

# M92 PNMK (PaNsret MaskinKanon)

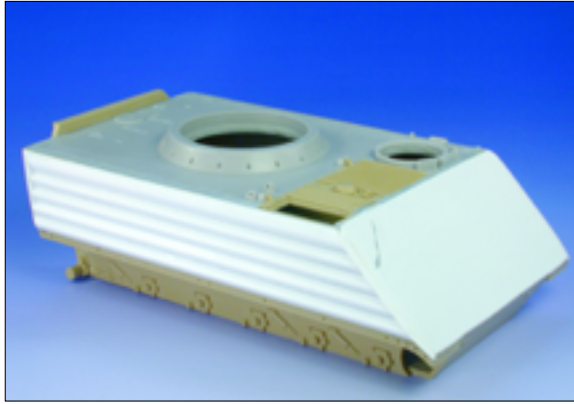
<i>Degree of difficulty:</i>	★★★☆☆
<i>Kits used:</i>	Academy FIST-V and Accurate Armour M92 PNMK conversion
<i>Additional detailing sets used:</i>	Eduard M113 photo-etch, Scale Scenic brass mesh, AFV Club Diehl tracks (vinyl), 22g brass wire, .24g floral wire, various Evergreen sheet stock and right-angle strip, brass sheet, MV lenses,
<i>Markings:</i>	Hand painted, Eduard Bridge stencil, Archer KFOR decals, Kit decals.
<i>Paints:</i>	Tamiya XF-24 Dark Grey, XF-67 NATO Green, XF-4 Yellow Green, XF-69 NATO Black, XF-64 Red Brown, X-1 Black, X-27 Clear Red, X-26 Clear Orange, X-25 Clear Green; Gunze Sangyo H-304 Olive Drab, Polly-S Clear Flat, Testors' Chrome Silver; Winsor & Newton Raw Umber oil paint; and Rembrandt Raw Umber light and dark pastel chalk.

## Background

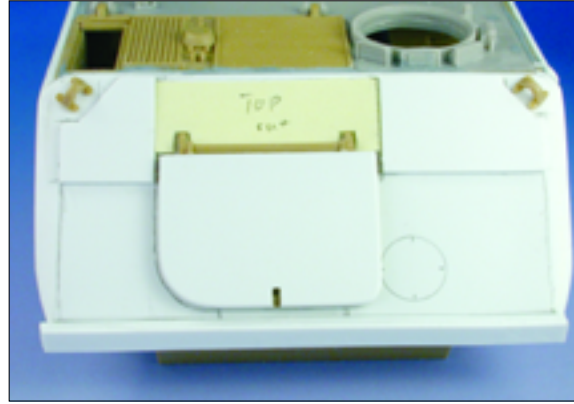
The Danish Army converted 50 of its M113A2 Mk. Is to provide fire support for mechanised infantry units. Entering service in 1992, and unofficially known as the Wildcat, the M92 PNMK is fitted with the Italian Oto-Melara T25 turret and thermal sights. Armed with a dual-feed Oerlikon Contraves 25mm cannon and 7.62mm co-axial machine gun, the gunner can choose between 135 rounds of armour piercing or 35 rounds of high explosive ammunition. A bolt-on passive armour package to protect against 14.5mm rounds can be added to the hull and turret when the M92 is deployed on high-threat operations.



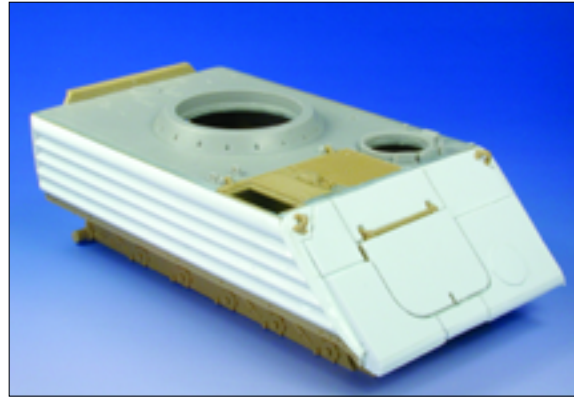
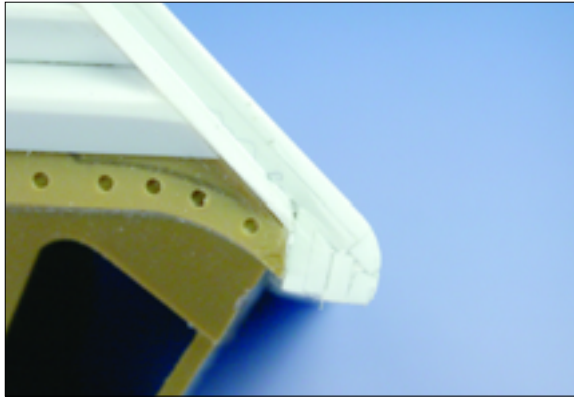
One of Accurate Armour's more recent releases is the very nicely done M92 PNMK conversion. Designed to fit the Academy M113 hull, it is really a 'drop-in' conversion suitable for the novice. The Academy hull came from the FIST-V kit used in the YPR-765 PRAT conversion.



ABOVE The side appliqué armour was built by stacking rows of 90-degree angle strips butted against the front and rear armour. The top ridge was laminated with an extra strip, so a curve could be safely sanded into the edge.



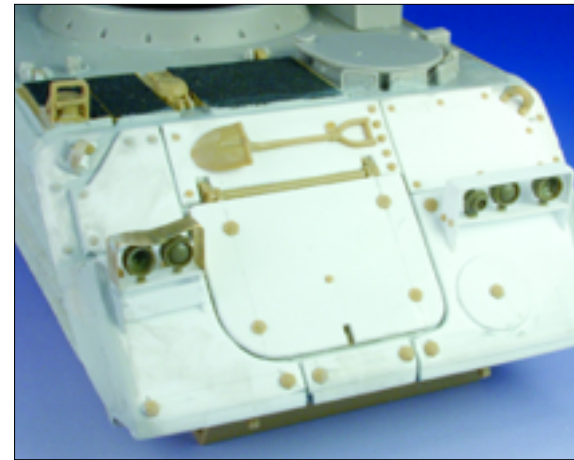
ABOVE AND BELOW The front armour was traced out on post-it notepaper templates, which were then used to guide the cutting of the styrene. The lower front lip was built up with oversized strips and a generous amount of CA glue. This was allowed to set for an hour before shaping with a sanding block.



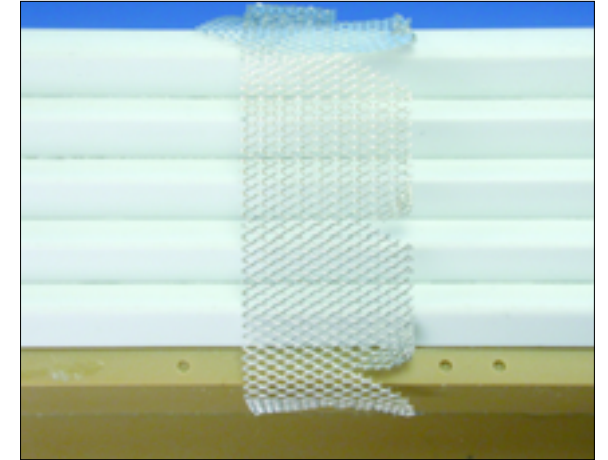
## Construction

This project involves a bit of scratchbuilding and the use of commercially available resin conversions. In this case, Accurate Armour makes a nicely detailed M92 conversion with top-notch fit, casting, and detail. I would classify this a drop-in conversion – there were no air bubbles or tricky fits requiring the re-shaping of warped parts that is unfortunately typical of many resin kits. Top marks to AA for their work on this kit. Since I wanted to model a KFOR vehicle, I'd have to scratchbuild the appliqué armour package attached to the front and sides of the hull and turret. I was able to locate a few blurry photos on the Internet, so I figured I had enough to go by to start the conversion. This is an area that tends to plague scratchbuilders – you can wait forever trying to get that perfect detail shot or measurement, or you can bash on with construction and run the risk that some details will be overlooked. I believe it's all a matter of personal taste how faithful you want to be to the real vehicle, and so long as you are enjoying what you are doing then it's mission accomplished.

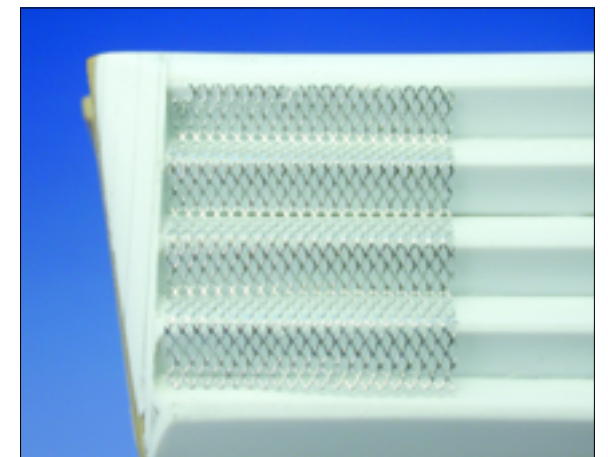
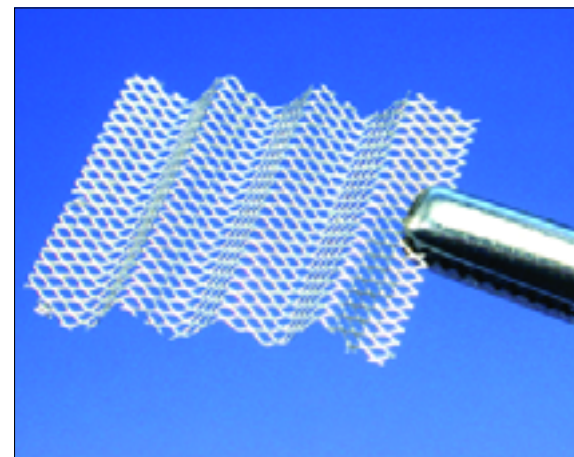
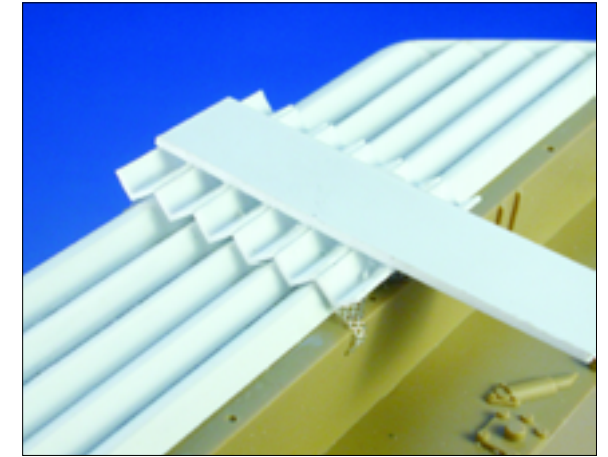
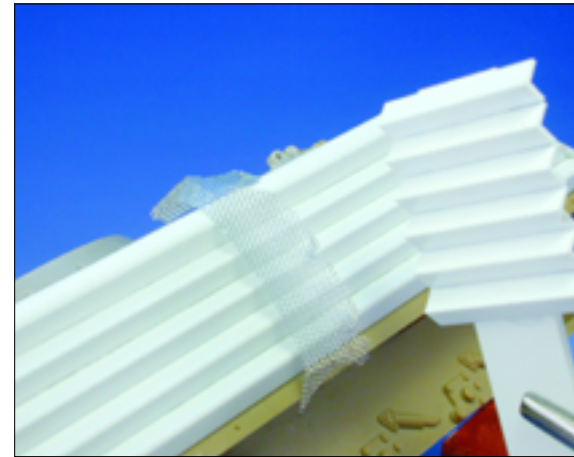
Armed with a few scant references, I decided to work on the hull armour first. The side armour forms a corrugated pattern along the length of the hull and meets with frontal appliqué armour at a bevel. I began with attaching the hull insert, which, after removing a slight casting ridge, was a perfect fit for the Academy hull. The corrugated appliqué was made of five rows of stacked

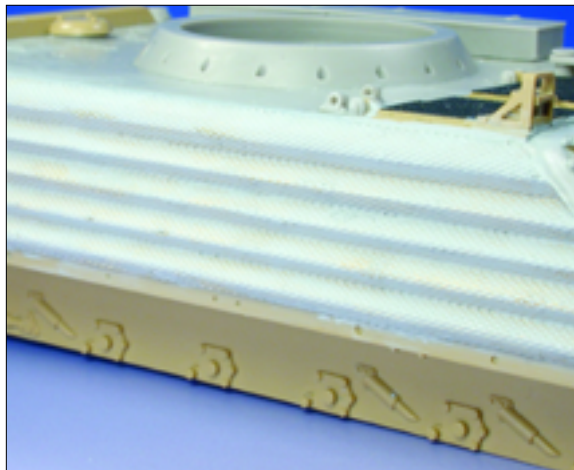
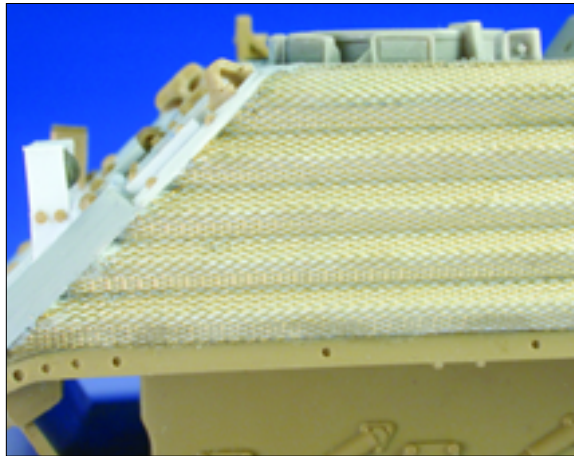
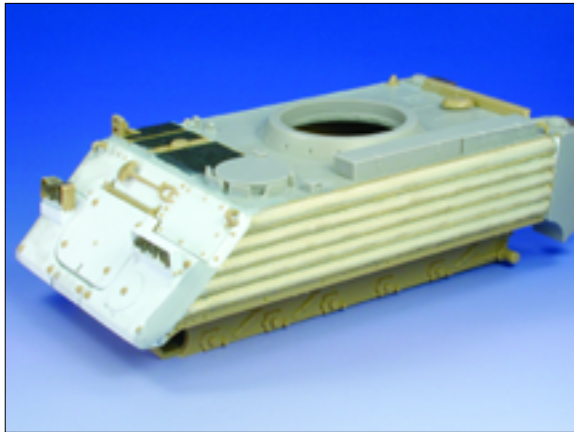


ABOVE A mixture of kit details and parts from the spares box were used on the front. The headlights were relocated farther down, and brackets were scratchbuilt using a mix of styrene and brass.



ABOVE AND BELOW The side armour appeared to have a woven texture moulded into its surface. To replicate this, I tried out a small square of screen mesh pushed into the corrugations using a press made from the same stock of 90-degree strip. This acted like interlocking teeth and showed promise to proceed with the entire side.





right-angle styrene. I laminated some .040in. sheet on the top run, as this ridge has a slightly rounded edge and the extra sheet let me sand a curve along the edge without cutting through the angle brackets.

The front armour was built up with .040in. sheet based on a pattern I first drew on a post-it note paper template. These sticky papers are laid over the plastic, cut to fit, and then used as a template for the plastic parts. I was generous with the CA glue as it sands well, especially around the bull nose shape of the front plates. This shape was made by gluing a few strips of styrene together and then carefully sanding them.

Details were added over top of the front armour using a mix of kit supplied parts and bolt heads shaved off the appliqué armour from another kit. The headlight mounts were made from 020in. sheet, and, to impart a used look, I made the left light guards from brass so I could give it a couple dents. Driving lights were hollowed out while on the sprue to accept an MV lens.

Based on the pictures I had, the hull armour appeared to have a kind of woven mesh texture. I had seen a similar effect first hand on some Canadian up-armoured M113s, so I reckoned the best way to duplicate it would be scale brass mesh. Unfortunately, as I later discovered, the armour on the M113 I remembered turned out to be different from the Danish armour. The real M92 has circular perforations on the ridges whereas mine had a diamond-shaped texture.

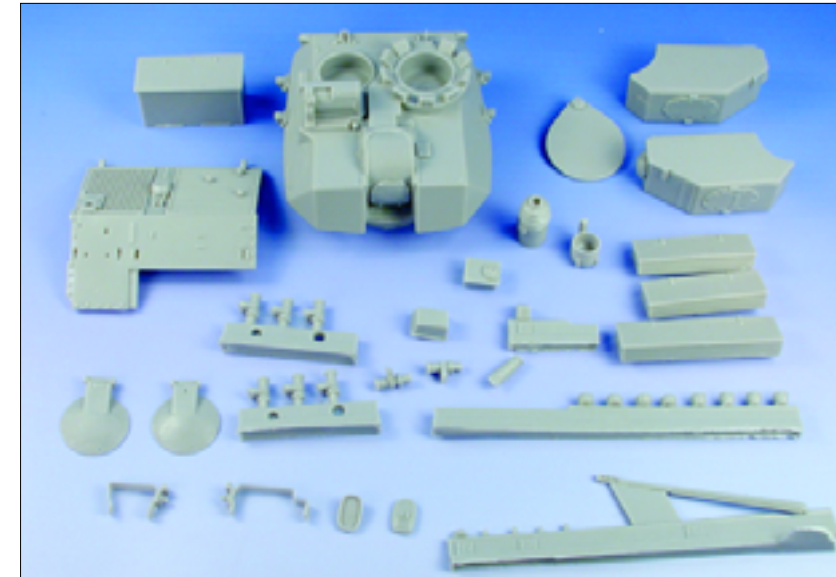
To test if my idea would work, I placed a small scrap of mesh over the ridges. Using an interlocking press made from the same angle bracket as the armour, I squeezed the mesh against the side of the hull. This showed good promise, so I decided to use a full size sheet of brass mesh to get the texture.

The full-length sheet proved a bit trickier to work with. Getting it to conform to all the ridges required it to be tacked with CA along the top, while a slot screwdriver was used to press the mesh right into the crevasse. On the real armour, this mesh was moulded to the ridges, so to make it blend in I brushed on a couple coats of Mr Surfacer 500 over it. This helped fill some of the gaps where the mesh wasn't in full contact with the styrene below. I got some black nylon mesh from an old Tamiya kit and, using a straight razor, cut this to fit over the grills on the engine deck.

With the hull almost complete, I began to work on the turret. This makes up the bulk of the AA kit and is really quite easy to assemble. The only tricky bits were the guard rails for the SGLs, but AA gives you enough wire to screw it up a couple times!

When I started this project, I thought that only the hull received the up-armour package. As I was all set to drop the turret in and begin painting I realized I'd overlooked that armour plate was also attached to the turret. I was beginning to see some of the pitfalls of rushing into this project! I didn't have any good photos for the turret armour, so a lot of guesswork was

ABOVE The full-length sheet was harder to work with than the smaller square, and required extra coaxing into place with a slotted screwdriver while the top edge was tacked along the hull roof. To give the screen that 'moulded-on' look, I applied a few coats of Mr Surfacer 500, which helped fill any gaps around the diamond mesh that did not actually contact the surface of the ridges.



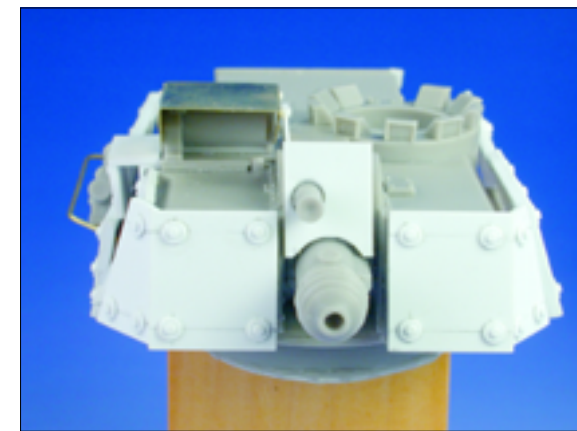
The major components that comprise the AA set.

involved. And in typical fashion, a few days after the model was painted, I found a magazine with a special on Danish Army vehicles complete with a nice M92 profile.

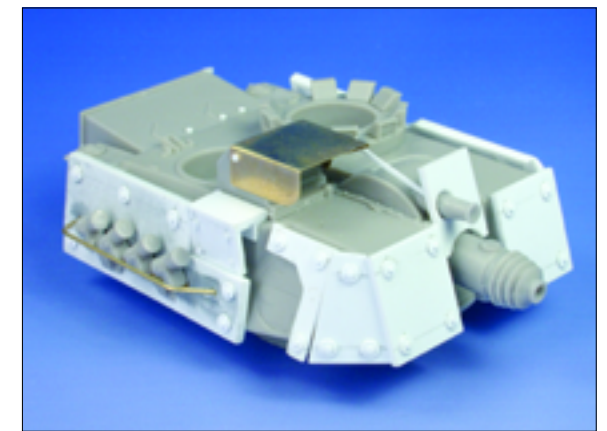
The turret was assembled as per the instructions, but I used .020in. sheet for the armour and the punch and die set for the attachment lugs. I cut a sheet of brass to make the sight cover, making the bends by first scoring the inner side with an x-acto knife and then using a pair of pliers to get a straight fold. The small curve on the right edge was rough cut with a pair of nail scissors and then sanded to shape using a file.

The conversion provides the external fuel tanks, tail lights, and some brass detail parts. It's important to use a sanding block to keep the mating edge of the external fuel tank level. However, the tank should not sit flush with the rear of the hull, so once it was sanded smooth, I glued a spacer sheet from .010in. sheet to create the gap that is present on the real M113 fuel tanks.

The model was almost ready for paint – I attached a couple of spare Diehl drive sprockets from the AFV Club YPR and some nicely detailed vinyl Diehl



ABOVE AND RIGHT The M92 turret armour has a haphazard kind of Mad-Max road warrior look to it. Flat armour plates are bolted to the front and sides, and a visor shield is installed over



the gunner's sight. This cover was made from sheet brass, cut to shape with scissors and bent with a set of flat pliers along a scored line.

tracks from the same company. Once again, I realised I'd have to make another compromise – the M92 does not use this type of Diehl track, however, short of scratchbuilding 120 track links and 240 end connectors, it's the next best thing.

## Painting

A quick coat of dark grey to ensure the colour coats had a uniform base and I could start painting. I decided to paint the optics a little differently this time. I sprayed Testors' Chrome Silver over all the glass surfaces and then airbrushed on a few coats of Tamiya Clear Green for a candied effect. These were then masked off with Tamiya tape for the duration of the finishing process.

The Danish Army uses a camouflage of broad black bands sprayed over a green base. I've seen this scheme done in hard and soft edge patterns. The green paint mix proved a bit elusive – it appears to have a lighter, more yellow tone than NATO green; yet in some photos it looks to be more olive coloured. I settled on a mix of Tamiya NATO Green (XF-67), Yellow Green (XF-4), and Gunze Semi-Gloss Olive Drab (hence the satin sheen of the paint). As it turned out, the weathering process really muted the subtlety of this green shade – a bit of a disappointment. The black was simply Tamiya NATO black (XF-69). Once I was happy I'd got the rough location of the colours right, I went in with the green again and touched up some of the black overspray.

The paint finish was a little bland and I faded each colour by adding some buff to the mix. However, I did not add enough thinner to the mix and the resultant effect was not as subtle as I had hoped for.

To tone down the obvious 'cloud' effect, I mixed some black and XF-64 Red Brown, and some of the green base colour, thinned 1:4. This was applied with an Iwata CM in vertical overlapping streaks until the clouds were buried under a murky, dirty paint job. The M92 was starting to look a bit better.

Another downside of conversion such as this is you often don't have many options for decals. In the case of the M92, I was able to use some fictitious registration codes from another M113 model, and some KFOR dry transfers from Archer. The Danish shield and weight disk markings were painted with homemade stencils and Eduard vinyl masks. I figured I could hand paint the white of the cross in later, which turned out to be a bad idea, as it was very difficult to paint the cross with straight edges.

The Danish KFOR vehicles carried a vertical chevron that appears to be made from red duct tape, though it may be painted on. I painted some Tamiya masking tape red, and cut it into thin strips, applying it to the kit according to pictures, though the exact size and placement of the chevron varies from vehicle to vehicle – as does the KFOR stencil.

With the markings done, I gave the model a coat of clear flat, a raw umber oil wash and a light dry brushing of grey and pale green enamels. I painted the tracks black and gave them a slightly oxidised appearance using ground pastel chalks. They looked a little too rusty though, so I ran a pencil lead over the raised portions and polished the racks with a cloth wheel on the Dremel tool to bring out a metallic shine. For vinyl tracks I was quite impressed with the level of detail.

Once the tracks were attached, I could begin weathering the model. I added some dark grey paint chips mixed from black and white oil paints and a touch of paint thinner. The main gun was dry brushed with Testors' Chrome Silver plus a small amount of black oil paint. While I had the silver out, I painted the turn signals and brake lights. Once dry, Tamiya Clear Red (X-27) and Clear Orange (X-26) was brushed on in two coats. The masking tape for the optics was removed and another coat of clear flat was added to tone down the overly bright emerald green colour of the optics.

Ground-up pastels were used again for road wheel mud. More pastel chalk was used to darken some of the recesses, but this looked too dark, and was toned down with a coat of 'dust' made from heavily thinned Tamiya Buff. A pair of antennas cut from floral wire and a pair of MV lenses finished off the project.



ABOVE AND RIGHT Some Diehl tracks from AFV Club and sprockets from the YPR kit were added last. The Diehl track is not the correct pattern for this version of the M92, but they



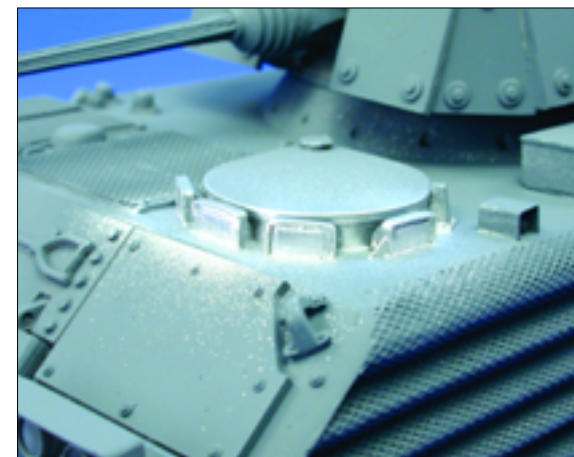
look close to the real one. Finely woven mesh screens were added to the engine deck.

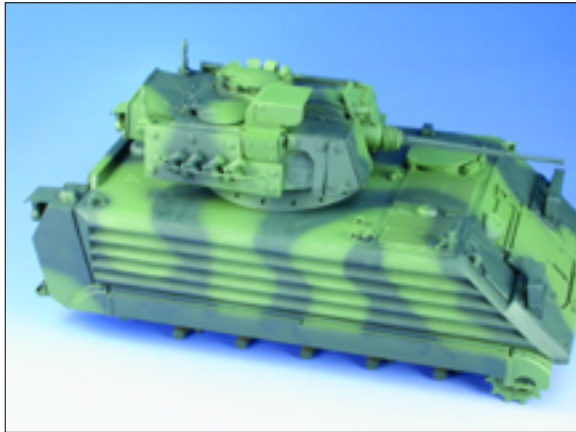


ABOVE The rear fuel tanks were added, with the slight gap between the rear of the hull and the mounting face of the tank included.



ABOVE AND BELOW As usual, some grey primer was laid down, but as an afterthought I thought I'd try painting the optics at this stage. Testors' Chrome Silver was applied over all 'glass' surfaces and allowed to dry overnight. A few coats of Tamiya Clear Green was sprayed over the top and, once dry, was masked off with Tamiya low tack tape.





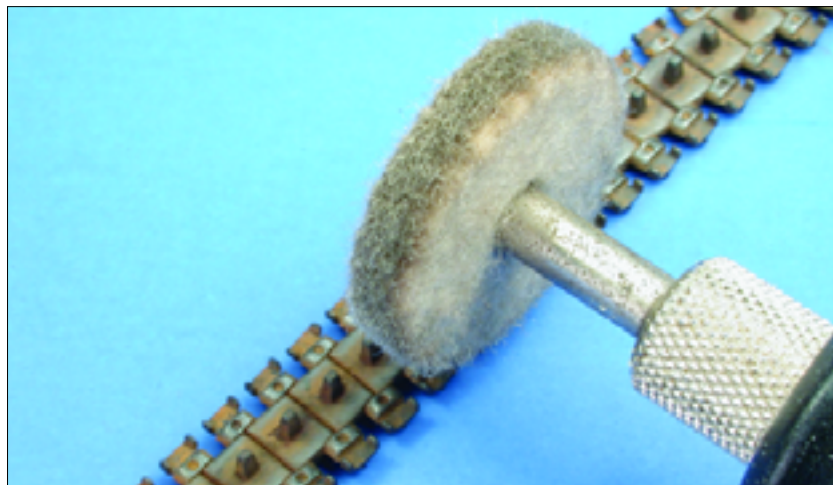
ABOVE AND RIGHT A mix of NATO Green and Yellow Green, plus NATO Black was sprayed in broad bands across the vehicle. The Danish Army does not appear to have a standardized M113

paint pattern, so there is a degree of latitude in deciding exactly where to switch colours. After spraying both colours, I went back with the green mix and touched up the overspray.

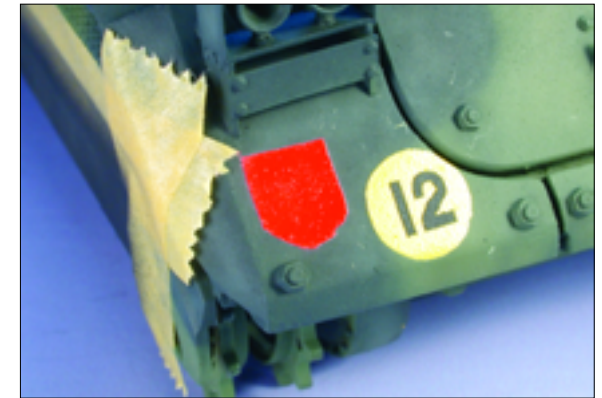


My technique of adding some buff to the basic paint colour did not turn out as well as hoped. The green paint looked nicely faded, but the black paint came out looking very contrived and not nearly as subtle as I'd hoped.

The 'cloudy' effect was toned down using a very thin mix of black and brown, applied in mostly vertical overlapping streaks.

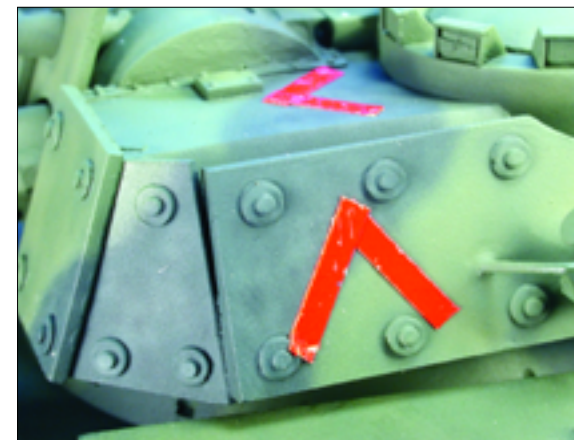


The AFV Club vinyl tracks are well detailed, on a par with their individual links. The tracks were painted black, given a raw umber wash and then stippled with orange and brown pastels. Some pencil shavings were rubbed on with my finger and then polished (carefully!) with a cloth wheel in a Dremel tool.



ABOVE I wasn't able to find a decal for the Danish cross and shield marking, so I tried to paint one using home-made stencils. The first step was to cut the basic shapes out of Tamiya tape. A layer of white paint was applied to give a good primer for the red and yellow colours that followed. Using an Eduard mask for the

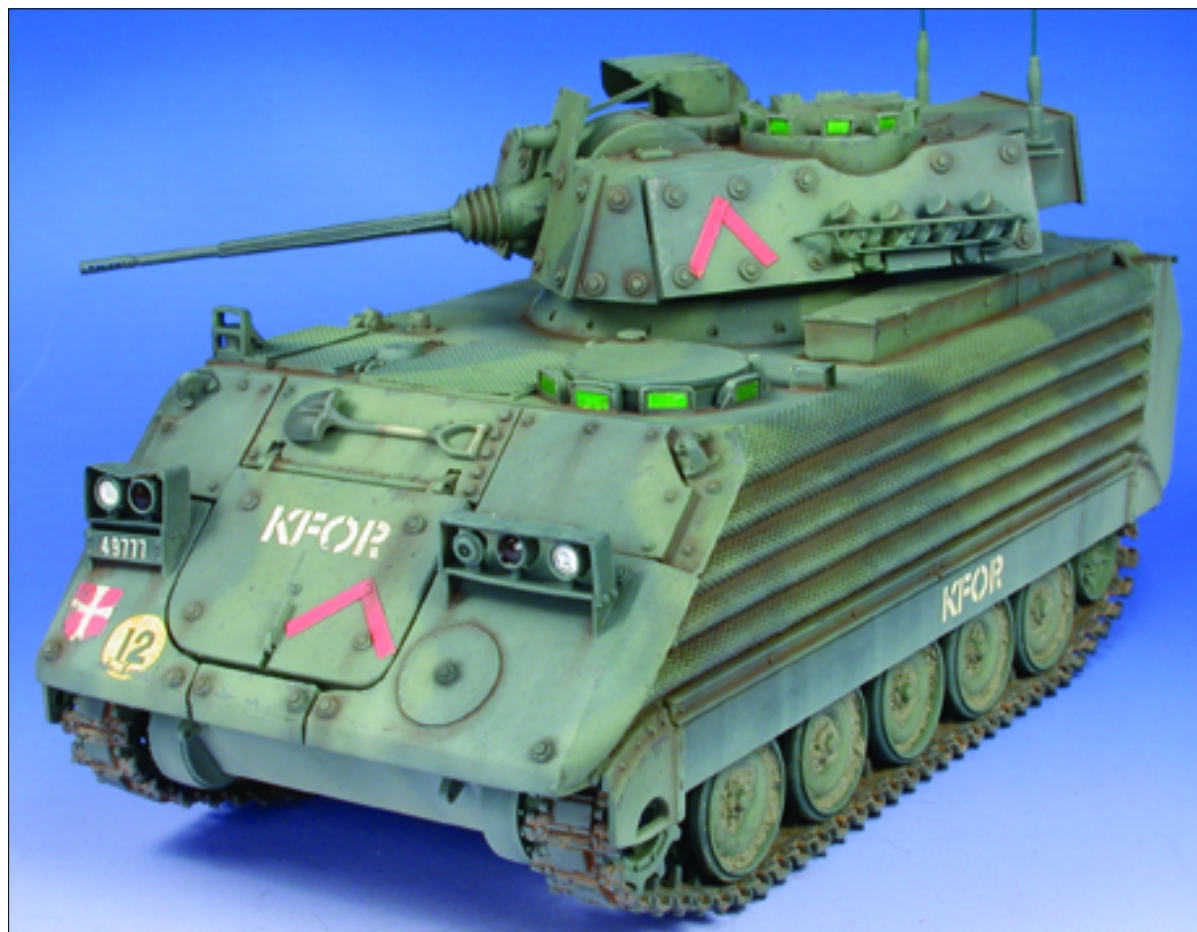
bridge classification made this step quite easy. Just a quick blast of black and that marking was done. Unfortunately, my attempts at hand painting the white cross on the shield went somewhat wrong.



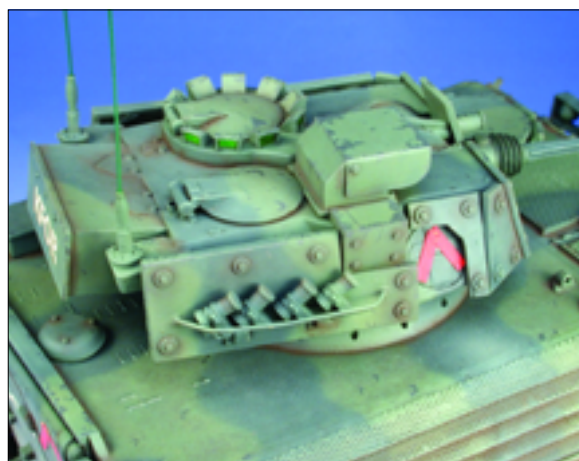
Some of the Danish KFOR vehicles wear several red inverted chevrons. From my pictures, I couldn't tell if these were painted on, or stuck on with red duct-tape. I painted some Tamiya tape gloss red, cut it into thin strips and stuck them on the vehicle according to my references.



Archer transfers were used for the KFOR stencils. Once these were applied, a shot of clear acrylic helped seal all the markings.



Weathering began with some paint chips made by mixing grey enamel with black oil paint. Not only does this give a muted chip colour, but the oil paint helps extend the working time on the brush. A light dry brushing of dark grey and pale green enamels helped bring out some of the raised mesh detail.



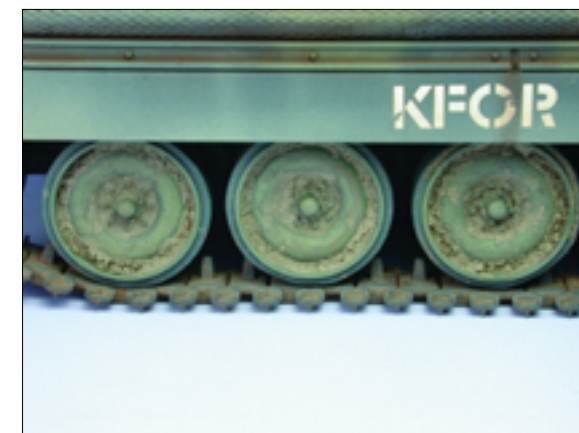
ABOVE AND RIGHT The masking tape was removed from the optics and some extra paint chips were added to the



hatch covers and other high traffic or otherwise exposed areas.



Turn signals and brake lights were painted chrome silver, and then coated with Tamiya Clear Red and Clear Orange.



Ground-up pastel makes the mud once again. This time, I used water instead of acrylic thinner to mix the slurry. I found this gave a nice lumpy texture with the added bonus that the water would not affect the paint underneath the same way thinner does.



ABOVE AND NEXT PAGE A pair of MV lenses and some floral wire complete the conversion. The last step was to add some deck tan dust in vertical streaks, and re-define some of the shadows with pastel chalks. The pastel chalks were also used to provide some streaking around the appliqué armour attachment points.



## 4 x 25mm SIDAM (Sistema Integrato di Difesa Antiaerea Mobile)

Degree of difficulty:	★★★★☆
Kits used:	Academy M163A1 Vulcan
Additional detailing sets used:	Eduard M163 photo-etch (Lower Hull), Airwaves photo-etch ring sight, Tamiya fine weave nylon mesh, Tamiya 25mm fluted barrel re-cast in brass, Aber chains, Modelkasten Tracks, .22 & .24 gauge solder, .24g floral wire, various Evergreen sheet and rod stock, MV lenses, foil confetti.
Markings:	Kit decals from Italeri M-109.
Paints:	Tamiya XF-24 Dark Grey, XF-67 NATO Green, XF-65 Field Grey, XF-69 NATO Black, XF-64 Red Brown, X-1 Black, X-27 Clear Red, X-26 Clear Orange, XF-55 Deck Tan; Polly-S Clear Flat, Testors' Chrome Silver; Winsor & Newton Raw Umber and Mars Black oil paint; and Rembrandt pastel chalk Raw Umber light and dark, Ochre, Burnt Sienna, Black.



### Background

Based on the M113 chassis produced by Oto Melara, the quadruple 25mm anti-aircraft SIDAM entered service with the Italian Army in late 1989. It currently serves with the 17th and 121st Anti-Aircraft Regiments, augmenting the HAWK and Stinger missile systems used by the other Italian air defence artillery regiments.

The hull of the SIDAM differs from a regular M113A2 with the addition of an auxiliary power pack behind the driver's station, and the rear internals being occupied by fire control and optical systems and the gunner's station. The one-man turret is fitted with four Oerlikon 25mm cannons fed with high explosive incendiary and/or armour piercing discarding sabot (APDS) tracer rounds. Enough ammunition is carried in the ready to fire bins for eight two-second combat bursts. With an effective range of only 2,000m, the SIDAM is a very short-range air defence system, though trials have been conducted with Mistel SAMs mounted to the top of the gun pods to give it greater reach. It can operate in low-light conditions and the turret can be slaved to an auto-tracking system. Though equipped with a laser rangefinder and Identification Friend Foe (IFF), it does not have an all-weather air defence capability. The SIDAM was initially designed with search radar; however, this option was deleted before the 280 units were delivered.

### Construction

I've always liked the look of this air defence system – there's something about seeing a regular M113 with this heavily armed turret that just looks so futuristic. This feeling seems to have been shared by the model builders at Lucasfilm too; take a look at the SIDAM turret and compare its shape to the Federation Hover Tank used in *Star Wars: Episode 1 – The Phantom Menace* (1999).

I had been putting off this project as the only references I had were some line drawing in *Jane's* that showed the prototype vehicle. Thanks to [www.missing-lynx.com](http://www.missing-lynx.com), I made contact with Francesco Chimentin, who sent