### **CAST AND CREW**



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Layout VisualizationMitzi Pudelle II

RAAF Target Towing Gear drawing used with permission of David Muir and the Publisher. NAA: A105, 15/11/592 Target Towing Gear

#### RED ROO MODELS PO BOX 113 GLEN WAVERLEY, VICTORIA 3150 AUSTRALIA

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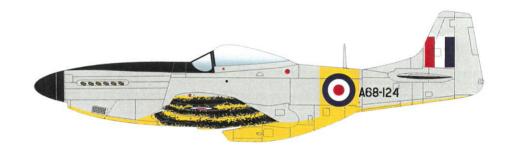
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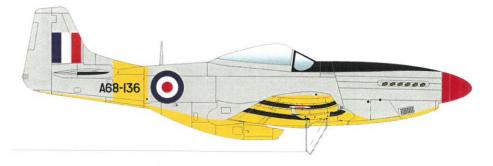
MADE IN AUSTRALIA From local and imported components.



## RED ROO MODELS 1/48 SCALE CAC TARGET TOWING MUSTANG DETAIL SET







"A Southern Cross Mustangs Authorised Product"

#### RAAF CAC MUSTANG TARGET TOWING AIRCRAFT

Royal Australian Air Force Armament Instruction Number 4 and Mustang Instruction Number 28 of 21 February 1951 described the fitment of a target towing line to the starboard bomb rack on Mustangs. This was a very simple installation, requiring only a short time to fit and remove. The frame enabled a 1,000ft steel cable to be connected via swivel fittings and a release cable through the tow ring guard to the forward release hook in the bomb rack and held the cable clear of the flap. Either a banner target of 20 to 30ft long and approximately six feet wide, or a drogue (a three foot diameter tapered tube approximately 20ft long) was towed, being pulled off the ground by sheer brute force as the pilot was instructed to use Emergency Power settings of 67 inches of Boost and 3,000 RPM until reaching a height of 500ft.

The towing speed was 175 to 185 Knots, thus allowing other aircraft, including Mustangs and Lincolns, to carry out live firing attacks on the target to simulate air to air combat. Each of aircraft detailed for the exercise would (if the pilots were a good enough shot) have its bullets tipped in a different colour paint so that they would leave a distinctive mark on the target for post flight assessment. On return to the airfield the towing aircraft would operate the bomb release overhead at 200ft so that the cable and target landed along the up wind side of the runway.

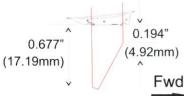
Eight RAAF Mustangs have been identified from photos as carrying the yellow and black striped Target Towing Identification Colour Scheme. However, pilots' log books show that other aircraft were used for this task without the coloured stripes. Drawings of the various versions of this colour scheme and decals for the aircraft serial numbers are included with this detail set for your selection. All five aircraft are CAC built CA-18 Mustangs and have eight spoke wheels, Australian built wooden seat, and standard cuffed round end propeller blades on the Mk21 and the De Havilland Australia uncuffed squared tipped blades on the Mk23's.

#### FITTING THE TARGET TOW CABLE GUARD:

Improve the right hand bomb rack by drilling a hole at either end where the bomb or tank steady arms are fitted, of a diameter to allow the guard legs to be inserted. In 1/48 scale, use a number 76 drill and space the holes 0.355" (9.02mm) apart; in 1/72 scale, use a number 80 drill and space the holes 0.124" (3.18mm).

Build your model in accordance with the kit instructions and paint it according to the selected RAAF colour scheme (see profile drawings). Apply the decals, selecting the serial number from those included with this set. Remove the etched brass guard from its carrier and clean up with fine wet and dry paper. Bend the legs to match the template drawings provided and check that their width matches the holes you have drilled in the bomb rack.

Paint the brass guard a dull aluminium colour to represent the Cadmium plated finish of the actual equipment. Then lightly polish the painted legs with micro-mesh to simulate the look of the real guard. Note that we are trying to simulate around shape with flat PE brass and may not necessarily obtain a true to prototype result – but, the resulting part will certainly look like the real thing. Repaint the part if required. Once this process is complete and you are happy with the shape you have achieved the guard can be carefully glued in place and your RAAF Target Towing Mustang is completed.

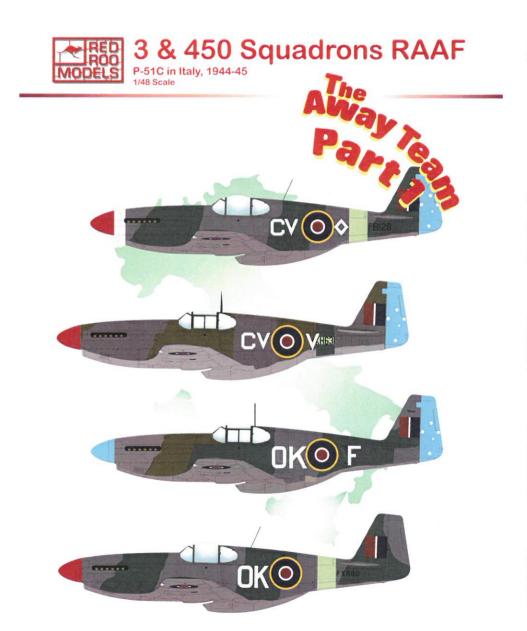


The drawing to the left shows you how to position the tow cable guard once you have folded the PE brass part to match the measurements indicated for 1/48 scale. We suggest you use a digital caliper to accurately measure the lengths required.

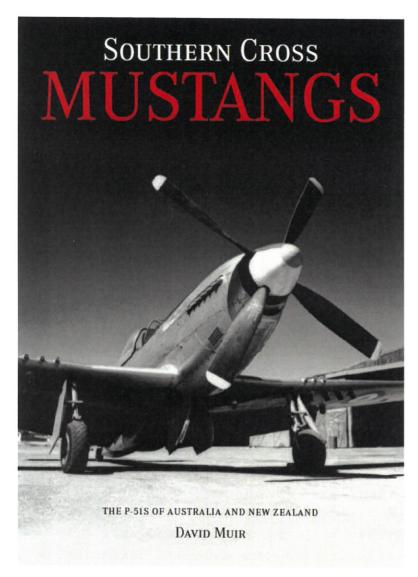
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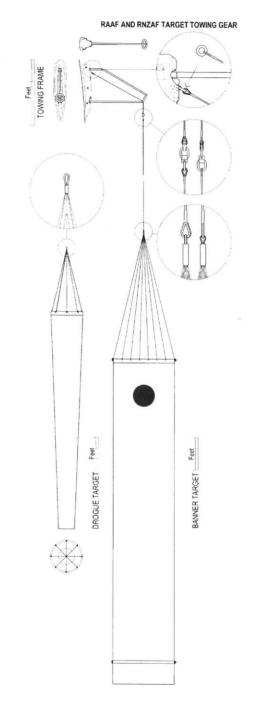
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# ARGET BANNER AND DROG

short a distance as possible and clear of the boundary fence. Above 500 feet the pilot throttled back to 44 inches of boost at 2,650 RPM. The recommended climbing speed was 140 knits to 10,000 feet and 135 knots above 10,000 feet. The towing speed was between 175 to 180 knots IAS and at altitudes below 20,000 feet it was necessary to use maximum continuous cruising power to maintain the correct speed. Normal descent speed was 180 knots and the target was simply released over an empty corner of the airfield before the aircraft landed.



#### A68-170, CA-18 Mk 23

After delivery to RAAF Laverton (Vic) on 1 December 1949, the aircraft was stored at Tocumwal for eight months before being issued to RAAF Station Canberra. After some use by Number 78 Wing it was issued to Number 2 Operational Training Unit for target towing, where it had a belly landing following engine failure on 30 September 1954. It was repaired and returned to service until allocated to the ATC Flight at Number 7 Stores Depot, Toowoomba (Qld) as an instructional airframe.

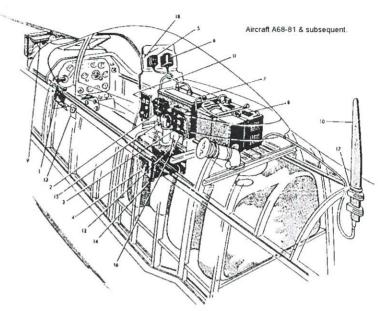
The aircraft was transferred to the RAAF Museum, Point Cook (Vic) in September 1970. It was eventually restored to flying condition, first flying on 17 February 1999, where it now resides as the Museum's flag ship, painted as A68-750 with a shark mouth.

The aircraft is depicted with D type red/white/blue roundels in the standard six positions and red/white/blue fin flashes. Both the spinner and anti glare panel are black and the black extends to the windscreen frame and the canopy hoop. The serial is black and the yellow fuselage band is not centred on the roundel. The propeller is matt black with standard 4" wide yellow tips.

The aircraft has its upper surfaces and fuselage painted with Aluminium lacquer. There is a 36" wide yellow band (K3/185) applied to the wing upper surfaces from leading to training edge. The underside of the aircraft is painted yellow with four 36" wide diagonal black bands. The yellow extends beneath the nose including the chin intake casting. The tailplanes are painted black on their undersurfaces and those of the elevators are yellow. The aircraft carries a full set of stencils, generally in black on the aluminium and yellow, but white on the black painted areas.

Unlike the NAA, CA-17 and early CA-18 Mustangs, late production CA-18s did not have their wing panel lines filled. They were just painted in aluminium and their panel lines are faintly discernable on the wing upper and lower surfaces.





The drawing above illustrates the radio fitment of CAC built Mustangs 168-81 and subsequent. Note the position of the IFF inertia switch attached to the rear of the pilot's armour plate. On these aircraft the battery has been relocated ahead of the firewall.

#### FITTING THE CHISEL TIP UNCUFFED PROPELLOR BLADES

The replacement resin propellor blades provided in this detail set have been moulded for a universal split stub and should readily fit most of the popular P-51D Mustang kits available without modification. It is strongly recommended that the blades are glued in place only after test fitting, using either Gator's Grip or thick CA glue to permit fine adjustment before the glue sets. The blades rotate anticlockwise as viewed from the front with a 22° pitch from the prop centre line.

#### Reference:

There is only one -

Southern Cross Mustangs, by David Muir, published by Red Roo Models, Melbourne, Australia 2009.

the fuel gauge dial is facing forward. The gauge face was black with white graduations and figures. Add a drop of Kristal Kleer or Simply Glues Windows to the gauge face to replicate the glass. Note that the Hasegawa kit provides both the fuselage fuel tank filler and the fuselage fuel tank fuel gauge moulded as part of the cockpit floor (part G6). You may also wish to add the vent pipe, using fine solder or wire to achieve this. The Academy kit includes the fuel gauge (part A9) and fuel tank filler (part A16). The Italeri kit does not include these items.

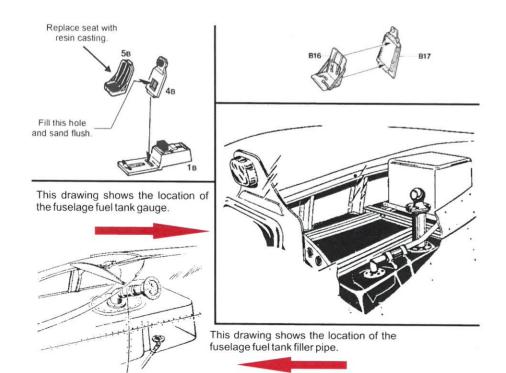
CAC-built Mustangs had a similar radio fit to that in the NAA-built aircraft. These radios and battery were sourced from local manufacturers. Refer to the scrap view detailing the radio fitment for A68-81 and subsequent aircraft opposite. Note that the CAC-built Mustangs used only the AN104A radio mast and the canopy was similar to that used on the NAA-built Mustangs, however, do check to make sure that the kit radio layout is that used on late NAA machines as illustrated opposite. It is more than likely that you will need to add the IFF inertia switches to the rear of the pilot's armour plate.

#### Fitting the seat - Academy

To fit the resin seat to the Academy kit simply replace the kit part (B16) with the casting supplied. The armour plate support rails and vent pipe may be added if desired. Make the support rails from scrap plastic and drill out the lightening holes before fitting to the rear of the armour plate. Because the fit of the kit parts is very tight it may not be possible to add this detail. Add the fuel vent pipe from thin solder or wire. Detail and paint the cockpit interior according to your preferences and continue kit assembly as outlined in the kit instructions. See drawing below (right).

#### Fitting the seat - Italeri

To fit the resin seat to the Italeri kit replace the kit part (5B) with the casting supplied. Fill the hole in the armour plate (part 4B) with a suitably thick piece of scrap plastic and sand smooth. Detail and paint the cockpit interior to your preferences. See drawing below (left).





Aluminium FS 17178



#### A68-113, CA-18 Mk 21

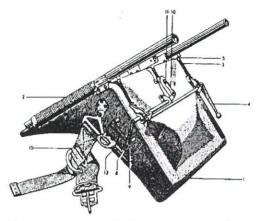
Delivered to the RAAF at Laverton on 1 April 1948, the aircraft was placed into storage at Benalla (Vic), then Tocumwal (NSW). In May 1953 it was sent to Number 10 Maritime Reconnaissance Squadron where it remained till November 1956 when it was despatched to Number 1 Air Depot, Detachment B at Tocumwal for disposal. It eventually became VH-UWB on the Australian Civil Register, owned by John Brookes at Moorabbin Airport.

The aircraft is depicted circa 1953 whilst operated by 10 Squadron. At this period it has a "medium blue" spinner and did not, as yet, carry the squadron badge on the fuselage immediately behind the firewall. The anti glare panel is matt black, incorporates the windscreen frame and canopy hoop. The canopy frame is also finished in matt black. The serial is black and eight inches high. The upper surfaces are painted Aluminium and there are 36" wide yellow bands on the upper surface of both wings. D type roundels are carried in the standard six positions along with red/white/blue fin flashes.

The under surfaces of the aircraft are finished in the standard RAAF target tug scheme, with 36" wide diagonal black stripes. The tailplane undersides were black and the lower surfaces of the elevators were yellow. The aircraft carried a full set of stencils: in black on aluminium and yellow surfaces, and white on black surfaces. The aircraft was fitted with an IFF whip antenna under the starboard wing and had the standard Hamilton Standard cuffed round end propeller blades. This is the only aircraft depicted in this detail set with the HS round end propeller blades. All the rest have chisel tip uncuffed blades.

This aircraft was part of the initial CA-18 production group and had filled wings.





This drawing from the CAC Mustang manual shows the seat pan, lap sash attachment and the support rails.

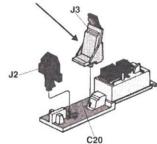
#### Fitting the seat - Tamiya

To fit the seat to the Tamiya P-51D kit carefully cut the armour plate supports from 10 thou scrap plastic and drill the lightening holes. Set the finished supports aside. Remove the moulded plinth on the forward side of the kit armour plate (part A21). Using a suitably thick piece of scrap plastic, fill the resulting hole and sand flush, front and rear. Fit the armour plate supports to the kit part. Check against the cockpit floor to ensure correct fit. Detail and paint the various cockpit interior parts to your requirements. Fit the modified armour plate to the cockpit floor (part A26). Carefully trim the moulding tab on the bottom of the resin seat. Do not cut off the support tubes as these help to locate the seat at the correct height from the cockpit floor. See drawing below (left).



Discard Tamiya seat - add armour plate support rails, if desired.

#### Discard Hasegawa seat, scratch-build armour plate and fit resin seat.



#### Fitting the seat – Hasegawa

To fit the seat to the Hasegawa kit discard the seat (part J3), which incorporates the armour plate. Using scrap plastic make a new armour plate and headrest, including the supports. Drill the lightening holes into the armour plate supports moulded onto the part. Detail and paint the various cockpit interior parts to your requirements. Fit the scratch-built armour plate to the cockpit floor (part C20). Carefully fit the resin seat to match the level of the support flange between the seat support rails. It is suggested that you paint the kit flange to match the armour plate in order to hide it from view when the cockpit is complete. See drawing above (right).

#### Super Detailing - any kit

Before fitting the cockpit interior to the fuselage add the fuselage fuel tank filler and the fuel gauge. Make both from sprue and shape using the drawings in this instruction sheet. Make sure

#### FITTING THE CAC EIGHT SPOKE WHEELS

Replace the kit wheels with the correct eight spoke wheels as supplied with this detail set. It is suggested that the new wheels be attached and the extra detailing carried out before the undercarriage legs are fitted to the model.



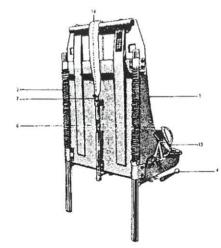


CAC CA-18 Mk21, Mk22 and Mk 23 Mustangs were fitted with eight spoke wheels. The brake pack fitted to these wheels was also larger than those fitted to North American Aviation built Mustangs. There were two types of tyres commonly fitted to CAC Mustangs at the factory, with either a diamond tread or a locally produced block tread. The tyres were interchangeable so it is not uncommon to see the same aircraft fitted with both types at different stages of its service life. The photographs in this instruction sheet will help you to establish the correct position for and the track of the brake lines. These were metal tube, except for a small section of rubber hose adjacent the undercarriage leg scissor link to allow for the movement of the oleo on take-off and landing. The hose runs between the two links that support the leg door, then through the torque link.

#### FITTING THE CAC PILOT'S SEAT

The CAC-built Mustangs were fitted with a moulded plywood seat that attached to the seat support rails, via the support bracket assembly which was attached to the armour plate, in the same manner as the NAA-built seat. The seat was fitted with a quick-release harness, attached at three points. The CAC seat was, however, a true 'bucket seat' and had a depression moulded into the pan to accommodate the pilot's parachute pack.

This instruction sheet describes the detailing required for the Tamiya, This drawing from the CAC Mustang manual shows 1/72 scale. Other kits may also be modified to accept this seat.



Academy, Italeri and Hasegawa kits in the support frame and the harness attachment.





#### A68-124, CA-18 Mk 23

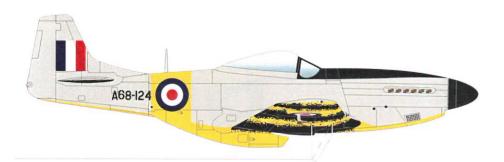
Flown to Laverton from CAC on 8 September 1949 the aircraft immediately went into storage until it was received by Number 25 Squadron in Western Australia in December 1952. Number 25 Sqn was a Citizen Air Force squadron that used the aircraft for fighter training, including target towing for live gunnery.

The aircraft was returned to Tocumwal for storage in April 1956 where it was held under cover until sold to R.H. Grant Trading Company in December 1958 and eventually scrapped.

The aircraft is depicted while serving with 25 Squadron, circa 1953. The upper surfaces are finished with Aluminium lacquer. The upper surface of both wings carried a 36" wide yellow band. D type red/white/blue roundels were carried in the standard six positions, along with red/white/blue fin flashes. The yellow fuselage band was 36" wide and centred on the fuselage roundels. The serial number is non-factory stencil and has been applied with the 6 out of line with the remainder. The wings on this aircraft were not filled.

The under surfaces of the tailplanes and elevators were black. The yellow under surfaces of the fuselage and wings were neatly masked and painted. The black stipes, however, were crudely sprayed freehand. Three pairs of rocket stubs on each wing.

Some uncertainty surrounds the colour of the spinner which has been depicted here as black. One reference source suggests the spinner was red. However, this is not confirmed as all available photographs show the spinner missing from the aircraft!





Aluminium FS 17178



#### A68-152, CA-18 Mk 23

Immediately after delivery to Laverton on 21 July 1949, the aircraft was transferred to Tocumwal for under cover storage until issued to Number 23 Squadron in Brisbane (Qld) on 20 November 1952. In June 1953 the aircraft was allocated to Number 2 Operational Training Unit at Williamtown for advanced training, including target towing duties until issued to Number 24 Squadron in South Australia in April 1956. On 2 February 1957 it crashed 10 miles from Balaklava (SA), so badly damaged that it was converted to components and scrap metal.

The date and location of the aircraft as and when it is depicted is unknown. The aircraft upper surfaces are finished in Aluminium lacquer with 36" wide yellow bands on the upper surfaces of both wings. The fuselage band is not centred on the roundel and is only 27" wide. The serial is black and eight inches high but is in a non-factory font with an unusual numeral 1 (there appears to be a very small serif on the numeral). The spinner and anti glare panel are black. The anti glare panel extends to the windscreen frame and the canopy hoop. D type red/white/blue roundels are carried in the standard six positions and there are red/white/blue flashes on the fin.

The under surfaces of the aircraft are finished in yellow, although the yellow does not extend to the chin intake casting. The 36" wide diagonal black stripes on the wing lower surfaces are centred on the roundels. The under surfaces of the tailplanes are black and those of the elevators are yellow.

A68-152 was another late production CA-18 with unfilled wings.







#### A68-136, CA-18 Mk 23

Received at Number 1 Aircraft Depot in December 1948, the aircraft was flown to Tocumwal for storage where it remained until it was issued to Number 2 Operational Training Unit at Williamtown (NSW) in November 1952. In March 1956 it was transferred to RAAF East Sale as a fighter trainer where it was no doubt used by the Air Armament School until moved to Number 24 Squadron in Adelaide (SA), where it remained in use until mid 1959. It was then disposed of and scrapped.

The aircraft is depicted whilst in service at RAAF Wagga, but the exact date is unknown. The upper surfaces are finished in Aluminium with 36" wide yellow bands on the upper surfaces of the wings. The spinner is red and the anti glare panel is black and extends to the windscreen frame but not the canopy hoop. The yellow fuselage band is not centred on the roundel and is only 27" wide. The serial is black and eight inches high.

The underside is yellow, with 36" wide diagonal stripes centred on the under wing roundels. The tailplanes are painted black on their lower surfaces and those of the elevators are yellow.

This aircraft is another late example with unfilled wings.





Aluminium FS 17178

#### WARNING! SAFETY FIRST!

These parts are moulded in resin. As with any type of plastic, wear a dust mask or other type of protective breathing device. Avoid inhalation of dust particles when cutting or sanding. Use copious amounts of water to trap dust in slurry and capture that waste on a piece of absorbent paper. Dispose of waste correctly. Wash parts and hands thoroughly following cutting or sanding work. The use of disposable gloves is recommended. Work in a well ventilated room and do not consume food or drink while working.

#### **ACKNOWLEDGEMENT**

Red Roo Models gratefully acknowledges the assistance of Dick Hourigan, who undertook the research and design of this accessory and provided the reference drawings.

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## Red Roo Models 1/48 Scale Commonwealth Aircraft Corporation (CAC) CA-18 Mustang Pilot's Seat

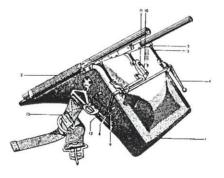
#### Introduction

The CAC-built CA-18 Mustangs were fitted with a moulded plywood seat that attached to the seat support rails, which were bolted to the armour plate, via the support bracket assembly, in the same manner as the NAA-built seat. The seat was fitted with a quick-release harness, attached at three points. The CAC seat was, however, a true 'bucket seat' and had a depression moulded into the pan to accommodate the pilot's parachute pack. This resin accessory pack provides the modeller with a seat of the CAC design and includes a number of cockpit interior details illustrated in the instruction sheet that the modeller may wish to incorporate when modifying the cockpit interior to accept the CAC design seat.

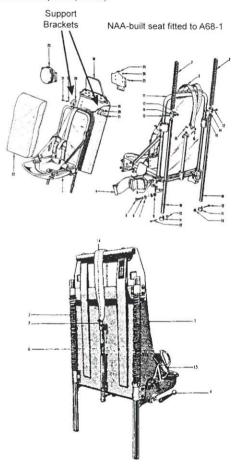
This instruction sheet describes the detailing required for the Tamiya and Hasegawa kits in 1/48 scale. Other kits, such as the Monogram or ICM kits, may also be modified to accept this seat.

#### Fitting the seat - Tamiya

To fit the seat to the Tamiya P-51D/F-51D kit carefully cut the armour plate supports from 10 thou scrap plastic and drill the lightening holes. Set the finished supports aside. Remove the moulded plinth on the forward side of the kit armour plate (part A15). Using a suitably thick piece of scrap plastic, fill the resulting hole and sand flush, front and rear. Fit the armour plate supports to the kit part. Check against the cockpit floor to ensure correct fit. Detail and paint the various cockpit interior parts to your requirements. Fit the modified armour plate to the cockpit floor (part A17). Carefully trim the moulding tab on the bottom of the resin seat to match the level of the support flange between the seat support rails. It is not recommended that you remove this flange because the resulting structure is extremely week and the flange helps to locate the seat at the correct height from the cockpit floor. It is suggested that you paint the flange black to hide it from view when the cockpit is complete.



The NAA-built seat was replaced by a locally designed and made plywood seat, which attached to the armour plate in the same manner as the NAA seat. This drawing shows the attachment points (No. 20).



These two drawings taken from the CAC Manual show the Australian-designed and built moulded plywood seat fitted to CAC-built Mustangs. Of a traditional 'bucket' seat design, the seat had a depression moulded into the pan in order to accommodate the pilot's parachute. The harness was a standard three-point quick-release type.

Moulding limitations prevented incorporation of the two reinforcing strips on the rear of the seat so use small strips cut from 10 thou scrap plastic to simulate them.

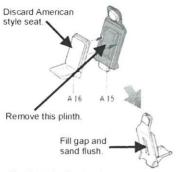
#### Fitting the seat - Hasegawa

To fit the seat to the Hasegawa kit remove the small plinth at the base of the armour plate (part A3), <u>but</u> ensure that you do not remove the locating tab. Drill the lightening holes into the armour plate supports moulded onto the part. You may fabricate replacements if you desire a more 'in-scale' look. Detail and paint the various cockpit interior parts to your requirements. Fit the modified armour plate to the cockpit floor (part A7). Carefully trim the moulding tab on the bottom of the resin seat to match the level of the support flange between the seat support rails. It is not recommended that you remove this flange because the resulting structure is extremely week and the flange helps to locate the seat at the correct height from the cockpit floor. It is suggested that you paint the flange black to hide it from view when the cockpit is complete.

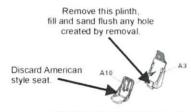
#### Super Detailing - any kit

Before fitting the cockpit interior to the fuselage add the fuselage fuel tank filler and the fuel gauge. Make both from sprue and shape using the drawings in this instruction sheet. Make sure the fuel gauge dial is facing forward. The gauge face was black with white graduations and figures. Add a drop of Kristal Kleer or Simply Glues Windows to the gauge face to replicate the glass. Note that the Hasegawa kit provides both the fuselage fuel tank filler (part B8) and the fuselage fuel tank fuel gauge (part B9).

CAC-built Mustangs had a different radio fit to that in the NAA-built aircraft. These radios and battery were sourced from local manufacturers and consequently had a different layout compared to those provided with the kit. Refer to the scrap views detailing the radio fitment for aircraft A68-1 to A68-80 and A68-81 and subsequent aircraft. Note that the CAC-built Mustangs used only the AN104A radio mast, but the canopy was identical to that used on the NAA-built Mustangs.



Modifying the Tamiya kit armour plate.

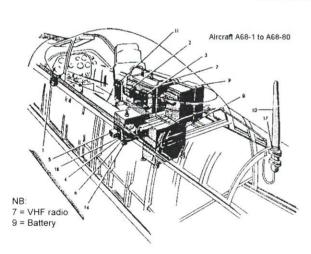


Modifying Hasegawa armour plate.

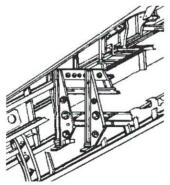
#### COLOUR NOTE:

RAAF K3/322 Cockpit Green - closest match is FS24110. Cockpit interior, including seat was finished in this colour. The fuselage fuel tank was matt black, as were the battery and radios.

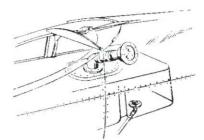
Use kit instructions for colour details of all other areas.



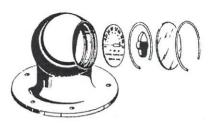
Drawing from the CAC Mustang Manual showing the radio fitment for aircraft A68-1 to A68-80 inclusive.



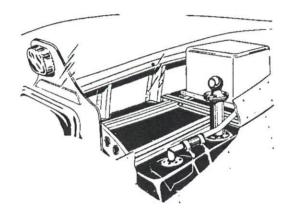
Drawing from the Mustang manual showing the position and arrangement of the armour plate support rails. Although present in the Hasegawa kit these rails are not depicted in the Tamiya kit and will need to be scratch-built.



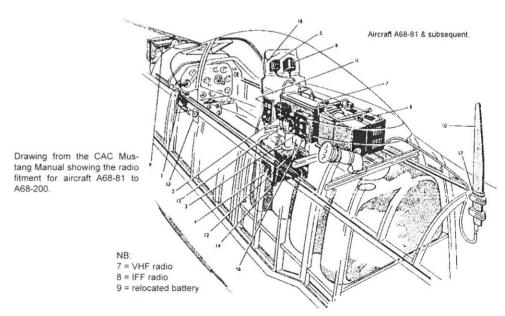
Drawing showing the location and shape of the fuselage fuel tank filler.



Drawing showing theassembly and shape of the fuselage fuel tank fuel gauge. This gauge faced forward so the pilot could read it by glancing over his left shoulder.



Drawing showing position of the fuselage fuel tank fuel gauge, fuel gauge, vent pipe and radio rack.







A68-170 A68-170 A68-124 A68-124 A68-113 A68-113 A68-152 A68-152 A68-136 A68-136

1/48 Scale RAAF TT Mustang