

1961 Chevrolet CORVAIR PASSENGER AND COMMERCIAL VEHICLE SHOP MANUAL

FOREWORD

This manual is designed to provide the service man with complete information on the maintenance and repair of various units of the 1961 Chevrolet Corvair Passenger and Commercial Vehicles.

An effort has been made to produce a manual that will not only serve as a ready reference book for the experienced service man but also cover step-by-step procedure for the guidance of the less experienced man.

The Section Index on the title page enables the user to locate quickly any desired section. At the beginning of each section, a Table of Contents gives the page number on which major subjects begin. An Index is placed at the beginning of each major subject within the section.

Within each section, service information applicable to Corvair passenger vehicles is included in its entirety and is followed by a description of operations which differ for the Corvair Commercial vehicles.

Summaries of Special Tools are found at the end of each major section, while Specifications covering vehicle components are presented in Section 12.

This manual should be kept in a handy place for ready reference. If properly used, it will enable the mechanic to better serve the owners of Chevrolet Corvair vehicles and thereby build or maintain a reputation for reliable service.

All information, illustrations and specifications contained in this literature are based on the latest product information available at the time of publication approval. The right is reserved to make changes at any time without notice.

CHEVROLET MOTOR DIVISION

General Motors Corporation
DETROIT, MICHIGAN

SECTION INDEX

SECTION	NAME
1	GENERAL INFORMATION
2	LUBRICATION
3	SUSPENSION
4	STEERING
5	BRAKES
6	POWER TRAIN
6A	ENGINE
6B	CLUTCH
6C	REAR AXLE
6D	TRANSMISSION—MANUAL
6E	TRANSMISSION—AUTOMATIC
7	ENGINE TUNE-UP
8	ELECTRICAL SYSTEMS
9	FUEL AND EXHAUST SYSTEMS
10	BODY
11	ACCESSORIES
12	SPECIFICATIONS

SECTION 1

GENERAL INFORMATION

CONTENTS OF THIS SECTION

Corvaair—500, 700 and 900 Series.....	Page 1-1
Corvaair 95 and Greenbrier—1200 Series.....	1-8

CORVAIR—500, 700 AND 900 SERIES

INDEX

	Page		Page
Vehicle Dimensions.....	1-1	Unit and Serial Number Locations.....	1-2
Model Identification.....	1-1	Selection of Gasoline and Engine Oil.....	1-4
Engine Data.....	1-1	Keys and Locks.....	1-4
Gear and Control Ratios.....	1-2	Pushing Car to Start.....	1-7
Capacities.....	1-2	Emergency Towing.....	1-7
Tire Information.....	1-2	Lifting Corvaair with Drive-on Hoist.....	1-7
Vehicle and Component Weights.....	1-2	Standard Torque Table.....	1-7

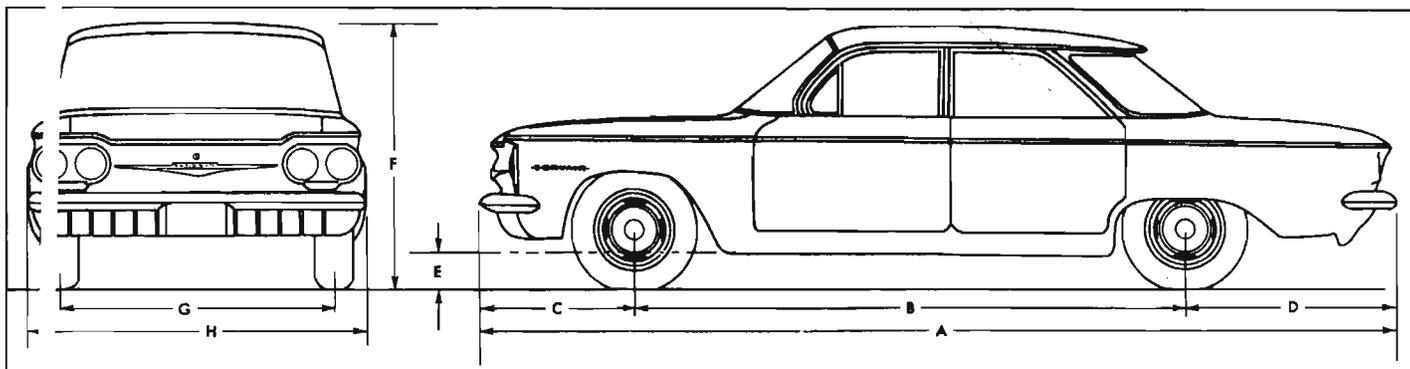


Fig. 1-1—Vehicle Dimensions

A—Overall length—180"
 B—Wheelbase—108"
 C—Front Overhang—30.3"
 D—Rear Overhang—41.7"
 E—Minimum Ground Clearance—6"

F—Height Overall (Loaded)
 4-Door Station Wagon—53.5"
 All Other Models—51.5"
 G—Tread width—54"
 H—Width Overall—67.0"

MODEL IDENTIFICATION

	Model	Body Style
	STANDARD SERIES	
	27	2 Door, 5 Passenger Club Coupe
	35	4 Door, 6 Passenger, Lakewood Station Wagon
	69	4 Door, 6 Passenger Sedan
	DELUXE SERIES	
	'27	2 Door, 5 Passenger Club Coupe
	'35	4 Door, 6 Passenger, Lakewood Station Wagon
	'69	4 Door, 6 Passenger Sedan

MONZA SERIES

927 2 Door, 4 Passenger Club Coupe

ENGINE DATA

Type.....6-cylinder Horizontal Opposed—Air Cooled
 Bore 3.4375"
 Stroke 2.6"
 Cubic Inch Displacement..... 145
 Compression Ratio..... 8.0:1
 Horsepower
 Turbo-Air 80 @ 4400 RPM
 Super Turbo-Air 98 @ 4600 RPM
 Torque
 Turbo-Air128 @ 2300 RPM
 Super Turbo-Air132 @ 2800-3000 RPM

GENERAL INFORMATION 1-2

GEAR AND CONTROL RATIOS

3-Speed Manual Transmission

1st Gear	3.50:1
2nd Gear	1.99:1
3rd Gear	1.00:1
Reverse	3.97:1

4-Speed Manual Transmission

1st Gear	3.65:1
2nd Gear	2.35:1
3rd Gear	1.44:1
4th Gear	1.00:1
Reverse	3.66:1

Automatic Transmission

Maximum Reduction	4.73:1
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Differential

3-Speed Transmission

Sedan Models	
Standard	3.27:1
Optional	3.55:1

Station Wagon

Standard	3.55:1
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4-Speed Transmission

Sedan Models—Standard		3.27:1
Optional		3.55:1

Station Wagon—Standard	3.55:1
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Steering Ratio

Overall	23.5:1
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CAPACITIES

Fuel Tank	14 gal.
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Crankcase

Wet	4 qts.
Dry	5.5 qts.
(For oil filter change—add 1 pt.)	

Transmission

Manual	1.9 pts.
Automatic	
Wet	6 pts.
Dry	13 pts.
Differential	3 pts.

UNIT AND SERIAL NUMBER LOCATIONS

The following illustrations show the locations of the unit or serial numbers of various components. These designations may be necessary to the serviceman in the preparation of L.&M.R.'s, D.B.M.R.'s and Product Information Reports.

TIRE INFORMATION

Type Tubeless Tyrex
 Size and Ply Rating

Station Wagons	7.00 x 13-4
All Others	6.50 x 13-4

Pressures	Front	Rear
Hot	18 psi	30 psi
Cold	15 psi	26 psi

Spare Tire..... Inflate to 26 lbs. Deflate to 15 lbs.
 when used on front.

VEHICLE AND COMPONENT WEIGHTS

Model		Total Shipping Weight	Total Curb Weight*
STANDARD SERIES			
527	2 Door	2336	2422
535	Station Wagon	2530	2616
569	4 Door	2372	2458
DELUXE SERIES			
727	2 Door	2366	2452
735	Station Wagon	2556	2642
769	4 Door	2398	2484
MONZA SERIES			
927	2 Door	2397	2483

*Full Capacity of Fuel and Oil—No Passengers

STANDARD EQUIPMENT WEIGHTS

6-Cylinder Engine	358.00 lbs.
3-Speed Transmission	40 lbs.
Differential	61.5 lbs.

ADDITIONAL WEIGHTS FOR OPTIONAL EQUIPMENT

Gasoline Heater	34 lbs.
Manual Radio	11.5 lbs.
Automatic Transmission	20.5 lbs.
4-Speed Transmission	35 lbs.
Safety and Convenience Group	3.5 lbs.
Wheel Trim Ring	2 lbs.
Heavy Duty Battery	3 lbs.
Deluxe Body Equipment	3 lbs.
Padded Instrument Panel	1.5 lbs.

The prefixes on certain units identify the plant in which the unit was manufactured, and thereby permits proper follow-up of the plant involved to get corrections made when necessary.

Always include the prefix in the number.

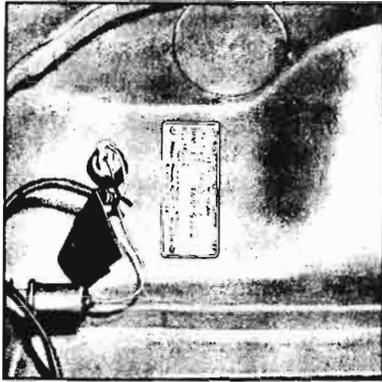


Fig. 1-2—Body identification tag located on left rear wheel house inner panel, inside engine compartment.



Fig. 1-3—Serial number tag located on left front lock pillar.

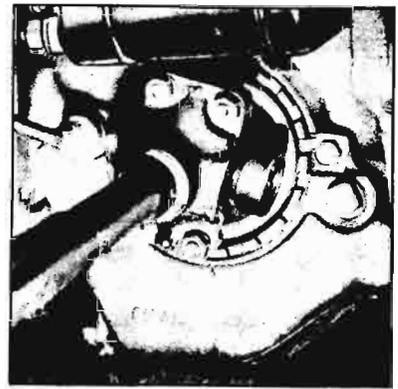


Fig. 1-4—Differential number stamped lower left side of casting.

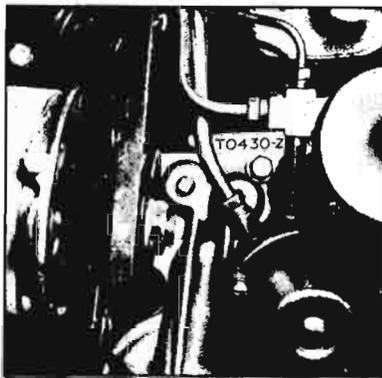


Fig. 1-5—Engine number stamped on top of engine block, immediately forward of generator-oil filter adapter.

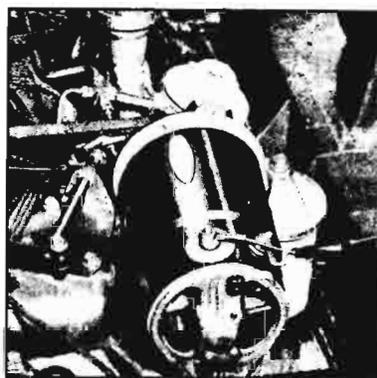


Fig. 1-6—Generator information on tag affixed to generator outer case.

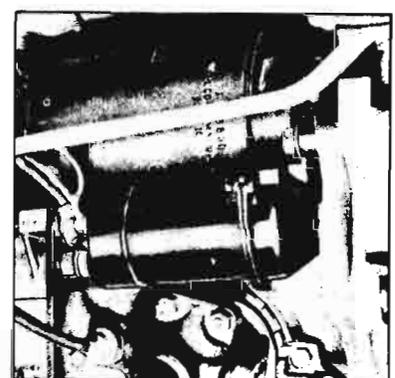


Fig. 1-7—Starter serial number and production date stamped into outer case, toward rear.

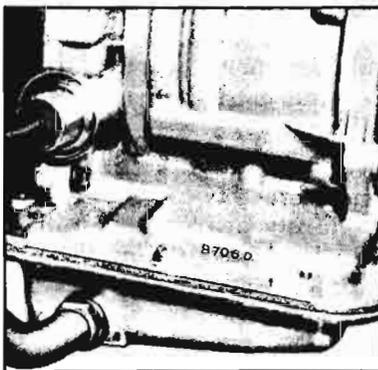


Fig. 1-8—Powerglide transmission unit number stamped on right hand side of casting between forward and middle pan mounting bosses.

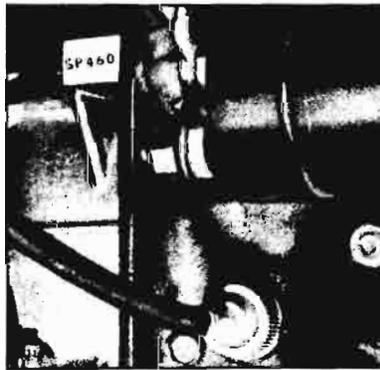


Fig. 1-9—Conventional transmission unit number stamped on side of upper left differential mounting boss.

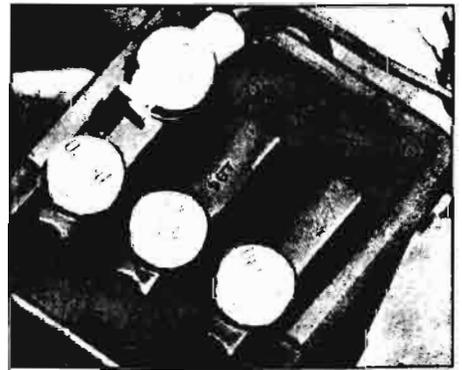


Fig. 1-10—Battery number stamped on top of the middle cell of group adjacent to positive terminal.

ENGINE NUMBER

The engine number (location shown, fig. 5) contains manufacturing plant, month and day of manufacture, and transmission type. A typical engine number would be T0430-Z, which would breakdown thus:

T—Manufacturing Plant (Tonawanda)
04—Month of Manufacture (April)

30—Day of Manufacture (Thirtieth)

Z—Transmission Type (Z—Powerglide, Y—Manual)

Vehicle Serial Number

A typical vehicle serial number tag (fig. 1-11) yields vehicle type, model year, assembly plant and production unit number when broken down as shown in the following chart. See figure 1-3 for tag location on vehicle.

GENERAL INFORMATION 1-4



Fig. 1-11—Serial number tag.

Model Year ¹	Body Style ²	Assembly Plant ³	Unit Number ⁴
0	0569	W	100025

¹ Last number of model year (1960).

² See Model Identification in this section.

³ K—Kansas City, O—Oakland, W—Willow Run.

⁴ Unit numbering will start at 100,001 at all plants. Fig. 1-11 shows tag for twenty-fifth car built at Willow Run.

SELECTION OF GASOLINE AND ENGINE OIL

Gasoline

The Corvair is designed to deliver peak performance on what is designated as Regular Fuel in the continental U. S. and Canada. It must be noted, however, that Regular gasoline may vary in octane between manufacturers, or from one section of the country to another for the same manufacturer. If unfavorable performance is encountered because of either or both of these factors, dealer adjustment of ignition timing will restore the vehicle to normal operation.

For operation of vehicle in foreign countries where only fuels of octane ratings lower than U. S. standards are usually available, the customer should be referred to:

Chevrolet Motor Division
General Motors Corporation
Technical Service Department
Detroit 2, Michigan

This department will give detailed information as to the availability of fuels in a given area and any service or adjustment which may be necessary to adapt the vehicle to the fuels available.

Engine Oil

Type of Oil

Oils which are used in the Corvair engine must conform to the American Petroleum Institute designations MS or DG. These letters refer to service application and DO NOT indicate viscosity.

Oil Viscosity

Oil viscosity is designated by the Society of Auto-

motive Engineers and is indicated by number (i.e., SAE 10W, SAE 20W, SAE 30). The higher the number the heavier bodied and slower flowing the oil.

For winter operation, the lighter bodied oils are used to ease starting and to offset the affect of cold weather on oil circulation, while the higher operating temperatures of summer require the use of heavier oils.

The following table will assist in the selection of the proper viscosity oil at various seasons of the year.

Lowest Anticipated Temp.	Recommended SAE Viscosity Oil	
	Single Viscosity	Multi-Viscosity
32° F.	SAE-30	SAE-10W-30
-10° F.	SAE-10W	SAE-10W-30
Below -10° F.	SAE-5W	SAE-5W-20

Always use SAE 30 if outdoor temperature is above 60° F.

After the first 1,000 miles of driving, if average daytime temperature is below 60° during the break-in period, the original heavy duty break-in oil should be drained from the engine and the crankcase refilled with oil as shown in the accompanying table.

If average daytime temperature is above 60°F. during the break-in period, change initial break-in oil to SAE 30 oil after the first 500 miles of operation.

Every 4000 miles thereafter, under normal operating conditions, drain and refill the crankcase in the same manner. Adverse driving conditions; such as extreme dust conditions or short trip winter driving (less than 1,000 miles per month) makes it advisable to change oil every month. Similar dusty or short trips in the summer make it advisable to change oil every two months.

Check the oil level on the dipstick frequently. The level should be somewhere between the "add oil" and "full" marks on the dipstick. Do not overfill. The oil filter element should be changed after the first 5000 miles of driving and every 4000 miles thereafter, more often under adverse driving conditions.

KEYS AND LOCKS

Lock cylinders are furnished for service uncoded; this necessitates the coding of all replacement lock cylinders.

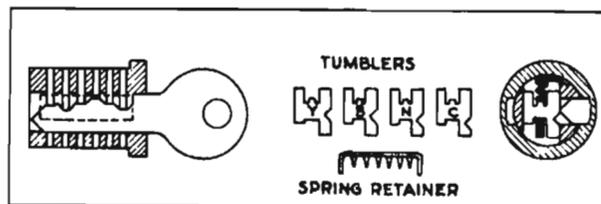


Fig. 1-12—Side bar lock.

The side bar type lock (fig. 1-12) is used for the ignition, door and front compartment on passenger cars. Glove compartment locks are wafer tumbler, single bit type having 4 tumblers on passenger cars. These locks are all coded the same, allowing a usage of one key for all locks on the vehicle. To protect owners, automobile lock manufacturers stamp the lock number on the lock core, shaft, etc., where they will not show until the lock is removed.

To obtain the code number, remove the door lock. The key number may be obtained from the lock core, shaft, etc., which will be the same on all of the other locks.

In addition, when a lock cylinder requires replacement the lock code number may be obtained either from the key, if available, or from the old lock cylinder which is being replaced.

Once the code number of the lock is obtained, look up this number in a key cutting book. There are two types of code booklets in general use, one which lists the cutting code by letters C, N, B and Y. Numbers or letters are always recorded from the head of the key to the end.

Numbers may be transposed to letters to numbers as follows:

Code Book—Numbers	Code Book—Letters
1	C
2	N
3	B
4	Y

All side bar locks furnished to the field by the Parts Department are uncoded; that is, they are furnished without tumblers, springs or spring retainers. These parts are serviced separately. The tumblers come in four different depths indicated by colors "C" for copper, "N" for nickel, "B" for black and "Y" for yellow.

The side bar locks have six tumbler positions, and in looking up the cutting code, the following may be used as an example. After key code number is determined, either from key or from number stamped on lock cylinder, refer to your code book and record the key cutting information as follows:

Key of lock code Number	Key cutting code Numerical	Key cutting code Alphabetical
8109	2-3-2-1-2-4	N-B-N-C-N-Y
cutting or Tumbler position from head of lock.	1-2-3-4-5-6	1-2-3-4-5-6

The numbers or letters (depending on code book) which are written above the cutting or tumbler position indicate the different color tumblers which are to be dropped into each tumbler slot of the lock: "C"—copper, "N"—nickel, "B"—black, "Y"—yellow.

NOTE: If code book used lists the key cutting code numerically, the numbers must be transposed to letters as previously stated in order to select proper color tumblers for installation into the lock.

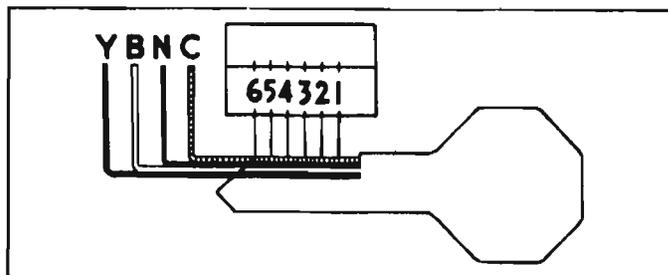


Fig. 1-13—Tumbler requirement diagram.

In cases where a code book is not available, the diagram as shown in figure 1-13 may be used to determine the tumblers required to assemble an uncoded lock cylinder.

1. Lay the key on the diagram (fig. 1-13) with the bottom of the key flush with the edge of the drawing, head and point carefully lined up.
2. Read the code in letters C-N-B-Y from the head of key to the end from positions 1 to 6 inclusive. As each depth is determined write that letter in the blank space provided above the position numbers (1-2-3-4-5-6).
3. With the key properly lined up on the diagram, all cuts that show in the first section are to be marked "C."
4. Cuts that fall in the first black section, mark "N."
5. Cuts that fall in the White section, mark "B."
6. Cuts that fall in the second black section, mark "Y."

After the letters (C-N-B-Y) have been determined and written above the cutting positions, the lock cylinder should be assembled as follows:

Lock Cylinder Assembly

1. Hold cylinder with head of cylinder away and, starting at the head of the cylinder, insert the tumblers in their proper slots in the order called for by the code; ribbed side toward you and long point down (fig. 1-14).
2. After all tumblers are in place, check for correctness with the code. Then press tumblers down with one finger (fig. 1-15).
3. Insert one tumbler spring in the space provided above each tumbler (fig. 1-16).

CAUTION: If the springs are tangled, do not pull them apart—unscrew them.

GENERAL INFORMATION 1-6

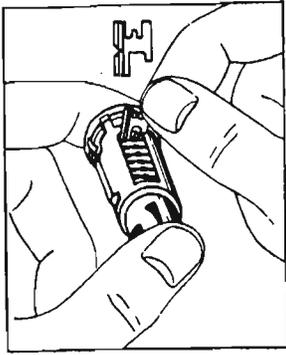


Fig. 1-14—Inserting tumblers.

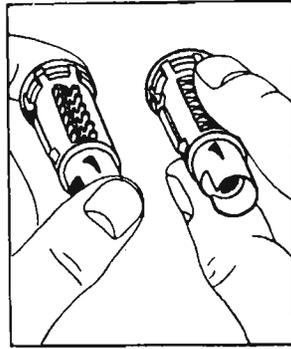


Fig. 1-15—Checking with code.

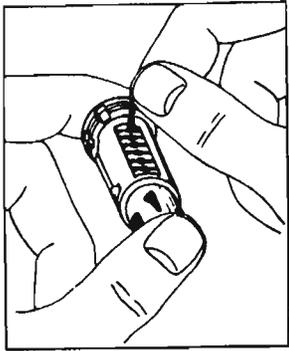


Fig. 1-16—Inserting tumbler springs.

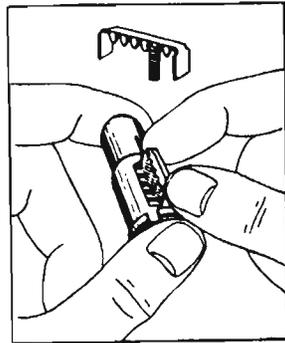


Fig. 1-17—Inserting spring retainer.

4. Reverse the lock cylinders so that the head of the cylinder is now toward you. Insert the spring retainer so that one of its six prongs enters into each of the springs and the two large end prongs slide into the slots at either end of the cylinder (fig. 1-17). Press the retainer down with one finger.
5. To check, insert proper key and if tumblers are installed properly the side bar will be allowed to drop down. If bar does not drop down, remove the key, spring retainer, springs and tumblers and reassemble correctly.

NOTE: If the tumblers have not been assembled correctly and not according to the code, the tumblers can be removed from the cylinder by holding it with the tumbler slots down, pulling the side bar out with the fingers and jarring the cylinder to shake the tumblers out. This procedure is necessary because after the tumblers have been pressed down into the cylinder they are held in their slots by the cross bar.

6. If after checking it is found that the lock is assembled properly, remove key and place cylinder in a vise using leather or wood on each side to prevent damage to the cylinder.
7. Stake the retainer securely in place by staking the cylinder metal over both edges of the retainer ends, using a suitable staking tool at right angles

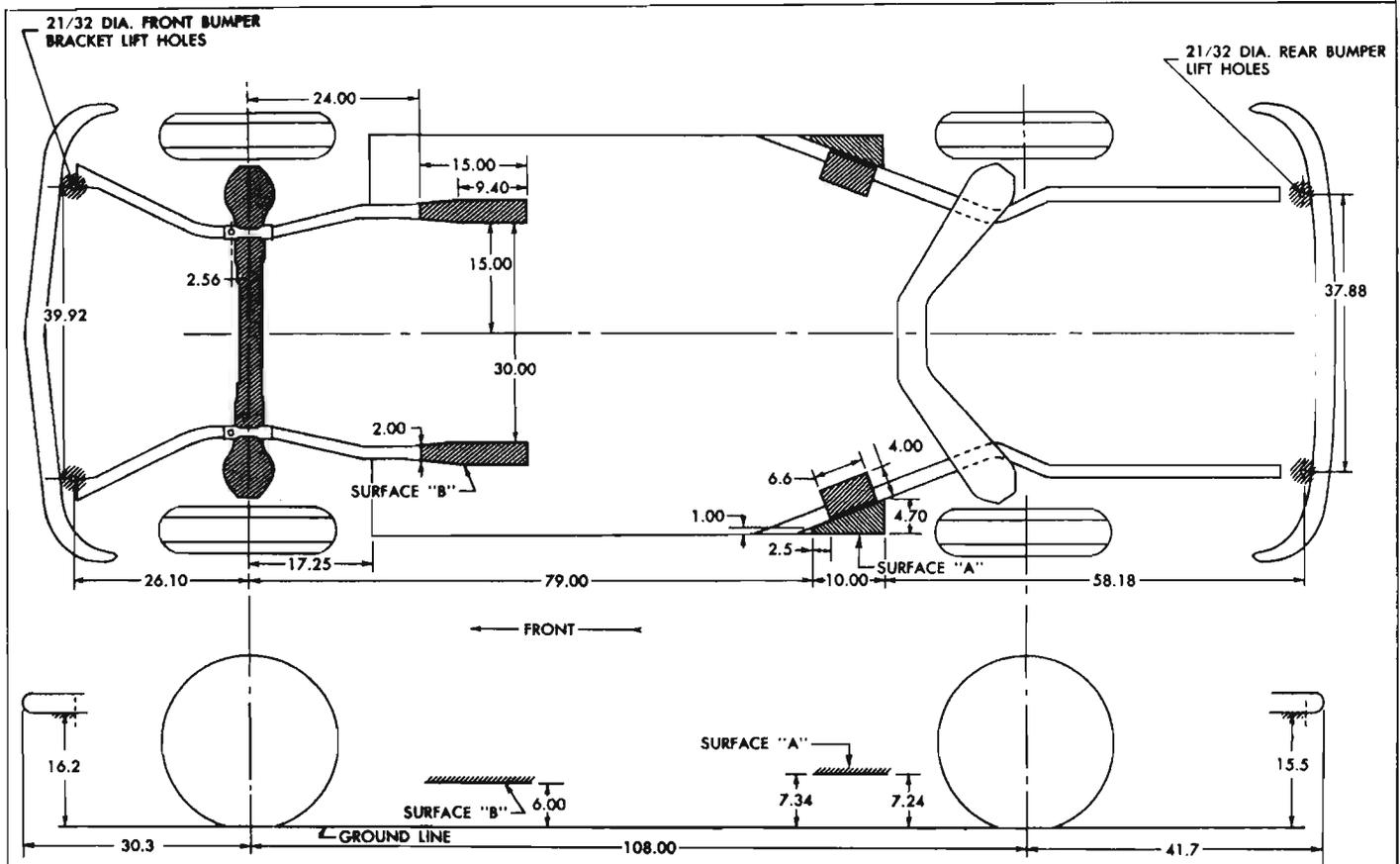


Fig. 1-18—Corvaire lifting point diagram.

to the top of the retainer and from the cast metal of the cylinder over the retainer at each corner.

FINISHING CAR TO START

NOTE: Towing car to start is not recommended due to the possibility of the disabled car accelerating into tow car.

AUTOMATIC TRANSMISSION - Turn ignition to "ON" pull choke knob 1/3 of the way out, and place transmission selector lever in Neutral ("N" on indicator) until car reaches 25 mph; then move selector to Low ("L" on indicator).

When engine starts, move selector to drive ("D" on indicator).

MANUAL TRANSMISSION - With gear shift lever in third, pull choke knob 1/3 of the way out, depress clutch pedal and turn ignition to "ON." When car speed reaches 15 mph, slowly release clutch pedal.

EMERGENCY TOWING

If a vehicle equipped with Powerglide becomes dis-

abled and requires towing or pushing, speed must not exceed 30 mph.

Both manual and Powerglide transmissions should be towed in Neutral only, with parking brakes fully released.

When towing a vehicle on its front wheels, the steering wheel should be secured to maintain a straight forward position.

LIFTING WITH DRIVE-ON HOIST

Many dealer service facilities and service stations are now equipped with a type of automotive hoist which must bear upon some part of the frame in order to lift the vehicle. In figure 1-18 the shaded areas indicate the areas recommended for hoist contact when this type of equipment is used.

Lifting with the Auto Jack

Lifting areas on Corvair Sedan and Station Wagon models are shown in Figure 1-18. When locating the auto jack, be sure the tab on the jack catches the outer body flange, thus preventing it from sliding too far under the vehicle. Corvair 95 lift pad locations are located differently and are covered in the Corvair 95 portion of this section.

STANDARD TORQUE TABLE

(Steel Bolts)

The following table lists bolt torque specifications for applications involving steel bolts and parts only. **DO NOT** use this table when torquing aluminum bolts or when torquing steel bolts which are threaded into, or bearing on, aluminum parts.

The specifications in this chart are provided for use in cases where specific torque specifications are not given.

Bolt Grade*	Comm. Low-Carb.	GM-280 SAE-5	GM-290 SAE-7	GM-300 SAE-8
Head Marking	None			
Bolt Size	In.-Lbs.			
#4-40	8			
#6-32	12			
#8-32	20			
#10-24	25			
#10-33	30			
#12-24	35			
	Pt.-Lbs.	Pt.-Lbs.	Pt.-Lbs.	Pt.-Lbs.
1/4-20	4	7	9	11
1/4-28	5	9	11	13
3/8-18	9	15	19	23
3/8-24	10	17	21	26
3/8-16	15	27	35	42
3/8-24	18	33	42	50
3/8-14	25	45	60	70
3/8-20	30	55	70	80
1/2-13	40	75	90	105
1/2-20	45	85	105	120
3/4-12	60	110	135	150
3/4-18	65	120	150	165
3/4-11	80	140	170	200
3/4-18	90	155	200	230
3/4-10	125	240	300	350
3/4-16	140	275	350	400
7/8-9	175	375	500	575
7/8-14	200	400	550	625
1-8	250	575	750	850
1-12	275	650	825	950

*The physical properties of a bolt primarily determine its assignment to a Bolt Grade, thus explaining the considerable difference in recommended installation torques for bolts of the same size, but of different grade. Bolts of lower grade than those used as original equipment, should therefore, never be used as replacement.

CORVAIR 95 AND GREENBRIER—1200 SERIES

INDEX

	<i>Page</i>		<i>Page</i>
Model Identification.....	1- 8	Fuel Tank.....	1- 9
Vehicle Dimensions.....	1- 8	Tire Information.....	1- 9
Gear and Control Ratios.....	1- 9	Type.....	1- 9
Manual Transmission.....	1- 9	Size and Ply Rating.....	1- 9
3-Speed.....	1- 9	Inflation.....	1- 9
4-Speed.....	1- 9	Unit and Serial Number Locations.....	1-10
Differential.....	1- 9	Lifting With Drive-On Hoist.....	1-10
Capacities.....	1- 9	Lifting With Auto Jack.....	1-10

The preceding portion of this General Information section dealt with both Corvaire and Corvaire 95 style vehicles except for the following items which deviate slightly and are applicable to Corvaire 95 styles only.

MODEL IDENTIFICATION

Model	Body Style
R 1205	½ Ton Panel
R 1206	½ Ton Sports Wagon
R 1244	½ Ton Pickup
R 1254	½ Ton Rampside Pickup

VEHICLE DIMENSIONS

Greenbrier and Corvan

Overall Length.....	179.7 in.
Overall Height.....	68.5 in.
Overall Width.....	70.0 in.
Wheelbase.....	95.0 in.
Turning Diameter.....	42.6 ft.
Load Compartment	
Height.....	54.0 in.
Length.....	106.2 in.
Width.....	59.4 in.
Side Loading Doors.....	49.0 x 53.5 in.
Rear Doors.....	36.0 x 44.6 in.
Curb Weight—Corvan.....	2805 lbs.
Greenbrier.....	3005 lbs.
Payload Capacity—Corvan.....	1795 lbs.
Greenbrier.....	1595 lbs.
Cubic Capacity—Corvan.....	191 cu. ft.
Greenbrier.....	175 cu. ft.

Loadside and Rampside

Overall Length.....	179.7 in.
Overall Height.....	69.0 in.

Overall Width.....	70.0 in.
Wheelbase.....	95.0 in.
Turning Diameter.....	42.6 ft.
Load Length.....	103.3 in.
Load Width.....	61.8 in.
Platform Height.....	26.5 in.
Tailgate.....	44.8 in. wide
Rampgate.....	47.5 in. wide
Curb Weight—Loadside.....	2705 lbs.
Rampside.....	2715 lbs.
Payload Capacity—Loadside.....	1895 lbs.
Rampside.....	1885 lbs.
Cubic Capacity.....	80 cu. ft.



Fig. 1-19—Body Identification Tag

GEAR AND CONTROL RATIOS

3-Speed Manual Transmission

1st Gear	3.50:1
2nd Gear	1.99:1
3rd Gear	1.00:1
Reverse	3.97:1

4-Speed Manual Transmission

1st Gear	4.26:1
2nd Gear	2.55:1
3rd Gear	1.68:1
4th Gear	1.00:1
Reverse	4.27:1

Differential

-Speed Transmission	3.89:1
-Speed Transmission	3.27:1
Lowerglide	3.89:1

Steering Ratio

Steering Gear	20:1
Overall	23:1

CAPACITIES

Fuel Tank	18.5 gal.
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TIRE INFORMATION

Type	Tubeless Tyrex
Size and Ply Rating	
Production	7.00 x 14-4
Optional	7.00 x 14-6

Load and Inflation

	7.00 x 14-4	Max. Load	7.00 x 14-6	Max. Load
Front	24	975 lbs.	24	975 lbs.
Rear	24		24	

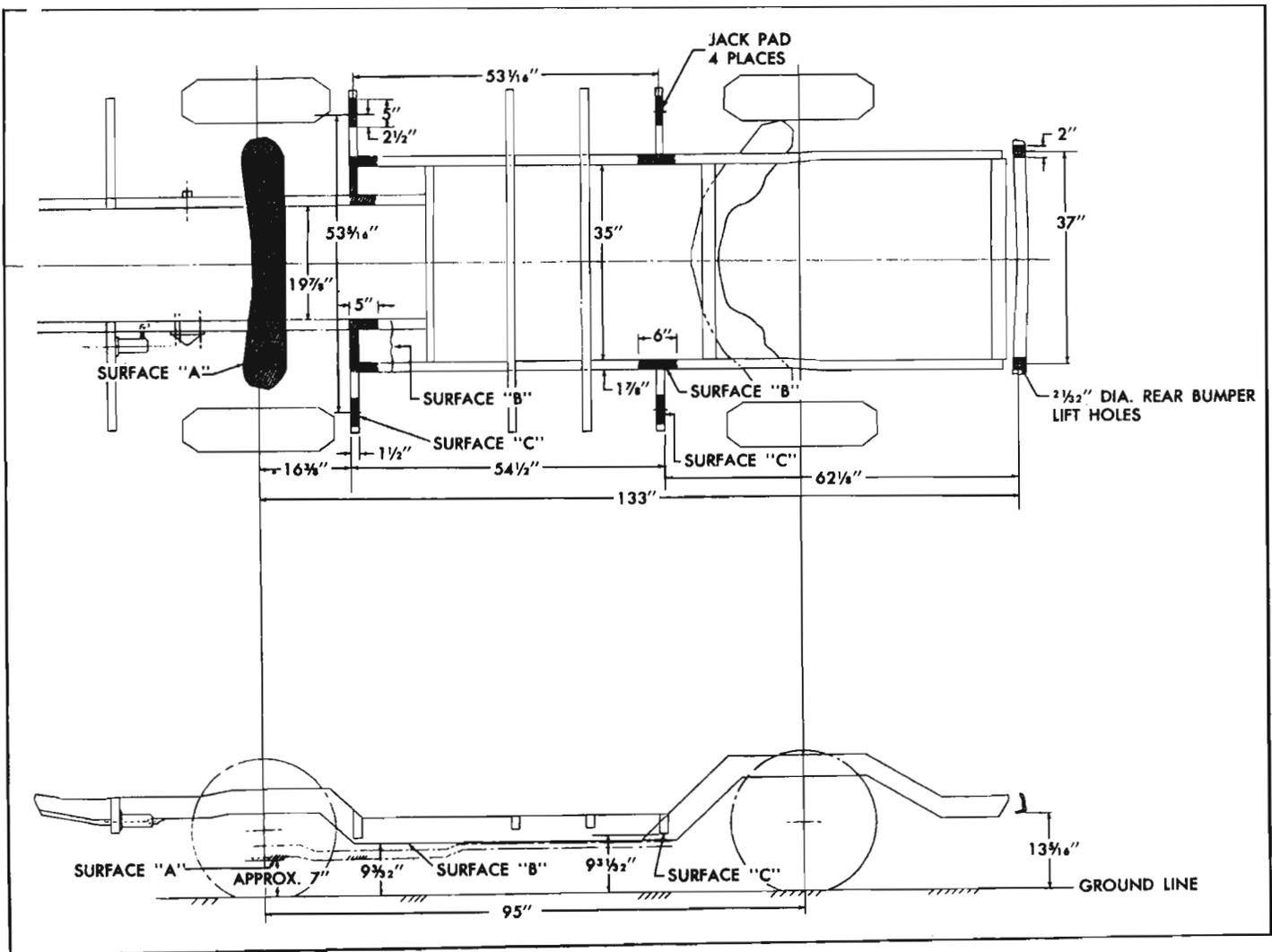


Fig. 1-20—Corvaire 95 Lifting Point Diagram

UNIT AND SERIAL NUMBER LOCATIONS

Corvair 95 Unit and Serial Number locations remain basically the same as previously described for the Corvair Sedan styles with one exception. The Body Identification Tag illustrated in Figure 1-19 is located within the cab of the vehicle instead of in the engine compartment.

LIFTING WITH DRIVE-ON HOIST

Figure 1-20 indicates, by means of shaded areas,

those portions of the underbody which hydraulic hoist equipment must bear against when lifting the vehicle.

LIFTING WITH THE AUTO JACK

Figure 1-21 indicates the jack locating holes in the frame outriggers of all Corvair 95 models. The pin on the load rest of the Corvair 95 auto jack should be located in the hole in the outrigger before attempting to raise the vehicle.

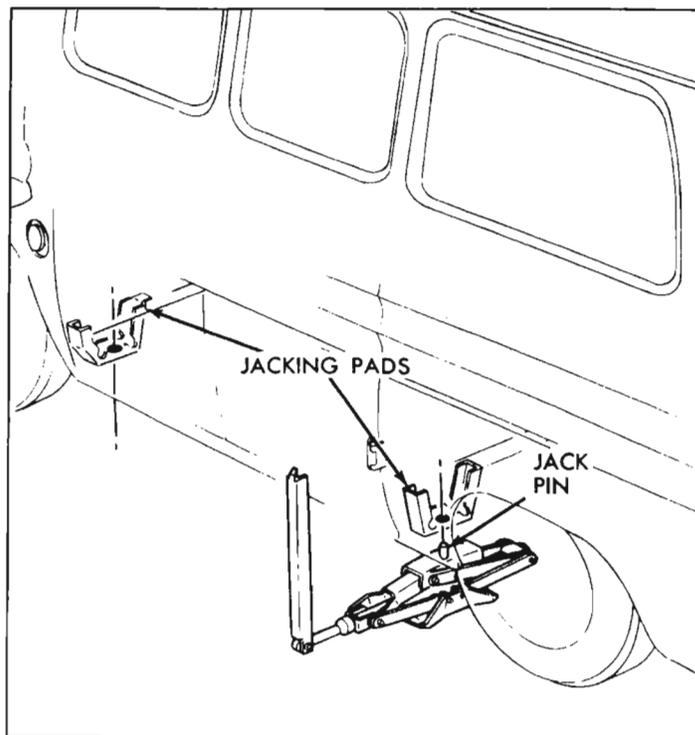


Fig. 1-21—Corvair 95 Jacking Pad Locations