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PARTS FAMILIARIZATION WORKBOOK NO. 2 240/260

Section 1: 1975 through 1978 240/260 Models INTRODUCTION - Part 2



One "taken for granted" consideration sometimes gets overlooked in the rush. The 262, 264 and 265 are six-cylinder cars that require engine parts for a B-27 or B-28 V-6--NOT a B-30 six-cylinder from the 160.

Electrical

The electrical system in the 1975 through 1978 cars was further refinement of the already-proved 140 electrical engineering. This development of Volvo electrical parts was also influenced by an ever-increasing number of new features. These features included:

- More luxury items like power front windows, heated seats, courtesy lights, extra instrumentation, vanity mirror lights, trunk lights and engine compartment lights.
- High-output heating, A/C and ventilation systems.
- Safety items like an illuminated seatbelt release mechanism, heated rear window and extra driving lights.
- Additional wiring for new emissions-related systems.

The 242, 244 and 245 came equipped with a 55-amp alternator and a 60-amp hour battery. Many of the above features were standard equipment on the 262, 264 and 265, so these Volvos were fitted with a 70-amp alternator and a 70-amp hour battery.

As the electrical system grew, so did the cost of an alternator.

The price of a modern original equipment (OE) alternator was usually more than the \$50 that someone expected to spend. Genuine Volvo alternators were "high ticket" parts because of the demands placed upon them.



A variety of substitute brands and aftermarket units exist on the market at bargain prices.

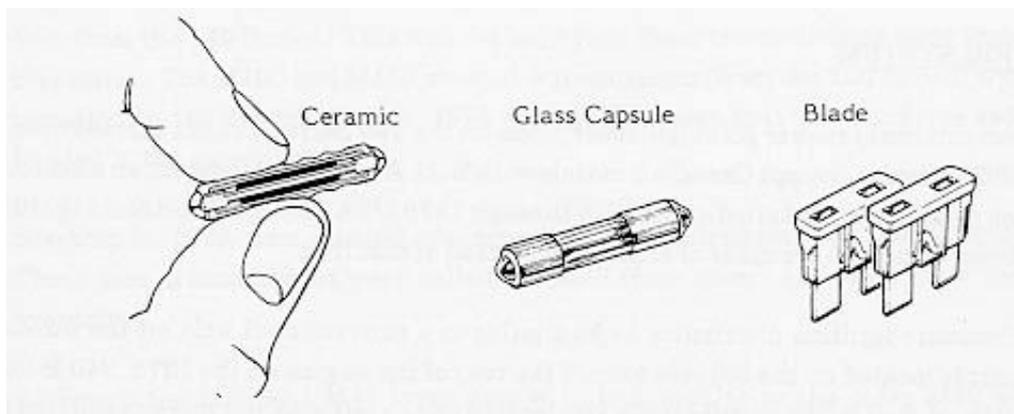
Throughout the 1975-1978 period, alternators from three manufacturers were installed: Robert Bosch, SEV-Marchal and Motorola.

The starter motor on all B-20F and B-21F four-cylinder engines is located on the left rear of the engine. The V-6 engines are the only Volvo engines to locate the starter on the right rear of the engine.

The fusebox is located on all 240/260 models behind a plastic cover on the driver's side interior kick panel ahead of the door. Fuses are available in a variety of ratings (example: 5, 8, 10, 16, 25 and 30 amps). Fuses protect electrical equipment from damage due to overloading.

Fuses have also changed in appearance throughout the years. Three main types have been used in automobiles:

- Ceramic-body -- used in all 240/260 Volvo fuse panels up to the current year.
- Glass-capsule -- used in most domestic car fuseboxes up to about 1980.
- Blade or bayonette plastic/metal fuses -- used in nearly all cars since the early 1980s and the 1983 and later 700 Volvos.



Although all future volvos will probably have blade type fuses, the majority of Volvos on the road today have ceramic-body fuses. Ceramic fuses are available separately or in a kit. Fuse types should not and cannot be mixed.

IMPORTANT:

Three things to remember about fuses:

1. Never assume what type of fuse you require, check your owner's manual or consult a Volvo technician.
2. Never use a higher-rated fuse instead of a lower one -- for instance, never use a 25 amp for a 16 amp application.
3. Many car radios in 1978 and earlier Volvos are protected by glass-capsule fuse instead of a ceramic-body type.

Another electrical system feature built into the 240/260 is the light integrity sensor. A warning light in the instrument cluster on the dashboard will light up if a bulb is burned out. This system monitors low beam headlights, taillights, and brake lights. It is sensitive to the type of light bulb used -- the bulbs are matched to the sensor.



Fellow parts specialists advise that installing non-genuine bulbs may cause the warning light on the dash to operate.

Ignition System

The conventional breaker point ignition system on the 140 was not carried over to the 240/260 (except Canadian models with B-21 A engines). Instead, an electronics ignition system was installed on all 1975 through 1978 USA model. Electronic ignition distributor housings are made of aluminum instead of castiron.

The electrical ignition distributors look similar to a conventional unit on the outside. This part is located on the left side toward the rear of the engine on the 1975 240 B-20F. The 1976-78 240 B-21F distributor is also located on the left side but more to the front of the engine. On B-27F V-6 engines, it can be seen on top toward the rear.

With the introduction of the B-21F and B-27F engines in 1976, ignition distributor parts became more complex with each year. To meet federal and California emissions standards, different internal parts, external vacuum lines and vacuum-operated valves were installed. Also as a general rule, a Volvo with an automatic transmission now had a different distributor than a Volvo with a manual transmission.

As you no doubt already know, the simple "I tuned it up in the driveway at home" has become a thing of the past! A trained professional Volvo technician and special electronic equipment are needed to do it right.

The routine maintenance intervals for electronic ignition systems installed on Volvos from 1975 are longer than the earlier conventional system.

Drive Train

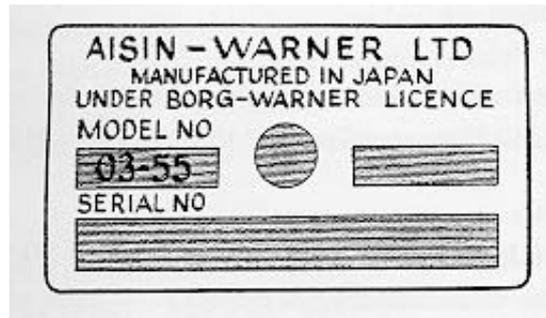
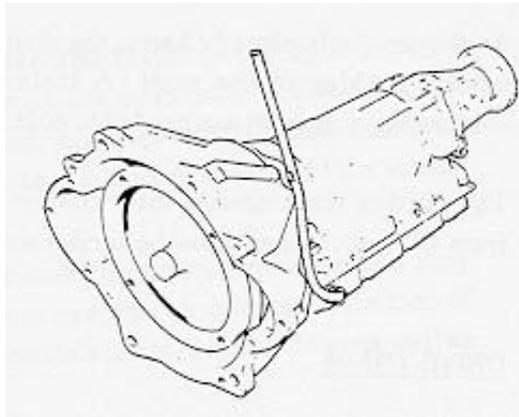
The 1975 240 used the M40 and M41 manual transmissions that were carried over from the 140. This was the only year these transmission were installed on these cars. The M400 and M410 manual transmissions (from the 160) were never installed on the 240/260. 1975 was the first year that the overdrive switch was located in the gearshift knob.

Starting in 1976, new manual transmissions were introduced for the 240/260. These new transmissions were called the M45 four speed and M46 four speed plus overdrive.

Although the M45 and M46 types appear to look similar to the older M40 and M41, numerous internal changes were made to the transmissions. Although some parts are common to both types, many are not.

Just like the manual transmissions that carry over to the 1975 240 models from the 140, the automatic for 1975 240s is the Borg Warner Type 35. Genuine Volvo replacement parts for rebuilding this trans as well as complete genuine remanufactured units are still available. These transmissions have a 486 or 470 plate marking (plates described in Workbook No. 1, Section 3).

In 1976 the Borg Warner Type 55 replaced the Borg Warner Type 35. It was fitted to both the 240 and 260. In addition, another version of an automatic trans was fitted to some models: the Aisin (aay sin) Warner Type 55.



The AW55 was manufactured in Japan instead of Europe. The main difference between the European BW55 and the "AW" is that the front and rear clutches in the AW55 gear case have only one large return spring -- the BW clutches have many. An identification plate on the left side of all BW and AW automatics contains the transmission model number and serial number for reference.

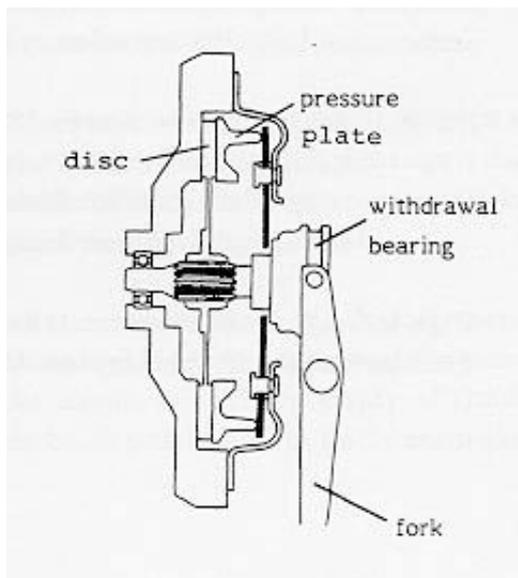
Parts names that you're familiar with include:

- Valve body assembly
- Governor
- Torque converter
- Brake and clutch discs
- Pan gasket
- Kickdown cable

Power gets from the engine to the manual transmission by going through the clutch assembly. The first three parts listed below are located in the large housing (called bell housing) between the engine and transmission:

- Clutch assembly (pressure plate)
- Disc
- Withdrawal (throwout) bearing
- Clutch cable (240)
- Clutch master cylinder (260)
- Slave cylinder (260)

The last three parts are located outside of the bell housing in the engine compartment.



The 1975-78 242, 244 and 245 use a mechanical linkage (the clutch cable) to operate the clutch. The 1975-78 262C, 264 and 265 have a hydraulic linkage (fluid under pressure) to operate the clutch. The two types of linkages do not share common parts.

The driveshaft is supported by a center bearing and three universal joints. Sound familiar? It should... the same dependable system used on the 140 appears on the 240/260.

The rear wheels continue to be driven by the traditional "live" or "solid" rear axle described first in Workbook No. 1. The dependable Volvo differential assembly fitted to these cars continued to be available in both limited slip and standard versions. Usually, limited slip was a dealer-installed optional accessory.

The 240/260 Volvo final drive ratios vary by transmission type and federal or California emissions standards. A set of gears in the differential (called a gearset) and the transmission will ultimately determine how engine power enables the actual movement of the vehicle. A plate attached to the differential case indicates the gear ratio.

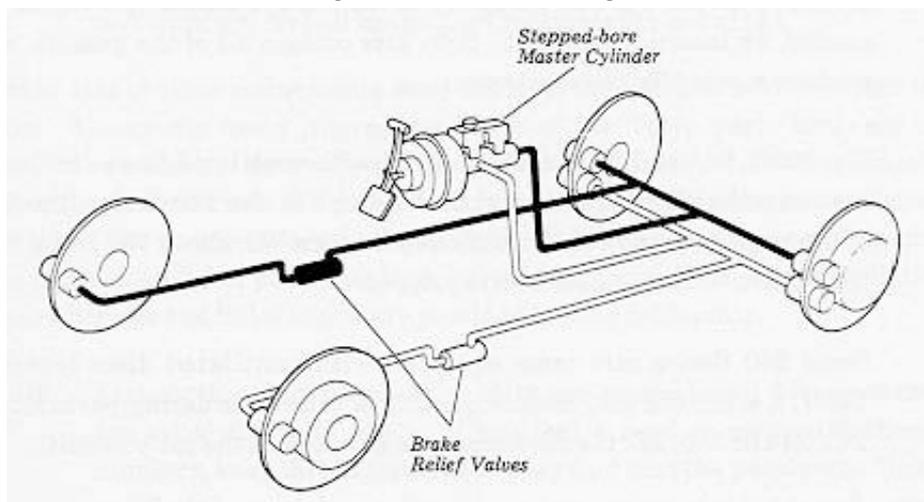
From time to time you may hear it said that a car is low or high geared. Volvo gearsets came in a variety of ratios (one per model). They are selected to provide the best performance, longevity and economy in day-to-day driving.

NOTE: A 4.10:1 (four ten to one) is an example of what is called a low ratio, and a 2.54:1 gearset is called a high ratio. The higher the number, the lower the ratio. Volvo 240/260 gearsets generally range from 3.54:1 to 4.56:1. Changing the gearset changes the driveability of the car.

High-mileage cars will eventually need to have the axle shaft bearings replaced.

Brakes

The 240/260 improved upon the power-assisted four wheel disc brake system from the 140 and 160. These cars introduced the following refinements during 1975 to 1978:



1975

A new type of master cylinder called a stepped-bore type. As indicated in Workbook No. 1, the two circuits in Volvo's triangular split braking system are jointly served by the same master cylinder. If one brake circuit fails, about 80% of full braking power is provided by the remaining circuit.

In the transition from operating on both circuits to only one circuit, there is a change that drivers will feel during an emergency situation. This change is the increased length of pedal travel plus the increase in pedal pressure necessary to brake -- due to the drainage of brake fluid from the

damaged circuit.

The stepped-bore master cylinder eliminates much of the feel of these transitional changes. It provides the same braking power and about the same brake pedal travel even if one brake circuit is entirely empty of fluid. Experiencing an unexpected increase in brake pedal travel in traffic can make you grow a little older real fast!

A vacuum pump is installed to provide additional air pressure for the power-assisted brakes. Located on the left side of the engine block, this pump provides vacuum to the vacuum brake cylinder (also called power brake booster). A round, flat rubber piece (called a diaphragm) inside the pump provides the pressure. Repairs to this pump are made using a diaphragm repair kit and, if needed, an internal valve kit.

1976

The 262C, 264 and 265 came equipped with ventilated front disc brake rotors. Instead of having a solid metal brake disc like the 140, the 260 models took a page from the 160 (to repeat from Workbook No. 1, the 160 was the first entire Volvos to be so equipped).

Some 240 cars came equipped with ventilated discs (example: 1978 242GT).

Getting the right brake disc part number also required knowing the name of the brake caliper manufacturer (Girling or ATE). Make sure, when you call for parts, to confirm part numbers by looking at the service plate or the calipers on the car.

NOTE: Genuine Volvo brake discs usually have three identifying markings cast into the inside edge of the hub: the Volvo name, the part number and a number in millimeters that indicates minimum machining thickness (example: 8.4 mm).

All 240/260 brake lines were now made from a metal alloy 87% copper, 10% nickel and 3% iron/manganese. This alloy is strong and has good resistance to corrosion. Alloy pipe was tested against galvanized steel and copper pipe (other metals used for brake lines). After 1,300 hours in extremely humid air with a 5% salt content, the alloy pipe came out the best with little or no damage. The copper pipe showed corrosion damage. The steel pipe was corroded through.



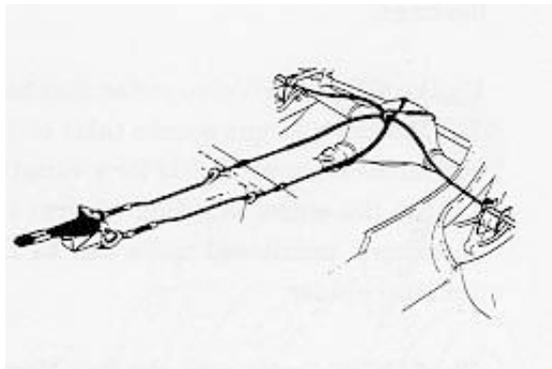
Many other less obvious refinements were made to the 240/260 brake system through the years.

The parking brake system (two small shoes inside the rear brake disc hub) is a redesign of the 140 system. The effect of corrosion and cable stretch upon the 140 system was a tough nut for Volvo engineers to crack.

A major feature of the redesign for the 240/260 cars resulted in the use of two brake cables (a left and a right) instead of the single cable on the 140.

Suspension

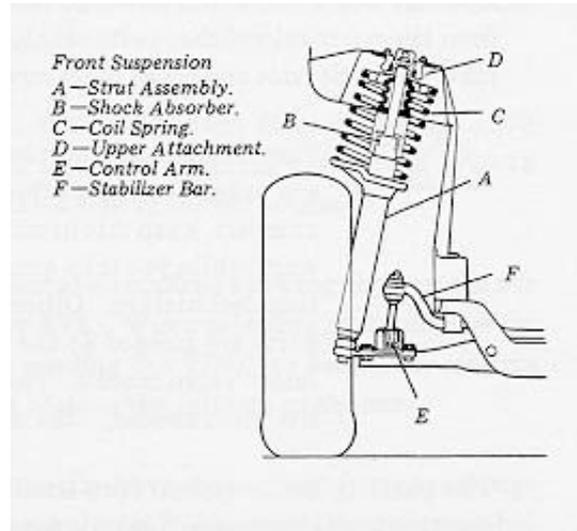
A new type of front suspension for Volvo appeared with the 1975 240 models. The older A-arm or



wishbone type used on all Volvos since 1956 was replaced by a spring-strut front suspension system. Many design differences exist between the two systems and part numbers are completely different for both.

The major parts of one side of the new spring-strut type front suspension are listed below:

- Strut assembly
- Strut-type shock absorber
- Coil spring
- Upper strut mount assembly
- Lower control arm
- Stabilizer bar



Other parts include rubber bushings, cushions, lower ball joints and wheel bearings.

Unlike all earlier Volvos that had bolt-on/off tube-type shock absorbers, replacing 240/260 front shocks (also called strut inserts) requires special tools. Different strut inserts are available for a variety of driving conditions.

The 240/260 were the first North American Volvos to be fitted with 14-inch diameter road wheels. Wheel rim size increased to 5.5 inches from the 4.5 and 5.0 inches on the 140 and 160.

Also, in addition to these stamped steel wheels, 14-inch aluminum alloy wheels became standard equipment on certain 1978 models. A variety of wheels and wheel trim was available for the 1975-78 240/260.

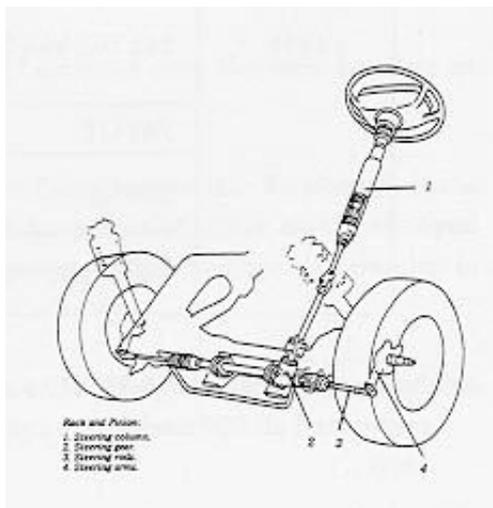
The rear suspension is a redesign of the tried and true coil spring live rear axle used on all earlier cars. Improvements include revised locating attachment points on the axle housing for the two torque rods (also called support stays) and many new parts like:

- Trailing arms (support arms)
- Panhard/track rod and support member
- Stabilizer bar (the 140 and 160 never had one)
- Various brackets, bushings, rubber cushions

Two rear coil springs are used on all models. A variety of coil spring part numbers are available, depending upon the vehicle application. As a general rule, the station wagon models (245/265) have stronger rear springs and shocks to help support increased carrying loads. Coil springs, like shock absorbers and certain brake system parts, should be replaced in pairs.

Steering

Every 240/260 model has a rack and pinion steering system. Two versions are used: manual and power-assisted. Which 1975-78 models have manual or power? Take a look at the list below:



Year	Model	Transmission	Steering Type
1975	242, 244	Manual	Manual
		Auto	Power
	242GL, 244GL	Manual	Power
		Auto	Power
	245	Manual	Power
		Auto	Power
1976	242,244	Manual	Manual
		Auto	Power
	245	Manual	Power
		Auto	Power
	262, 264	Manual	Power
	262 GL, 264 GL, 265	Auto	Power
1977	242,244	Manual	Manual
		Auto	Power
	245	Manual(M45)	Manual
	245	Manual(M46)	Power
		Auto	Power
	262 GL, 264 GL, 265	Manual	Power
	265 GL	Auto	Power
1978	242,244	Manual(M45)	Manual
		Manual(M46)	Power

		Auto	Power
	242 GT	Manual	Power
	245 DL	Manual	Power
		Auto	Power
	262C, 264 GL, 265 GL	Manual	Power
		Auto	Power

As a general rule, 1975-78 240 models with manual overdrive transmissions (M46), automatics and all 260 models are equipped with power steering. A few rare exceptions may exist.

Manual rack and pinion steering does not have a power steering pump, pressure lines, rubber seals and the hydraulic parts that a power rack does.

Special tools, test equipment and work/shop space are needed to properly repair a leaking power-assisted steering rack.



Local auto dismantlers may have rebuildable units available. It might pay to spend some time picking up a core.

Two manufacturers supply racks for the 240/260. They are ZF (short for Zahnradfabrik of Friedrichshafen, a German company) and Cam Gear (an English company). Determining the manufacturer of the rack to select the correct repair parts.

ZF racks can be identified by the two letters "ZF" stamped onto the rack housing or pinion drive.

The majority of power racks fitted to these cars are Cam Gear units. To identify these units, look for a production code number (1205660, for example) either cast or stamped on the rack housing. Only Cam Gear racks have this seven-digit number. If a number is found and no ZF marking is indicated, the unit is a Cam Gear.

Other parts in the steering system include:

- Power steering belt
- Left and right tie rods
- Pressure lines
-

Rubber bellows (accordion-type rubber boots on the rack)

Body - 240 Models

"Going up market" was a popular industry-wide term applied to Volvo 240 models in the mid to late 1970s. This term generally means that new Volvos were designed to attract the luxury car buyer. This "upscale market" luxury car buyer purchased cars that not only offered quality and dependability but also a variety of special luxury and technical features. The 240 models were designed with this in mind.

In addition to breaking new ground in the upscale market, prices for all new cars were increasing dramatically. Generally, a \$3,000 car in the late 1960s cost more than \$6,000 in the mid-1970s. In

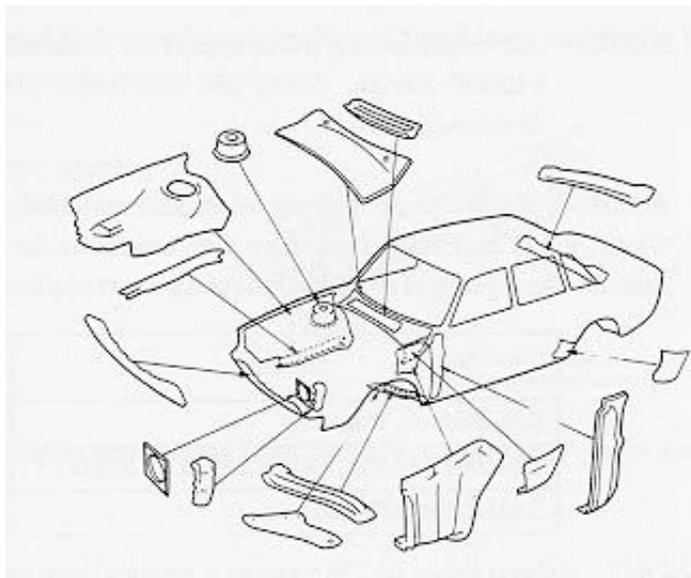
as little as five or six years, the cost of the average car had doubled (a 144S cost about \$3,200 in 1968, as compared with more than \$6,000 for a 244 in 1975!).

Although separate events might be blamed for higher car prices (inflation, skyrocketing oil prices, increased emissions requirements, etc.), it was actually a variety of reasons that kept prices climbing. Volvo not only had to contend with horrendous market conditions but also try to attract a new type of buyer -- a tough road made even tougher.

The 240 models had a big job to do. The body design was a combination of the 240 and the VESC previously mentioned. The 240 front end resembles the 1972 safety car both in its appearance and function. Improvements to the design of many 140 body parts prepared the 240 models for the jump into the upscale car market.

For many years, Volvo has used hot-dipped galvanized (zinc coated 0.02 mm) steel for certain sheet metal parts. These parts are normally subjected to high weather exposure and are critical to the strength of the body.

The 240/260 expanded the use of galvanized steel to other body parts. There are 20 body parts on 1975-78 240 models coated with 65 pounds of zinc. Also, the use of stainless steel for trim parts (first mentioned in the P120, Workbook No. 1) was continued.



A few of the major parts to remember are listed below:

- Front fenders -- called mudguards or wings in Great Britain, one set of part numbers fit all 1975 through 1985 240 models.
- Hood -- called a bonnet in Great Britain, a hood covers the engine compartment. Available in two versions -- without a raised front edge (Alternate 1) or with a raised front edge (Alternate 2).
- Front grille -- covers the radiator and is made of a strong plastic. Different models had different grilles (for example, a 242GT differs from a 242DL).
- Headlight frame -- also called a door or bezel, one frame surrounds each headlight.
- Rocker panel -- also called bottom rail. A formed sheet metal panel below the side doors running between the front and rear wheel openings.
- Quarter panel -- the rear fender on a car.

Your Volvo retailer should have the ability to provide detailed descriptions of all sheet metal body parts as well as part number listings for dashboard, upholstery, window glass, air conditioning, bumpers and emblems.

NOTE: Air conditioning parts appear in a different parts manual for the 240/260. They are not listed with engine, heating/ventilation or dashboard parts.

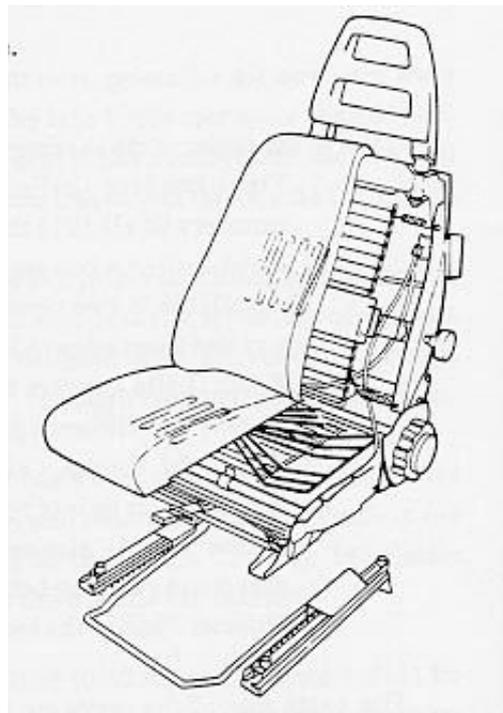
A variety of interior upholstery colors and materials were fitted as standard equipment. Cloth, vinyl and leather seating was available for different 1975 through 1978 240 models. As a general rule, the following chart applies:

Model	Upholstery
245 Station Wagons	Vinyl (cloth in Canada)
242/244 Sedans, 242 DL/244DL, 242GT	Cloth or vinyl
242GL/244GL Sedans	Leather

Replacement upholstery and seat parts may still be available.

A four-digit upholstery code number (2203, 4224, etc.) is needed when ordering (if quantities are still available). For 1975-78 240/260 cars, this is stamped:

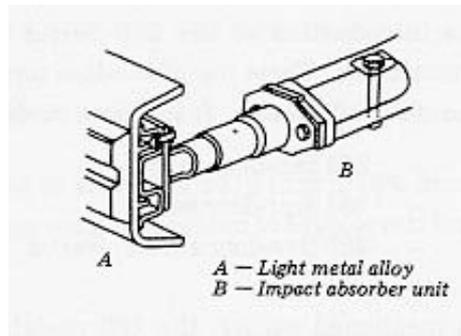
- Onto a metal plate attached to the right side wheel housing.
- Directly into the wheel housing.
- Onto the vehicle identification code plate.



Later cars all have the code stamped on a metal plate on top of the right side wheel housing.

The special bumper design required by law and used on the 140 are also on all 240/260 Volvos. Replacement parts include:

- Energy absorbers (bumper shocks)
- Bumper facebar
- Cover moldings
- Support brackets



A front or rear accident occurring at more than 5 mph can damage these parts and require their replacement.

A manually operated sunroof was available on a variety of 240 sedan models. The 245 has never been offered with a factory sliding sunroof. Replacement parts for the 240 sedans include:

- Sunroof crank handle
- Piping (a type of felt-like gasket)
- Left and right cables
- Gear housing for the crank

A sunroof that is not operating properly (jams open or closed) can sometimes be repaired without the need for replacement parts. Adjustment might be all that's needed.

Body - 260 Models

The introduction of the 260 in 1976 completed Volvo's new generation of automobiles. These top-of-the-line models were an advancement over the single model line of the 160. A complete model range was introduced that included:

- 262 two-door sedan
- 264 four-door sedan
- 265 five-door station wagon

As mentioned earlier, the 260 models were fitted with the 2.7 liter (163 cubic inch) aluminum V-6 engine.

NOTE: Another 260 car was introduced for 1978 -- the 262C. This was a special two-door coupe with the body made by Bertone in Italy. The 262 listed above is a two-door version of the four-door 264 sedan body made in Sweden and made in limited numbers. Be aware that the 262 and the 262C are two different cars (although they share many mechanical parts, the bodies are very different).

The 262/264/265 were also available as GL models. These 260s included extra luxury features like heated seats, power windows, a special steering wheel, sunroof (sedans only), metallic paint and special exterior trim parts.

Replacement body part numbers for the 240 usually apply to the 260. For instance, a front fender

and rocker panel for a 1977 244 and 1977 264 are the same. The only major exceptions to this general rule are the 1978 through 1981 262C models.

At first glance, there is little doubt that 1976-78 240 and 260 models look very much alike. Differences "under the skin" give the 260 its own special character.

All 260 models are clearly identified by external name badges (265GL, 262C, 264) either on the rear trunk lid or on the front fender. Of course, the VIN and Version Identification Code (VIC) plates on a 260 contain the most accurate information.

The 1975-78 240/260 were continually improved through these years. The large number of Volvos on the road and an increased range of genuine Volvo replacement parts made the future for parts look pretty good.

But a cloud appeared on the horizon ...

New Volvo car sales in the United States dipped to 43,700 in 1976 (down 28% from the previous high of 61,042 in 1973). Manufacturing costs had soared to high levels largely because of the increased cost of oil.

Higher Volvo new car prices were the result. In addition, many car buyers (fearing another oil shortage) focused their attention upon small sub-compact economy cars. There was a drop in Volvo new car sales.

Early "teething problems" with the 240/260 were overcome by the end of 1978. In North America, these Volvo cars would outlast tough economic conditions, re-emphasize the traditional Volvo quality/value image and successfully move the Volvo name up market.

The 240 also carried on another Volvo tradition...performance!

