SdKfz 234/3

No. 773

HISTORY

The **Sd.Kfz. 234** armored car series was originally ordered in 1940 as a replacement for the earlier Sd.Kfz 231 series eight wheeled reconnaissance vehicles then in use. The Sd.Kfz. 231 was an extremely sophisticated piece of automotive engineering when it was developed in 1934-35. Like the later **Sd.Kfz. 234,** it had eight-wheel drive with fully independent suspension and steering for all wheels. These vehicles were equipped with two complete sets of controls so that the vehicle could be driven easily in either direction. To facilitate this the three speed gear box was fitted with a high/low ratio transfer case and a direction-change box which gave it six speeds in forward and reverse.

The **Sd.Kfz. 234** was similar to the earlier vehicle but was fitted with a monocoque unitized hull and better suited to operation in tropical climates. The elimination of separate body and chassis units resulted in a lower overall profile and some weight saving. The Tatra firm in Nesseldorf was to create a new diesel engine suited to tropical conditions. This engine had severe development problems which resulted in the vehicle not entering production until 1944, long after the war in Africa had ended.

Other improvements made to the new vehicle included heavier armor, larger tires and increased fuel capacity which gave the **Sd.Kfz. 234** nearly twice the range of the Sd.Kfz. 231. Later versions had even more fuel tankage. Once the engine troubles had been worked out the **Sd.Kfz. 234** turned out to be an excellent vehicle. It was the only German armored car being produced at the end of the war. About 2,300 of these armored cars were produced and served both in Russia and North-West Europe.

The **Sd.Kfz. 234** was produced in four different versions including the **Sd.Kfz. 234/2 Puma** (Testor kit No. 854). The **Sd.Kfz. 234/3,** the subject of this kit, was equipped with a short 75mm howitzer to provide heavier close support for the Reconnaissance units. The 75mm gun previously used in the early versions of the Stug.III and Pz.Kpfw. IV was mounted into an open superstructure atop the hull. The **Sd.Kfz. 234** was a very sophisticated design and in fact, many of its technical innovations still influence armored car design today.

SPECIFICATIONS

Weight (empty)	9.7 tons
Length	19.7 ft.
Width	7.55 ft.
Height	7.75 ft.
Engine	Tatra 103 air cooled, V-12 diesel producing 210 hp @ 2,250 rpm
Armament	one 7.5cm K51 or K51/1 (L/24) tank gun, and one 7.92mm MG-42 machine gun
Max. Speed	53 mph (road) 19 mph (cross-country)
Range	375 miles, later 625 miles

Reference Sources

German Armored Cars of World War Two, J. Milsom & P. Chamberlain (Arms & Armour Press)

Strassen Panzer, The German Scout Cars, Armor series Vol. 5, Walter Spielberger & Uwe Feist (Aero Publishers)

BEFORE STARTING

1. Study the illustrations and sequence of assembly before beginning.
2. Decide how much detail you wish to add to your model and whether or not you intend to modify or "convert" the basic model in any way. Study carefully all available reference material before beginning to ensure an authentic model.
3. Due to the amount of parts in this kit, do not detach the parts from the runners (sprue) until you need them. This helps avoid confusion and lost parts.
4. When cementing the parts together, check the way in which one part fits together with another. This ensures a neat job.
5. Always remember, when working with plastic model cement and paint, make sure your work is well-ventilated. The fumes from plastic modeling products can be harmful if inhaled.

PREPARATION OF PARTS

1. Never tear parts off the runners (sprue). Use a Testor Hobby Knife, nail clippers, or small wire cutters.
2. It is possible some parts may require a little attention with a file or sandpaper to ensure a proper fit and neat appearance. Hobby files and Testor Hobby Sandpaper appropriate for model-building are available in most good hobby shops.
3. If you desire, you may fill any seams (where parts go together) or imperfections with Testor Contour Putty for Plastic Models which is also available at good hobby shops.

PAINTING

You can obtain an excellent finish on your model using Testor Enamels. Parts of the model are painted individually, and then the entire model is oversprayed when you have finished construction.

First of all, be sure your brushes are soft, clean and flexible. (Keep them that way by cleaning them thoroughly with Testor Paint thinner.) Never use inexpensive brushes! A selection of Testor Shed-Proof Brushes will serve you well.

Wash plastic parts before detaching them from the sprue. Warm water and liquid detergent remove the oils left from the manufacturing process. Let the parts dry and avoid excessive handling. Immediately before painting, wipe the parts with a "tac rag" (available at automotive centers) to remove dust and lint.

Most parts are best painted while still attached to the sprue or they may be detached and held with tweezers or "magic" type transparent tape. Paint in one direction only. If your paint is the correct consistency, brush strokes will disappear as the color dries. If the paint seems too thick, thin it with Testor Paint Thinner. Wheels may be detached from the sprue and fit onto toothpicks or matchsticks for painting. Then just hold the paintbrush against the edge of the wheel and rotate the wheel to obtain a neat clean finish.

Let the paint dry completely before handling. When the parts are dry, assemble the model, following the directions closely. Remember cement will not stick to painted surfaces. Using your Testor Hobby Knife, carefully remove paint from all surfaces to be cemented. After you have assembled your model you may touch up areas where cement has marred the finish.

When your model is completed, apply a coat of Testor Dullcote #1260 to the entire model. This will give it an authentic, dull finish and protect the surface of the model.

The ***Testor Model Master*** paint system is specially designed to be used on military models. The **Preliminary Painting** instructions in this sheet indicate which ***Model Master*** colors to use by FS number and name. These colors are called out by ***bold italic type.*** Wherever ***Model Master*** colors are not applicable, the required **Testor** color will be called out by number and name in **regular bold type.**

Any parts not called out in **Preliminary Painting** instructions should be painted **Dark Yellow,** which is the overall body color.

Tweezers will be useful in assembling the many small parts in this kit. The type used by postage stamp collectors is recommended.

Liquid cement, Testor #3502, is recommended for construction since it can produce the neatest, quickest, and strongest glue joints. Apply small amounts of cement, using the tip of a 00 brush, to the surfaces to be joined while holding the parts in place. Do **not** use large amounts of cement.

1 PARTS 1-11

Preliminary Painting

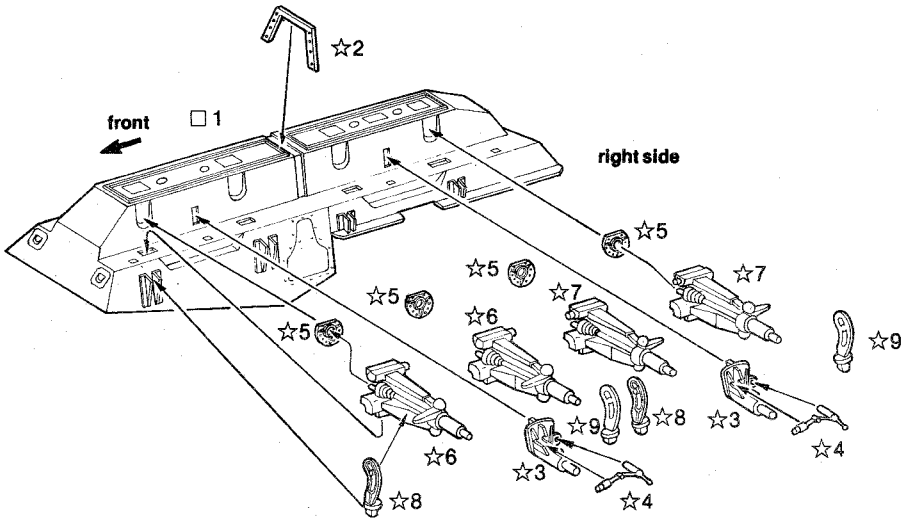
☐1 through ☆**11** (overall body color): **"Dark Yellow"** (mix 6 parts ***FS 33531 Sand,*** 2 parts ***FS 30219 Dark Tan*** and 1 part ***FS 33538 Insignia Yellow***)

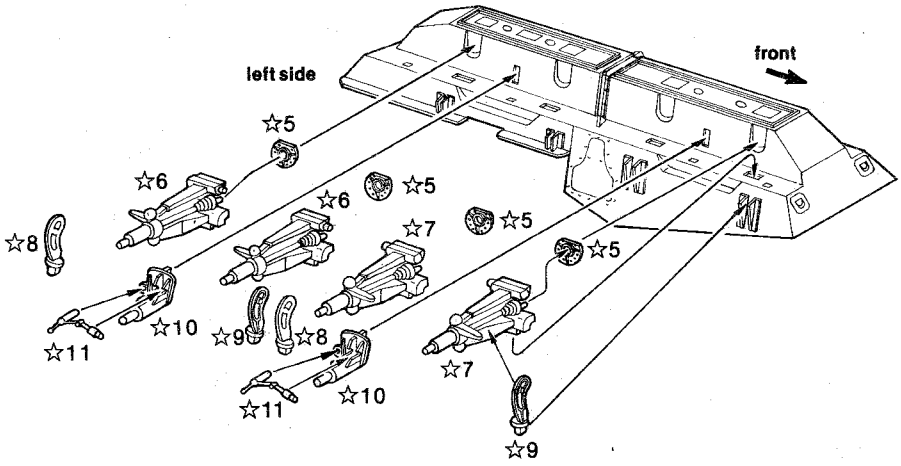
Assembly

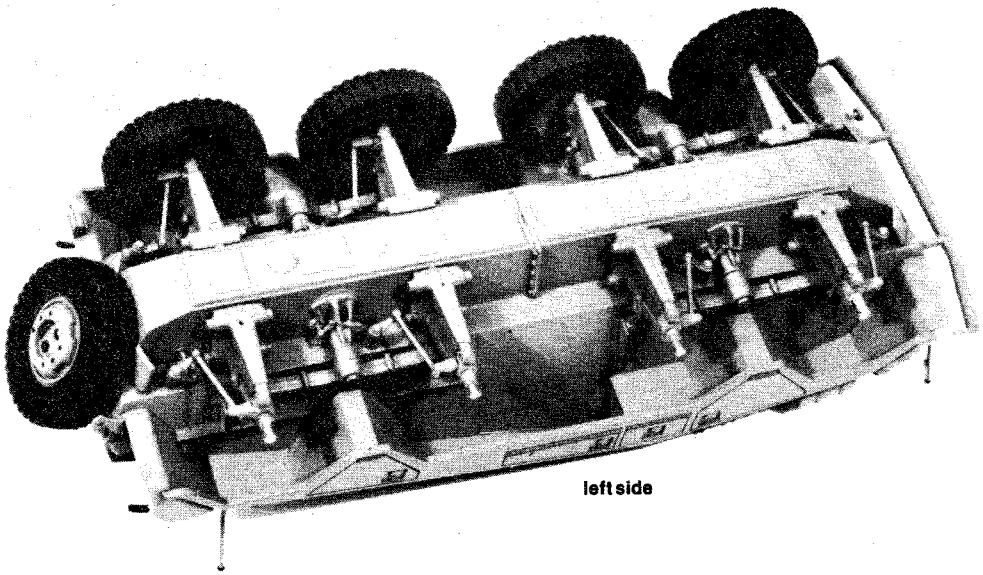
☐1. Cement flange ☆**2** to depression on bottom of hull ☐1 as shown. Cement spring pivots ☆**3** to two slots on side of hull. Glue one lever ☆**4** to each spring pivot.

☐2. Cement one axle bearing ☆**5** to pin shown on two axle assemblies ☆**6** and two axle assemblies ☆**7**. Cement these assemblies to right side of hull, making sure that lug on upper swing arm fits in slot and axle bearing ☆**5** fits in depression on hull. Notice that axle assemblies ☆**6** mount to two right front positions and axle assemblies ☆**7** mount to two right rear positions. Cement stays ☆**8** and ☆**9** to axle assemblies and mounting gussets at positions shown on drawing.

☐3. Repeat above assembly sequence using parts ☆**10,** ☆**11,** ☆**5,** ☆**6,** ☆**7,** ☆**8** and ☆**9** respectively. Note that axle assemblies ☆**6** fit to left rear positions and axle assemblies ☆**7** fit to left front positions. Refer to photo on this page for proper appearance.







2 PARTS 12-23

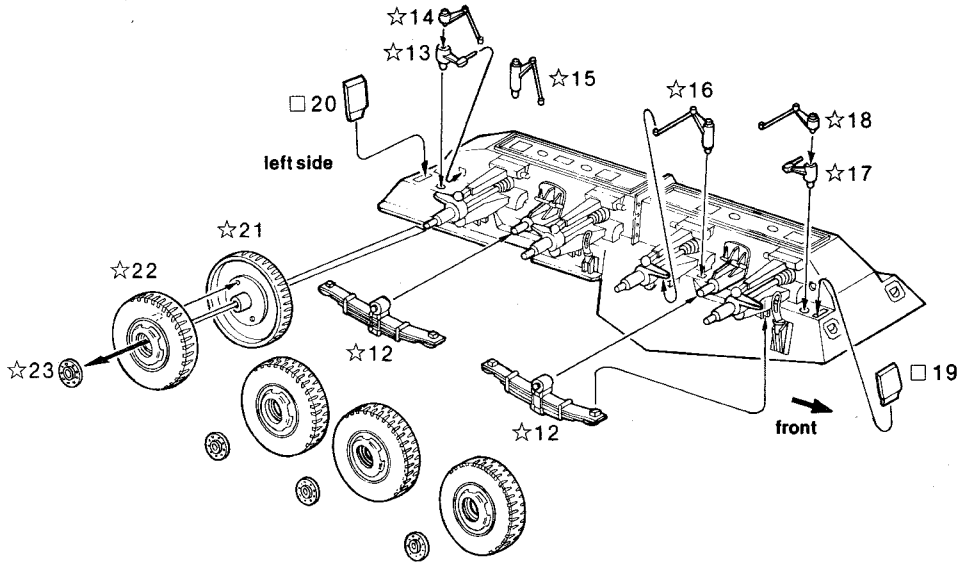
Preliminary Painting

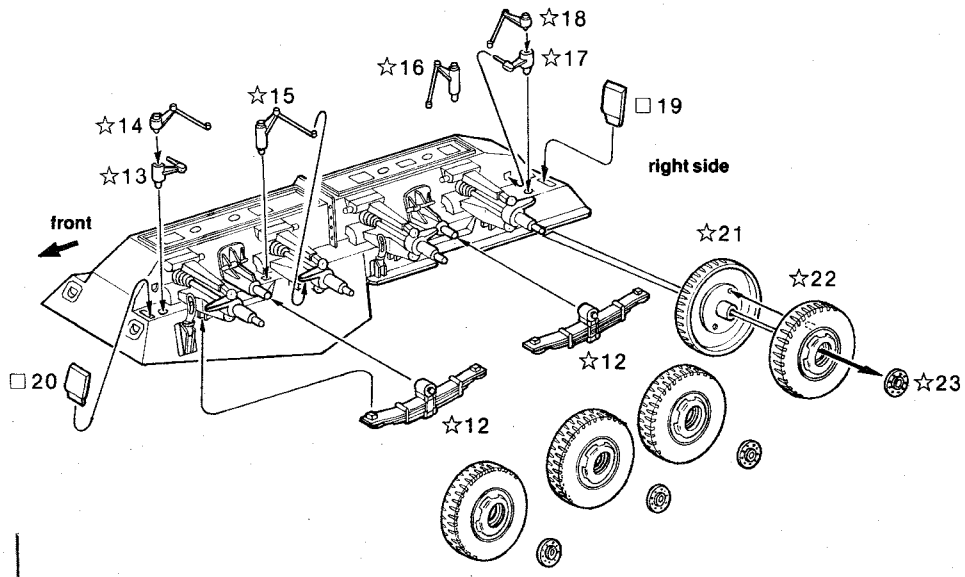
☆**21,** ☆**22** tires only:
FS 37038 Flat Black

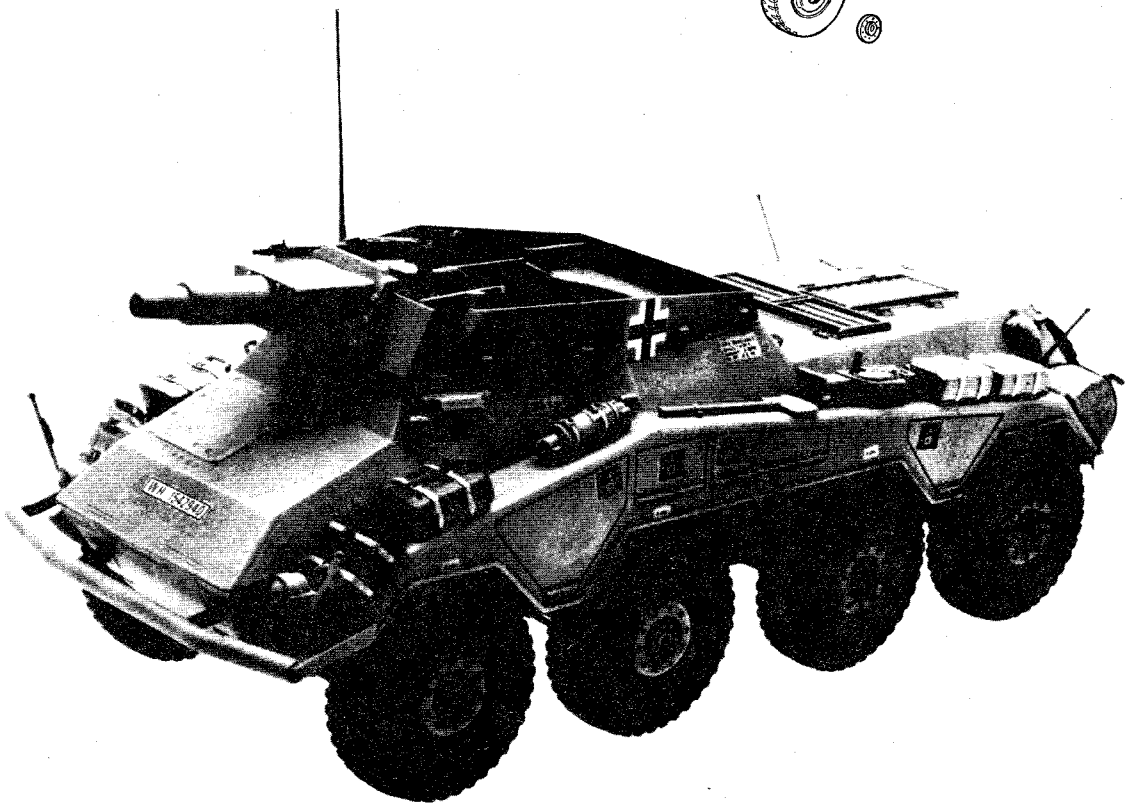
Assembly

☐1. Cement one spring ☆**12** to each spring pivot and mounting lugs on top of each axle assembly. Cement one tie rod end ☆**13** to large holes at right front and left rear positions on hull. Glue one steering link ☆**14** to each part ☆**13** and projecting tab on adjacent axle assembly (see photo on page 2 for proper appearance). Cement steering links ☆**15** and ☆**16** to holes in hull and tabs on axle assemblies at positions indicated on drawings. Cement tie rod ends ☆**17** to left front and right rear positions on hull. Glue one steering link ☆**18** to each part ☆**17** and adjacent tab on axle assembly. Again, you may refer to the photo on page 2 for proper appearance.

☐2. Cement one tie rod shield ☐**19** to each position scribed on left front and right rear of hull. Glue one tie rod shield ☐**20** to each position scribed at right front and left rear of hull. Cement one inner wheel half ☆**21** to each outer wheel half ☆**22** making eight wheels. Slip *(do not cement)* one wheel over an axle, then carefully cement one hub ☆**23** to the tip of axle. Do not get cement on wheel or wheel will not roll. Repeat procedure for seven remaining wheels.







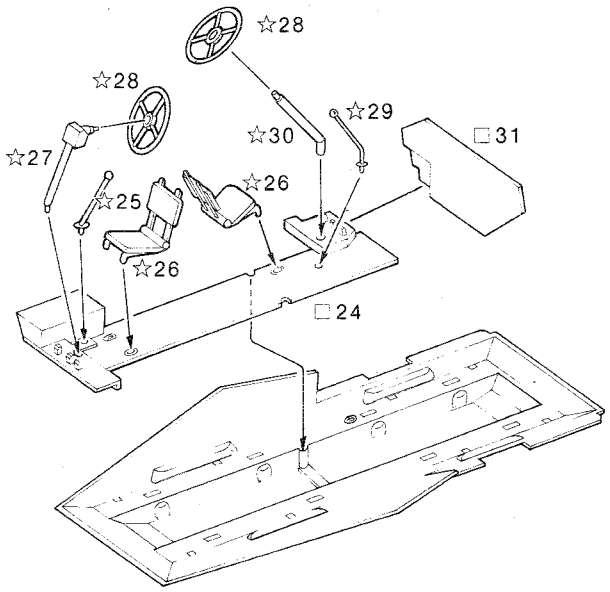
3 PARTS 24-31

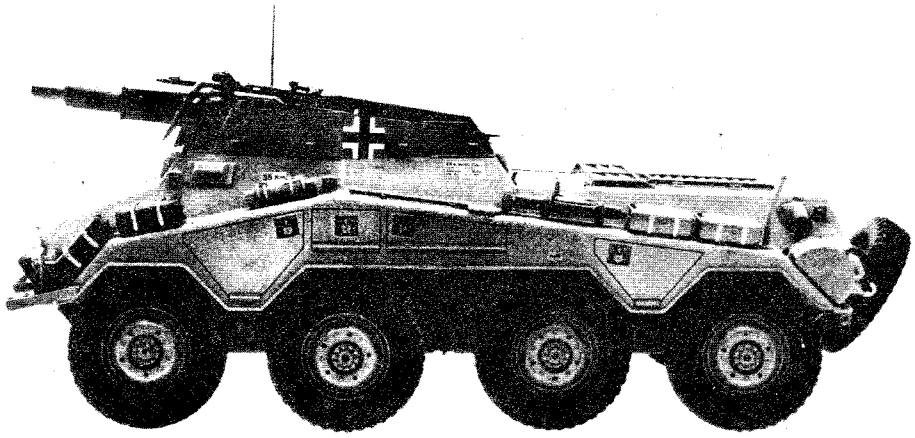
Preliminary Painting

☆**26** cushions only:
FS 30219 Dark Tan
☆**25,** ☆**29** shift knobs only; ☆**28**:
FS 17038 Gloss Black

Assembly

☐1. Cement floor panel ☐**24** into hull. Glue shift lever ☆**25** into position in forward driving station. Cement seats ☆**26** to round locators on floor. Cement shift lever ☆**29** into hole in rear driving station. Cement front and rear steering columns ☆**27** and ☆**30** to positions shown on drawing, then glue one steering wheel ☆**28** to each column. Cement firewall ☐**31** into hull.

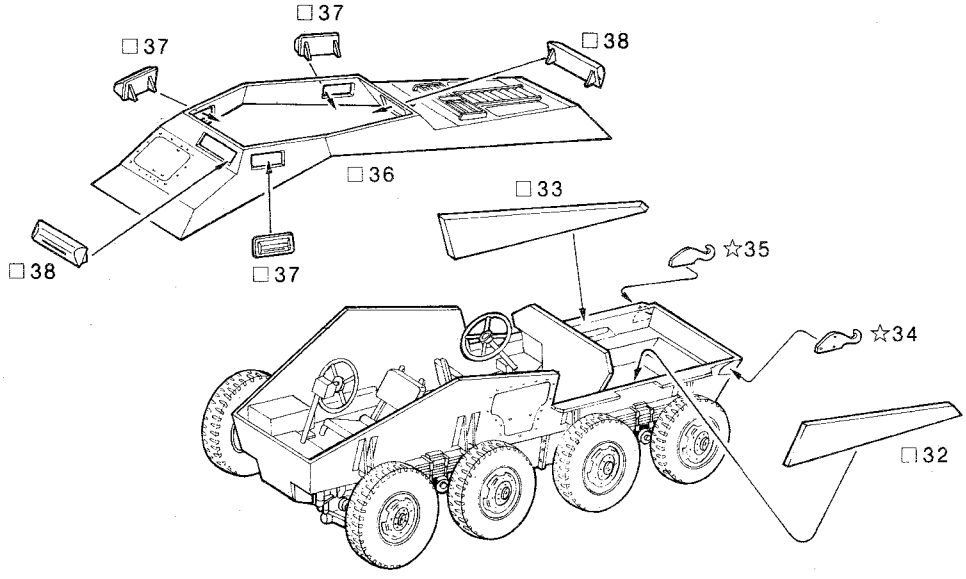




4 PARTS 32-38

Assembly

☐1. Cement left and right hull panels ☐**32** and ☐**33** to hull as shown. Cement left and right tow hooks ☆**34** and ☆**35** to scribed positions on left and right sides of hull. Glue upper hull ☐**36** to lower hull. Cement side view visors ☐**37** into openings on sides of upper hull. Cement driver's visors ☐**38** into openings in front of each driving station.

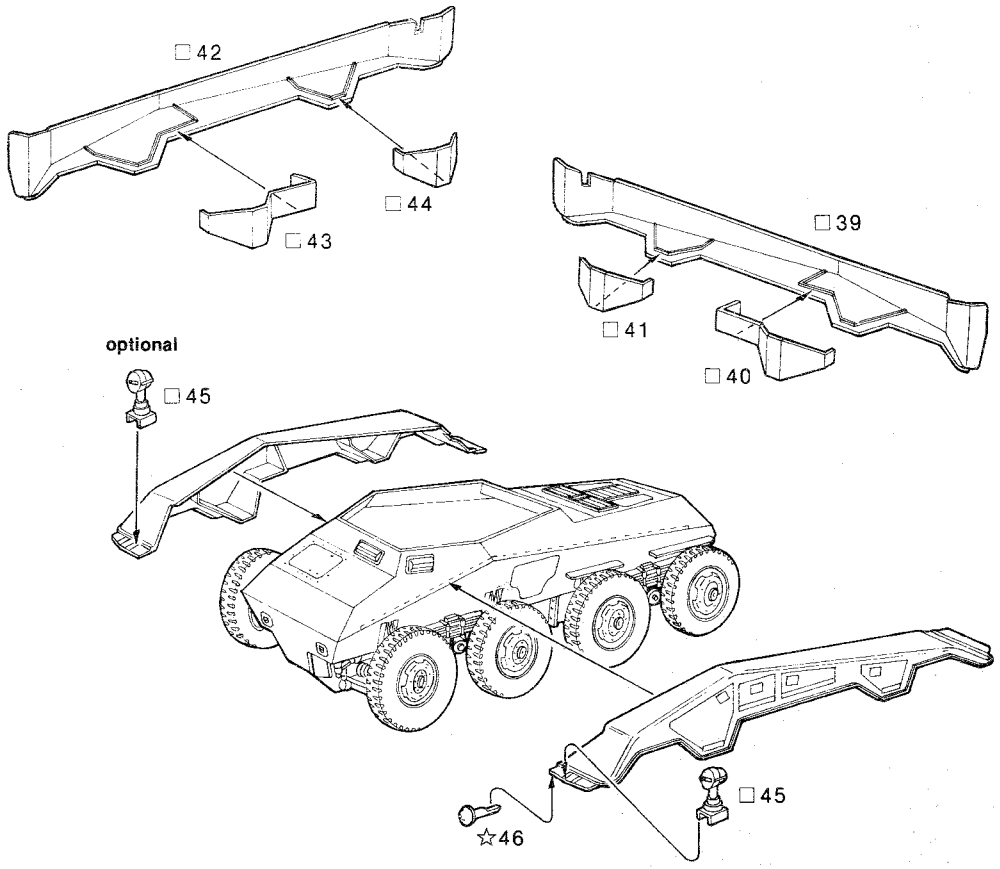


5 PARTS 39-46

Assembly

☐1. Cement stowage locker liners ☐**40** and ☐**41** into inside of left fender ☐**39**. Cement left fender ☐**39** to left side of hull, note that edge of fender slightly overlaps edge of hull as shown by broken line on drawing.

☐2. Glue storage locker liners ☐**43** and ☐**44** to inside of right fender ☐**42**, and cement fender to hull. Cement one headlight ☐**45** to panel at front of each fender (**NOTE:** many of these vehicles were only equipped with the left headlight). Glue horn ☆**46** to underside of panel at front of left fender.



6 PARTS 47-57

Preliminary Painting

☆**49** ball at tip only:
FS 17875 Insignia White

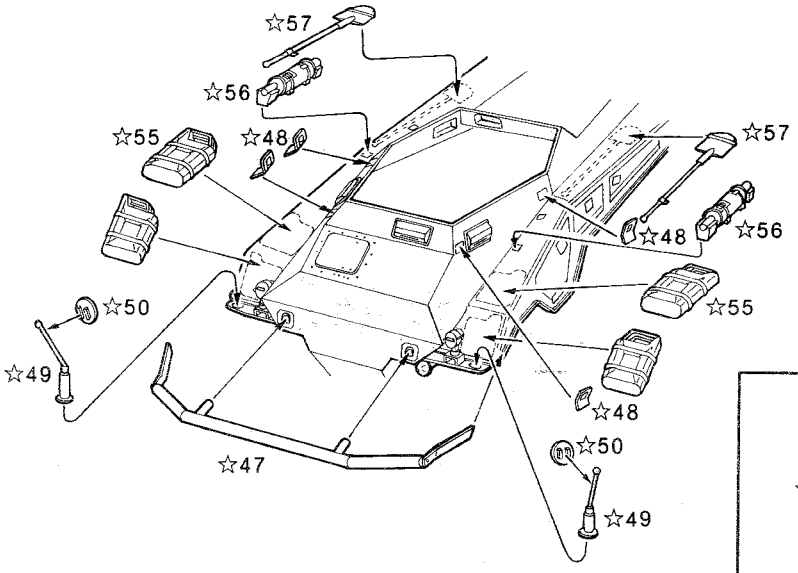
☆**50** mirror face only:
FS 17178 Chrome Silver

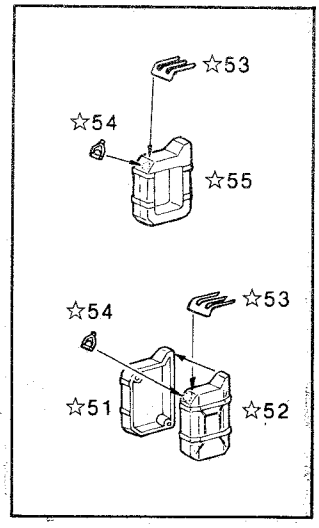
☆**57**:
#1780 Steel with ***#1735 Wood*** handles or **"Dark Yellow"** (see **Preliminary Painting** on page 2)

Assembly

☐1. Cement bumper ☆**47** to sides of fenders and depressions at front of hull. Glue four lift hooks ☆**48** to positions indicated on drawing. Cement one clearance feeler ☆**49** to outside of panels at the front of each fender. Cement one mirror ☆**50** to each feeler ☆**49**.

☐2. Glue fuel can halves ☆**51** and ☆**52** together making two cans. Cement one cap ☆**54** and one handle ☆**53** to each can. Note that cap fits on right side of can (see drawing). Cement one cap ☆**54** and one handle ☆**53** to each can ☆**55**. Cement four completed cans to front and top of each fender as shown. Cement one fire extinguisher ☆**56** to the top of each fender at positions indicated on drawing. Glue one shovel ☆**57** to the top of each fender.





7

PARTS 48, 55, 58-74

Preliminary Painting

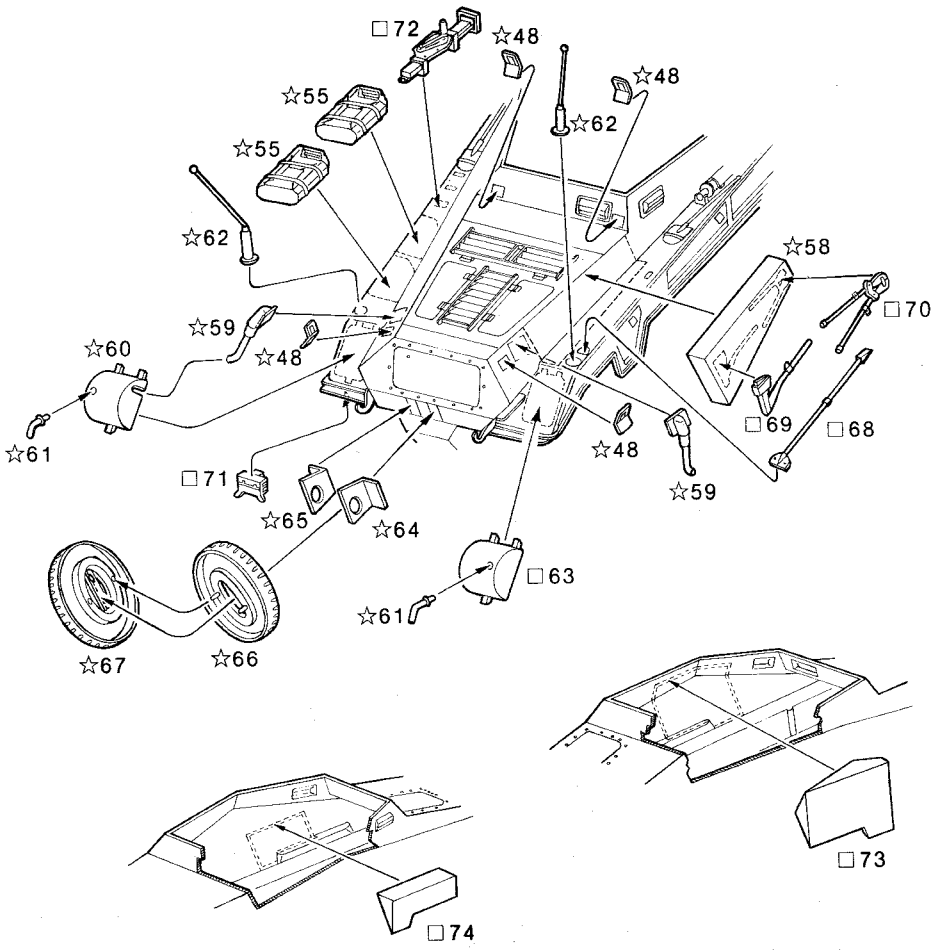
☆**62** ball at tip only:
FS 17875 Insignia White
☆**59**, ☆**61**:
#1785 Rust
☆**66**, ☆**67** tire only:
FS 37038 Flat Black
□**68**, □**69**, □**70**:
#1780 Steel with ***#1735 Wood*** handles
(note: □**68** does not have a handle)

Assembly

□1. Cement two remaining fuel cans ☆**55** to left fender. Cement four remaining lift hooks ☆**48** to upper hull at positions shown. Glue storage bin □**58** to side of hull and right fender. Cement one exhaust header pipe ☆**59** to positions indicated on either side of hull. Cement muffler □**60** to left fender and header pipe. Glue muffler □**63** to right fender and header pipe. Cement exhaust pipes ☆**61** to hole in each muffler.

□2. Glue one clearance feeler ☆**62** to position indicated on each fender. Cement spare tire mounts ☆**64** and ☆**65** to rear of hull. Cement spare tire halves ☆**66** and ☆**67** together, then cement to mounts. Cement crow bar □**68** to fender below storage bin. Cement axe □**69** and bolt cutters □**70** to storage bin as shown.

□3. Cement jack □**72** to left fender. Glue notek light □**71** to underside of panel on left rear fender. Cement boxes □**73** and □**74** into inside of right and left hand sides of hull respectively.



8 PARTS 75-91

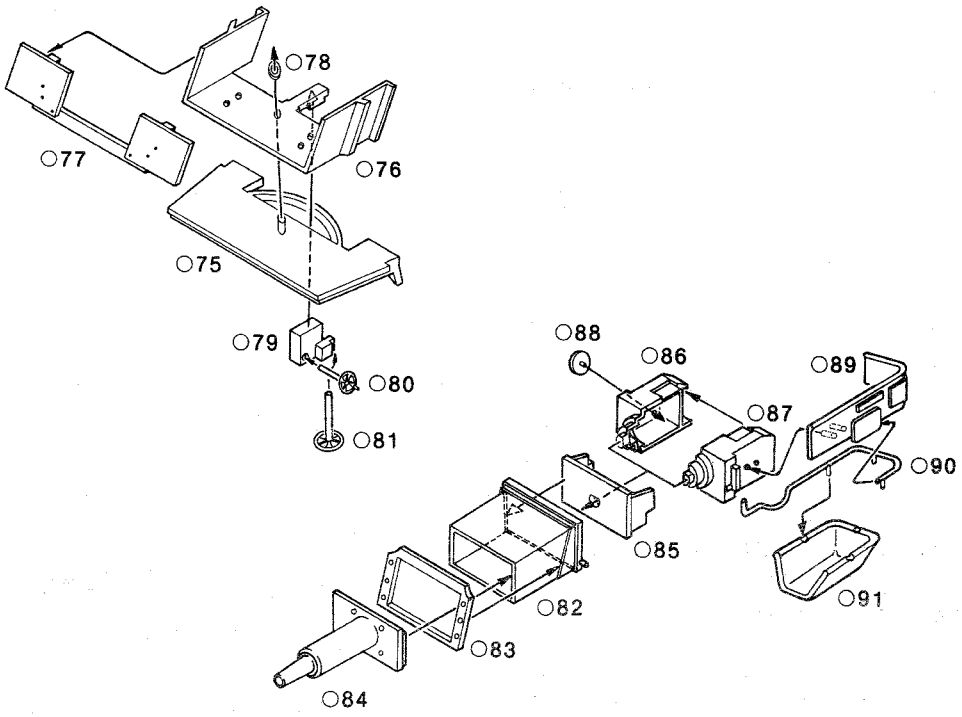
Preliminary Painting

○**86,** ○**87** interior of breech only:
#1780 Steel

Assembly

☐1. Cement shield ○**77** to cradle ○**76**. Place *(do not cement)* cradle over pin on gun mount ○**75** and fasten by carefully cementing retainer hub ○**78** to tip of pin. Do not get cement on cradle or gun will not traverse. Cement gear-box ○**79** to underside of tab at rear of cradle. Glue elevation wheel ○**80** to hole on side of gear-box. Cement traverse wheel ○**81** to groove at rear of gear-box.

☐2. Glue flange ○**83** to mantlet ○**82**. Cement barrel ○**84** to front of mantlet. Cement backing plate ○**85** to back of mantlet. Cement breech halves ○**86** and ○**87** together, then glue to hole in backing plate. Cement wheel ○**88** to right side of breech. Cement breech guard ○**89** to side of breech. Cement safety rail ○**90** to bottom of guard. Glue casing bin ○**91** to bottom of rail.



9 PARTS 92-105

Preliminary Painting

○**100:**
FS 37038 Flat Black

○**103:**
"Gun Metal" (mix 10 parts ***FS 15042 Dark Sea Blue*** and 1 part ***FS 17178 Chrome Silver***)

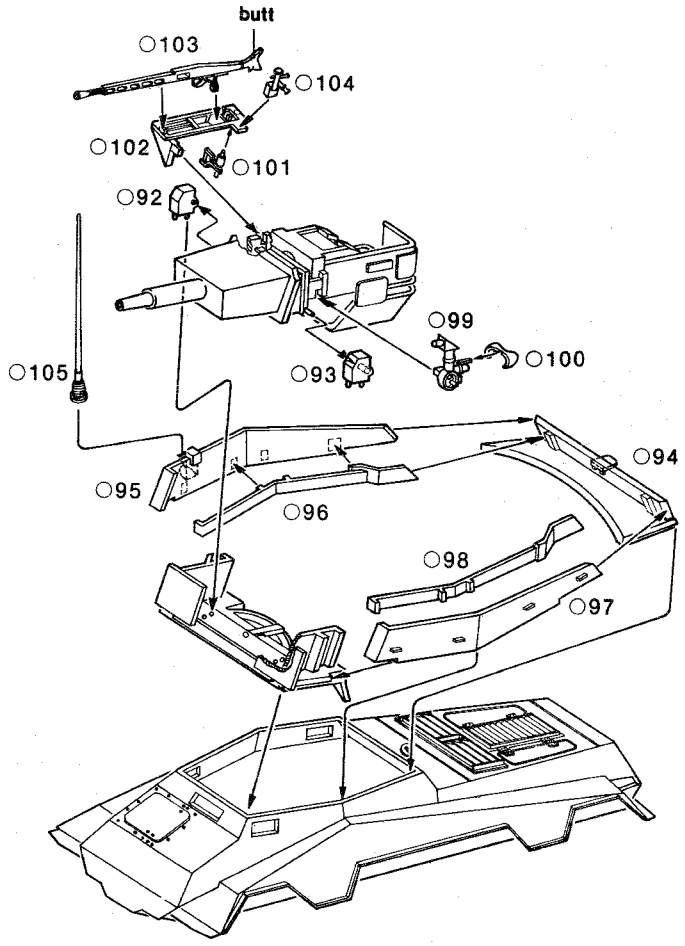
○**103** butt only:
#1736 Leather

Assembly

☐1. Place *(do not cement)* right and left gun bearers ○**92** and ○**93** over pins at base of mantlet and carefully cement them into small holes in cradle assembly. Do not get cement on pins or gun will not elevate. Glue gun/cradle assembly into top of hull.

☐2. Cement superstructure rear panel ○**94** to top of hull. Glue left superstructure side panel ○**97** to superstructure rear panel and gun cradle at positions shown. Cement right superstructure panel ○**95** in place. Cement right and left inner panels ○**96** and ○**98** inside right and left superstructure panels.

☐3. Cement eye shade ○**100** to gun sight ○**99** as shown. Cement gun sight ○**99** to position indicated. Glue ○**101** to machine gun mount ○**102,** then cement ○**102** to breech and mantlet backing plate. Cement machine gun ○**103** to machine gun mount. Glue ○**104** to machine gun mount. Cement antenna ○**105** to mount on side of superstructure.



Remove this page from the instruction sheet by cutting along indicated line. Use the drawings of the complete sprue as a part-locating reference when building the model.

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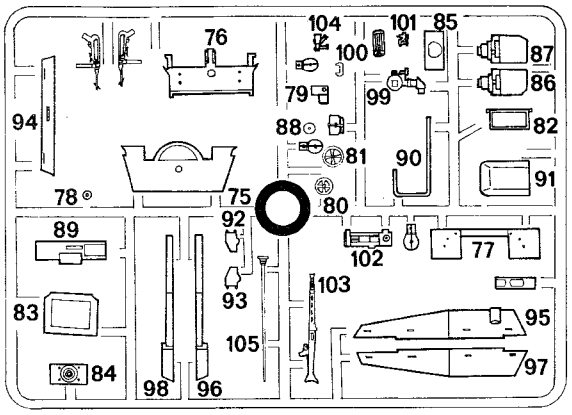

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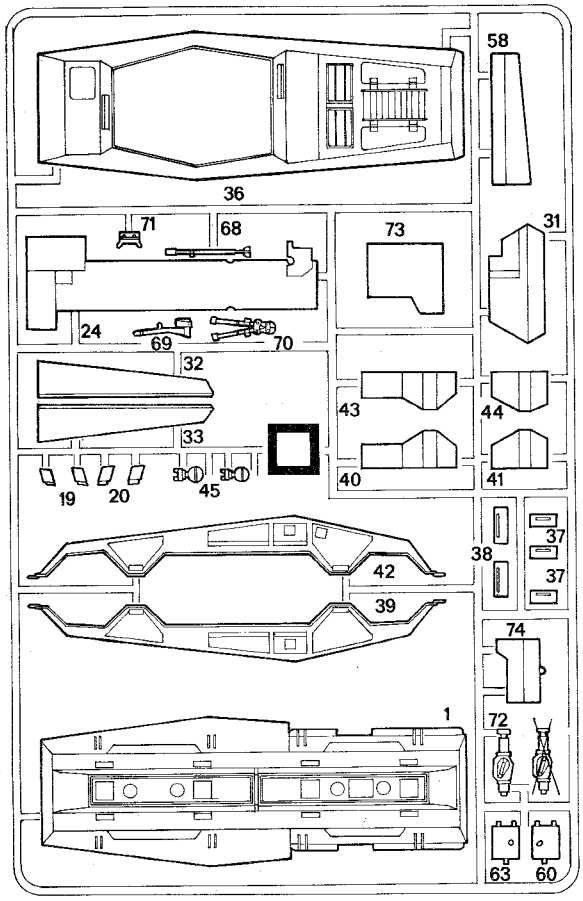

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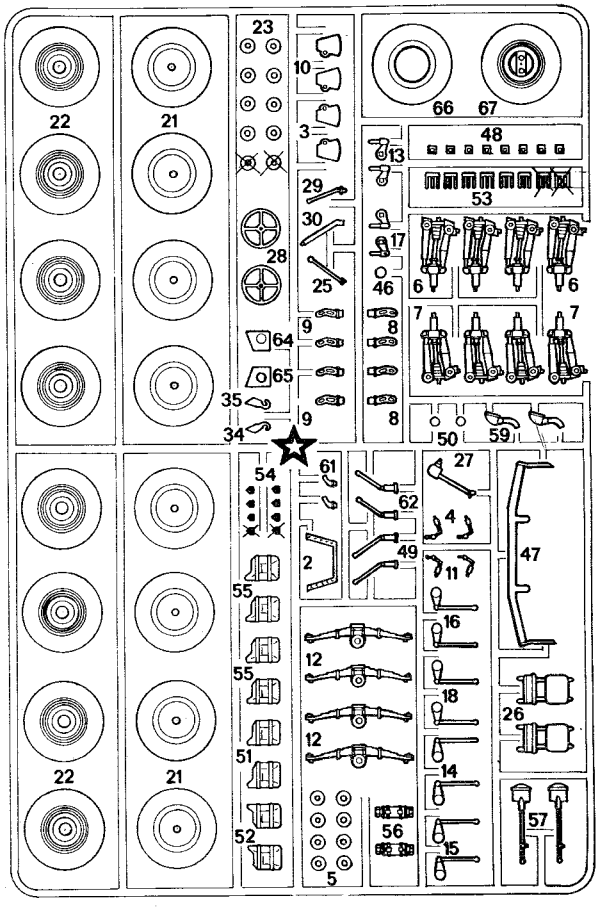

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WEATHERING HINTS

Nearly all military vehicles show some signs of wear and tear. The process by which the modeler imparts this look to a model is referred to as weathering. Many times, the weathering, that is, the representing on the model of rust, mud, oil stains, dust, chipped paint, etc., can really make a model stand out and give it amazing authenticity.

Always try to be logical in applying weathering techniques. For instance, you wouldn't want to show rust on top of mud or dust on your vehicle, nor would you normally want to cover a vehicle supposedly operating in the desert with mud. Vehicles move *through* the land they operate on more than over that land, and you must weather your vehicle in such a way that it makes sense.

After you have painted your model in its basic colors, begin by sealing the paint with one or two coats of Testor #1260 **Dullcote** or Model Master ***#1960 Lusterless (Flat) Clear Lacquer.*** This will help prevent subsequent washes from lifting the base color. When this dries, you can add shading to the model using washes. A wash is simply thinner which has been tinted by adding paint to it. You should experiment with washes of differing strengths on an old model until you find the dillution which works best for you. A good wash should leave dark deposits in depressions and around projections without obliterating the base color in other areas. Use a broad brush and apply an even wash of ***FS 37038 Flat Black*** (use ***FS 30118 Field Drab*** if your model is painted "sand" or tan) over the entire model. Apply this quickly, and before it dries, carefully wipe it off with a soft lint-free cloth. This should leave subtle shadows around all projections and details. If you like, you can darken these shadows in certain places by adding additional washes with a #0 brush.

The next step is highlighting your model. For this, use a technique called drybrushing. Wide, flat, chisel shaped brushes in various sizes are used. On a palette or scrap of cardboard, mix a slightly lighter shade of your base color. For example, if your model is painted **Panzer Gray** (***FS 36118 Gunship Gray*** is a close match) mix a little ***FS 36375 Light Ghost Gray*** into your **Panzer Gray** color. Wipe the brush off on a clean cloth until there is barely a trace of paint left in it. Gently drag this "drybrush" across the surface of your model. Paint will begin to collect on all the edges and high points of the model. You will soon begin to see how this enhances the shape of your model, causing the details to "pop-out." Use a scrubbing action at first and literally tint your model with this color. Lighten up this color a little more and drybrush again, this time applying the paint a little more subtly. Repeat this process one or two more times, lightening the color and drybrushing more lightly each time. Don't get carried away, though; the effect should be restrained at this point. After the paint has dried, apply the decals and let them dry.

If you want your model to appear new, it can be left as is. If you want a dirty or dusty model, you can now begin to dirty it up. Start by drybrushing the model with ***FS 30219 Dark Tan***. You may want to adjust this color somewhat to more closely resemble the earth color prevalent to the area in which your model would be operating. For a dusty appearance, drybrush lightly. For a grubby or filthy look, scrub the paint on in blotchy or streaked patches. Try to keep in mind that a dusty vehicle would have a lighter chalky appearance, while a grubby vehicle would have patches of a more natural earth color. As with the base color you can drybrush on further highlights by adding ***FS 33531 Sand*** or ***FS 33613 Radome Tan*** to your basic earth color, again lightening your color and drybrushing more subtly with each succeeding layer.

When drybrushing always remember, a lighter color goes over a darker, and brush pressure gets lighter with each succeeding tone.

It is important, especially at first, to try not to overdo weathering. Weathering which is understated looks far more convincing than that which is overdone. Knowing when you have applied too much is often difficult to determine, so pause often and inspect your model for the desired effect. If your model is not weathered enough it is simple to add a little more, however, if you have gone too far it is difficult to "unweather" it.

A little rust on mufflers and exhaust pipes is realistic, as is a hint of it on the metal parts of a vehicle's tracks. But as a rule, be sparing with it if you wish your vehicle to look authentic. Rust is one of the most overdone forms of weathering seen on models. Unless your model is supposed to be wrecked or an abandoned vehicle, go very easy with the rust. To rust out a muffler, first brush on a coat or two of Testor Liquid Cement or lacquer thinner. This will craze the plastic and give it a slight texture. After this has hardened, paint the muffler ***FS 30117 Military Brown*** or ***#1785 Rust*** and follow with a couple of heavy washes of Testor **#1183 Rubber**. After this dries mix some **Rust** with the **Rubber** and drybrush liberally. Follow this color with pure **Rust**, and if you wish you can add a touch of ***FS 33538 Insignia Yellow*** to this, drybrushing very lightly.

Occasionally there are areas on a vehicle where paint becomes scraped or scuffed off. Such areas include metal flooring, around hatches, grab handles, gun breeches and upper surfaces of a tank where the crew walks over it regularly. Paint only rubs off under extreme wear, so keep this to a minimum. There are two ways to represent this. The first is by drybrushing *very lightly* with ***#1780 Aluminum*** or ***FS 17178 Chrome Silver***. The second method is by applying graphite. You can do this by drawing directly on the area with a pencil, or by grinding the lead into a powder and applying with your fingers or a paint brush. This aspect of weathering is the easiest to overdo, so use it sparingly.

If you are building a tank, leave the tracks off until last and paint them separately. Use ***FS 30219 Dark Tan***. After this dries add a wash of ***FS 37038 Flat Black*** between the shoes, then drybrush the shoes very lightly with ***FS 17178 Chrome Silver***. Be careful though; some tracks have rubber shoes and these areas should be painted **#1183 Rubber**.

Vehicles operating cross country and on unpaved roads collect layers of mud and road dirt like a magnet. Heavy layers of mud can be built up with successive layers of Testor Contour Putty applied with an old paint brush. This can be painted with earth color paint. Remember that wet mud is dark in color, and turns lighter as it dries. Also thick globs of mud will dry slower than thin ones. A very realistic wet/dry mud effect can be obtained by painting the mud a light color and blending darker washes into the heavier areas. An effective way to create thin coverings of mud is by mixing baking soda with earth color paint. This technique has the advantage of minimizing the need to paint the mud after it has been applied.

Of course these hints are only meant as a general guide to help you get started. Through experience and experimentation you may find new or better ways to accomplish different effects. Serious modelers collect books and photographs to use as a reference when they finish their models. Good photos can help you visualize what the elements and wear and tear can do to a vehicle. Your local hobby shop or library can help you locate such books. Your own observation can be the biggest aid of all. Visit museums. Look at buildings and vehicles around you and observe what the weather has done to them. Another way to get ideas is by attending meetings of your local International Plastic Modeling Society chapter. Here you can see and discuss modeling techniques with other modelers. Your hobby shop can help you locate your local I.P.M.S. group.

Remember: try not to overdo weathering—and keep practicing. Be patient, it takes time to discover and master all the tricks of this fascinating hobby.

PAINTING

All *Sd.Kfz. 234/3* armored cars left the factory painted overall **"Dark Yellow"** inside and out. Once the vehicles were delivered to field units, they were sometimes over painted with secondary colors to help conceal them in their surroundings. These secondary colors **"Red Brown"** and **"Olive Green"** were usually sprayed on by the crews themselves. These were applied in random patterns, either one, or both colors being used at the discretion of individual unit commanders. Of course supply problems toward the end of the war meant that many vehicles remained in their standard **"Dark Yellow"** paint job as shown in the drawings.

COLOR MIXES

1. **"Dark Yellow"** (mix 6 parts ***FS 33531 Sand,*** 2 parts ***FS 30219 Dark Tan*** and 1 part ***FS 33538 Insignia Yellow***)
2. **"Red Brown"** (mix 1 part ***FS 30219 Dark Tan*** and 1 part ***#1785 Rust***)
3. **"Olive Green"** (***FS 34151 Interior Green*** is a close match for this color)

APPLYING DECALS

1. Spray entire model with Testor Glosscote #1261. Decals adhere best to a smooth surface and the shinier the finish, the smoother it is. Allow the Glosscote to dry thoroughly before going further.
2. Select the decals you plan to use, and cut each of them out from the decal sheet with small scissors or Testor Hobby Knife.
3. Working with only one decal at a time, dip the decal in clean water for no more than five seconds, then remove it from the water and place on a dry paper towel for about one minute.
4. When the decal slides easily on the backing paper, slide it to the edge of the paper and onto the surface of the model with a soft paintbrush or tweezers. Remember: the decals are very thin and can be easily ripped if care is not taken. Work slowly and patiently.
5. Once the decal is in the desired position, apply a small amount of Testor Decal Set #8804. This will help the decal to conform to any irregularities in the surface of the model (rivets, curves, etc.). Allow the decal to dry undisturbed. Should you find the decal has moved or should you desire to purposely move it, apply a little Decal Set to a soft brush and push the decal slowly into the desired position.
6. When the decals are completely dry (usually overnight), apply a coat of Testor Dullcote #1260 to the entire model. This will give it an authentic, dull finish and protect the surface of the model.