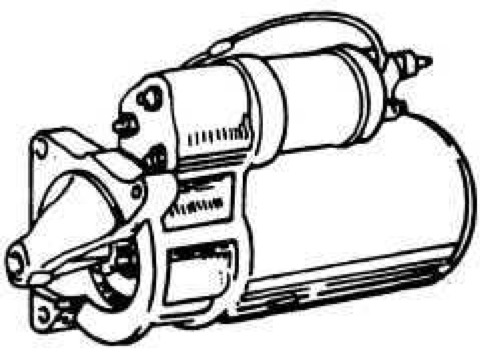
Torque Specifications	17.5-20 NM (13-15 FT LB)
Gap	0.6-0.7 mm (0.024-0.028 IN)

CONCEPT

STARTER MOTOR CIRCUIT

CIRCUIT DESCRIPTION

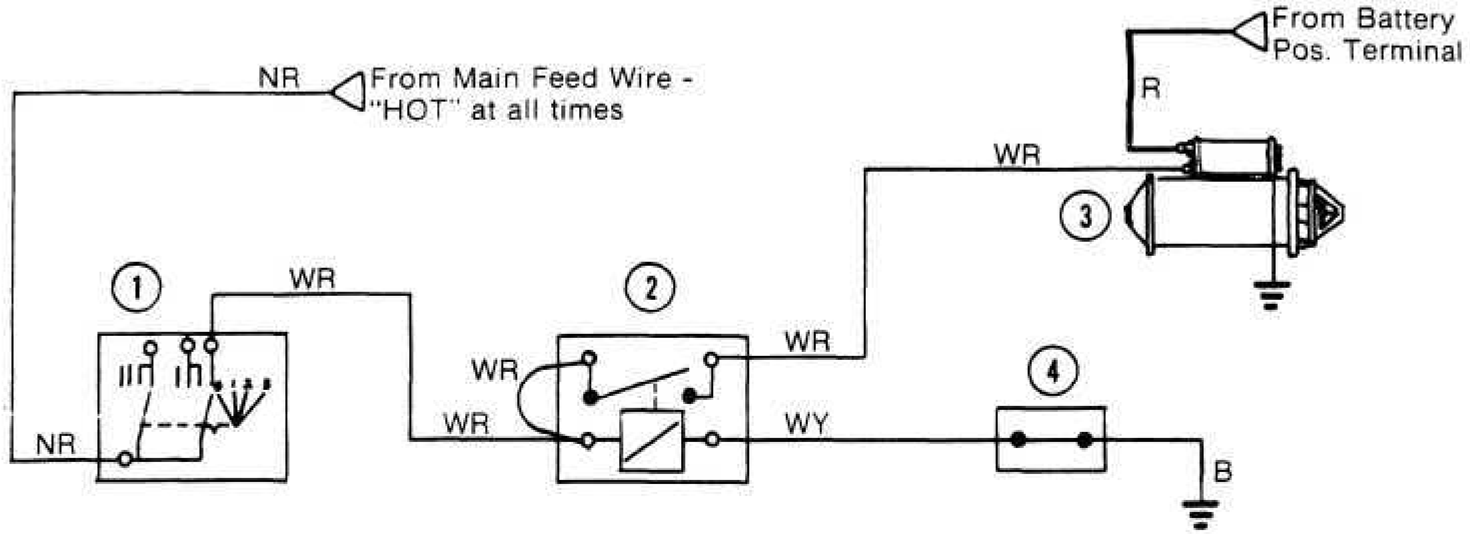
The starting circuit used is basically the same as any domestic or import automobile starting system. The Paris-Rhone starter motor is activated by a solenoid switch which simultaniously engages the starter drive gear to the flywheel. Solenoid plunger movement is transmitted to the starter drive gear via linkage and a shift fork during cranking. An over-running clutch is used in the starter drive gear to prevent damage to the starter motor after the engine starts if the ignition key is not released immediately.



STARTER MOTOR

The electrical circuit that activates the starter contains a start inhibit relay. When the ignition switch is turned to the "start" position, the start inhibit relay is energized allowing current to flow to the starter solenoid. By using this type of circuit, the current required by the solenoid pull-in windings is routed through the relay contacts, thus eliminating high current arcing at the ignition switch contacts.

B — BLACK
R — RED
NR — BROWN/RED
WR — WHITE/RED
WY — WHITE/YELLOW



STARTING CIRCUIT

1 - Ignition switch - "start" position
2 - Start inhibit relay
3 - Starter motor and solenoid
4 - Neutral start switch
(Auto. transmission only)

CIRCUIT OPERATION

When the ignition switch (1) is placed in the "start" position, current flows through the electromagnet in the start inhibit relay (2) and on to ground via the transmission wiring harness. Current flowing through the relay magnet causes the contacts to close, completing the circuit to the solenoid pull-in windings (3). When the vehicle is equipped with an automatic transmission, the neutral start switch (4) must be in the "neutral" or "park" position to complete the ground circuit of the start inhibit relay. Manual transmission cars are connected to ground at the transmission wiring harness eliminating the neutral switch completely.

As the solenoid plunger moves rearward and engages the starter drive gear to the flywheel, electrical connection is made between the battery and the starter motor via a contact disc inside the solenoid. During the cranking process, a hold-in winding is activated in the solenoid to assist holding the drive gear in engagement with the flywheel.

The start inhibit relay is de-energized when the ignition switch is released. This allows the solenoid to de-energize, disconnect the starter motor from the battery, and retract the drive gear from the flywheel.

SYSTEM REPAIR NOTES

1. The starter motor may be overhauled depending upon the extent of repair. Solenoid, drive gear, brushes, linkage and armature bushings are available for replacement.
2. The start inhibit relay is located in the relay panel in the relay compartment behind the passenger seat. (See "Chassis Electrical" section)
3. The automatic transmission neutral start switch is part of the valve body controls and is not adjustable.
4. The electrical portion of the ignition switch can be replaced without removing the lock cylinder and steering lock assembly.

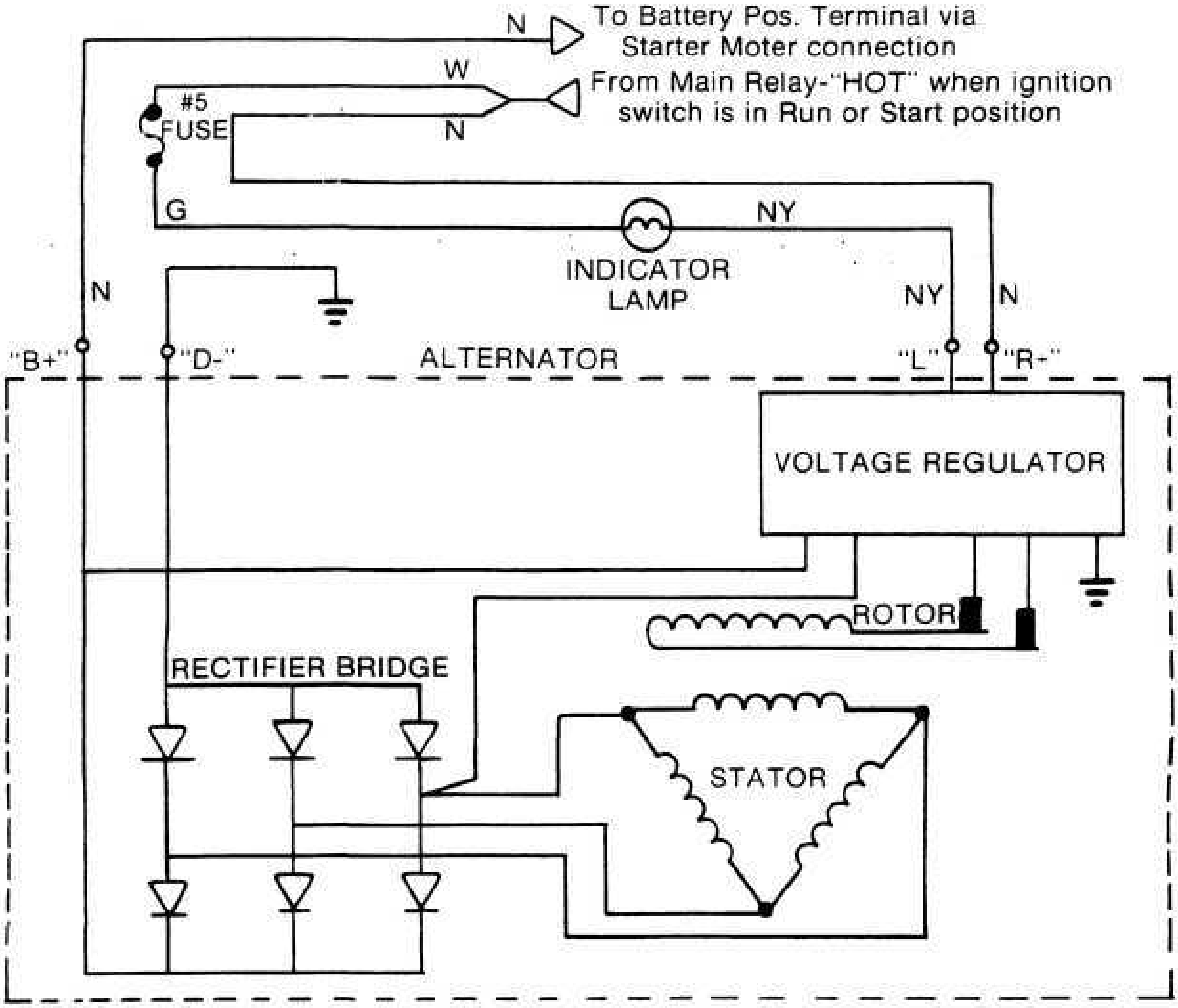
CHARGING SYSTEM

SYSTEM DESCRIPTION

The car is equipped with a Ducellier 80 amp alternator containing an integral voltage regulator. The alternator consists of a "delta" connected stator, a six diode rectifier bridge, and a "claw pole" rotor which is controlled by an electronic voltage regulator.

When the ignition switch is turned to the "start" or "run" position, the main relay supplies power to the voltage regulator and the "charge" indicator lamp. The charge indicator lamp operation is controlled by the voltage regulator. Whenever the ignition switch is in the "run" position and the alternator is not producing voltage, the voltage regulator will allow current to flow through the indicator bulb circuit, lighting the lamp. Any voltage produced by the alternator, above that of the battery, will cause the voltage regulator to turn the indicator lamp off.

N — BROWN   W — WHITE
G — GREEN   NY — BROWN/YELLOW



CHARGING CIRCUIT

REPAIR NOTES:

1. The alternator is serviceable and parts are available for necessary repairs.
2. When the alternator belt tension is adjusted correctly, the belt may be depressed 6-10 mm (¼ - ⅜ in.) with moderate thumb pressure midway between the pulleys.
3. Charging system voltage is regulated between 13.5V and 15.0V and is checked at approximately 3,000 RPM with accessories and lights turned off.
   NOTE: A discharged battery will lower voltage readings.
4. Current maximum output should be within ten percent of alternator rating at approximately 3,000 RPM with an electrical load of 80 amps.
   NOTE: If carbon pile tester is not available, load the system by turning on all lights and accessories.

   NOTE: It is not possible to "full field" the alternator to determine if the regulator is defective. DO NOT attempt to by-pass the regulator by using jumper wires.

   NOTE: Low charging system voltage and current output may be caused by a loose drive belt. Due to the high capacity of the alternator, it is necessary that the belt is adjusted properly.

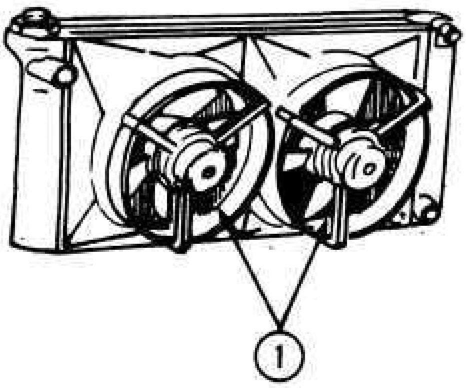
SPECIFICATIONS:

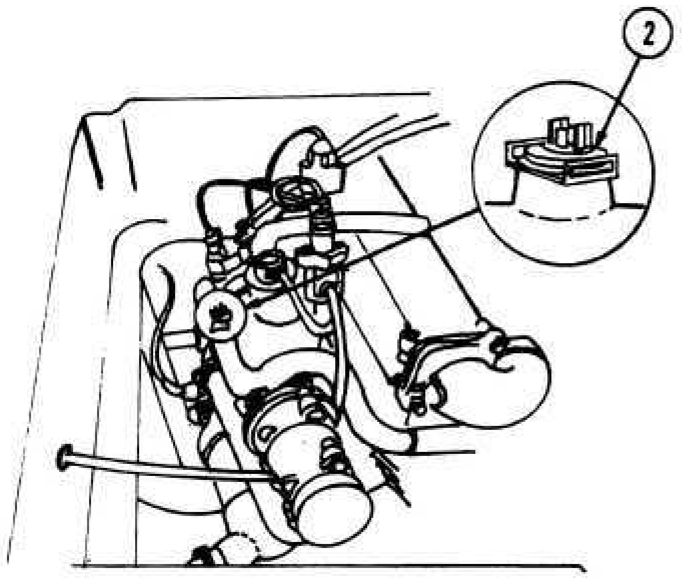
Current Output	80 amps
Regulated Voltage	14.4V± 0.15V at 20°C (68°F)

COOLING FAN CIRCUIT

CIRCUIT DESCRIPTION

The De Lorean Sports Car uses a forward mounted radiator fitted with two electric cooling fans to control engine coolant temperature.

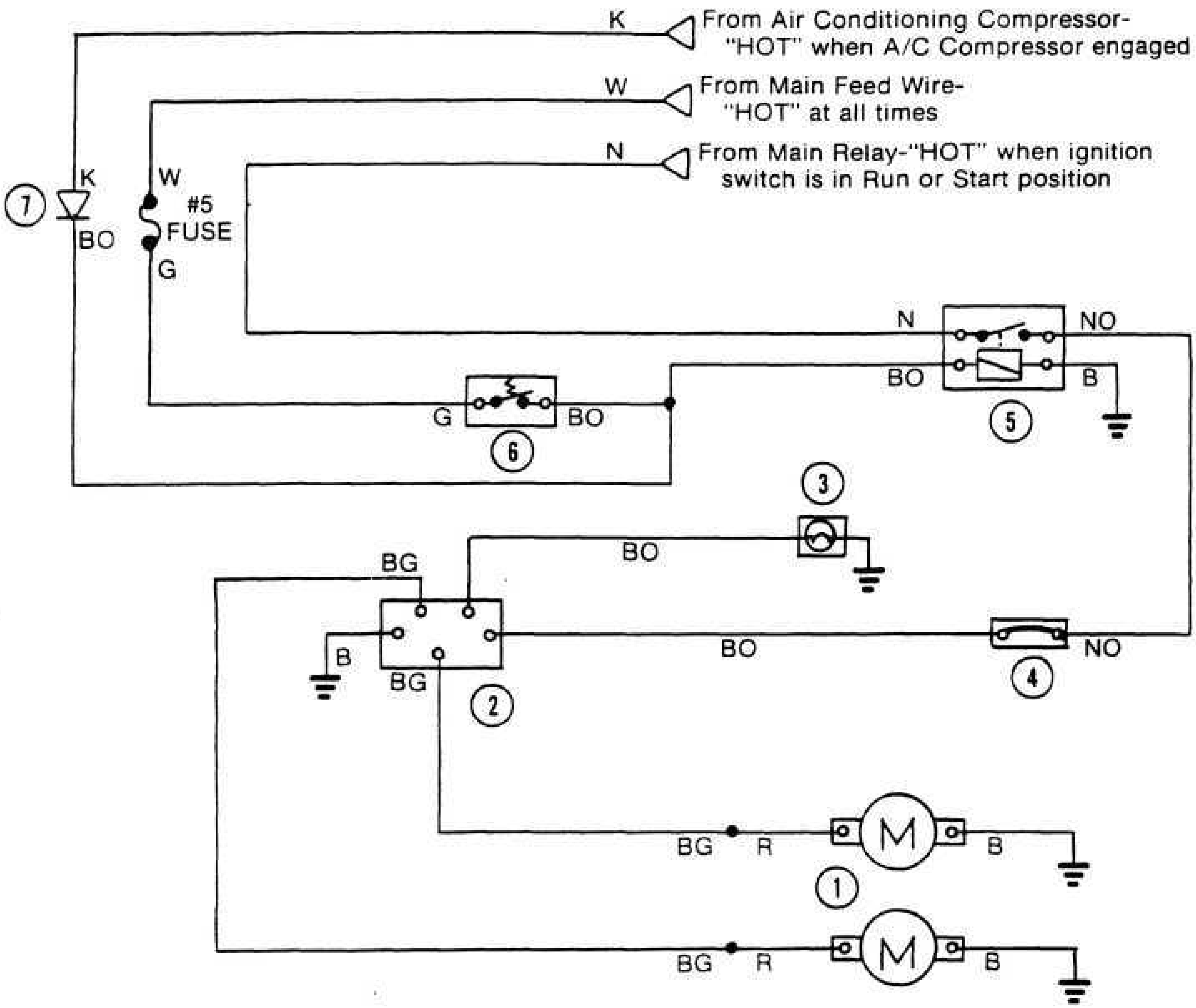




A temperature sensor (2), located in the coolant outlet pipe leading to the radiator, cycles the cooling fans (1) on and off to increase air flow through the radiator when coolant temperature increases above normal. The temperature sensor is calibrated to turn the fans on at approximately 97°C (207°F) and turn off when the temperature drops below 91°C (196°F). The fans will remain on continuously if the coolant temperature does not drop below 91°C.

The cooling fan circuit is also controlled by the air conditioning electrical circuit. Whenever the air conditioning compressor is activated, the cooling fans switch on and run continuously to provide constant air flow through the condenser which is mounted in front of the radiator.

K - PINK
W - WHITE
N - BROWN
G - GREEN
BO - BLACK/ORANGE
R - RED
NO - BROWN/ORANGE
B - BLACK
NS — BROWN/SLATE
NP - BROWN/PURPLE
BG - BLACK/GREEN



COOLING FAN CIRCUIT

1—Cooling fans
2—Fan fail module
3—"Fan fail" warning lamp
4—Circuit breaker
5—Fan relay
6—Temperature switch
7—A/C diode

CIRCUIT OPERATION

With the ignition switch in the run or start position the main relay supplies voltage to the temperature switch (6) from fuse #5 in the fuse box. If the coolant temperature in the engine exceeds 97° C (207° F), the temperature switch closes and allows current to flow to the fan relay (5). Current flowing through the relay closes the contacts and connects both cooling fans (1) to the main feed wire which is "hot" at all times. When the coolant temperature drops below 91° C (196° F) the temperature switch opens, deactivating the fan relay and turning the fans off.

An air conditioning override circuit will bypass the temperature switch when the A/C compressor is energized. This allows the cooling fans to run whenever the A/C compressor is operating. An A/C diode (7) is used in this ciruit to prevent the cooling fan circuit from "feeding back" into the air conditioning circuit.

Current supplying the fan motors passes through a circuit breaker (4) which is used to protect the circuit from overload. The circuit breaker is designed to accept the high current surge developed when the fans start into operation, but will open the circuit if excessively high current flows due to a shorted or siezed fan motor. When the circuit breaker overloads and opens, it will cool down and reset automatically.

Current supplying the fan motors also passes through the fan fail module (2). The purpose of this module is to measure the current flowing to each fan motor and signal the driver by turning on a warning lamp (3) whenever the fans are drawing improper amounts of current. For example, the warning lamp would activate if one fan were to stop due to an open circuit or if one fan would begin to seize and draw higher amperage than normal.

NOTE: It is normal for the warning lamp to light for a few seconds when the fans turn on.

CIRCUIT REPAIR NOTES

1. The cooling fan motors are not serviceable and each must be replaced as a unit if defective.
2. The fan relay, A/C diode, circuit breaker, and fan fail module are located in the relay compartment behind the passenger seat. (See "Chassis Electrical" section)
3. The A/C diode (color coded black) can be removed from the wiring harness and replaced if defective.

   NOTE: A shorted A/C diode would cause the A/C compressor to run when the temperature switch closes and the A/C control is in the "off" position.