CHEVROLET
SERVICE NEWS

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1960 CHEVROLET FEATURES

Never before in the history of Chevrolet has the product information been so extensive. The all-new Corvair, the greatest fundamental change in Chevrolet Truck history and the stylish improvements of the Passenger Car and Corvette all add up to more new features being presented in one model year than ever before. The service procedures and major product constructional changes are covered below in the order that these items appear in the Shop Manuals.

Passenger Car

LUBRICATION

The lubrication revision for the 1960 passenger car is further explanation of the oil drain procedure. The 4000 mile oil drain period is satisfactory only during ideal driving conditions. Adverse driving conditions or short trip winter driving (less than 10 miles driving per trip), makes it advisable to change oil every month. Similar short trips in the summer makes it advisable to change oil every two months.

FRAME AND SUSPENSION

Frame

The only major change on the frame is a large, heavy crossmember added between the rear X-member of the frame. This crossmember adds rigidity to the rear area of the frame where the upper control arm is attached to the frame.

Suspension

The suspension system is unchanged and air suspension is no longer available.

Shock Absorbers

Shock absorbers have two changes. Inside the shock absorber on the piston is a nylon skirt. The skirt reduces scuffing of the piston walls and gives greater shock absorber durability. Also, the upper end of the front shock absorbers are attached to the front suspension crossmember with a solid mount. The rubber mounting is a captive rubber arrangement which is part of the shock absorber assembly.

Tires

The tires have a new synthetic rubber and a new proportion of synthetic to natural rubber in the tread material. This new tire gives longer life better stopping ability, improved driving traction and greatly reduces tire squeal on curves. There is no change in the recommended tire pressure.

POWER STEERING

Control Valve

The power steering control valve has a new adjustment feature. This adjustment will provide equal assistance for either right or left turn conditions. This change makes the new adjustment necessary, as the valve spool positioning is more critical. To make the adjustment, the valve end cover is removed, and the self-locking nut turned as required to obtain equal feel in right or left turns. (fig. 1).

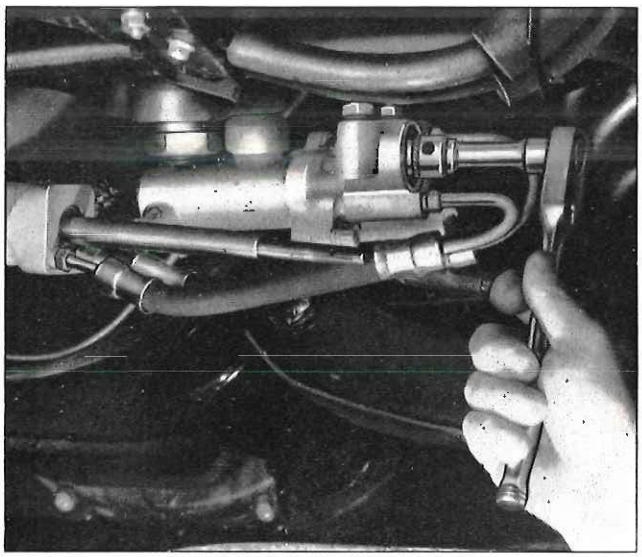

Fig. 1—Power Steering Control Valve Adjustment

Pump

The power steering for 1960 has a new power steering pump.

The new pump, no longer driven from the rear of the generator, is belt driven. On V-8 models, it is mounted below the generator and is driven by a separate belt. The pump belt is driven by the front groove of a three-groove pulley on the crankshaft. It is essential that the generator drive belt used be of the correct length, as a belt that is slightly long will produce interference with the power steering pump. On 6-cylinder models, the pump is mounted above the generator, and is driven by a belt running in the front groove of a two-groove crankshaft pulley. The chief advantage of this new installation is that since the generator armature speed is not involved, a larger pump pulley can be used. By slowing down the pump, greater durability and quietness are achieved.

REAR AXLES

An improvement in fuel economy is expected from the use of the 3.08 rear axle on 283 V-8 engines teamed with Powerglide. The 3.36 axle was used in 1959 with this combination. If factory optional Air Conditioning is ordered on 283 Powerglide models, the 3.36 axle will be installed. The 283 engine used with the three-speed transmission will use the 3.36 axle, which was 3.55 in 1959.

Rear axles for use with high performance engines (RPO577) and with 4-speed transmissions (RPO-685) are 3.70:1, replacing the 3.55:1 axle used on past models.

BRAKES

Conventional Service Brakes

An increase of $\frac{1}{16}$" in the diameter of the front wheel cylinders, produces a softer pedal feel and gives a better distribution of braking effort between front and rear wheels.

The change in the cylinder size makes it necessary to use new front brake shoes with a modified piston rod notch. 1960 shoes can be used on 1959 models, but the 1959 shoes will not function properly on 1960 models.

A new frame bracket, at the point where the flexible front brake lines join the metal brake piping, prevents twisting of the flexible lines when tightening the coupling end of the hose. Always connect the coupling end of the hose last when replacing a hose. A lengthwise paint stripe makes any hose twist obvious. Always install the line with the paint stripe straight.

The brake adjustment specification is 12 notches loose from a light, uniform drag. This is the same specification as was introduced in mid-season 1959.

Parking Brake

The 1960 parking brake pedal assembly is entirely new (fig. 2). A ratchet mechanism, built into the assembly, returns the foot pedal to the normal position after each downward stroke. With properly adjusted brakes, one stroke of the pedal is all that is necessary to apply the brakes.

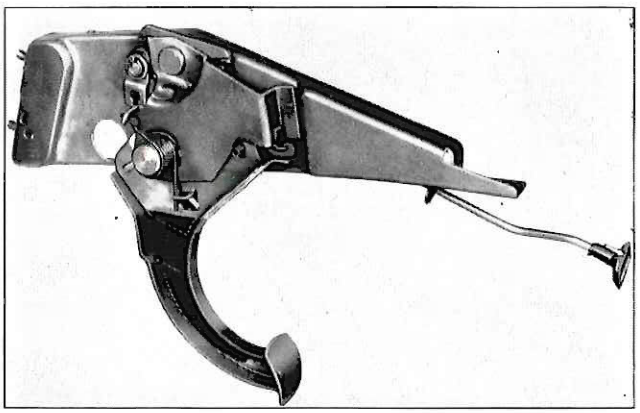

Fig. 2—Parking Brake Pedal Assembly

A new front brake cable clevis of the open strap type permits easy servicing of the adjusting nuts without removing the clevis as in the past. The cable idler lever movable end is suspended on a swinging link from the frame to eliminate rattles, binding and freezing up.

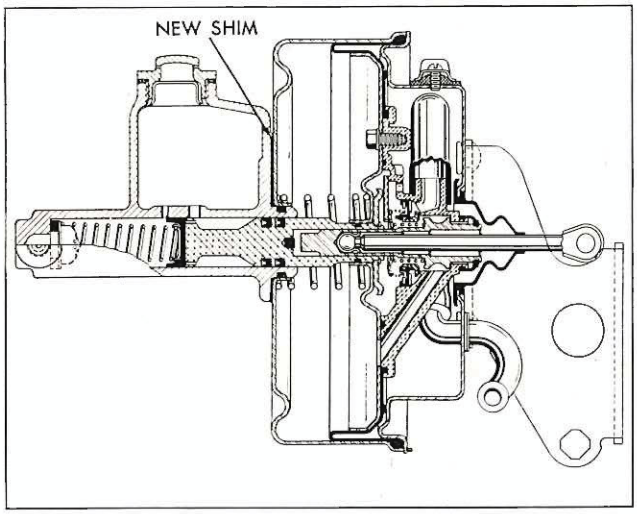

Fig. 3—Shimming Arrangement for Moraine Power Brake

Power Brake

The only power brake change for 1960 is in the Moraine (cam and slot lock) type. A shimming arrangement (fig. 3) between the master cylinder and the power cylinder requires a new gauge for proper shim selection.

The master cylinder piston is .046" shorter than the 1959 model. By proper shim selection, the piston-to-compensating port clearance can be closely controlled to provide minimum pedal travel before the brakes begin to apply.

ENGINE

Six-Cylinder Engine

The 235 line-six engine is unchanged for 1960. When power steering is installed, a new harmonic balancer is used with provisions for a bolt-on double groove pulley.

283 Cu. In. V-8 Engines

Corresponding to the improvement in the 1959 Hi-Thrift Six, the 1960 283 2-barrel carburetor V-8 engine is equipped with a low lift camshaft for decreased valve lift and consequently more economical operation.

The change in camshaft provides an improvement in low and middle-speed performance, with smoother and more economical idling.

348 Cu. In. V-8 Engine

The 348 V-8 engine is being carried over into 1960 the same as 1959 except for slight revisions.

Ignition timing on the regular camshaft 348 cu. in. engines (4 barrel and 3x2 carburetor) should be set at 8° BTDC. On the special camshaft engines, ignition timing should be set at 12° BTDC.

Engine Cooling

The radiators used with the 235 and 283 engines are new. The 1960 grille design has a greater area of unrestricted openings, permitting more air flow to the radiator core. Therefore, radiators of lower cooling capacity are used, and are not interchangeable with the 1959 models. For 1960 service replacement, the 1959 radiators are to be used.

Oil Filters

Full flow oil filters are standard equipment on all V-8 engine models.

Fan Belts

The fan belts for 1960 are revised from their former sizes and routings. The length of the belts is carefully controlled, since belts that are slightly too long may interfere with other engine components. This is particularly critical on power-steering models.

ELECTRICAL

Gasoline and Temperature Gauges

The design of the gasoline gauge and temperature gauge has been improved to make these instruments more accurate, particularly in the half-full to full range of the gasoline gauge. The indicating hand now is counterbalanced in a neutral position. The 1960 gauges may be used to service 1959 models.

One caution must be observed by the motorist in using the new gauges. The gauges do not return to zero when the ignition switch is turned off, and the uninformed owner may think he can get an accurate reading even with the switch turned off. Such is not the case. The indicating hand will "float" rather freely, and stay in any position when the switch is off. Any reading with the switch off should be ignored.

Generator Regulators

A modification to the voltage regulator produces less variation in system voltage with changing temperatures. The occurrence of excessively high voltage during cold weather is less frequent, reducing the tendency to "blueing" the distributor points. Thus, a new temperature compensation table is in the Shop Manual, and must be used for adjusting the Voltage Section of the 1960 Generator Regulator.

In addition, a new voltage and current contact point adjustment mechanism provides easier and more exact adjustment of the regulator air gaps.

Shift Quadrant Lamp

On Automatic Transmission models, the shift indicator quadrant is illuminated. A socket within the turn signal housing carries a bulb that projects through the housing and into the quadrant bezel. The light, passing through a green filter, edgelights the quadrant. The lamp is on the panel rheostat circuit and thus will dim with the panel lights.

Ignition Coil

The ignition coil primary resistor wire in the starter harness is 12 inches longer. This changes the resistance in the coil primary wire from 1.5 ohms to 1.8 ohms. This will aid in preventing "blued" distributor points during cold weather operation. This change lowers the specifications for the ignition coil primary voltage check by .5 volts. The new specification is 4.5 to 6.5 volts.

FUEL AND EXHAUST

Fuel Tank

The separate fuel tank vent pipe is no longer used, and a vented cap serves to vent the tank. Use caution not to install a 1959 cap on a 1960 model, as it can cause stoppage of fuel supply to the fuel pump and/or collapse of a fuel tank.

Air Cleaner

A positive advantage in economy for the 2-barrel V-8 engine is the introduction of a polyurethane air cleaner element. Less subject to injury than the paper element, this oil wetted air cleaner can be cleaned repeatedly. Ordinarily, the element is rinsed in a solvent such as kerosene after 5000 miles of use. After the solvent has been squeezed out, the element is re-oiled with clean engine oil. Do not wring-out to remove excess oil or kerosene. Just squeeze until oil does not drip off. Excess oil can be squeezed out without damage to the resilient polyurethane material.

Exhaust Systems

The tail pipes on all models are contoured the same as the late production 1959 Station Wagons, with the discharge just behind the rear wheel.

Mufflers of improved construction, stronger and more corrosion-resistant than the 1959 mufflers, are used with V-8 engines.

STANDARD TRANSMISSIONS

Three-Speed Transmission Shift Linkage

The three-speed hand shift lever is longer to improve shift characteristics and reduce effort. The new lever can be used for 1958 and 1959. The aluminum adjusting ring at the bottom of the shifter tube has been replaced by a steel ring to provide better resistance to thread stripping when too much torque is applied on the bolts.

With the steel ring, a selector plate clamping ring, as used in the past with the automatic transmission shift tube adjusting ring, must be used to give a flat surface for the bolt head to seat on.

Four-Speed Transmission

In addition, a change to provide better machining in the shift linkage makes it necessary to use a new, thicker shift lever adjusting gauge. The gauge is the same size as before, with the thickness increase of 3/8" to .385".

AUTOMATIC TRANSMISSION

Powerglide

An all-welded converter assembly will be used in partial production on the Powerglide transmissions. This unit is welded around the outside diameter, in place of the "O" ring and bolts used in the past. By eliminating this joint, the possibility of oil leaks at this point is minimized.

Turboglide

The Turboglide transmission is carried over from 1959 with only one change. The needle thrust bearing located between the converter cover and the first turbine hub has been replaced with a one piece thrust washer. The new thrust washer is made of Spauldite, a black synthetic material similar to Mylar.

BODY AND SHEET METAL

Body

Changes in body structure for 1960, other than the major exterior appearance change, are limited to the tunnel area, and provide more leg room for a passenger seated in the center of the front seat. The front tunnel is reduced in height about 1 1/4 inches, and narrowed by as much as 1 1/2 inches. These changes to the tunnel represent a gain in passenger compartment volume of approximately 475 cubic inches, or about 28 percent reduction in tunnel volume.

All models except the hardtops and the Convertible have a straight slope windshield and use solid safety plate glass for all side windows. The Sport Coupes, Sport Sedans, and the Convertible continue the compound curved windshield, and use laminated safety plate glass for the side windows.

Optional 4-Way Seat

A new 4-way power seat is offered, in addition to the 1959 style 6-way power seat option. The single 4-way switch enables the driver to choose any fore and aft position, and any raised or lowered position

available on the 6-way seat option. The tilting feature, however, is not included. The 4-way unit is powered by a single electric motor, and is controlled by a single switch positioned as on the 6-way seat.

Windshield Wipers

Factory optional accessory windshield washers used with standard single speed electric wipers are driven mechanically, from the wiper motor. This construction is very similar to the washer pump used on the 1959 and 1960 two-speed windshield wiper.

The two-speed wiper linkage is unchanged from 1959, but the 1960 single-speed wiper has a new linkage arrangement. The reversing link on the right hand wiper transmission is discontinued, and a new, second arm on the wiper motor shaft provides the reversing feature for conventional blade action.

Hood Lock

The 1960 passenger car hood lock is the dovetail, positive retention type. A bolt type adjustable dovetail is mounted on the upper plate, fastened to the hood by bolts in slotted holes. The bottom plate and latching mechanism is simply bolted in place with no provision for adjustment. The adjustment procedure is to adjust the hood bumpers for sheet metal fit, and tighten up on the dove tail until the hood will not latch when slammed. Back off the dove tail bolt ½ turn at a time until the hood will just latch when firmly slammed. This will provide maximum hood retention to prevent hood flutter at high road speeds in a headwind. If the bood latch release effort is too high with the above adjustment, back off on the dove tail adjustment ½ turn.

AIR CONDITIONING AND ACCESSORIES

All-Weather

The All-Weather Air Conditioning Unit for 1960 is basically unchanged, but has a new center air outlet and a modified receiver-dehydrator. The 1960 assembly can he used on the 1959 models. The unit is now also available on six-cylinder engine models, with either standard or automatic transmission.

Cool-Pack

The 1960 Cool-Pack unit, while operating the same as in 1959, is almost completely new. The blower is mounted under the instrument panel near the right hand kick pad, and connects by a duct to the new evaporator suspended forward of and under the instrument panel. Relocated air outlet louvers give improved air circulation.

The Cool-Pack condenser and receiver-dehydrator are modified in the same way as the All-Weather unit.

OTHER ACCESSORIES

Speed and Cruise Control

New for 1960 is the Speed and Cruise Control, a device that enables a motorist to cruise steadily at a desired speed. This new accessory does not replace the speed indicator and throttle lock introduced in 1959, but is an addition to the accessory line. The Cruise Control notifies the driver when he has reached his chosen road speed, and also helps him to maintain the selected speed.

Viscous Fan Drive

The thermostatically modulated viscous fan drive is part of the All Weather air condition when installed in V-8 cars as Factory Optional Accessory 110. This fan drive does not apply to the 6-cylinder engine. If the All Weather Deluxe Air Conditioner is purchased from a dealer, the temperature modulated fan is not part of the accessory. It is available as a separate accessory, however, for both air conditioned and non-air conditioned cars with V-8 engines.

The new Fan Drive is automatically regulated by under-hood temperature. As under-hood temperature rises, the drive automatically increases fan rpm to produce required cooling.

Corvette

ENGINE

All of the 1960 Corvette engines have the oil economy improvements in cylinder heads, as on the 1960 passenger car 283 engines.

Fuel Injection Engines

The optional fuel injection engines are equipped with aluminum cylinder heads. Aluminum has inherent advantages in its light weight and superior heat conductivity.

Special rocker arm studs are used that screw into the head and have a lock nut to hold them in place. Steel valve spring seats are used between the valve springs and the head, and it is important that they always be used in service operations. Cylinder head bolts are installed at the same torque as used on cast iron heads, but special, cadmium plated, hardened steel washers 1/10" thick are used under the bolt heads, and must always be used in service.

Special spark plugs are used with this new head, and are of the same design as the spark plugs used in the Corvair engines. The spark plug supplied in production is a 44 FF, and the spark plug suggested for extreme duty operation is a 42 FF.

1960 CHEVROLET REFINISH PAINT CHART

Passenger Car Acrylic Exteriors (Including Instrument Panel)

Combination Number				ACRYLIC LACQUER			REGULAR LACQUER	
Pass.	Corvair	Corvette	Color	Lucite Stock No.	R-M Stock No.	Ditzler Code No.***	"Duco"**	R-M Stock No.**
900-A	902-A	503-A	*Tuxedo Black	88L	A-946	DDL 9300	44	400
903-A	904-A	517-A	Cascade Green Met.	4029-L	A-1214	DDL 42693	93997	1214
905-A	906-A	—	Jade Green Met.	4033-L	A-1215	DDL 42650	93994	1215
910-A	911-A	502-A	Horizon Blue Met.	4030-L	A-1210	DDL 12234	93998	1210
912-A	913-A	—	Royal Blue Met.	4032-L	A-1209	DDL 12174	93995-H	1209
915-A	916-A	504-A	Tasco Turq. Met.	4025-L	A-1211	DDL 12228	93996	1211
920-A	—	—	Sun Tan Copper Met.	4031-L	A-1217	DDL 21841	93991	1217
923-A	924-A	506-A	*Roman Red	2931-LH	A-1138R	DDL 70961	29671	1138R
925-A	—	—	Crocus Cream	4028-L	A-1200	DDL 81202	93993	1200
936-A	937-A	510-A	Ermine White	4024-L	A-1199	DDL 8259	94001	1199
938-A	—	—	Fawn Beige	4026-L	A-1197	DDL 21873	93992	1197
940-A	944-A	509-A	Sateen Silver Met.	4023-L	A-1203	DDL 31928	93988	1203
941-A	—	D	Shadow Gray Met.	4027-L	A-1202	DDL 31905	93989	1202
—	—	523-A	Honduras Maroon Met.	4034-LH	A-1221R	DDL 50568	—	1221R

*Repeat from previous production.
**Passenger Car Bumper Valances, Gravel Shields and Wheels are factory finished in Baked Enamel. Apply Enamel or regular lacquer for refinishing.
***For Ditzler Regular Lacquer, use DAL prefix, for enamel use DQE prefix.

Passenger Car Interiors

Color	"Duco"	R-M Stock No.	Ditzler Code No.	Code
Black	44	A-946	*9248	P-H
*Red	2967-H	A-1138R	*70961	P-C
Med. Gray Met.	93989	1202	31905	P-H
Light Copper Met.	93991	A-1217	21841	P
Med. Green Met.	93994	A-1215	42650	P-H
Med. Blue Met.	93995-H	A-1209	12174	P-H
Med. Turq. Met.	93996	A-1211	*12228	P-H-C
Inca Silver Met.	94260	A-696	31425	H
Light Blue Met.	92808	U-2471	12018	C

*Repeat from previous production.
**To reduce gloss add Dupont 4528 "Duco" Lacquer Flattening Compound or equivalent.
NOTE: Car code: P—Passenger, H—Corvair, C—Corvette.

Truck Exterior Colors

Comb. No.	Color	"Duco" Stock No.	"Dulux" Code No.	R-M Stock No.	Ditzler Code***
700-A	*Jet Black	44	93-005	400	*9000
703-A	Neptune Green	4052	93-76550	U-3621	42698
705-A	Hemlock Green	4051	93-76549	U-3620	42699
707-A	Brigade Blue	4050	93-76548	U-2473	12233
708-A	Marlin Blue	4049	93-76547	U-2472	12232
710-A	*Tartan Turquoise	2707	93-75034	U-2330	*11807
713-A	Klondike Gold Met.	4054	181-15643	U-7163	21903
714-A	*Cardinal Red	2411-H	93-58209-H	U-5625R	*70704
715-A	Grenadier Red	4047-H	93-76545-H	U-5627	71108
716-A	*Omaha Orange	31	93-082	U-7880-D	*60156
718-A	Golden Yellow	4053	93-76691	U-7162	81196
719-A	*Yukon Yellow	174	93-6578	U-7161	*80028
721-F-G-H	*Pure White	817	93-21667	U-951	8080
723	Garrison Gray	4048	93-76546	U-1324	31998
**Two-Tone (Upper Color)	*Bombay Ivory	2059	93-72961	U-7757	*81196

*Repeat from previous production.
**Used on all series (except white on white jobs) on Radiator Grille and Bar Assemblies, Grille Areas on Front Fenders and Radiator Grille Baffle, Depressed area on Hood Filler Panel, Bumpers and Headlamp Bezels.
***Use DAL Prefix for laquer and DQE Prefix for enamel.

Truck Interior Colors

Color	"Duco" Formula No.	R-M Stock No.*	Ditzler Code**
Charcoal	73605	U-1123	31864
Silver Metallic	94162	U-1325	32029

*To reduce gloss add DuPont 4528 "Duco" lacquer flattening compounds.
**Use Prefix DUL for Textured Lacquer and Prefix DL for Lacquer.

Engine Cooling

The Fuel-Injection and 2 x 4 carburetor high-lift cam engines are equipped with aluminum radiators. These all new radiators are of the cross-flow, drawn-cup type.

Due to the physical properties of aluminum, these radiators will require special maintenance and repair procedures. Recommended servicing for a standard brass and copper radiator may actually destroy an aluminum radiator.

SUSPENSION

A heavier front stabilizer bar is standard equipment on all Corvettes. A new rear stabilizer bar, similar in construction to the front stabilizer bar, is also standard equipment.

Corvair

LIFTING INFORMATION

Figure 4 shows the available lifting areas for the Corvair. These are the only places that are approved for lifting. Each hoist manufacturer has adapters available for his own hoist. In general, most frame contact type hoists will not require adapters, but the axle pick-up types will require modification.

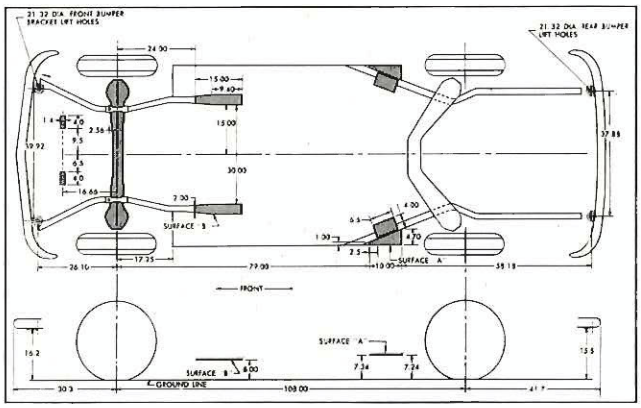

Fig. 4—Corvair Lifting Areas

The fuel tank is located behind the front axle and ahead of the body sill lifting pads. Use care not to hit the fuel tank with hoist sections.

CAUTION. *If the rear of the vehicle is supported at the rear lifting pads, and the luggage compartment and fuel tank are empty, the vehicle will begin to teeter on the rear lifting pads (the front end lifting) if more than about 200 pounds load is placed on the rear end. Chain or tie-down the front end to prevent mishap.*

TOWING PRECAUTION

If it should be necessary to tow a Corvair with the rear wheels lifted off the ground, there is one precaution which should be observed. If the lifting sling chains are attached to the rear suspension control arms, the grille and sheet metal under the bumper are subject to damage. To prevent this, place a 4″ x 4″ wooden post or board about 3 feet long under the rear skid plate, above the towing chains. The skid plate is in front of the grille and sheet metal and behind the engine oil pan. This will space the chains out from the grille and sheet metal, and prevent damage.

FRONT SUSPENSION

All front suspension components are assembled as a unit with the front suspension cross member. This unitized front suspension assures a consistently high quality in production, alignment being accomplished under closely controlled conditions in manufacture. Spherical joints and anti-dive suspension geometry also are featured.

The upper control arm stampings are similar in design to those of the regular passenger car, but of smaller dimensions and lighter gauge metal (fig. 5). As in the full-size Chevrolet, upper spherical joints utilize non-metallic bearing liner halves and a rubber loading ring to compensate for wear.

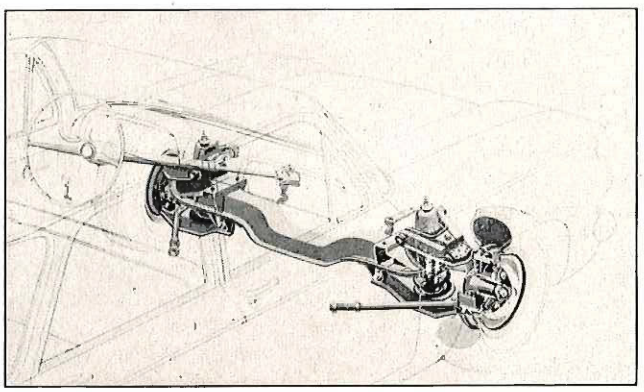

Fig. 5—Front Suspension

The lower control arms are of a new 2-piece design. The larger piece is a stamped, flanged, channel-section beam, supporting the car's weight. The smaller piece is a bar-like strut which provides a triangular structure for rigidity.

Incorporated in the stamped larger piece are a rubber-bushed mounting on the inner end, a spherical joint mounting flange at the outer end, and the coil spring seat at an intermediate point. The strut is solidly bolted to the beam near its outer end, and angles to the rear and inward where the inner end is mounted with two rubber bushings. The inner end of the strut is threaded so that the front suspension caster angle may be readily adjusted by varying the length of the strut (fig. 6).

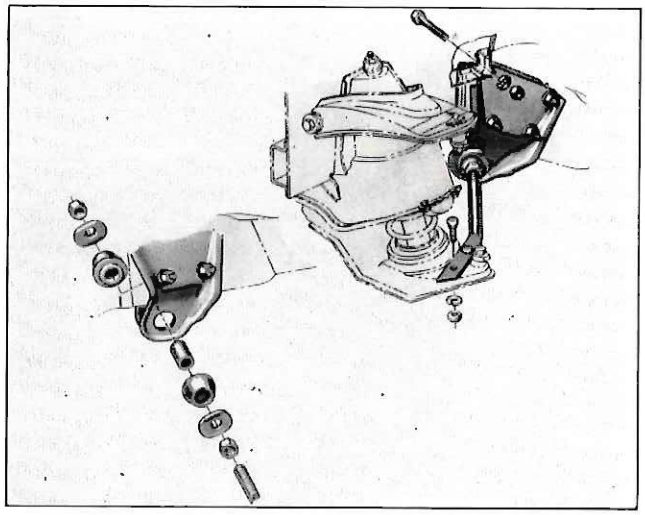

Fig. 6—Strut Rod Adjustment

Camber is set at ½ degree positive, plus or minus ½ degree, at curb weight and is obtained by shimming the upper control arm cross shaft in the same manner as Passenger Car. Adding shims reduces the camber, removing shims increases camber. It is desirable to hold the camber adjustment within ¼ of a degree from one side to the other. Caster is a positive 3½ to 4 degree (current production) and is obtained by adjusting the strut rod length. Lengthening the rod increases the caster, shortening the rod decreases the caster. Toe-in is 5/32 to 7/32 per wheel at curb weight and is obtained by adjusting the tie rods.

The Corvair Passenger Car has tapered front wheel bearings. To adjust these bearings, the nut is torqued to 80 inch-pounds (6-7 ft. lbs.) while rotating the wheel. Then back off the adjusting nut 1 to 1½ flats and insert the cotter pin. These bearings must not be preloaded, but should have from 0 to .004 end play.

REAR SUSPENSION

The swing-type independent rear suspension used on the Corvair (fig. 7) provides ride features of particular significance to the "compact" car, plus the always desirable positive control of suspension geometry.

With the swing-type suspension, the differential and final drive gear case is rigidly mounted to the sprung mass of the car; the axle shafts are individually driven through U-joints (fig. 8) on each side of the differential. The swing-type suspension gets its name from the fact that suspension travel is provided by allowing the wheels to swing through arcs of a radius equal to the axle shaft length.

Because the rear wheels are independently suspended, new geometry factors must be considered.

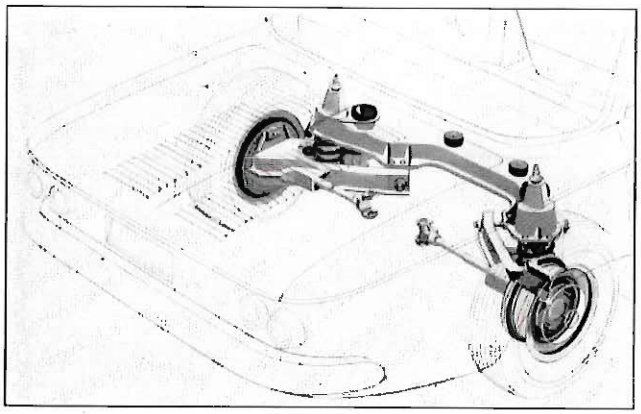

Fig. 7—Rear Suspension

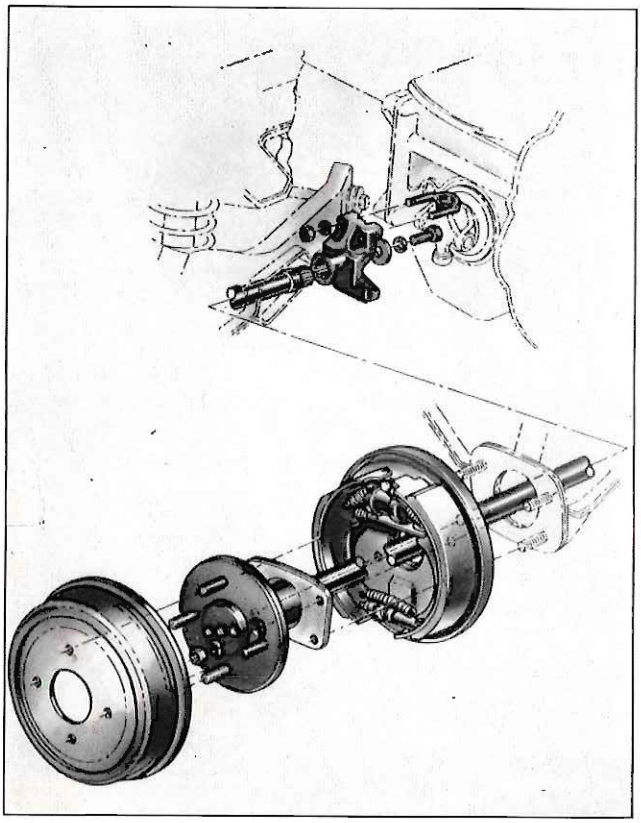

Fig. 8—Axle Shafts and U-Joints

Toe-in is designed to increase positively as the suspension moves up or down from the design height position. Thus, since the outside wheels carry the greatest weight in turns, the toeing-in characteristics of the rear suspension create a desirable understeer geometry.

To adjust the toe-in setting, the transmission mounts in front may be shimmed to move the entire engine - differential - transmission assembly fore or aft. Such movement moves the axle shaft inner ends, making it possible to obtain the proper straight ahead alignment at design weight. The

toe-in should be 0 to 1/4" at the front of the rear wheels and can be checked by the usual toe-in checking equipment. If the car is backed onto a machine, the toe-in will register as toe-out.

STEERING

The steering gear is a highly efficient recirculating ball-type unit with a ratio of 18-to-1. Cast aluminum is used for the steering gear housing to save weight. A metal pitman shaft bushing is pressed into the housing. Worm bearing and over-center adjustments are performed in the same manner as the regular passenger car.

Provision is made to permit periodic lube inspections of the steering gear from underneath the car, so that the luggage compartment need not be disturbed or exposed to soil from lube spillage.

Steering linkage of the Corvair is very similar to that of the regular passenger car in lay-out and specific components.

BRAKES-WHEELS-TIRES

The brakes are the duo-servo design that provides maximum effectiveness with minimum pedal effort. A very favorable lining area-to-vehicle weight ratio insures long life.

Every car when decelerating undergoes an effective weight transfer to the front. In the case of the Corvair, which statically is heaviest on the rear wheels, the weight transfer when braking is advantageous. The braking weight transfer tends to make the actual weight distribution more nearly equal, and thus permits a similar distribution of braking effort.

When adjusting the front brakes a close clearance condition exists between the front control arms and the steering wheel stop. A special adjusting tool should be used, with a 30 degree cut on the end. The adjusting action is the same as on the passenger car, that is, raise to tighten and lower to back off. The front brakes are adjusted in the normal manner, with a specification of 12 notches loose from a hard drag. This is the same as seven notches loose from a light drag. A heavy drag can best be explained as the effort necessary to just rotate the wheel assembly. The rear brakes must be adjusted to 20 notches loose.

Parking Brakes

Parking brakes (fig. 9) are provided through cables and linkage to the rear service brakes, and are applied by pulling a ratcheting, pistol grip, hand lever. The parking brakes have the double stroke feature of the new passenger car parking brake design, and an instrument panel mounted release and indicator knob. When the parking brakes are applied, the knob pops-out 2 inches providing visual indication that the brakes are applied. To release the brakes, the knob is pulled out another 3/4 inch. This action prevents the release of the brakes by accidentally striking the knob, when entering or leaving the car.

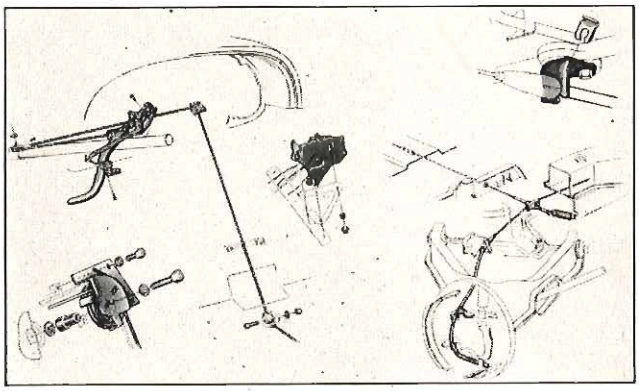

Fig. 9—Parking Brake System

Wheels

Wheels are 13 inches in diameter with 5.5-inch wide rims. Design and construction of the wheels is similar to the regular passenger cars, which includes cooling slots, and welded disk-to-rim assembly.

Tires

Tubeless type, Tyrex cord tires, size 6.50 x 13, are regular equipment and provide the best combination of stability and ride quality when inflated to 15 psi front and 26 psi rear, cold. Normal operating pressures usually average about 3 psi more in front, and 4 psi more in rear.

The steering response picks up quickly if 16 or 18 lbs., pressure (cold) is used in front. This would lead to customer complaints of over-steer. Compare the front pressure to the rear pressure, and there should always be about 11 or 12 psi differential anytime they are checked.

All tires used on the Corvair feature the same improved tread material used on the regular passenger car.

All wheels need to be balanced the same as on the passenger car. The rears are balanced the same as the front. The balance weight should be on the inside of the rim.

The wheel and tire bead construction on the Corvair is such that the tire beads and bead seats must be liberally lubricated when mounting or changing tires. Use vegetable oil soap or a material such as RuGlyde Rubber Lubricant. If this lubrication is not used, the tires will probably be seriously damaged in the bead area.

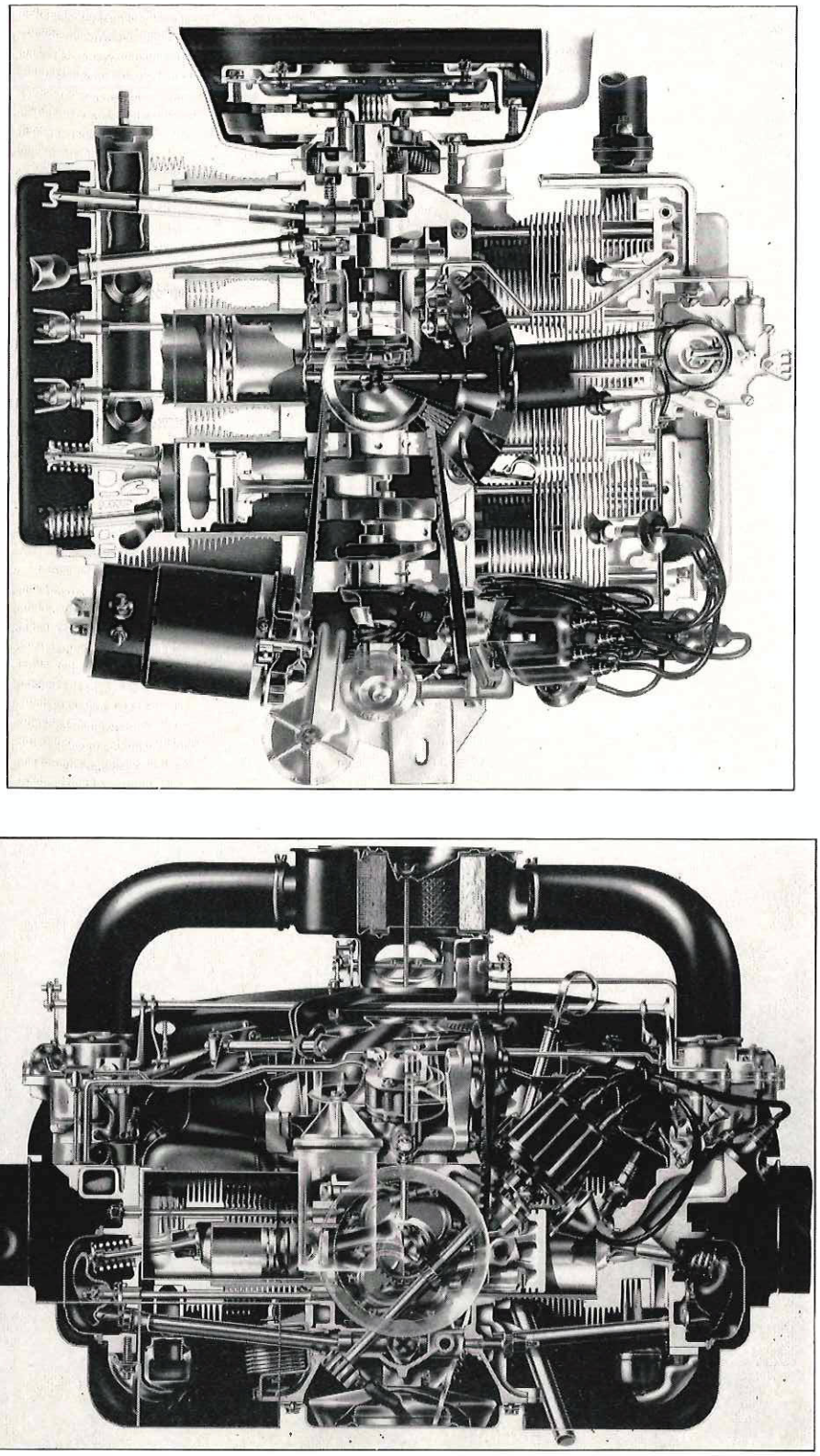

Fig. 10—Corvair Engine Cross-Section

ENGINE

General

The engine in the Corvair passenger car is a gasoline-burning spark ignition piston engine, like other Chevrolet engines. Beyond these basic elements, the engine has little similarity with the in-line or V-type water cooled engines that power the larger Chevrolet cars.

The 6-cylinder Corvair power plant is a horizontal air cooled engine (fig. 10). Commonly called an opposed cylinder engine, it is perhaps most easily visualized as a V-type engine, with the angle of the V, between the banks of cylinders, enlarged to 180 degrees.

Type	*Corvair Horizontal-opposed Valve-in-head*	*6-Cylinder In-line Valve-in-head*
Bore	3.375	3.56
Stroke	2.60	3.94
Displacement (cu. in.)	140	235.5
Cylinders	6	6
Weight	310	555
Compression Ratio	8-1	8.25-1

The engine's direction of rotation, viewed from the flywheel end, is clockwise. Viewed from the crankshaft pulley, or from the rear, the rotation is counterclockwise. This is opposite to all other Chevrolet engines. The flywheel end in this case is toward the front of the car, as the transmission is forward of the engine. The cylinder numbering system also is reversed with the engine mounted "backward." The right rear cylinder, then, is number 1 and the left rear is number 2. The firing order is 1-4-5-2-3-6.

Crankcase

This engine has no conventional cylinder block. The central, structural member of the engine is the aluminum alloy crankcase, which is roughly rectangular in shape (fig. 11). Cast in two halves, the crankcase is held together by bolts at the vertical parting line.

Each half of the crankcase has three pilot openings for the cylinders mounted into it at the sides. Each trio of individual cast iron cylinders is held in place by a cast aluminum cylinder head, which contains all three combustion chambers for its bank. Twelve long studs—four to each cylinder—secure the head and its cylinders to the crankcase.

No separate main bearing caps are required in this engine, since the four steel-backed babbitt main bearings are supported entirely by the crankcase at the junction of the two halves.

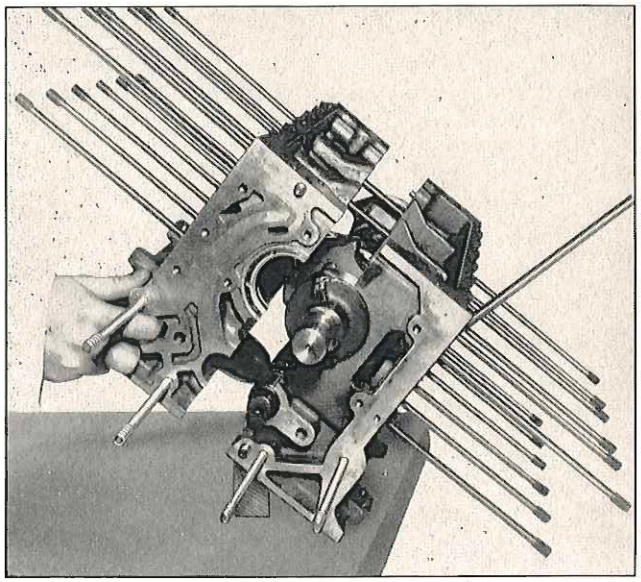

Fig. 11—Crankcase

Crankshaft

The forged steel crankshaft has six throws arranged in pairs. Each crankpin is 180 degrees removed from the other member of its pair, and the pairs are 60 degrees apart. This arrangement produces a crankshaft with inherent balance, and no counterweights are needed.

Camshaft

Centrally located below the crankshaft, the modest-lift camshaft is out of the ordinary in that it has only three exhaust valve cams. These lobes are twice the width of the intake valve cams, so that each exhaust valve lobe actuates the push rods for a pair of exhaust valves.

Cylinders

Each cylinder of the Corvair engine is an individual iron casting, with 14 individual fins on the outside (fig. 12).

For service replacement, there is a kit that contains one cylinder, piston, piston pin, and necessary rings. Thus, there is no piston fitting problem.

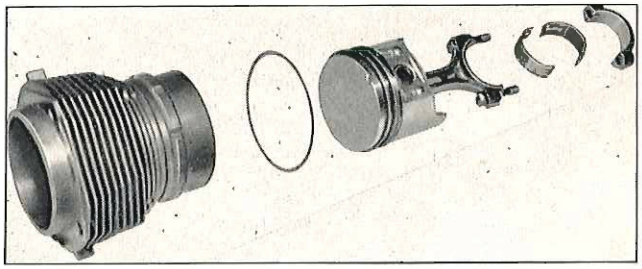

Fig. 12—Cylinder

Cylinder Heads

The cylinder heads are cast aluminum, with wedge-shaped combustion chambers. Spark plugs are at the top when the engine is in the installed position. The valves, which are in line, alternate exhaust with intake.

The cylinder head studs require special attention. They are stressed very highly and as a result do not have much tolerance for knicks or damage on the shank of the stud. These studs can be serviced individually and when a damaged thread would necessitate replacement of individual studs, the new installation must have an interference at the pitch diameter of the thread. This is necessary in order to maintain an oil seal as the studs go through into the crankcase, and to keep the studs from working in the threads and becoming loose. In order to cover this in service an oversize pitch diameter stud is used to take care of the ironing out of the threads in the crankcase. A minimum torque of 5 ft. lbs. has been set with torque being evidence of the pitch diameter interference of the thread. Torques are tolerated as high as 30 ft. lbs. as a maximum interference, so anything in the 5-30 ft. lb. range is acceptable. The studs are essentially not re-usable since the studs are usually defaced during the removal.

Periodic retorquing of the cylinder heads is not required.

Cylinder heads are interchangeable, differing only in plugs and hose connectors.

Pistons

The pistons are conventional flat cast aluminum alloy, with a light tin plate, each with two compression rings and one single-piece oil control ring. The piston pin is a press fit in the connecting rod. The pistons and connecting rods are all balanced to a specific weight.

Lubrication

The lubricating oil pump body is cast as an integral part of the rear engine housing, an aluminum casting that forms a substantial part of the rear structure of the engine. The drive gear of the conventional gear-type pump is fastened to a slotted shaft, which is driven by a mating tongue on the end of the distributor shaft. The oil pump gears are matched sets, selectively fitted to the rear housing for depth or end clearance. Gear end-clearance should be .002" to .0045".

A spring-loaded pressure regulator valve in the engine rear housing limits the maximum oil pressure to 35 psi.

Oil, leaving the pump travels up to the top of the crankcase where it enters the full flow oil filter, standard equipment on this car. From the filter, oil passes through the oil cooler, enters another gallery formed by the crankcase and rear housing, and then passes on to the main galleries. The main oil galleries, which are parallel passages running longitudinally through the crankcase, intersect the valve lifter openings, and act as valve lifter oil galleries as well as main oil galleries. The four main bearings and four camshaft bearings are supplied with oil at full system pressure through drilled holes in the crankcase bulkheads.

The oil cooler has been designed so that it is a serviceable package and can be removed easily for service. The oil cooler seals on two rubber seals. These seals are rectangular in section, similar to an "O" ring. An access plate is on the top shroud which can be removed to get in and remove any foreign material that accumulates on top of the cooler.

Cooling System

The engine is cooled by a blower which is mounted on top of the engine in a horizontal position. Air is drawn in through the inlet of the blower, discharged centrifugally, and loads the engine top cover with pressurized air. The air then passes over the cylinder head and cylinder fins and is discharged through two exhaust ducts at the rear of the engine (fig. 13).

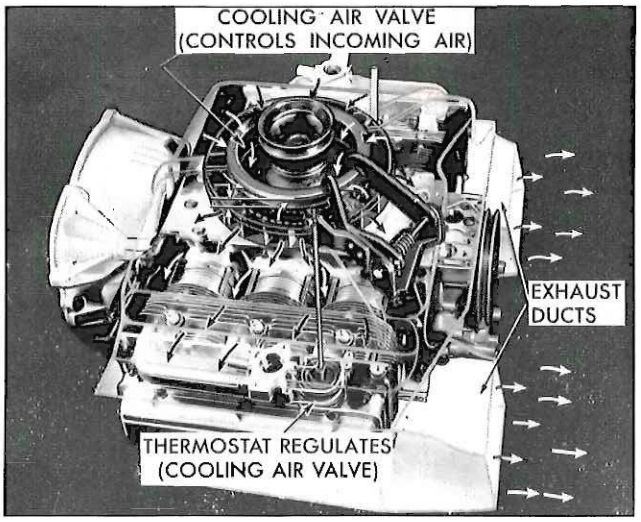

Fig. 13—Engine Cooling System

Blower

The blower is mounted on a water pump type bearing by a hub pressed on to the outer race of the bearing. The blower bolts on to this hub, and the shaft of the bearing is pressed into the crankcase cover. For service the bearing and hub can be pressed out of the crankcase cover for replacement.

Blower noise is quite effectively insulated on the Corvair, and the blower runout may be as

much as .020" without causing difficulties in balance.

All cooling air must be pulled in by the blower. The blower is belt driven from the crankshaft at a 1.6:1 ratio. The adjustment on the belt is made by adjusting the idler pulley to a 100 lb. load in a horizontal direction. This is equivalent to a 3/16 deflection mid-point on the belt under a 5 lb. load. If the belt is too lose, it will flutter to such an extent that it will interfere with some of the pieces on the engine.

Loose belts do not cause blower slippage, even under rapid acceleration, due to the high belt-wrap angles. Under emergency conditions, a 3/8" fan belt of the light industrial type, readily available in most hardware stores, can be used. It should be 56" long. This type of belt will not run long, but should be sufficient for an owner to reach a Chevrolet Dealership.

If a fan belt breaks, the generator warning light will light, which indicates to the driver the engine should be stopped immediately. To run this engine without a belt is to invite serious engine damage, as certain parts of the engine can get very hot quickly without the blower running.

Snow or ice blockage of the air inlet louvers in the engine compartment lid does present a minor problem. The owner's instructions are to sweep off any accumulations. Air flow past the car is such that the air will clean the lid off rapidly. If the louvers are blocked, the first symptom of trouble is a lack of engine power as the air for combustion is restricted. This lack of power becomes quite noticeable before any cooling problem arises.

Cooling Control

Air flow control for the engine is accomplished by a cooling air throttle valve which moves in and out of the eye of the blower. In the event of a failed thermostat bellows, the ring will be in the open position so that the system is a fail safe system. If the thermostat fails, the engine will not overheat, but there may be trouble driving away in cold weather. There is one adjustment to be made on the thermostat and that is to adjust the opening of the ring relative to the top shroud directly opposite the hinge. The adjustment is made by a carburetor type swivel on the thermostat rod which is adjusted to fit in the hinge lever so that with the thermostat pulled up against the wide open stop there is an inch and a half opening between the ring and the bottom of the blower. While the ring can be picked up and the thermostat pulled up against the stop, it is advisable to accomplish the adjustment by heating the engine by driving the car for a couple of blocks, then letting it idle until the ring opens to the wide open position. Then, with the thermostat expanded against the stop by heat, make the adjustment on the ring.

The blower damper ring thermostat starts to open the damper ring at about 180°, and the damper ring is fully opened at about 200°.

Service Precautions On Aluminum Parts

Gasket surfaces on aluminum parts should never be scraped for cleaning. Use denatured alcohol or other solvent.

Anti-seize compound must be used in locations where steel bolts enter aluminum threads. This compound, available through regular parts channels as Part No. 3776999 in one pound cans, must be used on all threads except the spark plug threads. The compound serves to prevent thread seizure as well as acting as a sealer.

CLUTCH

The Corvair clutch is similar to the one used with the synchromesh transmission in the larger Chevrolet cars. The major difference is the driven disc does not have the spring loaded hub, nor does it have the friction dampening springs. It is not necessary for this vehicle, because the input shaft from the clutch to the transmission is torsionally soft.

REAR AXLE

The Corvair differential carrier is compactly sandwiched between the engine-clutch and transmission (fig. 14).

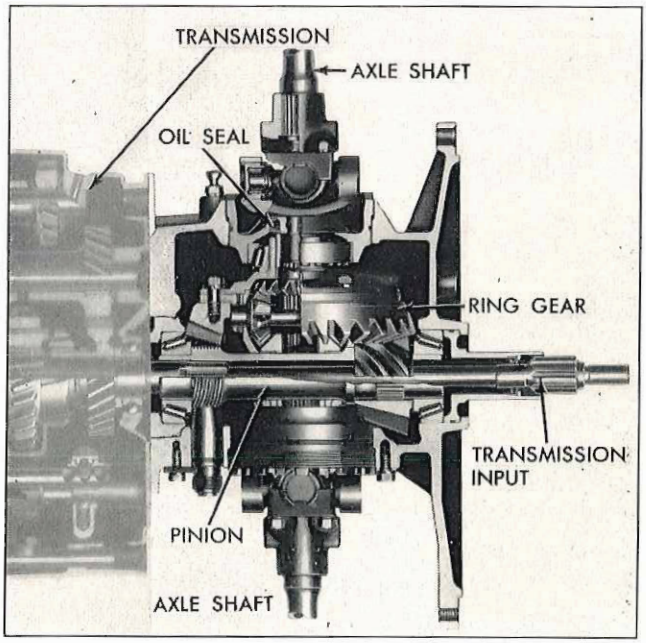

Fig. 14—Rear Axle Cross-Section Top View With 3-Speed Transmission

Oil seals are pressed in each differential bearing adjusting sleeve, and are easily serviced without disturbing any rear axle adjustments. Each oil seal has a lip that seals against a machined surface of the universal joint.

The differential carrier and 3-speed transmission share a common lube supply. As used with the automatic transmission, the differential carrier has its own lube supply, because the extreme pressure additives required with the high offset, hypoid, final drive gears are not available in present day automatic transmission fluids.

The design and location of the differential bearing adjusting nuts is new for this model. The adjusting nut is a sleeve with a differential bearing outer race and an oil seal pressed into it. It screws directly into the side of the carrier and is sealed on the O. D. with an "O" ring. The nut is locked externally with a lock plate. Servicewise, the oil seal can be replaced without disturbing the unit and is readily accessible from under the car.

The standard axle ratio is 3.55:1 (9:32 combination). This is released for both 3-speed and automatic transmission jobs. There is an optional 3.89:1 ratio (9:35 combination) available on all models.

STANDARD TRANSMISSION

3-Speed Transmission (fig. 15)

The regular equipment 3-speed transmission represents a departure from conventional practices in its application. Though many of the interior components are the same or similar to regular passenger car counterparts, unusual qualities stem from its mounting directly to the differential carrier, its cast aluminum case, and also from the fact that the input and output shafts are concentric.

The general arrangement of this transmission may be visualized by considering the regular 3-speed transmission as having a hollow mainshaft. Rather than have the clutch gear shaft pass through the front of the case as it does on the conventional transmission, let it pass from the rear through the hollow mainshaft. In this manner, both the input and output shafts are concentrically extended from the rear of the transmission case.

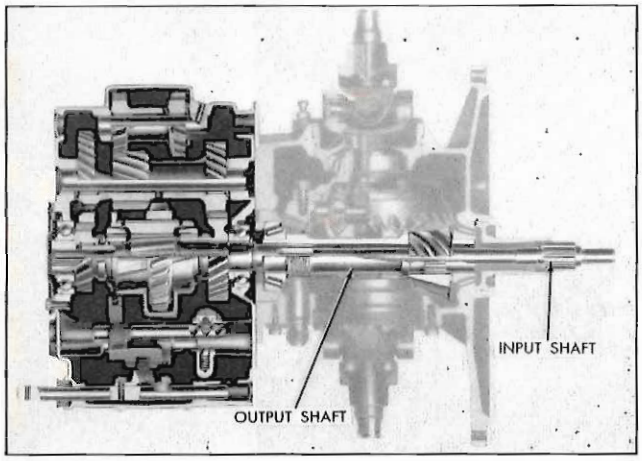

Fig. 15—Three Speed Transmission

Unlike other cars using similar final drive arrangements, the Corvair 3-speed transmission does not use any gears in third, therefore, driveline noise is minimized and mechanical efficiency maintained at a high level.

The aluminum case contributes to the low overall dry transmission weight of about 30 pounds (less control linkage).

The filler plug has been retained on the transmission, even though normally you could fill the axle and check the level in the axle. This is because after both units have been completely drained, it would be impossible to fill only the axle to its filler plug and be assured that there was adequate oil in the transmission. So the procedure is to fill both the axle and transmission after a complete drain. However, in checking level only, there would never be any point in checking the level in the transmission; if you had the proper level in the axle, the transmission would have its share.

Any hypoid lubricant will be adequate for the transmission except the active sulfur variety or mineral type of axle oils. The high sulfur type has a high tendency to disintegrate the bronze synchronizer cones in the transmission. Never use either type. Any ordinary multi-purpose axle oil, SAE80 is recommended.

AUTOMATIC TRANSMISSION

The air-cooled, three-element torque converter driving an automatic shifting, two-speed planetary gear set provides the Corvair with the same operating ease and comfort as the regular passenger car equipped with Powerglide. However, the Corvair automatic transmission is designed specially for the needs of the compact car and, therefore, many design features of this unit are unique.

Shift Controls

The transmission selector lever is mounted on the instrument panel. The short, tab-like lever has four positions providing Drive, Neutral, Low and Reverse. No Park range is provided.

The control cable on the first production Corvair Powerglide was held to the transmission case with a threaded nut. It is extremely important that this not be tightened over 9 ft. lbs. If this figure is exceeded, the transmission case will probably break. If oil seepage at the threads is en-

countered, use a sealer such as Permatex. Do not over tighten! Later production units have a cable attachment similar to the passenger car speedometer driven gear fitting. The cable fits into a non-threaded counterbore in the case and is sealed with an "O" ring. A retainer plate is bolted to the case.

Construction and Operation

The physical arrangement (fig. 16) of components is similar to the Corvair regular equipment 3-speed transmission and clutcb. That is, the torque converter is attached through a flex plate to the engine crankshaft. From the converter, the transmission input shaft goes through the hollow pinion and transmission output shafts.

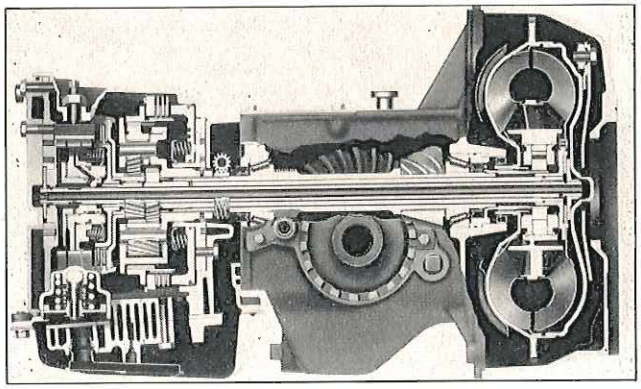

Fig. 16—Powerglide Cross-Section

Inside the transmission, the power flow is similar to that of Powerglide. A compound planetary gear set is employed to provide a 1.82:1 reduction for Low and Reverse. A double-wrap hand provides the reaction for Low, and a four-active face plate clutch connects the input and output for Direct drive.

Unlike Powerglide, the Corvair automatic transmission features an eight-active face plate clutch to supply the reaction for Reverse operation.

The transmission case itself is cast aluminum and contributes to the low overall weight increase of 53 pounds for the automatic transmission option. This is especially signficant in view of the low weight of the 3-speed transmission.

The 3-element torque converter is of special design, and features an all-welded cover to facilitate air cooling and provide a positive seal. None of the components in the torque converter are serviced, since it is a welded assembly. Maximum torque multiplication is 2.6-to-1.

Either the valve body or the governor can be serviced with the transmission in the vehicle. Other service operations require removal of the power train assembly. The transmission can be overhauled without removing it from the power train assembly.

Automatic Drive

When the selector lever is placed in the drive "D" range, the transmission shifts into low range. The clutch is released and the band is applied. The powerflow through the gear set is identical to a Passenger car Powerglide, including the gear reduction which is 1.82-1.

The transmission will automatically shift at 12 to 45 MPH depending on throttle position. When the shift occurs the low band is released and the drive clutch is applied.

Manual Low Range

In Manual Low Range the operation is identical to drive range before the transmission has shifted. The difference is full T.V. pressure is applied to the low and drive shifter valve, eliminating the possibility of an up shift, and inhibiting against a manual downshift above 45 MPH.

Reverse and Neutral

The powerflow in reverse and neutral is the same as the Passenger Car Powerglide. In reverse the internal gear is fixed, causing the short pinions to walk around the internal gear and the output shaft to turn backwards. In neutral there is no reactionary member so the output shaft remains stationary.

TUNE-UP

The Corvair engine does not require special tune-up procedures. While locations are different than on other Chevrolet engines, the same basic tune-up procedures and equipment apply.

CHASSIS ELECTRICAL SYSTEM

The Corvair has a 12-volt electrical system. Four wiring harnesses are used. The four sealed beam headlights are 5¾ inches in diameter and are similar to those used in the standard Chevrolet.

The oil tell-tale light will indicate both low oil pressure or high oil temperature. There is no separate temperature gauge on this engine since it's air cooled.

The gasoline gauge is of the improved "floating pointer" type also introduced on the large Chevrolet.

Electrically driven single-speed windshield wipers are standard equipment on the Corvair. Operating in parallel, the two blades wipe areas that overlap to a considerable degree.

Battery

The battery used in the Corvair is a 7 plate, 35 ampere hour battery and has a different cell arrangement than the batteries used up to now.

It is a 3 x 2, or an end for end type with 3 cells sitting end to end, forming the battery. Pull off caps instead of the normal screw off type are used. The cables for the battery are attached with a new clamping device. Depressing the spring with a pair of pliers permits installation and removal on the battery post.

Generator and Regulator

There is no generator adjustment for adjusting belt tension. An idler pulley on the opposite side of the engine is used for belt tensioning. This generator rotates in a reverse direction from the standard generator, and requires a reverse or left hand thread and nut.

The Corvair generator regulator is much the same as the new regulator used on the 1960 passenger car. The cut-out relay, however, has important differences. A new winding lay-out on the cut-out relay produces cut-out action with only 2-4 amperes of reverse curent flow. This is necessary on the Corvair engine, because it would be possible for the battery to motor the generator in the case of fan belt breakage while the vehicle was moving. If this happened, no driver warning would be evident because the generator tell-tale would not light up. By providing this sensitive reverse current cut-out relay, this possibility is eliminated, and a broken fan belt will be noted immediately by the illuminated, generator tell-tale light.

FUEL SYSTEM

An 11-gallon tank is used. The gas gauge tank unit is located on the bottom corner of the tank. More precaution has been taken to assure against leakage. A compounded rubber and cork gasket is used to improve sealing along with a ribbed gas tank flange in between the holes to give more stiffness to the flange. Cup type screws are used which have Neoprene cone shaped washers to seal around the screw hole. A water proof connector is used on the tank unit wire.

Fuel Pump

The fuel pump is of a straight, push rod type, with no rocker arm. Since the pump is driven by an eccentric on the crankshaft instead of the camshaft, it cycles twice as rapidly as a camshaft-driven pump, and for this reason a shorter stroke is used.

Carburetors

Both carburetors are identical and interchangeable and are single barrel, down draft carburetors with conventional float and idle system (fig. 17).

The carburetor design is distinguished by a main nozzle cluster that is quite different from the boost venturi type used on the regular passenger car. Instead of the ring-shaped end that forms a small boost venturi, the main nozzle terminates in a radial cluster of four small radial tubes. It has been found that this type of cluster is more effective with the relatively slow gas velocities developed with the dual carburetors and small displacement engine.

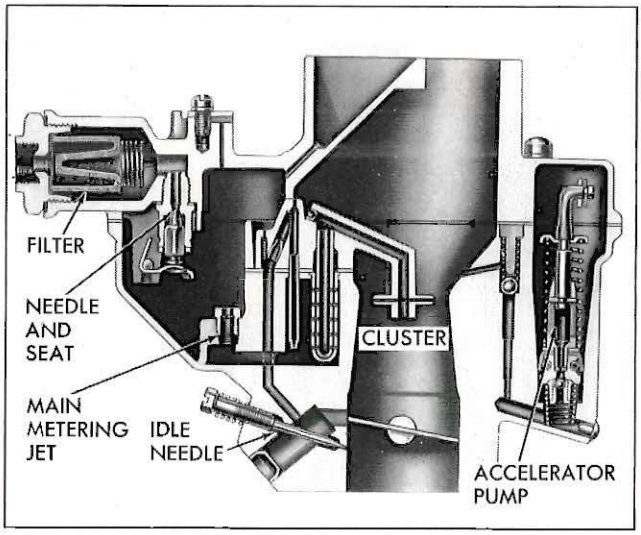

Fig. 17—Carburetor Cross-Section

The carburetor has the throttle body and bowl cast as one piece, and has no power enrichment system such as a power piston or metering rod.

The two carburetors are joined by means of a vacuum balance tube. The balance tube supplies the source of vacuum to the choke piston as well as to the vacuum modulator of the Powerglide transmission. Since it is necessary to have the steadiest vacuum possible to operate both of these units, it is done by taking vacuum from six cylinders instead of three.

Choke

An unusual feature of the 2-carburetor induction system of the Corvair engine is the location of the choke. The automatic choke mechanism operates on an air inlet pipe at the front of the air cleaner, instead of on the carburetors themselves. Thus the flow of air during cold start and warmup is regulated before it reaches the air cleaner.

An entirely new item is a choke modifier on the automatic choke. With a modifier, the choke thermostat is mounted on a rotating post that goes through the choke cover. The choke cover does not move since it has a square lug that locks it in place. The choke modifier is used to prevent "loading up" and excessively rich mixtures during the engine warm-up period.

When the engine is started cold and the throttle is opened considerably (such as going up a steep hill) vacuum pull on the choke piston is lessened,

tending to close the choke valve because the balance between the thermostatic coil and vacuum pull on the choke piston is upset. Also, vacuum drawing heat to the thermostatic coil housing may not be sufficient to heat and relax the coil before "loading up" takes place.

When opening the throttle valves, the choke modifier is at its leanest point at approximately 45° of throttle opening, then will gradually enrich the mixture again as the throttle contines to open wide. The various engine demands at different speeds are, therefore, more closely satisfied.

All choke modifier adjustments are done at the choke modifier lever by loosening the screw and moving the lever as required.

The operation of the Model H carburetor is basically the same as the single barrel Model BC.

Accelerator Linkage

The accelerator pedal, to the left of the tunnel, has a lever which supports the pedal and provides a pivot means to transmit the torque necessary to operate the throttle. A push tube 5/8" in diameter pushes back to an intermediate lever which is both a reversing lever and a ratio lever. A second rod connects directly from the intermediate lever to the TV lever in the case of the automatic transmission car or to an idler lever on three speed cars. This second rod is adjustable on automatic transmission models to get down-shift with wide open throttle. Attached to the upper end of the idler or TV lever is a third rod which connects to the cross shaft on the engine assembly, which is also adjustable at the upper end. This type of system has a design safety factor. It is all solid from end to end with pins and bushings, and if for any reason the throttle should be stuck or if anything should happen to the system, it is possible to reach down and pull the pedal back, closing the throttles.

Adjustment

To adjust the accelerator linkage, set both throttles to idle and then adjust the one adjustable swivel so it falls in the hole in the cross shaft.

It is very essential that the linkage be divorced completely from the carburetors before starting to adjust the carburetors. Take the clips off the right and left carburetors so that the carburetors are not controlled by the linkage. Then, by means of a .003 or .005 feeler gage insure that both throttle valves are closed by backing the air screw off on both carburetors individually and then screwing them in so that there is one turn of throttle valve opening. This can best be done by putting the feeler gage between the screw and the lever point which the screw butts against. The right hand lever is then attached to the right hand carburetor, then the left hand rod is installed on the left hand carburetor as follows. With the carburetors closed, the swivel on the rod is adjusted so that it just goes through the hole on the left lever of the linkage. Install the clip and the carburetors are synchronized.

Air Cleaner

The air cleaner, which has an oil-wetted polyurethane element, is mounted by means of a tripod above the blower shroud. The oil wetted element can be cleaned repeatedly. Ordinarily, the element is rinsed in solvent such as kerosene, squeezed out and re-oiled very 5000 miles.

EXHAUST SYSTEM

The single muffler on the Corvair is mounted close to the engine, along its right side. The open ends of the exhaust manifolds, which are the forward ends, connect to the muffler by means of a common exhaust pipe, shaped like a modified letter Y. Manifold and exhaust pipe are joined by means of 2-bolt flanges.

BODY STRUCTURE

The frame-integral type body construction of the Corvair is the unique key to many Corvair features and yet similar in many respects to that of the current regular passenger car (fig. 18).

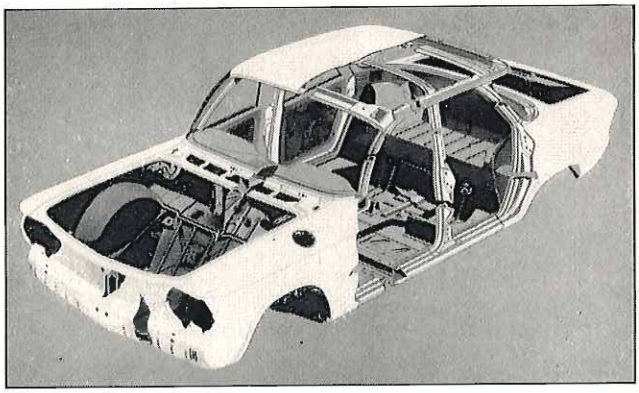

Fig. 18—Body Construction

This structure is notable in that it saves approximately 60 percent of the weight of a seperate frame, and is approximately 30 percent more torsionally rigid than the regular passenger car.

To provide the frame-integral structural features, the Corvair underbody is especially reinforced, and side rail-like members extend into both front and rear quarters. The principal reinforcements to the underbody are special box-section members con-

centrated adjacent to the box-section sills at the front and rear ends. The front and rear side rail-like extensions are integrated into these heavily reinforced underbody sill areas. Further, the front and rear rail extensions are of flanged channel-section that are completed as box-sections when welded to the front and rear wheelhouses.

With the frame integral structure, prevention of corrosion becomes especially important. To prevent such corrosion, the principal underbody structural members are coated on the interior surfaces with a high zinc base primer prior to assembly. Following assembly of the entire body shell, all undersurfaces are painted. Zinc Chromate primer should be used on all sheet metal surfaces that do not receive a color coat whenever service replacement is made.

Doors

The doors on the Corvair body feature general construction similar to that of the regular passenger car. Rotary-type door latches, similar to Chevrolet truck type, with the safety feature of interlocking lock bolt housing and striker teeth, are used in combination with pushbutton door handles.

Bumpers

The bumpers are .089" thick. In order to provide a strong bumper, a center support or crush bracket is used. This crush bracket does not offer a rigid support such as the outer brackets, but is designed so that under a certain impact the bracket will crush or fail before it would impart permanent set to the front and rear body crossmembers.

The Dimension Story

The Corvair design reflects the close working relationship of the stylist and engineer. The exterior size is compact, but the 6-passenger interior is exceptionally roomy.

Corvair models are only slightly more than four feet in overall height. The headroom and ground clearance are almost equal to conventional vehicles. This is attributable to the frame-integral type body construction which eliminates the added height of a separate frame.

The practical overall vehicle width is 66.9 inches. Both front and rear treads are 54 inches to create a wide stance for Corvair models and to contribute to the overall stability of the vehicle. Equal treads present the ideal situation for front and rear wheel tracking in mud, snow, and sand.

Inside, over 57 inches of hip room is provided both front and rear seat occupants. Shoulder room in the front compartment is 54 inches and over 53 inches of shoulder room is available in the rear.

With the engine positioned at the rear of the vehicle, the space forward of the cowl is utilized as a luggage compartment and stowage area for the spare tire and wheel assembly. The overall capacity of this cargo area is over 9 cubic feet. This location is especially advantageous when angle-parked, since it eliminates walking to the rear of the vehicle to load parcels.

An optional rear seat with folding backrest converts the Corvair sedan into a utility-type vehicle. When folded, the backrest is continuous with the floor of the rear luggage space, and terminates near the front seat, providing 10.4 cubic feet for cargo inside the vehicle. With the optional folding rear seat over 20 cubic feet of cargo space is available.

ACCESSORIES

Heater

The heater and defroster for the Corvair, available as either a factory optional accessory or a dealer-installed accessory, is a gasoline-burning model designed to give nearly instant heat.

Fresh air to be heated is drawn entirely from the outside through a cowl chamber. It is blown by an electrically-driven centrifugal blower through a heat exchanger and then into the passenger compartment (fig. 19). The blower is equipped with a 2-speed switch. The high speed of 3500 rpm supplies heated air to the passenger at 100 cubic feet a minute.

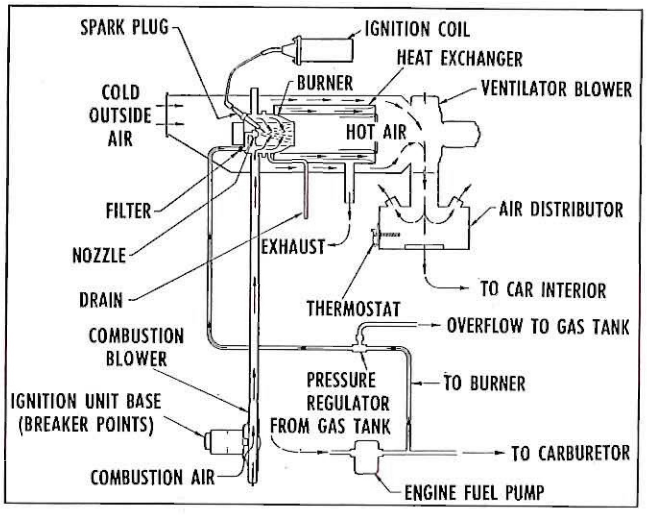

Fig. 19—Complete Heater System

Heater fuel consumption in normal use during the cold season runs approximately one-tenth of a gallon per hour. Run continuously at the maximum rate, the heater consumes about one-fourth of a gallon an hour. The air needed for combustion is supplied by a second electrically-driven centrifugal blower.

Most of the burning takes place in the burner. The hot combustion gases pass through the heat exchanger before leaving through the exhaust tube. The passenger air passes over the outside of the heat exchanger absorbing heat through the stainless steel walls.

A thermostat turns the fuel control solenoid, in the heater, on and off to maintain an even temperature inside the car. The solenoid controlled fuel valve turns the fuel on and off, much like a home furnace.

A "purge" switch connected to the positive battery terminals keeps the blower running for about 30 to 40 seconds after the heater has been turned off. This is to blow remaining hot air and combustion products out of the system after combustion has stopped. Since the purge switch maintains contact directly with the battery for this short period, it performs its function even if the car ignition is turned off. Drivers will need to become accustomed to hearing the combustion blower continue to run for a short time after the engine is stopped or the heater is turned off. To the uninitiated, it may seem that the heater can not be shut off.

No carbon monoxide is formed during operation of the heater, because of the liberal amount of air supplied to the burner. Carbon monoxide is formed only when combustion is incomplete because the supply of oxygen is limited. Here an excess of oxygen is always available.

Other Accessories

Other major accessories offered for the Corvair are a manually tuned radio, windshield washers, and back-up lights. The heater and radio are available as either dealer or factory-installed accessories, as are decorative wheel trim rings.

Truck

FRAME AND SUSPENSION

Frames

The 1960 truck has entirely new types of suspension, front and rear, and a totally redesigned cab and sheet metal. Since the frame is used to hang and support these various units, the 1960 truck frames are entirely new.

Frames on the ½ and ¾ ton models are an all-welded, X-member type, and therefore are serviced similarly to passenger car frames. A service precaution on frame welding is to protect the torsion bars on the front suspension from scratches or arc splash, which can shorten torsion bar life. The ½ and ¾ ton 4-wheel drive models use a 1 ton frame.

Forward Control vehicles are nearly 100% carry-over design, and thus use the past model frame.

The 1 and 1½ ton frames are of conventional, riveted, ladder-type construction.

The 2 and 2½ ton frames are of two types. Short wheelbases have a ladder type frame with an inner liner for stiffness. Longer wheelbase models are of the "Extended K" type, similar to X-member frames.

Front Suspension—10-40 Series

The 10-40 series front suspension (fig. 20) is of the unitized, independent short and long arm type and uses torsion bars for springs. The front cross member is a deep hat section member with a bottom plate that forms a box section.

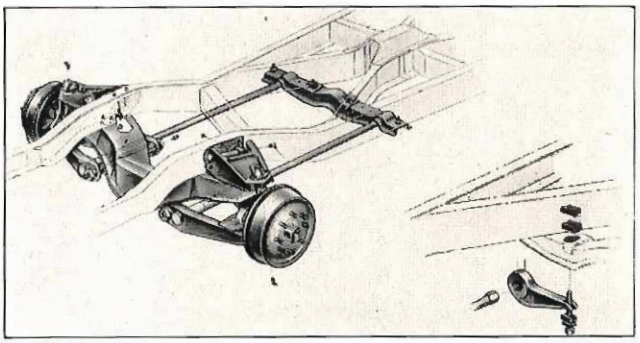

Fig. 20—10-40 Series Front Suspension

A short and long upper and lower control arm system, made of steel stampings, is firmly mounted upon forged "pivot shafts". Upper pivot shafts are tilted 10 degrees for anti-dive and are bolted through the cross member brackets and frame side rails. Threaded type bushings are used for the pivots.

Adjustment Procedure

A special cross member supports the rear ends of the two torsion bars through adjustable anchor systems. The torsion bars must be right and left hand because they are pre-twisted or preset. The pre-setting or over twisting leaves a permanent wind-up of internal stresses that permit as much as 35% higher loads. The torsion bars are made so that vehicle height cannot be set if LH and RH bars are reversed. All 10-40 models are adjusted at curb to the same height by measuring the lower bumper bracket to cross member clearance. This should be 4⅜" to 4⅝" from the lower bumper bracket to the crossmember at the centerline of the wheel. Design and construction of front suspensions for ½, ¾, 1 and 1½ ton models are closely similar except for necessary size and weight increases for certain components to provide proper load capacities.

For caster changes, one 1/32" shim added to the

rear bolt changes caster minus ½°. Removing a shim at the rear bolt increases caster ½°.

For camber changes, one 1/32" shim added or removed at both bolts changes camber 1/5° or 10½ minutes.

Shims are available in 1/32", 1/16" and 1/8" thicknesses. The shim pack at either bolt should not exceed 5/8", or 21 of the 1/32" shims. The difference between the two shim packs should not exceed 11/32" or 11 of the 1/32" shims.

The steering knuckles of any vehicle equipped with ball-joint front suspensions should never be heated or bent in an effort to change front wheel camber.

The procedure for adjustment is to loosen the upper shaft to bracket bolts, add or remove shims as required, and retighten the bolts. The torque on the upper control arm bolts is extremely critical. Under-torquing will lead to early loss of shims, and over-torquing will produce loss of alignment through the bolts exceeding their yield strength.

Caster should be + 1° ± ½° and camber should be + ½° ± ½°. Shims for the C-10 ½-ton and C-20 ¾-ton are sized for the 7/16" bolt used there. Shims for the C-30 1-ton and C-40 1½ ton are sized for a ½" bolt.

Torsion Bar and Control Arm Service

Optional torsion bars for very heavy loads are available. All bolts and nuts are alloy steel heat treated to 300M G.M. standards.

To remove a torsion bar, remove the vehicle load so the vehicle is at full rebound (first remove upper arm bumper). It is then possible to unwind the bolt for the adjusting arm so that the torsion bar is unloaded. Remove the torsion bar from the front socket and pull the arm off of rear hex. The bars are no more sensitive to nicks than coil springs.

Front Suspension Series 50-80

The front suspension used on Series 50-80 is similar in design to the 10-40 Series, but is quite different in detail due to the higher load requirements.

The torsion bars on the 50-80 series are not adjustable for vehicle height. The weight and spring ratios on these series make the adjustment unnecessary.

The torsion bar on the 50-80 models is retained in place by a spring pin, pressed into a drilled hole through a boss in the bracket. This passes through a notch cut in one corner of the rear torsion bar hex to properly locate the bar for full contact with its sockets on the front and rear ends. This pin is easily removable and is reusable.

Adjustment Procedure

Sandwiched between the upper control arm bracket and the frame side rail is a stamped upper control frame bracket used to attach the front cross member to the frame side rail and shims for the purpose of adjusting camber. The frame brackets differ on the three suspensions in that the 9000 lb. part has a larger side opening to accept a larger shock absorber eye bolt. The 5000 and 7000 lb. parts are the same except that the 5000 lb. part is of thinner gauge material. Both the 5000 lb. and 7000 lb. suspensions can be serviced with the part designed for the 7000 lb. assembly.

The camber adjustment shims, which are the same for all models, are used between the upper control arm bracket and the frame bracket. No shims, one shim, or two shims may be inserted. Each shim added increases camber ½ degree, by tilting the steering knuckle outward at the top.

Rear Suspension 10-20 Series

The 10 and 20 series or ½ and ¾ ton rear suspension is a completely new, two-link coil spring type of suspension (fig. 21).

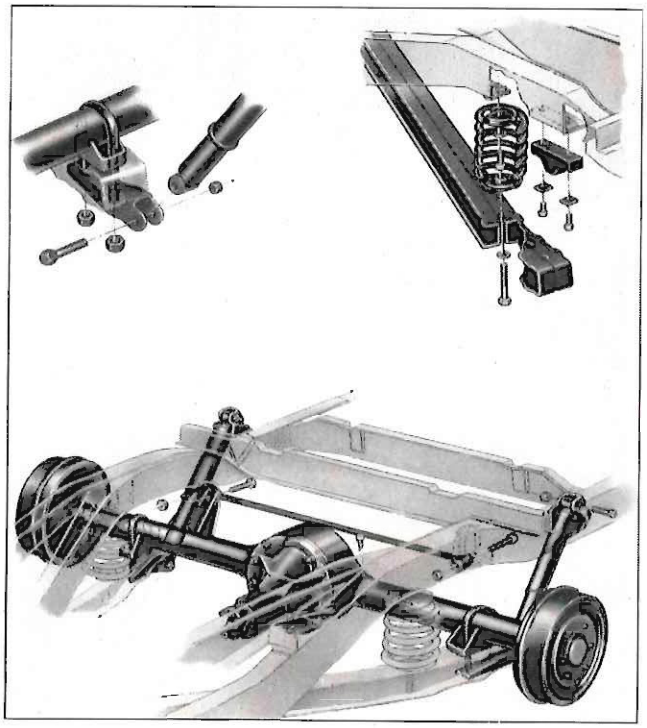

Fig. 21—10-20 Series Rear Suspension

This suspension brings ride and handling characteristics similar to those of a passenger car to the light-duty truck, while retaining the same or better load capacity as past models.

Construction

Two control arms are used, each constructed of stamped steel channels attached back to back. The double channel control arms fasten to the outer

ends of the axle housings with a single "U" bolt on each side so that both fore and aft thrust and torque are transferred to the control arms. The control arms are attached to the strong central area of the frame through rubber bushings in a bracket attached to a frame brace running between the side rail and the "X" member tunnel.

Prevailing torque type lock nuts are used on the rear suspension. Since prevailing torque lock nuts are not caried in service, always use lock washers if the nuts must be replaced.

It is recommended that the bolts which clamp the bushings be tightened with curb loads on the vehicle to minimize bushing wind-up. In other words, tighten these bolts after the vehicle is on its feet.

Rear Suspension 30-40 Series

The rear suspension on the 30 and 40 series is the same leaf spring, Hotchkiss drive type used on past models.

The rear suspension used on the 50 through 80 series C and L models as well as school buses is entirely new for 1960. While it still employs the leaf type spring the application is considerably different from past models.

Construction

The rear springs are of 2 stage design, full-floating fore and aft with lateral control through a radius leaf assembly. These springs are known as multi-stage variable rate leaf springs (fig. 22). The variable rate is the result of the cam surface contours upon which the spring main plate rides. A large change in spring rate is due to the change in effective length which results as the spring moves up and down. The braking and accelerating reaction as well as torque or windup, is largely controlled through the radius leaf as well as through the spring pile.

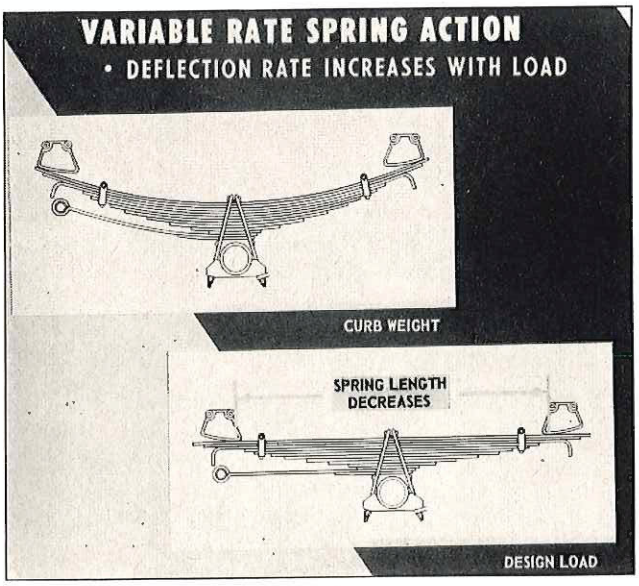

Fig. 22—Variable Rate Leaf Spring

The new 2-stage design eliminates the need for auxiliary springs. This eliminates the extra spring weight and the spring slap encountered in the past on lightly loaded vehicles.

It is extremely important that the vehicle not be jacked on the radius leaf since it is highly stressed and nicks or scratches could help to induce fatigue cracks.

Tandem Rear Suspension

The tandem rear suspension on M60, 70, 80 series (fig. 23) is completely new for 1960. It is basically the Hendrickson RT-320 series which uses variable rate leaf springs, cantilever type walking beams, and is rubber bushed throughout.

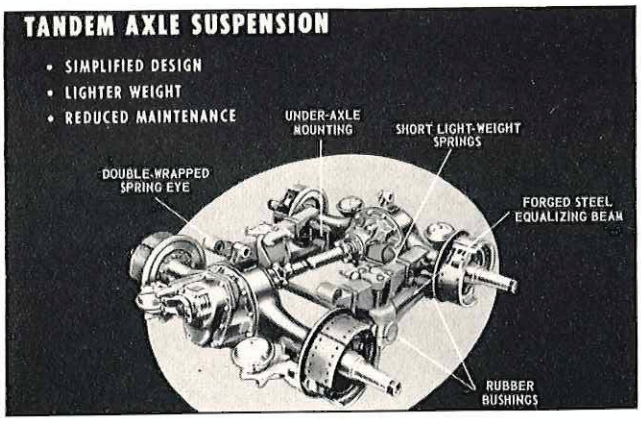

Fig. 23—Tandem Rear Suspension Series M60, 70, 80

Each spring is mounted at its center on a saddle supported on the end of a cross tube which passes through the two equalizing beams between the forward and rearward axle housings. Replaceable bushings are used at beam-to-axle mountings and at cross bar-to-saddle and beam mounting. These bushings require over 40,000 lbs. press to remove.

TIRES

Balancing Procedure (Front Wheels)

The only new service problem in wheels and tires will come in the form of balancing the front wheels. While initial balancing is done at the assembly plants, maintenance balancing in the field is necessary. Any time that tires are changed, even on new units, or tires are criss-crossed, the front wheels must be balanced.

STEERING

The revised suspension systems for 1960 carry with them entirely new steering systems. The new

systems are quite similar to those on the passenger car, differing only in the size and shape of the components.

Steering Shafts

The steering shafts incorporate two universal joints, the 10-40 series having a fabric joint at the bottom like the passenger car. The top joint on the 10-40 series and both upper and lower joints on the 50-80 series are a newly developed pot type joint which is similar to the passenger car upper universal joint.

Steering Gears

The 10-40 series steering gear is the same as the 1960 passenger car gear except for case design and pitman shaft length. The gear adjusting specifications and procedures are the same as the passenger car.

The 50-80 Series has an entirely redesigned steering gear. The 70 and 80 series are the same as the 50 and 60 except that a worm shaft back-up plug is used to handle the higher loads encountered. The gear is similar in design to the passenger car gear, but has the worm shaft bearing adjustment at the top instead of at the bottom.

All pitman arm and idler arm bushings are the greased-for-life rubber-nylon type.

POWER STEERING

No power steering is offered on the 10-40 series trucks. The new suspension and steering arrangements make it unnecessary on these series.

The power steering offered on the 50-80 series is an entirely new unit, with fewer parts, more effective in control and assistance, and longer lasting.

The 60, 70, and 80 models equipped with power steering have a power steering oil cooler mounted on the radiator support. The heat exchanger is in the pump return circuit, and serves to reduce the maximum temperature of the power steering oil.

Construction

The control valve is an integral part of the steering gear assembly and operates on the steering main shaft. This means that you do not have to turn the steering wheel through the gear lash range to operate the valve. This provides a greater improved feel on the steering wheel. There is only one steering gear and valve assembly to cover the 2 and 2½ ton trucks, where the 1959 model had 6 control valve assemhlies. The servicing of the new valve is entirely different from past models.

The two pumps replace the four pumps on 1959 2 and 2½ ton trucks and are both direct belt drive in place of some being generator driven. The new pumps are of high capacity and deliver up to 3.5 gallons per minute at driving speeds and 2.35 gallons per minute at idle speed. The servicing is considerably different than current pumps.

Only one hydraulic steering cylinder is used in place of three. The new cylinder has 2⅜" diameter bore to have a sufficient capacity for any front suspension loading. The only service on the cylinder is either the seal or the scraper. The ball stud eliminates the possibility of bind in the attaching parts as long as the correct adjustment is made in the ball stud housing. The correct adjustment is to tighten the adjusting plugs to contact, back off to the nearest aligned locking hole and install a cotter pin.

REAR AXLE

10-40 Series Rear Axles

The C10 and C20 series axle housing has a tie rod bracket and two control arm pads welded to the rear axle housing. These welded on parts control the fore and aft and lateral position of the axle under the truck, and are required for the new type suspension. Available gear ratios for the C10 series are revised, the optional economy axle 3.38:1 ratio replacing the 3.7:1 ratio. The standard axle remains at 3.9:1 ratio.

A new optional rear axle with a limited slip differential of the 3.9:1 ratio is available on the C10 series. The new compact differential fits into the regular ½ ton Chevrolet axle housing and utilizes the same axle shafts and wheel bearings. In this differential, the case is one piece and houses 14 clutch plates; 4 drive and 3 driven, located behind each of the differential side gears. If any good grade of multi-purpose gear oil is used, the clutch plates will not chatter as the vehicle rounds a corner. It is not necessary to use special oil for this unit. The previous special limited slip rear axle is discontinued.

50-80 Series Rear Axles

A new 13,000 lb. axle is standard equipment on the C50, L50, S50, S64, and S68 series. It has a 6.6:1 ratio and a tread of 68½".

Eaton 16,000# Single Speed and 2-Speed Rear Axle Assemblies

There are several changes to this axle compared to the 1959 style.

1. The gear set design has been changed from hypoid to spiral bevel.
2. The front pinion bearings are new and supply a 20% increase in capacity.
3. The axle housing has new, additional cutouts in the banjo opening to allow sufficient clear-

ance for use with the larger ring gear. Also, the brake mounting flange location is new to take the new rear brake assembly.

4. The rear wheel hubs have been redesigned to incorporate the 5 bolt shoulder lugs which pilot the I.D. of the wheel.

Eaton Tandem Axle Assemblies

The tandem axle assemblies are completely new for 1960. They are the new Eaton 30D series and have a rated capacity of 32,000 lbs. The tandem axle assembly features a through shaft drive with the power divider in the forward axle, and the ratio in each axle is 7.17 to 1 (fig. 24).

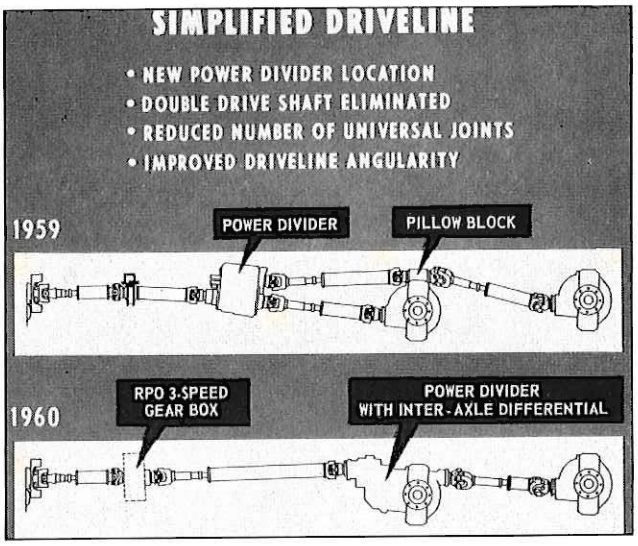

Fig. 24—Tandem Axle Lay-Out and Powerflow

The tandem rear axle installation consists of a rearward rear axle and a forward rear axle which carries a single speed power divider with an inter-axle differential. A spring loaded solenoid operated shift mechanism is used to lock out the inter-axle differential to provide positive drive to both axles when required.

Both axles drive at all times, so the inter-axle differential (3rd differential) is provided to allow differential action between the two axles minimizing tire wear and axle stresses. When extra traction is required to move the vehicle, the inter-axle differential can be locked out so equal power can be delivered to each axle. A toggle switch in the driver's compartment actuates the solenoid controlled vacuum operated lock-out shift lever at the axle, to move the sliding clutch into engagement with the input shaft helical gear. A light installed on the dash warns when differential is locked out. *Use lockout only in slippery going. Continuous unnecessary use of lockout must be avoided. When differential is to be locked out, vehicle must be completely stopped.*

BRAKES

All vehicles, except forward control models, are provided with new suspended brake pedals and linkage. In this arrangement, a dual-barrel master cylinder is mounted on the engine side of the firewall, with a direct connection from the cylinder actuating push rod to the brake pedal arm. One side of the dual cylinder is for brakes, and the other is for the hydraulically operated clutch.

Brake and Clutch Master Cylinders

There are two dual barrel master cylinder assemblies. One for 10 through 60, and a larger one for 70 and 80. The use of only two master cylinder assemblies is permitted by the use of new vacuum and air power brake equipment.

There is one single barrel master cylinder assembly, for brakes, to be used with the automatic transmission models. This assembly is identified with the letter "B" stamped on the rear face of the fluid reservoir. There is also a second single barrel cylinder assembly for clutch operation when full air brakes are used on the 70 and 80 series. This assembly is identified by the letter "C" stamped on the rear face of the fluid reservoir.

Brake Assemblies

Rear brake assemblies for ¾ and 1-ton models incorporate a "labyrinth"-type drum-to-flange plate seal. This seal is very effective in keeping mud and dirt out of the drum, and affords a substantial improvement in lining and drum wear life. A similarly designed seal is used on 1½ through 2½ ton models.

Larger effective lining areas are an important factor in determining lining life because the unit pressure, which governs wear life, is decreased. New brake sizes and substantial increases in facing area give the new models brake life improvements of up to 40 per cent.

POWER BRAKES

Vacuum-hydraulic brakes are again provided as regular production equipment on the 40 through 80 Series trucks. However, new diaphragm-type vacuum power brake units are utilized, replacing the piston-type formerly employed. The new power brake equipment provides improved pedal "feel" and brake "controlability." The primary difference in the new design is the use of a larger diameter slave cylinder push rod. The resulting increase in rod cross section area causes the rod to displace more fluid in the slave cylinder. This feature results in a low input, high output unit since the

brake fluid volume requirements from the main cylinder are reduced while the fluid displacements to the wheel cylinders are increased.

The smaller 10-inch power cylinders are identified by the "Hydovac" trade name, while the larger 11½ inch units carry the "Hy-Power" trade name.

The availability of the short stroke 7-inch piston type Hydrovac is now limited to the P20, P30 and C30 models, where it is released as an option.

Low Input Type "Hydrovac"

In a system containing a Low Input type Hydrovac, the input volume to the Hydrovac is less than the displacement requirements at the wheel brakes and a smaller displacement master cylinder can therefore be used. One master cylinder size and brake pedal arrangement can be used on several vehicle sizes. In each case, the output hydraulic fluid pressure and displacement from the low input Hydrovac matches the displacement and pressure requirements of the brake system. A 1.15 cubic inch displacement master cylinder can therefore be used to supply hydraulic pressure to brake systems having 1.63, 2.36 or 3.24 cubic inches fluid displacement at the wheel brakes. This power brake unit will service the 40, 50, 60 Series truck (fig. 25).

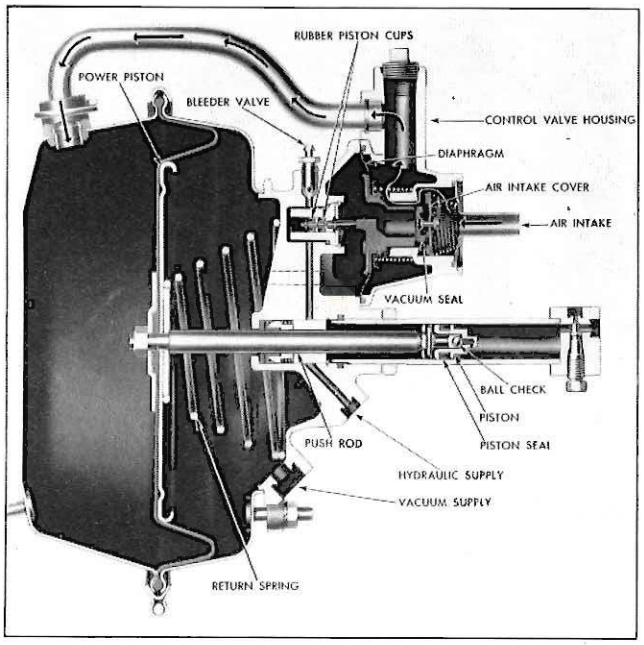

Fig. 25—Hydrovac-Power Brake Applied

Construction and Operation

The diaphragm type Hydrovac consists of the following three principal sub-assemblies:

(1) A vacuum power chamber,
(2) A hydraulic cylinder, and
(3) A control valve

The vacuum power chamber consists of two metal sections divided by a pressure plate and rubber diaphragm all held together by a metal clamp ring. A push rod moves into the hydraulic cylinder when atmosphere pressure is admitted to the back side of the power piston for a brake application.

The hydraulic cylinder contains a piston and pressure sealing members. When the brakes are applied fluid is displaced by the piston moving into the cylinder.

The control valve consists of a diaphragm, air valve, vacuum valve and hydraulic piston. Hydraulic pressure is applied to the piston, the air valve opens and admits atmospheric pressure to the back side of the power piston.

Brake application can be obtained in case of power failure, by pumping the brake pedal rapidly. The brake application is hard, but will be sufficient to stop the car.

Midland-Ross Low Input "Hy-Power" Units

The recently released line of low input booster units was designed to cover the complete range of hydraulic braked trucks ranging from those which require a brake fluid capacity equal to that of 1⅛" x 1 7/16" master cylinder to those requiring a brake fluid capacity equal to that of 1¾" x 2½" master cylinder. These units are used on 70 and 80 Series trucks (fig. 26).

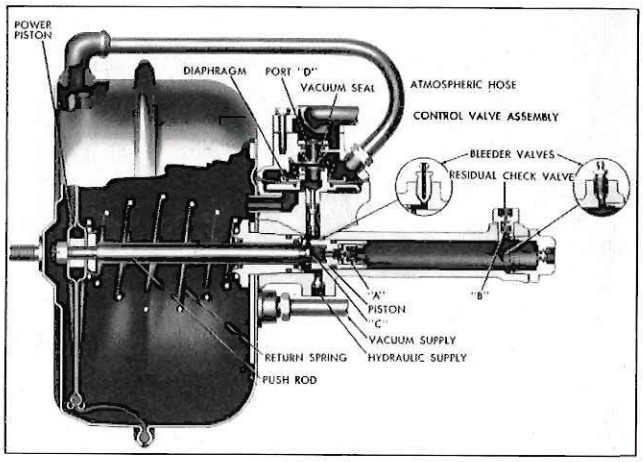

Fig. 26—Midland-Ross Power Brake Released

Construction and Operation

The Hy-Power chamber consists of two metal sections divided by a pressure plate and rubber diaphragm all held together in one assembly by a metal clamp ring.

During brake application, the power piston is moved to the right by an unbalance condition of atmospheric pressure on the left side of the power piston and vacuum of the right side.

The Hy-Power vacuum control valve is of the same general design as the valves used in Hy-Power units for many years. The valve is actuated by hydraulic pressure from the master cylinder. As the piston moves, the air valve opens admitting atmospheric pressure to the power piston.

The hydraulic slave cylinder contains a hydraulic piston and residual check valve. The hydraulic piston moves the hydraulic fluid out of the cylinder and into the brake lines. The residual check valve maintains a static pressure in the brake lines when the brakes are released.

ENGINE

V-8 engine power is available either as standard or optional equipment for all except the Forward-Control Models. The 322 Loadmaster and the 283 Four-barrel Super Taskmaster have been discontinued for 1960.

While the engines for 1960 are basically the same as in 1959, changes have been made for two reasons, to improve engine efficiency and durability, and to make the engines compatible with 1960 chassis design changes.

Cylinder Head (283)

All 283 cylinder heads incorporate the improved oil drainback feature, the same as on the passenger cars.

This change requires new valve rocker covers and gaskets which are wider to meet the new cylinder head rail width.

The new drainback cylinder head can be used to service past models, but must be accompanied by the new gaskets and rocker cover.

Engine Ventilation (235, 261, 283 and 348)

In 1959, positive ventilation was released as standard equipment on all 283 heavy duty engines, the 348 cubic inch engine, the 261 heavy duty engine and on the 235 forward-control models.

For 1960, only the 235 L-6 forward-control model and the 348 cubic inch engine in the M-70 (Tandem) series will have positive ventilation as standard equipment. It is available as optional equipment in other model engines.

Inlet Manifold (348)

The 1960 4 barrel carburetor inlet manifold has been redesigned for greater power output and improved mixture distribution.

This has been accomplished by modifying the existing 3 x 2 passenger intake manifold passage cores so that the air fuel ratio spread between cylinders is reduced.

This improved air fuel ratio spread will improve the durability of the pistons, exhaust valves and exhaust valve seat inserts. These parts will run cooler and consequently reduce the tendency for pre-ignition to occur.

ENGINE COOLING

Water Pumps (348)

For 1960, the 348 engine has a new water pump to place the fan in correct relationship with the 1960 radiator location, and to raise the fan high enough so that the fan blades will have adequate clearance to the crankshaft mounted power take-off.

Two additional new pieces are required to insure adequate support for this new raised water pump. Special Neoprene rubber gaskets are used between the water pump and the cylinder and case. These gaskets are more resilient and do a much better job of sealing against leakage. A special reinforcing bracket supports the uppermost part of the water pump, and ties into the two mounting bolts of the water outlet.

Radiators

The number of different radiator cores has been reduced from 17 to 9 for 1960 The 10-60 models have the cellular type as on past models, and carry a 7 pound pressure cap. Models 70 and 80 have tube and fin type radiators.

ELECTRICAL

Electrical Gauges

The design of the gasoline gauge has been improved to make this instrument more accurate than in previous years. The indicating hand is counterbalanced in a neutral position. The gauge does not return to zero when the ignition switch is turned off. Any reading with the switch off should be ignored.

Battery Charging Circuit

The battery charging circuit for 1960 uses a direct line between the regulator and the battery, similar to the 1958-60 passenger car.

Ignition Switch

Foot-actuated starting has been eliminated in 1960 and all ignition switches incorporate the key-turn starting feature previously available only with V-8, automatic transmission, and forward control models. The new switch, standard equipment on all but forward control models, has four positions: LOCK, OFF, ON and START.

FUEL AND EXHAUST

Air Cleaners

348 engines in 70 and 80 models have an "out-

side" air connection from the air cleaner to the left hand corner of the grille filler panel thru a hose to the fender skirt and sheet metal ducts along the outside of the fender skirt (fig. 27).

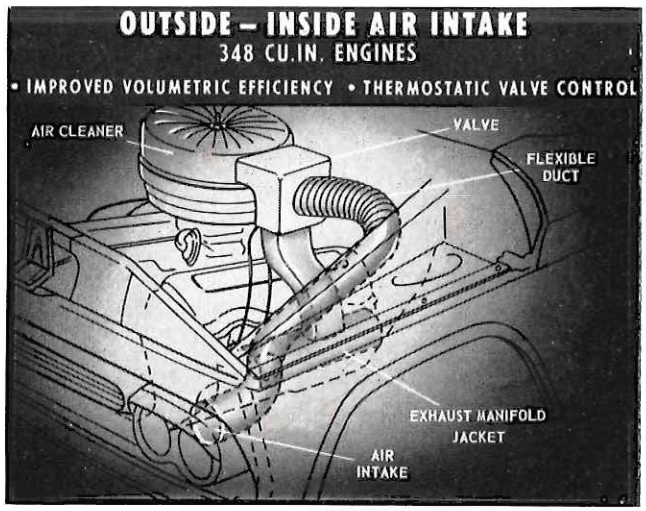

Fig. 27—70-80 Series Outside Air Intake

This gives up to 40° lower carburetor air temperatures and results in up to 4% more engine power. A pellet thermostat type valve at the air cleaner determines whether under hood or outside air is used by the engine. At temperatures below 83°, all the air is taken from under the hood while above 102° all the air is taken from outside. In between these temperatures inside and outside air is mixed.

HYDRAULIC CLUTCH CONTROLS

Hydraulic clutch controls are used on all except forward control models (fig. 28).

The first point to check for adjustment is the lash between the clutch master cylinder push rod and the master cylinder piston, which amounts to approximately 1/8" of clutch pedal pad movement. This adjustment can be set by means of an eccentric bolt at the clutch pedal top push rod attachment point.

The second point of adjustment is at the point where the slave cylinder push rod contacts the outer end of the clutch fork at the V notch. To make this adjustment, disconnect the pull-back spring at the end of the clutch fork and move the outer end of the clutch fork rearward as far as possible. Push the push rod of the slave cylinder forward as far as possible. The clearance between the V block on the slave cylinder push rod and the V notch at the end of the clutch fork should be 5/32".

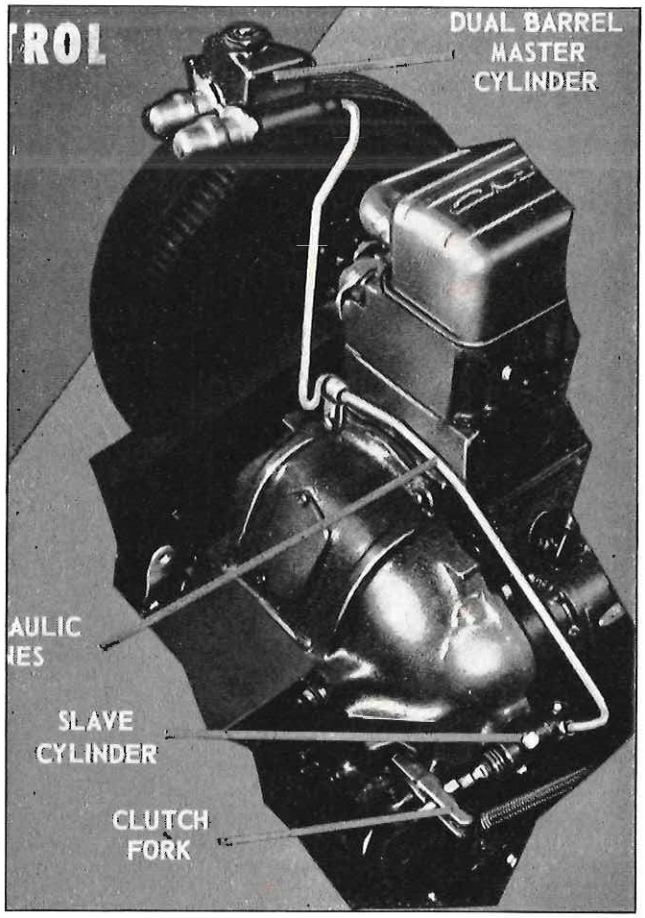

Fig. 28—Hydraulic Clutch Controls

MANUAL TRANSMISSIONS

In general, the transmission line-up for 1960 follows 1959 with the following changes.

The 1959 model Truckstell power divider on tandem models and the Spicer manufactured Napco transfer case on the 4 x 4 model are no longer used.

New transmission assemblies as follows are introduced for 1960:

A 5-speed Clark model 265V is the base transmission on C, L and S-70. (A few of these transmission assemblies were used in 1959 as special order units.)

The 5-speed Clark 267V is optional on C and L-70.

A 5-speed Spicer 3152-A (close ratio) is optional on C and L-80.

A 3-speed Spicer model 5831F auxiliary transmission with 12 x 5 Bendix parking brake is optional on M-70 tandem.

AUTOMATIC TRANSMISSIONS

The Hydramatic transmission is no longer available on conventional 1/2, 3/4 and 1 ton models. The Hydramatic model 200CHC is still available as an option on forward control models only.

Powerglide

The Powerglide automatic transmission is offered in the C-10 and 20. This transmission is the same as the passenger car version except for speedometer gears. An all-welded converter is used in partial production. With this transmission, passenger car type engine mounts, linkage, filler tube and dipstick are used.

Powermatic

The Powermatic transmission is extensively changed for 1960 in the Torque Converter, gear train and hydraulic system.

Torque Converter

The 1960 model torque converter is a 3-element unit with a single stator. The pump and turbine assemblies each have 25 vanes. The rear thrust washer (second stator spacer in the 1959 model) is eliminated, and two needle roller thrust bearing assemblies have been added for the 1960 model. A larger converter pump bearing is used.

In addition there are other changes to accommodate the changes made in the parts relating to the turbine.

The bronze thrust bearing used in 1959 model transmission at the rear of the ground sleeve has been replaced by a needle bearing assembly. The needle assembly and front thrust member are pressed into the counterbore at the rear of the ground sleeve. The rear thrust member is separate and is installed against the shoulder of the turbine shaft.

Splitter Mechanism, and High-Range Clutch

Changes have been made in materials, surface finishes and dimensions of various components of the splitter and high-range clutches.

The clutch surface of the low-splitter clutch reaction plate is ground and polished to a smoother finish. This surface is designed to match the new clutch plates.

The high-splitter clutch back plate is 0.290 to 0.300-inch thick, compared to 0.193 to 0.198-inch for the 1959 plate.

The externally splined high clutch plate is 0.0890 to 0.0975-inch thick compared to 0.193 to 0.198-inch for the 1959 plate.

The low-splitter clutch friction plate has a square grid pattern identical to the pattern used on the 1959 plates at other locations. This pattern replaces the spiral grooving formerly used. The steel core of the new plate is harder. Improved facing material has greater resistance to breakage.

The clutch surface of the low splitter piston and the high-splitter piston is ground and polished to a smoother finish. This finish is designed to match the new clutch plate.

Low and Reverse-Range Clutches

The range clutches for 1960 transmissions have heavier apply plates, improved friction facing material and smoother clutch surface finish.

Intermediate Range Clutch

The intermediate range clutch is a double-disc design for added durability.

Hydraulic System

Changes and modifications in the 1960 hydraulic system components involve three major areas: the control valve body assembly, the downshift timing valve body assembly, and the oil transfer plate assembly.

The principal difference between the 1959 and 1960 control valve body assemblies is in calibration of orifices and the use of a trimmer valve on all models.

BODY AND SHEET METAL

The 1960 body structures are stronger and more rigid than any past model. Special attention has been given to the problems of dust and water sealing and vibration control. In addition, all bodies have improved side door alignment and operation, more comfortable seat cushion construction, full rubber-cushioned mounts, and standard equipment single-speed electric windshield wipers. Improved rear door stability and locking are built into panel type bodies. Suburban Carryall bodies have a "dropped" floor for increased legroom in the second seat area, redesigned tail and liftgates, and new side window latches.

The front end sheet metal structures are completely new. Triangulated fender skirts and front

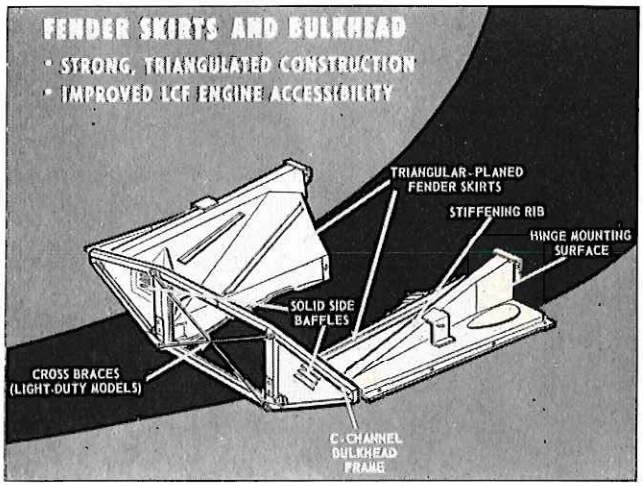

Fig. 29—Fender Skirts and Bulkhead

bulkheads (fig. 29) form a sturdy base for the support of the low profile fenders, cab-wide hoods, and radiator grille filler panels. Hood panels have one hand operation and more durable link-type hinges.

A new enamel is used to finish 1960 Chevrolet truck bodies and sheet metal.

With this new enamel, it is most important that any area to be resprayed be thoroughly scuffed or sanded to remove all traces of the gloss or "case-hardened" finish. If this is not done, or overspray hits unsanded areas, the new material will lift and peel. This essentially means that spot repairs will require refinishing the entire panel.

Cab Bodies

The Basic Cab has a resistance to twisting 67 percent greater than the 1959 cab.

Four basic components; the cowl, underbody, rear end, and roof panel are reinforced and welded into a strong and rigid structure.

Side Doors

A more rigid door mounting is effected with the use of butt-type hinges, which pivot closer to the mounting surface than the box-type hinges previously used. Serrations on the hinge faces butting against the hinge pillar provide better adjustment life. The door check is now separate throughout the model line-up.

Seat Cushion Construction

New spring wire elements replace the former conventional coil springs and jack stringers for increased seat cushion comfort and durability.

The elements consist of a double S-shaped front portion, a slightly arched, flat-drawn central portion, and a small coil spring rear portion. Mounted in a sturdy channel-section frame, the elements are topped with a burlap and wire cover assembly, foam plastic pad, cotton pad, and trim material. The use of foam plastic with its excellent recovery qualities greatly reduces the seat cushion "set" experienced with previously-used materials.

An all new windshield wiper system mounted in the plenum chamber is used for all 1960 Trucks except the forward control models. The single speed motor is basically similar to the 1959 Passenger Car Model.

Service operations are all simplified by comparison with past models and other systems. If transmissions or links must be replaced, they are eaily accessible through the plenum grills.

Hood Panel

Because of the increased weight of the hood panel, durable toggle-type hinges replace the previous gear-type. The new hinges are mounted outboard the engine compartment, attaching to the outside face of the box-like fender skirt rib. Redesigned hinge geometry allows the hood panel to be easily lifted despite its greater weight.

Windshield Wiper

An all new windshield wiper system mounted in the plenum chamber is used for all 1960 Trucks except the forward control models. The single speed motor is basically similar to the 1959 Passenger Car model.

Service operations are all simplified by comparison with past models and other systems. If transmissions or links must be replaced, they are easily accessible through the plenum grills.

Panel Body

The same overall structional strength and rigidity of the cab body are included in the new panel body. The basic cab structure is used for the front compartment, with new body side panels, roof panel, and rear door structure incorporated to form the panel body.

A box-section header rail ties into the box-section hinge pillars to form a more rigid door opening structure.

Rear door hinges are of the same type as used previously, but are now more widely spaced for improved door stability in both the open and closed positions. Also improving rear door stability in the closed position are upper and lower wedges on both rear doors. The wedges help to eliminate vertical movement, thus removing undue stress from the door locking mechanisms.

Rear Door Locks

A fork-type cam lock replaces the former rotor-type for more positive retension of the rear doors. The fork-type design incorporates an automatic "take-up" feature, wherein the grip of the fork on the striker increases as the lock is activated by road shocks. Fork-type cam locks are also used to lock the left hand door, replacing the former spring-type hook catches.

FOUR WHEEL DRIVE

Ten 4-wheel drive models in 1/2 and 3/4-ton classifications are offered. New, stronger frames, conventional leaf spring front and rear suspensions, new front axle assemblies, and a new 2-speed transfer case are featured for 1960.

4-wheel drive models are equipped with a Thriftmaster six cylinder engine, heavy-duty 11-inch clutch, 4-speed transmission, and 2-speed transfer case. The light-duty Trademaster V-8 engine is available as an option. Other power team combinations are not available.