SEA HARRIER FRS.1

Building & Finishing Notes for the Airfix 1:48th scale kit

By NICK GREENALL

Introduction

The Harrier SIG's various Sea Harrier displays since Scale Model World 2004 has led to our answering many questions about how to improve the Airfix 1:48th scale Sea Harrier FA.2 kits and the promise of written details appearing in response to the many requests for them. What follows is a Falklands FRS.1 focused re-write of the build and finishing notes I wrote for that purpose and for 'Project 899' - a joint IPMS(UK) Harrier SIG, Quarter Scale Group, Fleet Air Arm SIG and others group-build of 30 in-flight Sea Harrier FA.2 presentation models for 899 Squadron's Decommissioning in March 2005. While focusing on the Airfix 1:48th scale kit, the main points can be applied to all other FRS.1s kits.

The featured FRS.1 is the model I made for renowned Falklands SHAR pilot David Morgan following the SIG's display at the Royal Navy's 'Sea Harrier End of Era Dinner' held in The Painted Hall at Greenwich on 31 March 2006. 'Mog' wanted the model of ZA177/77 as on take-off for the 'duskers' sortie he flew on 8 June 1982 with Lt David Smith during which they shot down three Grupo 5 A-4B Skyhawks which had been attacking landing craft from HMS Fearless in Choiseul Sound: Mog downing two and Smith one with AIM-9Ls. In fully-armed take off configuration the model needed all the possible detailing modifications to be made to the kit, except for the undercarriage bays and cockpit.

As this is not a super-detailing article, the notes may seem long for simple modifications. They are comprehensive, as I have explained some of them at length and followed the kit's instruction sheet build sequence for those who have not made an Airfix SHAR before. None of the mods and techniques described are difficult if you have good basic modelling techniques.

The kit

Airfix's 1:48th FRS.1 kit first appeared 20 years ago and many of the moulds are now showing their age, not just because of its raised panel lines; you'll need a lot of filler for umpteen moulding flaws.

Photos show that the raised panels on the wings and tailplanes can be virtually sanded off and not re-engraved: only the access panels are notable on the real aircraft. On the fuselage, the raised panel lines should be used as a guide for engraving, but there are inaccuracies: the access panels on the nose and the prominent rectangular panels aft of the exhaust shields; refer to photos and drawings.

Aftermarket accessories

I've not used NeOmega's cockpit detail set (C34) for any SHAR I've made, mainly because they've had a pilot in place or the canopy closed. While it's much better than the kit parts it has several flaws, e.g. the instrument panel coaming and

MDC box detail on the canopy's rear bulkhead. Though not 100% accurate in its headbox, NeOmega's Martin Baker Mk10 ejector seat (E16-48) - available from Punctilio Models or Aeroclub - is a huge improvement on the kit's poor effort. Airwaves' late Hawk resin MB10 - available from Hannants - can be used instead. Wider than the kit's cockpit tub, it will need surgery to fit. Its headbox also needs deepening with microstrip at the rear. Airwaves used to make some excellent resin nozzles, but these are not currently available: bother. The kit's AIM9-L Sidewinders are hopeless; I used some 9-Limas from Hasegawa's AAM accessory set.

Reference notes

Paint references throughout are all Humbrol, unless stated otherwise. A list of good FRS.1 references is given at the end of the notes, drawings being provided in the August 2002 Scale Aircraft Modelling. The Harrier SIG's Falklands Sea Harrier FAQ provides all the colour scheme details you'll need for all the Falklands War FRS.1s.

The build

Stage 1. Pilot

For an in-flight model "Jeff" is not discarded. Use filler to make a lowered visor and in-place oxygen mask. Remove his lower legs just below the knee restraints. Use photos to help with painting, there are good ones in Jamie Hunter's and David Morgan's books. Pilot colours: helmet 163 dark green (gloss) and g-suit (matt), 150 olive green overalls; black oxygen mask, visor (gloss) and cloth visor cover (matt) over the top of the helmet; aluminium reflective tape cross on top of the helmet; harness straps 63 matt sand; small triangles of flesh at side of oxygen mask; dirty white gloves.

Stages 2, 3 and 4. Cockpit and seat

Assemble the instrument panel and cockpit tub but do not fit the HUD (part 7) or the seat until the final assembly. The cockpit interior should be 164 dark sea grey, not 165 as in the instructions (the actual colour is Admiralty Grey). Do not decal the side consoles if making an in-flight SHAR, Jeff's arms obscure them, but fit the instrument panel decal.

If a pilot is not fitted, detail the cockpit from scratch or use the NeOmega set. Some simple detailing is shown in the photos. Good cockpit photos exist in the World Air Power Journals.

Replace the kit seat with your choice of resin MB10. So Jeff can sit in the correct SHAR pose, remove all seat harness detail below the shoulders. Remove the harness clips on the side of the headbox and the side detail on the seat base to enable it to fit the tub - use the kit seat to get the top to bottom length and dry fit to ensure the canopy goes over it OK. Seat colours: 164 overall, 163 cushions and top of headrest, black headrest pad, 63 harness straps, including those on headrest, 27001 piping detail behind the headbox. Use the kit headbox decals. Fix Jeff to the seat so there is a 2-3mm gap between his head and the headbox; see photos for how SHAR pilots 'sit'. This photo of a real MB10 will help with painting the seat.

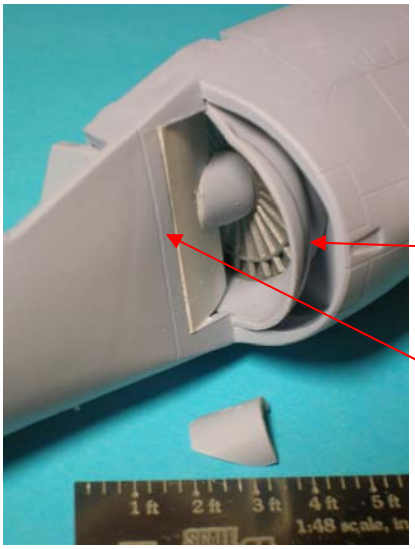
Stage 5. Fan and bell-mouth

Paint the back of the bell-mouth, part 10, where the blades fit and the blades 56 aluminium. The bell-mouth is Extra Dark Sea Grey (EDSG). Remove the dome on part 9. The next mods really do make a difference for more realistic intake interiors...

Stage 6. Basic fuselage assembly

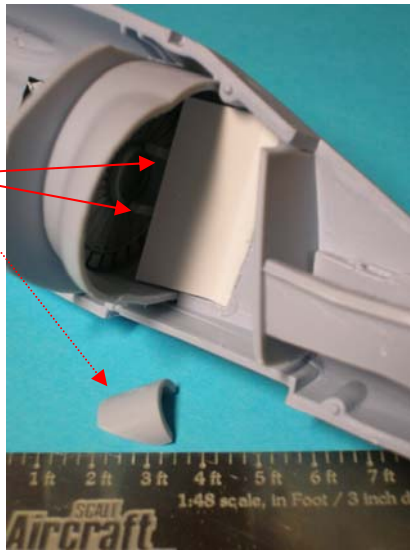
As with their 24th Harriers, Airfix have put the turbine blades too far back in the fuselage. The stage 5 assembly should fit *in front* of the two locating ridges so the blades are just behind the forward engine cover panels on the fuselage top. So this sub assembly can fit without forcing the sides apart remove the top 4mm of part 11 and trim its ends too. Part 10 needs its central top and bottom rims trimming back a few mm to enable it to fit in its new position, using trial and error…

Cut a line 2.5mm down behind the engraved line on each fuselage half just inside where the intakes fit. Make two 90-degree cuts to this line and remove this area. Fix the stage 5 assembly into place in one of the fuselage halves. Use an oblong of 30 thou card to replace the removed piece: 12.5mm front to back. Curve it gently around a pencil and fix it in place to form one half of a gently curved V with its apex 3mm in front of the turbine blades on the fuselage centre-line.



The intake modifications described in the text: in the photo on the right you can see the overlap of the cut down piece of the Sea Eagle…

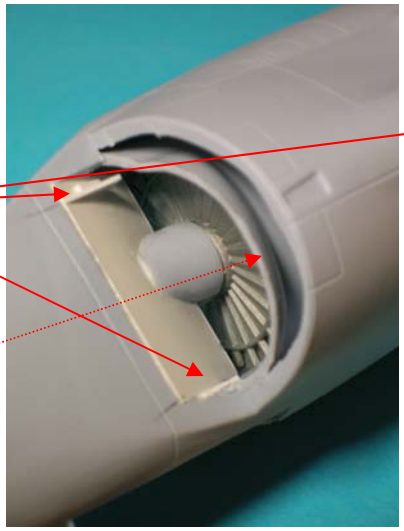
The area ahead of this pencil line will be removed from the bell-mouth so the intakes can be fitted.
This gap is 2.5mm wide between the panel and cut lines.



For the round fairing over the hub of the Pegasus use one of the kit's Sea Eagle halves, remove the ridge and sand it round. Using the photos as a guide cut two bevelled sections 9mm long. Fix one to the card insert so it sits just off the fan blades overlapping the rear of the insert. Fix the cockpit bulkhead and tub.
Hold the intakes in place while you draw lines inside them where they overlap this new assembly. Cut some card triangles to fill the gap between the new curved V and the intakes when they are fitted; if care is taken here next to no filler will be required when the intakes are fitted in stage 7.

Here you can see the card triangles used to fill the gaps between the new portion of the fuselage and the intakes.

In this photo part 10 has been sawn back flush with the outer fuselage so the intakes can be fitted



I don't use the kit's nozzle backing discs but instead fix oversized oblongs of black plasticard behind the nozzle openings to stop the possibility of seeing through the fuselage.
The kit nozzles can be improved by sanding off all mould lines before a scalpel is used to thin down the rims of the nozzle openings. The rear edge of the back nozzles should be squared off slightly. The finished nozzles can simply be pushed into place; they are a tight fit and you may need to open up some of the holes. Note: at the start of the take off run the nozzles are 10 degrees down.
The kit's heat shields are hopeless! Use a razor saw and scalpel to reduce their length by 5mm. Use scrap and filler in any holes to restore the fuselage contours. Make new heat shields from 5 thou plasticard using the template below.

With a fine biro engrave the rib detail. Use microstrip to depict the lower three braces on the underside of the kit's moulded-in shields. Leave fitting the new shields until the final assembly stage to avoid damage.

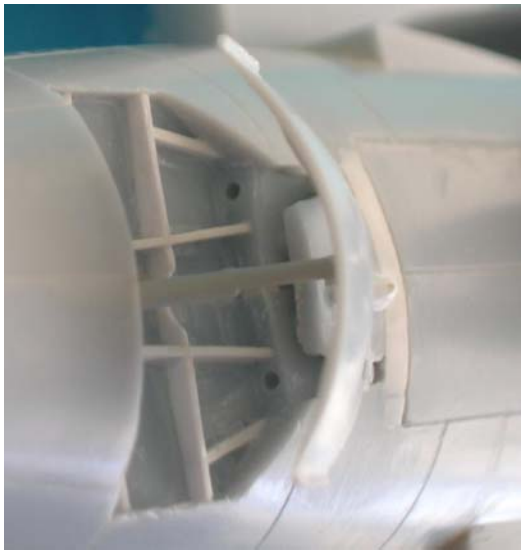
FRS.1 nozzle colours notes… Before late 1984 all SHARs had their front (cold) nozzles painted in their upper surface colour. Use matt black to depict the gaps behind the vanes. The rear (hot) nozzles have always been left natural metal and I use 53 gunmetal for them. Humbrol's polished steel Metal Cote is a good match for new heat shields or gunmetal for weathered shields and their braces. The rear nozzles and shields soon get *very* sooty, so liberally dry-brush matt black over them.

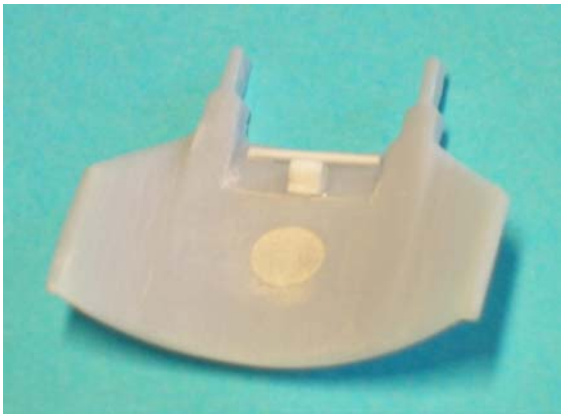
The decaling diagram shows the two "grills" of the gas turbine starter / auxiliary power intake and outlet unit - decal 76. The intake on the starboard side has a mesh grill, which can be better depicted by scoring cross-hatched lines with a scalpel over a 7mm x 3mm area - the mesh directions are nose-tail and wing-wing. The same-sized outlet on the port side needs opening out with a scalpel. The rear edge of this opening is steeply bevelled, which can be achieved by paring it with the scalpel blade. Back the hole with card and fit a small piece of 10 thou scrap for the GTS/APU exhaust. In front of the GTS/APU intake a small fairing has been badly depicted in the kit. Remove and replace it with a small section of rod sanded to shape.

Before joining the fuselage halves, drill out the angled hot air outlet on either side of the rear fuselage just below the tailplane leading edges and back the holes with scrap black card. After the fuselage halves have been joined, add the second section of 30 thou and half round fairing to the other fuselage half. Once the assembly is dry razor saw off the areas of part 10 that protrude forward of the intake openings flush with the fuselage so the intakes can be fitted later.

Rather than at stage 12, fit the closed undercarriage doors and airbrake now for an in-flight or an on the deck with engine running SHAR. Most SHARs at rest have the forward u/c doors and airbrake down but the main u/c doors closed, though very slightly dropped. Filler is needed on the rear canopy decking, the sunken areas around the airbrake and main wheel bays and on top of the rear fuselage; plus areas around the front u/c doors. Sand these down, repeating the process as needed.

For an **on the deck** SHAR, add airbrake bay detail now from microstrip, having smoothed out the join line inside the bay. David Morgan's book provides a great photo of the emergency chaff mod fitted to the SHARs on HMS Hermes, which I replicated from scrap card and 5 amp fuse wire. Detailing the airbrake is straightforward, refer to the photos, with the actuating jack being made from rod. Leave fitting until final assembly.





Re-instate all fuselage panels, undercarriage door and airbrake outlines the rubbing down has erased.

Note the difference photos show in the panels on the upper surface engine bay covers compared to the kit's lines, and how the second set of engine covers back overlap onto the fuselage above the fire access points in the wing roots. Photos show the panel line that goes back centrally from the forward red X to between the two X's on the sides of the

covers to be markedly wider than other panel lines. This line is missing from both the kit's instruction's decal drawings and the SAM plans!

For an **in-flight** SHAR fit two 6mm x 1.5mm strips of 10 thou onto the small rear front u/c door on each side of it extending back onto the fuselage. For u/c down we'll make a new unit later.

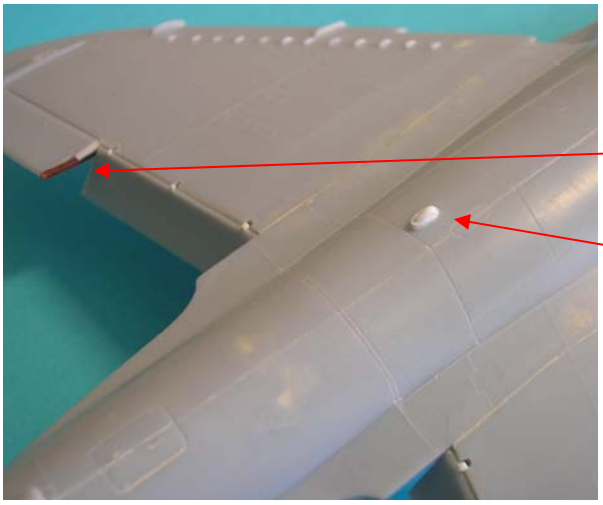
Stages 7 and 13. Main component assembly and upper fuselage details

Filler is needed in the gaps under the wings when the upper and lower surfaces are glued together. Use a sharp scalpel to thin down the vortex generators by half. Carefully cut each one vertically downwards then cut horizontally to remove the outboard portion of each. Use a scalpel to cut out the upper and lower Reaction Control Valve (RCV) nozzles in the wing tips and outrigger fairings, paring out small sections at a time to make the openings. Sand off the incorrect raised panel lines around the wing tip navigation lights; the lights are best just painted on later. Fill then re-drill out the fire access ports in the wing root leading edges.

When sanding down the upper and lower surface join lines also remove the mould lines on the wing fences. Use a razor saw to cut the gaps between the fuselage, flaps, ailerons and the wing tips. Scribe in a further chord-wise line on the upper surface of the flaps 2mm inboard of the flap/aileron line. Diagonally cut 20 thou rod is used for the fuel dump pipes above the flaps, these being fixed in the 2mm wide section about 2mm back from the flap leading edge with a 1.5mm gap between the bottom of the pipe and the flap trailing edge.

The flaps… Most photos of **in-flight** SHARs show the flaps partially down, to get maximum lift at speeds below 300kts. Partly dropping the flaps on the in-flight model do give it more interest. **On the deck** SHARs can be seen with flaps both up and down, most usually up. Make life easy for yourself and keep them up is my advice, unless you're making a landed SHAR with its engine running. Partly/fully lowered flaps mean you have to detail the hinge points, three per flap on the upper surface. Small pieces of microstrip are added into the flap/wing join line and smoothed-in to the falp surface when set to depict the hinges; the hinge slots in the upper surface of the wing being etched in with a scalpel tip. Note the hinges do protrude slightly above the wing surface, refer to photos.

Fit the wings using the angle templates given in the instructions as a guide. The gaps on both upper and lower surfaces' joints will need filling and sanding down; those on the top will need quite a bit of filler over an area both sides of the joint.

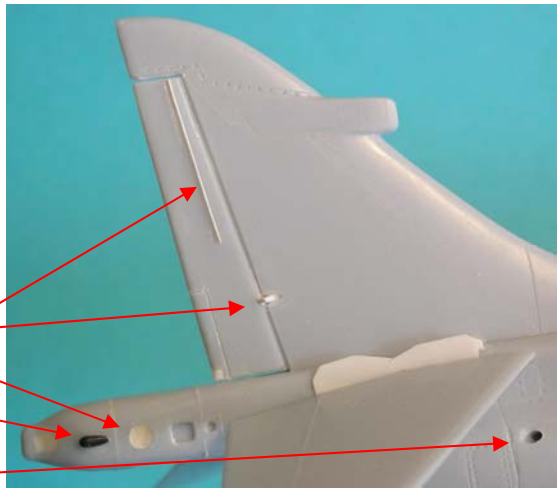


Detail of fully dropped flaps showing the three cut-outs in the wing trailing edge, the three hinge tabs on the leading edge of the flap and the fuel vent pipe and fairing.

The upper surface of the flap here is sanded down so that if the flap was closed the fuel dump pipe would be accommodated.

Note the anti-collision beacon and engraved panel lines. On these wings the upper surface joint was not too bad.

Filler will be needed for the tailcone joint. Small pieces of trimmed rod are used for the two rear id lights on the tailcone.



Rudder strake and hinge detail

RCV vents, drilled and partly filled

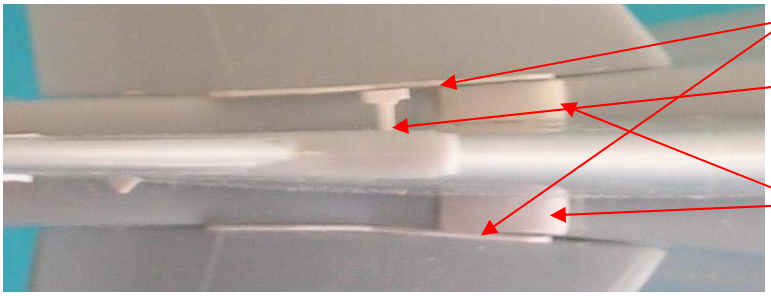
Rear ID light

Hot air outlet

Use a circular template when scribing the 5 large and 2 small mesh covered RCV vents on the tailboom, an alternative method is to use a drill bit to make circular depressions and partly fill them.

se a thin razor saw to separate the top and bottom of the rudder from the fin and fuselage. 16mm long strakes are added to each side of the rudder from fine strips of 5 thou, using straight edges to keep them straight when gluing them to the rudder. They are positioned 1/3rd of the way back from the leading edge at the top of the rudder. Refer to scale drawings and photos. Small triangular wedges of plasticard form the rudder control links (15 thou) on the starboard side and rudder trim tab controls (10 thou) on the port. A "T" of microstrip is used for the temperature probe on the port side of the fin. Use a scalpel to open out the intake at the base of the fin.

Fit the tailplanes again using the instructions' angle templates. Upper and lower sealing plates are made from 10 thou card using the templates. They are fitted so their rear overlaps the panel line 2/3rds of the way back on the tailplanes by 0.5mm. Scrap 40 thou is used for the bulges on the top of the fuselage either side of the fin which allow the all-moving tail to move fully.



Tops of the tailplanes' end plates.

T-shaped temperature probe

The position of the bulges on top of the fuselage over the all-moving tailplane joint.

Tailplane positions… SHARs **on the deck** usually have their tailplanes pivoted fully back when at rest. This can be done by cutting a line where the kit locating tabs meet the tails leaving about 2mm at the central pivot point uncut. When the tailplanes are fitted gently twisting the surfaces around the pivot will enable this position to be achieved. Adding the sealing plates will strengthen this joint. **In-flight** or powered-up SHARs ready for take off will have the tailplanes at 0 degrees.

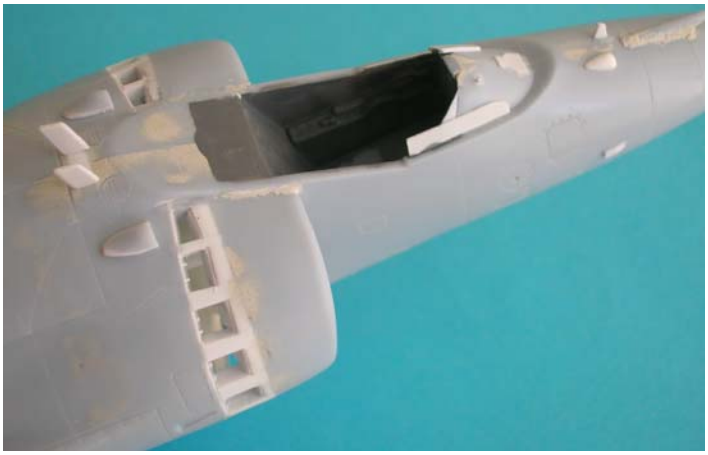
The instrument panel coaming is detailed with 10 thou card. Two 1.5mm strips of 10 thou are added to the windscreen sill to represent the de-mister units, with two triangles of 10 thou above these being used to alter the angle of the coaming at its rear. Further details are added with a piece of 10 thou on the port side and, for an on the deck SHAR, a small piece of scrap by the HUD on the starboard side - which should be painted emerald green. The whole coaming is painted toned-down matt black.

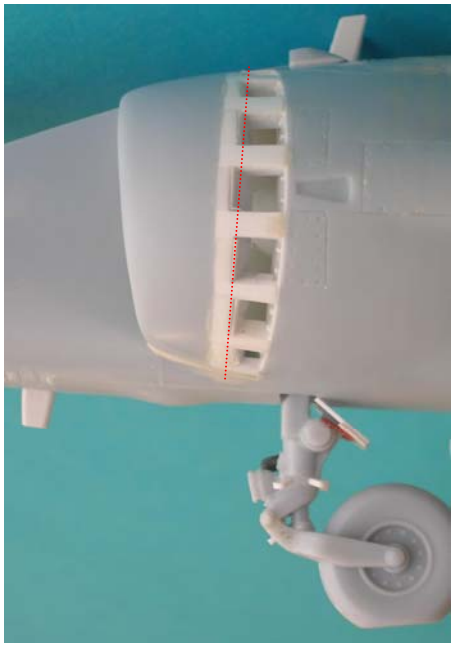
On all the SHARs I've made, I've found it easier to fit the canopy parts after major painting has been completed. The rear of part 24 is about 2mm too long and needs trimming down - the drawings on page 11 of the instructions will be helpful here. Before joining it to the canopy use 30 thou to make the canopy miniature detonating cord activator cover box that's missing from the kit part, adding detail with thin rod and scrap; refer to the templates and photos. Paint all internal windscreen and canopy frames and the bulkhead 164 dark sea grey, with yellow and red detail on the MDC detonator cover. Set aside the 'screen and canopy until final assembly.

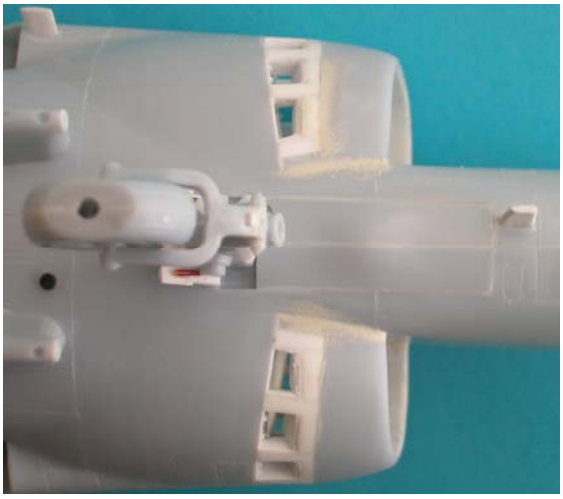
For an **in-flight** SHAR, the intakes… need the inner surfaces cutting back to a line at the front of the auxiliary doors. Watch out for sink marks near the upper surface leading edges of the starboard intake. Before fitting the intakes paint their inner surfaces and the fuselage walls inside them up to the prominent panel line. After smoothing the intakes into the fuselage, use a scalpel point to engrave the auxiliary door positions, which are inaccurate in the kit. Refer to the scale drawings, templates and photos for help here. The time spent doing this is worth it when the doors are highlighted after painting.

For an **on the deck** SHAR it's easy though time-consuming to modify the intakes and drop the auxiliary doors. For a static SHAR the top 4 doors on both sides will be dropped and the central door may be partially open or shut; gravity keeps the lower three doors shut. Mark where the intake fronts will fit on the fuselage before using a razor saw to cut through the outer and inner surfaces of the intakes, cutting the inner surfaces so that they will end where the dropped

doors sit. 10 thou is used for the bulkhead between the bellmouth and fuselage. Fit the intakes to the fuselage aligning them with the marks made earlier. Once set, with reference to templates, drawings and fuselage panels, fit scrap pieces of plasticard to make the segments between the doors: they are all different in shape! Use more scraps to fill in the front portions of the door openings as required; fill any gaps in the whole assembly and sand to shape. The doors themselves are cut from 10 thou and simply stuck in place at the required angles. Door catches are made from scrap.







The intakes in the above photos were modified for a SHAR with its engine running on the deck: all the auxiliary doors being open. On a SHAR at rest, gravity keeps the lower three doors shut, the middle doors may be partly open or shut.
Note the cockpit details, twin UHF and IFF aerials, the three modified ram air intakes and the panel fastenings.
The inside of the intake has also been trimmed back to a line aligned with the rear of the dropped doors, shown by the dotted red line above. Note also the new front u/c rear door from 10thou, strip and rod and the basic leg details in the photos above and left.
Intake interior colours: EDSG/W SHAR FRS.1s had EDSG intake interiors, with the white overlapping onto the intakes' inner surfaces by about 6". The white was overpainted in EDSG. Medium Sea Grey / Barley Grey re-enforcement aircraft of 809 NAS had satin white intake interiors with an MSG overlap inside the rims. One MSG/BG aircraft from 801 NAS, ZA190/009, returned with MSG interiors.

Stages 8, 9, 10 and 12. Undercarriage fitting options

For an **in-flight** SHAR the undercarriage doors and airbrake will already have been fitted in their closed positions and liberal layers of filler applied to smooth everything out and remove the sink marks under the fuselage.

The outriggers are improved by rounding off the tyre profiles, which are too square, and the square edges of the wheel yokes. Cut off the yokes and wheels to do this, reducing the gap between the tyre and the cover to 1mm when refitting them. Again filler will be needed on and around the outrigger/wing joints and to fill sink marks and gaps.

For a **non-flying SHAR**… The kit outriggers are poor compared to the Tamiya items and at least need the obvious sink marks filling. The tyres and wheel yokes are rounded-off as above. The tie-down rings are made form tube and scrap.

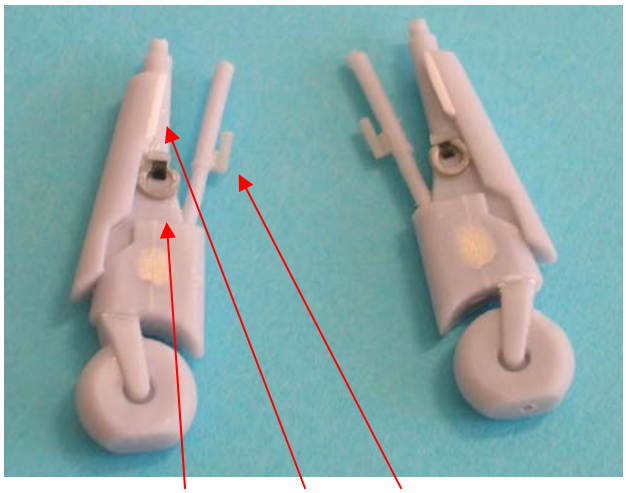
On the wings, the rear of the outrigger openings should be square and not aligned to the trailing edge; the cut back going outboard. The rears of the openings need carving out. After that I'd suggest you refer to photos for the extent you want to go to in further detailing the outriggers.

The main u/c bay doors are often closed when a SHAR is parked though they do drop a fraction, one side usually more than the other. Yep, refer to photos. This saves you having to hack around and detail this bay. The twin main wheel hubs can be detailed with a small burr and some scraps of rod for the centres.

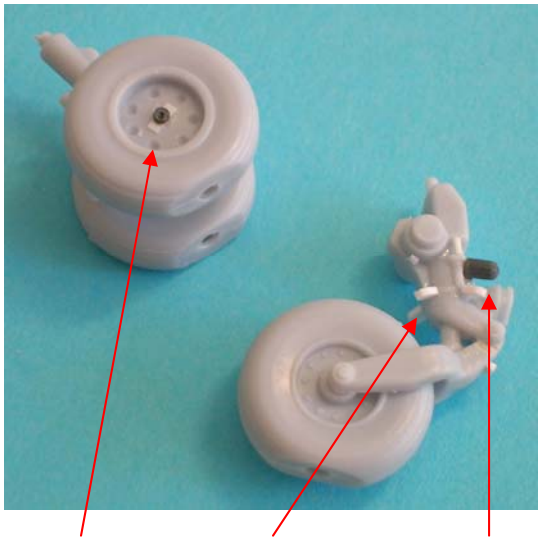
The kit nose wheel leg needs some work. Firstly, it's too long, though it is great for a SHAR going off a ski-jump! Refer to photos here and reduce the angle of the yoke to the vertical.

Also take a couple of mm off the top of the leg. Use some clear sprue to make the two landing lights, the smaller upper one on SHARs being red.

Plastic off-cuts are used for the tie-down rings. The upper leg has lots of piping, which is best made from copper wire, superglued into fine holes drilled in the leg. How far you go depends on you, especially where detailing the kit's non-existent nose wheel bay is concerned.



Tie down rings, door and oleo details



Wheel hub detail, 4 tie-down points, upper light

Unless you're building a competition model, I'd use trompe l'oeil paint effects.

Now, **the simple way to make all the wheels touch the ground…** Flatten the twin main wheels and the nose wheel tyres and add them to their legs, but don't glue them yet! Glue the nose wheel leg and both outriggers in place. Refer to scale drawings for their side view alignment making sure they are vertical when viewed from the front and the flat of the nose wheel is grounded; it can be secured in place now. Once they are set it's time to fit the main u/c leg, reducing this in length until all five wheels touch the ground. Finally, secure the main wheels so their flats are grounded. Easy!

Colour notes for the u/c… All the legs are 127, with nose leg piping being dark grey and black. The nose, main and outrigger wheel hubs are also 127 on Falklands aircraft; on later FRS.1s the hubs were white. The main wheel hubs rapidly get dirty and can be liberally dry brushed with matt tyre black. The interiors of the u/c doors are satin white; the nose gear doors have rectangular black rubbing plates inside them around their bulge. The last bit of detailing is to make a new front u/c bay rear door and its arms from 10 thou to replace the kit part.

Stages 13 and 16. Fuselage details

Small pieces of card sanded to shape are used for the upper and lower anti-collision beacons, the one moulded on part 52 being cut off and replaced. Both are offset from centre on the port side, page 12 of the instructions showing their correct positions.

The cockpit conditioning system ram air intakes (parts 105 and 106, which are not referred to in the kit instructions) need beefing-up by mounting on some 15 thou card, cutting them out on this and sanding them to a more rounded shape before fitting - refer to photos. The UHF antenna parts 83/84 need replacing with two new ones made to the template pattern from 20 thou. Fill the gap in the fuselage before fitting them in place. A further scratch-built UHF antenna is added (to replace part 79) on the lower fuselage offset to port at the front of the underfin.

The fresh air ram intake on the fuselage in front of the windscreen wiper fairing is poorly depicted and should be removed and replaced with one cut and sanded to shape from rod. A new IFF antenna is made from 15 thou and fitted offset to port ahead of the windscreen.

The pitot needs some work on its tip with filler to give it a diamond shaped arrowhead profile. Some filler may be needed around it joint with the fuselage.

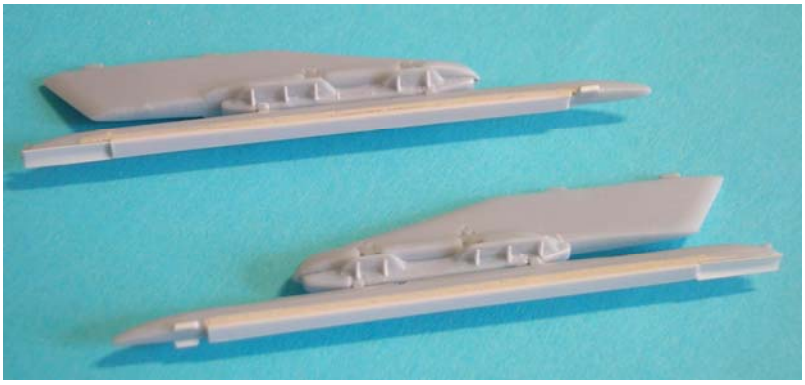
15 thou is used for the I-band transponder antenna fitted centrally on the panel in front of the Doppler panel used to be carried. Part 80 is added as per the kit instructions. I used a small burr to add the holes in part 80. The upper dump fairing that sits on the underside of fairing just ahead of the starboard font nozzle is made from scrap. (This is part 110 in the FA.2 kit.) These two parts should be parallel in the angle they make from the fuselage. A short length of semi-circular rod is fitted under the fuselage (see gunpods photo).

I use a small burr to just indicate the many panel fastenings on the front nozzle fairing and elsewhere.

Lastly, fit some scrap card on the starboard fuselage centre-line below the front of the windscreen to duplicate the small fairing on the port side (see the last photo on the FRS.1 Diagrams.pdf).

Stages 11, 12, 14, 15.2 and 16.2. Gunpods, pylons, AIM-9L Sidewinders and tanks

Detail the pylons by cutting off the kit's weapon mounting lugs, using small pieces of rod for each of the sway braces, which should protrude about 1mm from the undersides.



Engrave the explosive release bolts on both sides - 2x 5 on the port side of each pylon, 2x 4 on the starboard side with a small drill bit or burr. The time spent on this is worth it as you'll see when the pylons are painted. The kit's AIM-9L launcher rails and their pylon mountings need detailing; refer to photos for guidance.

The gunpods will need some work to improve their shape and detail. The kit's locating instructions are wrong; refer to page 9 of the instructions for the correct positioning.

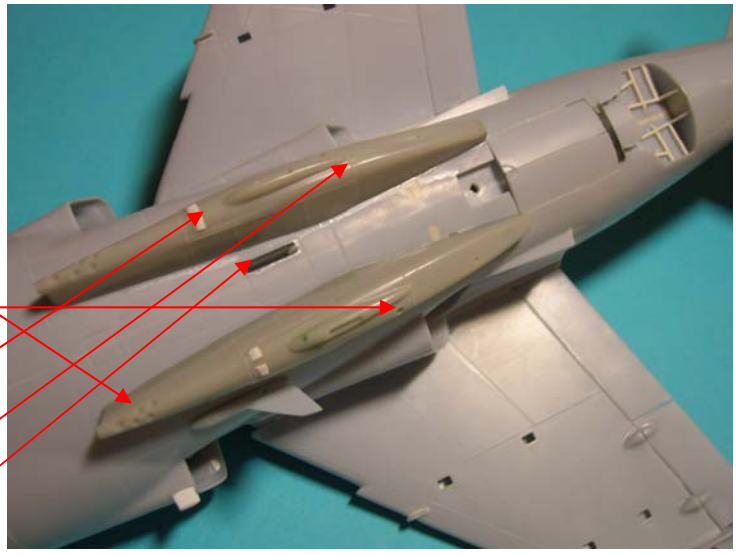
The photo shows the main changes needed to the gunpods and their correct positioning:

Various holes drilled out

Scrap used for these two vents

Ejector fairing reduced in length at rear

Semi-circular vent



A spare inboard pylon can be cut down to make a centre-line pylon.

Finishing

The following painting notes clarify the kit instructions, applying to Falklands era FRS.1s.

All U/C legs and wheel hubs:	Satin Blue Grey	127
Fin and tailcone RWR covers:	Tan	94
All UHF, IFF, I-Band antennae:	Matt Black	33
Two underfin radar altimeter aerials:	Matt Black or Tan	33 or 94
Underfin rear IFF notch aerial and bumper:	Matt Black	33
Fin VHF and HF notch antennae*:	Matt Black	33
RCVs and meshed vents, fin pressure head:	Gunmetal	56

Lights: Tailcone IDs - 2x silver; anti-collision beacons and port wing - red 19 + clear red; starboard wing - green 3 + clear green.

* This runs along the top of the fin panel in front of where the RN logo sits and should be just over 1mm wide. The fin tip leading edge antenna is of similar width. Refer to photos.

The Harrier SIG's Falklands Sea Harrier FAQ will give you the information you need for painting any of the Falklands War SHARs so I'll refer you straight to that document and the other references listed below for the possible schemes.

Decaling

For Falklands War EDSG SHARs the kit decals and instructions (option C) are fairly comprehensive. XZ455 an ex-899 aircraft was with 800/899 NAS on HMS Hermes during the war as black 12, transferring to 801 NAS on HMS Invincible before Hermes sailed for the UK. On Invincible she was completely re-sprayed in EDSG and given the 000 side codes. Not that the kit 000s are too small – they should be a scale 16" high.

If you have the old decal sheet for the FRS.1, which was in the original issue of the kit, then you'll get an option for ZA177/77. An 809 NAS aircraft that served with 800/899 NAS on Hermes and was flown by Flt Lt David Morgan on 08-Jun-82 when he destroyed two A-4B Skyhawks - C226 and C-228 of Grupo 5 - with AIM-9Ls during a 'Duskers' sortie after Morgan had seen the A-4s attack landing craft from HMS Fearless operating in Choiseul Sound.

The kit's decal quality is variable - in some the register is spot on, in others the white appears to one side of the red walkway markings and Xs. A steady hand easily rectifies this.

Leave adding decals 57 and 58 until the canopy has been fitted and painted.

Highlighting and weathering

EDSG SHARs weathered less than the MSG/BG ones; use photos for references. I try and keep highlighting and weathering to a restrained minimum, preferring my models, even medium sea grey ones, not to look as if they are wearing sun-bleached tartan! No pre or post shading here. I highlight all control surface joints with a very dark grey wash, including the fin trim tab, taking care with the flap hinges. I also used the same wash with a 00 brush to define the outrigger leg joint lines, the airbrake and undercarriage doors.

Pick out all the detailing done on the pylons with the very dark grey mix. The same mix is also used for the ends of the fuel dump pipes, the "open" ends of all upper fuselage intakes and vents, the camera port, the rear fuselage vents ahead of the tailplanes, three small rectangles on the under-surface leading edges of the flaps (see photos), the fire access ports in the wing roots, the GTS /APU intake and outlet on the engine cover. The mesh of the intake is dry brushed Humbrol 54 brass, the same colour being used to depict the edges of the rectangular GTS/APU outlet; see photos.

With reference to photos I use a very sharp H pencil to draw in those panels clearly visible in non-close-ups: the engine cover panel lines, the blow-in doors, the side panels ahead of the front nozzles and the two panels behind the blow-in doors, all nose panels (except the badly depicted access ladder traps on the starboard side under the canopy) the radome hinge line, the avionics bay panels aft of the rear nozzles, the fin panel ahead of the RN logo, the fin-top panels above the RWR fairing, the undersurface panel lines between the guns, aft of the airbrake and the underfin panels. Take care when drawing over decals.

I keep weathering quite restrained and use photos as a guide. Dry brush matt black streaks behind the exhaust shields and around the RCVs on the tailcone, and back from the small front main u/c bay door going back over the airbrake.

Add some small black streaks going back from the nose RCV, the rear of the small nose u/c bay door and the rear RCVs.

Thinned down Humbrol 100 applied with a 00 brush is used to depict the fluid streaks especially prevalent coming back from the under-fuselage panels between the guns. For ZA177/77 a dry brushed mix of Humbrol 29 and 33 was used for scuff marks on the upper surface of the wings, fuselage and engine covers. I was more restrained with this than the photos of ZA177 on her return to the UK show. Areas to concentrate on are the rear nozzles, heat shields and fuselage aft of them - keeping the latter minimal - and the oil streaks under the fuselage and wings.

Final assembly and finishing

Add the seat and HUD at this stage, painting parts of the HUD black to represent the frames of the real unit; photos will help you here. Attach the windscreen and canopy with Clearfix, using this to fill any gaps between them. Once set, use filler to blend in the windscreen frames.

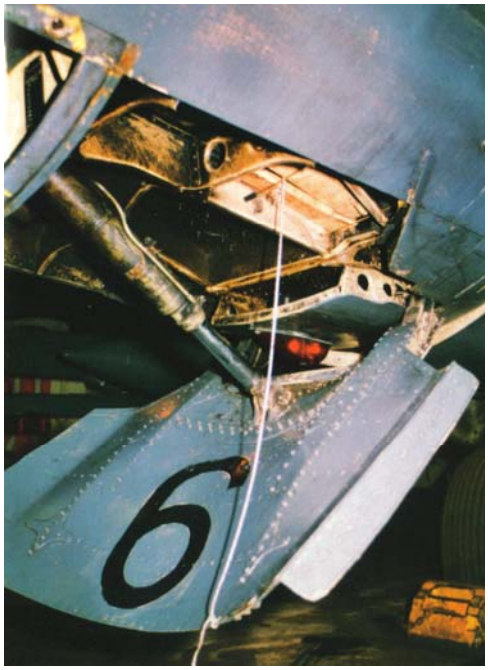
Paint the external frames the upper surface colour, using a thin line of MSG to represent the MDC just inside the interior edges of the rear canopy frame. The MDC in the canopy roof can be painted on in MSG, if you have a very steady hand! Pick out the wiper with matt black; its strut being the upper airframe colour. Add the remaining decals around the canopy.

The yaw vane (part 83) should be thinned down and added now, the strut is, again, the airframe colour, the vane is aluminium with an orange front part. Drill out the centre of the circular panel on the starboard side under the 'screen to take a 5mm length cut from a pin-tip, protruding 3mm, to represent the pressure vane.

Carefully fix the pre-painted heat shields with a 1mm gap to the nozzle opening, sticking the side with the biro lines on it to the model - they *are* larger than the parts remaining on the kit, do *not* trim them down!

Fit the airbrake now if it's being depicted down; it should be dropped at a 25-degree angle for a parked SHAR.

For a Falklands War HMS Hermes SHAR you may wish to add in the Hermes chaff-fit as shown right on XZ460/26 in David Morgan's book. Simply use some scrap for the bundles of chaff and some thin rod for the securing rods. 5 amp fuse wire can be used for the string between the rods and the rear edge of the airbrake as in this photo from David Morgan's book.



EDSG SHARs are a gloss finish, a thin coat of Johnson's Klear or Xtracrylix Satin varnish is fine for this; the former depending upon how glossy the surface is you have after decalling.

The MSG/BG FRS.1s were nominally a satin finish, in practice this weathers down to a more of a matt to semi-satin finish. I've found that Xtracrylic Matt Varnish gives just about the right effect in this scale.

Once the pylons are added, the model is completed. That should give you everything you need for producing a superb looking FRS.1… Good luck!

References I have starred those I think are best with a *, 'must-haves' with **

1. **Falklands - The Air War** Rodney A Burden, Michael A Draper, et al (Arms & Armour Press)**
2. **Sea Harrier over the Falklands - A maverick at war** Cdr N. D. 'Sharkey' Ward
3. **Air War South Atlantic** Jeffery Ethell & Alfred Price (Sidgwick & Jackson)
4. **Battle for the Falklands [3] Air Forces** Roy Braybrook (Osprey - Men-at-arms 135)
5. **Harrier at War** Alfred Price (Ian Allan)*
6. **The Harrier Story** Peter E Davies & Anthony M Thornborough (Naval Institute Press)*
7. **World Air Power Journal** Vols. 6 (Harriers) and 41 (Sea Harrier)*

8. **Sea Harrier and AV-8B** Robert Jackson (Blandford [Weapons & Warfare])

9. **Harrier** Michael J. Gething (Arms & Armour Press - Warbirds Illustrated - 20)*

10. **The Sharp End - Sea Harrier Front Line** Neil Mercer (Airlife)*

11. **Sea Harrier The Last All-British Fighter** Jamie Hunter (Midland)**

12. **Hostile Skies** David Morgan (Wiedenfeld & Nicolson)**

13. **Sea Harrier** Roger Chesneau Aeroguide 32 (Ad hoc)*

Scale Aircraft Modelling

Vol. 5, No. 3 December 1982** Falklands Campaign

Vol. 22, No. 7 September 2000 Sea Harrier Falklands Scoreboard

Vol. 24, No. 6 August 2002** Aircraft in Detail - Sea Harrier FRS.1 / FA.2

Scale Models

February 1983 Sea Harriers in Action**

May 1983 Sea Harrier Special**

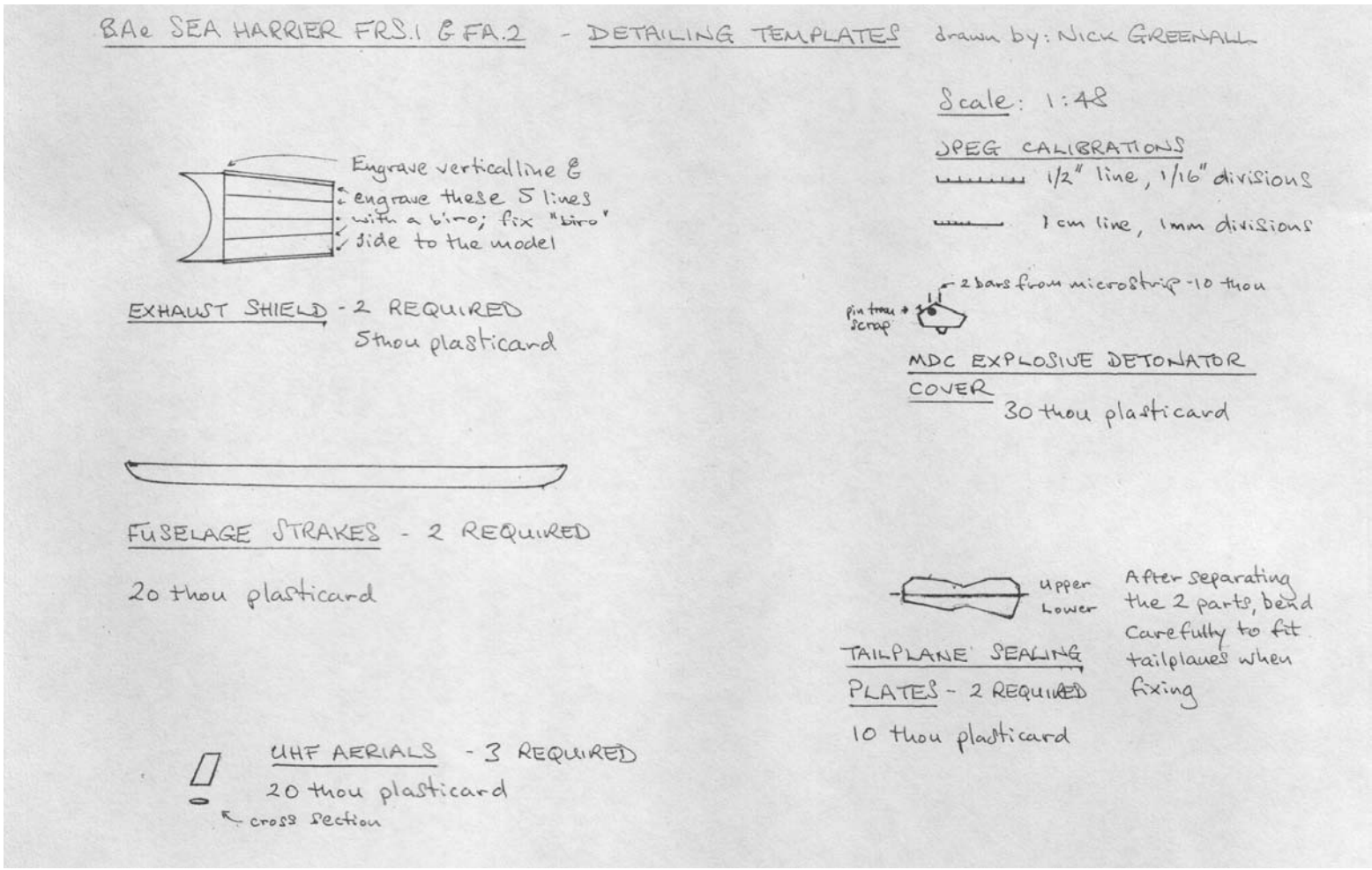
Air Pictorial

Vol. 46, No. 5 May 1984 Reflections on the Falklands War 1 (Cdr N. D. 'Sharkey' Ward)

Vol. 46, No. 6 June 1984 Reflections on the Falklands War 2 (Cdr N. D. 'Sharkey' Ward)

Fly Navy (The Journal of the Fleet Air Arm Officers' Association)

No.30 Summer 1996 'Fearless Goes To War'



(These drawings should print at the correct size on A4 paper. You may need to adjust scaling to A4 on your printer.)

For more photos of the finished model of ZA177/77, annotated for all the added details, please see the

Sea Harrier FRS.1 - Building & Finishing Diagrams