

AVRO LANCASTER BI/BIII



1/48 SCALE MASTERPIECE SERIES NO.9



Story by Chris Ellis

Photo of Completed Model.



Many aircraft won fame in World War 2, but only a few of these will be re-

membered as truly "great" aircraft long after most others are forgotten. The Lancaster Bomber achieved immortality for its outstanding operational record with the Royal Air Force and other Allied Air Forces working under RAF command during the war years. It spear-headed RAF Bomber Command's huge bombing offensive against Germany and was the principal RAF heavy bomber in the last half of World War 2; it was specially adapted for hazardous raids against key targets such as the Ruhr Dams; it saw much service both during and after the war as a maritime reconnaissance aircraft; and in post-war years it was developed as a "stop-gap" civil aircraft and remained in RAF service well into the 1950s, and with other air forces even longer. And even in the 1970s in Britain, a preserved Lancaster, in flying condition, can usually steal the honours from modern aircraft at an air display as it roars low over the airfield, its four Merlin engines throbbing out a menacing but re-assuring note which, one heard is never forgotten. Indeed it is a remarkable fact that the sight or sound of a preserved Lancaster, a full generation after it flew in combat against the enemy, can instill a great feeling of pride and admiration for the great wartime achievements of the Royal Air Force, even among enthusiasts who are too young to remember the Lancaster in its service days.

Over 7,000 Lancasters of all types were built, and the "Lanc"—as it was popularly known—was truly an example of the "right aircraft at the right time", which was the key to its great success in service. The story of the Lancaster goes back to the mid-1930s, however, when the British Air Ministry began a modest expansion plan to ensure that the RAF had 500 bombers by 1935. By the end of 1935, however, the Italian conquest of Abyssinia and the re-arming of Nazi Germany under Hitler's leadership, led to the expansion target being doubled to 1,000 aircraft, with over 800 being required by 1937. In May, 1936, formal specifications were put out by the Air Ministry for both twin-engine and four-engine types, and heavy bomb loads (by the standards of the time) were called for, of between 8,000 and 12,000 lbs, plus bomb bays big enough to carry torpedos. Earlier specifications had already resulted in the development of simpler twin-engined types, the Wellington, Whitley

and Hampden, and these were destined to be the same bombers which formed the main part of the RAF's striking strength in the 1939–1941 period. However, the 1936 specifications led to the development of the types which would ultimately succeed these earlier monoplane bombers, and of these the Stirling (built by Short Bros.) was the first four-engine bomber in RAF service in 1940. The Handley-Page Halifax followed it into service at the end of 1940 and equipped Bomber Command until 1945 with great success, even though it was greatly eclipsed by the Lancaster in both number of sorties flown and weight of bombs dropped on the enemy. The Stirling had a more chequered career, and was relegated to secondary roles once the Lancaster became available in large numbers.

Prior to the development of the Halifax, Handley-Page had proposed a version with twin-engines (the HP 56) which was subsequently dropped in favour of the four-engined Halifax, and A.V.Roe Ltd. proposed a design known as the Avro 679. This was a large, twin-engined machine powered by Rolls-Royce Vulture engines. The Vulture was a somewhat complex engine, essentially two V-12 Kestrel engines on a common crank-shaft, one above the other, to give a X-24 cylinder layout. The original Kestrel engine from which the Vulture was evolved was well proven, having powered the Hawker fighters and other types in the early 1930s. As the Vulture power units were each "twins", in effect the Avro 679 was to all intents and purposes four-engined, even though it had a twin-engine layout. A wooden mock-up of the

Avro 679 was built and some 200 machines were ordered in 1938 before a prototype had flown. The name Manchester was later given to the new aircraft, and the unarmed prototype made its first flight in July, 1939.

While the Avro Manchester was structurally a sound aircraft, it was an almost complete failure in terms of suitability for service. Concentration on twin-engined types, rather than a four-engined type from the start, was influenced by opposition in some quarters to large four-engined bombers, due to the expense that would be incurred in extending runways and airfields to enable them to operate. Defence budgets were extremely tight, even in the late 1930s, when re-arming was under way. Some largely abortive experiments with catapult launching were put in hand to help overcome this problem while work proceeded with the Manchester. The weakness of the design was in the Vulture engines, which had been fairly hastily developed and ordered without any really satisfactory trials programme, due to the urgent need for new bombers. These engines failed to give their intended power output, and this in turn made the relatively heavy aircraft unstable. The wings, fuselage and tail of the Manchester were very like those which became familiar on the Lancaster. However, the Manchester had its wing span extended by ten feet and an additional fin added on the fuselage rear in an attempt to improve stability. More than a year was taken up in trying to improve the design problems, and the war had been under way for over a year before the first Manchester was delivered



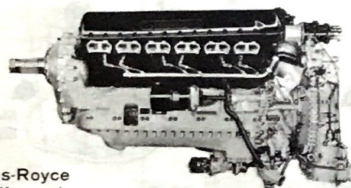
to the RAF at the end of October, 1940.

No. 207 Squadron took the early aircraft, but they, in turn, were dogged by technical troubles, almost all caused by the defects of the engines.

The first Manchester operational sortie took place against Brest dockyard in February, 1941, but overall the type had a limited career due to frequent engine failures which caused aircraft to be suspended from operations for long periods while attempts were made to remedy the problems. Nonetheless there were many successful sorties flown by determined crews, and one Pilot, Flight Liet. Manser, won a posthumous Victoria Cross for a brave attack on Mannheim in the face of heavy AA fire. Manser attempted to fly his badly damaged Manchester back to England on one engine and sacrificed his own life to enable his crew to parachute to safety before the machine crashed.

By June, 1942, Manchesters were withdrawn from operational sorties, and after a short time in operational training roles, were withdrawn from service altogether, to be wholly replaced by four-engined types which were by then in large scale service.

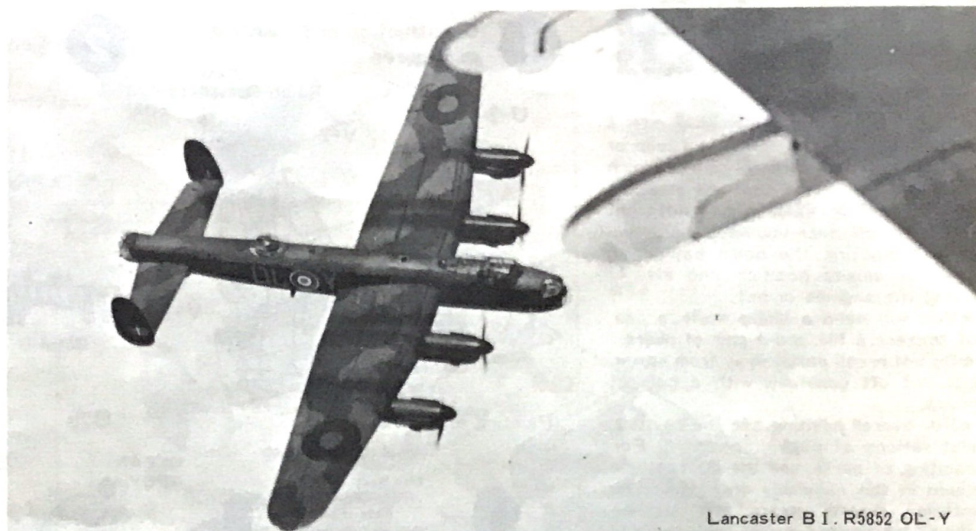
Despite its ignoble service career, the Manchester was the aircraft which made the great Lancaster possible. The Manchester airframe was extremely rugged and sound, and when it was realised that the Vulture engine troubles were unlikely to be overcome, the idea was taken up of modifying the basic airframe to take four Rolls-Royce Merlin engines. The Merlin was already proven; it powered the Spitfire and Hurricane Fighters which had been built in large numbers, and the four-engined layout had been proved a practical proposition in the Handley-Page Halifax, which was already in production at the end of 1940. Thus a Manchester airframe was adapted (Serial BT308) from the production line and completed with four Merlin engines. It still retained the central tailfin and was, in fact, originally known as the Avro Manchester Mk III. BT308 flew in January, 1941 and proved successful from the start, so successful that Manchester production was ordered to be converted to the four-engined configuration from the 200th machine onward. The changes necessary to make the Manchester into the Lancaster were relatively few, mainly relating to the wing and engine installation. The fuselage was hardly altered at all, and the 33 ft. span twin-tail was like that of the



Rolls-Royce
Merlin engine

original Manchester design. The early Lancasters had actually been laid down as Manchesters and were converted on the production line.

All this accounted for the speed with which the Avro Lancaster was got into production, and almost immediately thereafter, into RAF service. Conceived almost as an afterthought, the Avro Lancaster proved to be the best of all the bombers serving with the Royal Air Force in World War 2. It was docile to fly, took terrific punishment, both from the stresses of flying and from enemy aircraft, and it was easy to maintain and very reliable mechanically. Above all, it had inherited a capacious and uncluttered bomb bay, which not only allowed it to carry 4,000 lb. bombs (the largest in use in 1942) but subsequently enabled it to carry massive bombs up to 22,000 lbs in weight as developed later on in World War 2. By contrast the Stirling and Halifax, being developed earlier, had compartmented bomb bays, which restricted the size of individual bombs which could be carried. Aside from engine changes and equipment changes, The Lancaster was virtually unaltered in basic design throughout its entire service life, a fairly rare thing with military aircraft, which points to the soundness of the Manchester/Lancaster airframe design, and is in itself a great tribute to the late Roy Chadwick, who headed Avro's design team. Sir Roy Dobson, head of A.V.Roe Ltd., was certainly confident that his firm had produced a winning design. Watching the prototype take off on its first flight he is said to have turned to Chadwick and said "Oh! Boy, Oh!



Lancaster B I. R5852 OL-Y

Boy. What an aeroplane! What a piece of aeroplane!"

In September, 1941, the Lancaster prototype was sent to No. 44 (Rhodesian) Squadron at Waddington, to familiarise crews in the type, and at Christmas, 1941 the first production aircraft arrived to join the Squadron. Over 1,000 Lancasters were originally ordered in 1941 but this was subsequently increased as the war went on, until by 1946, when the last was delivered, some 7,377 had been built, 430 of these by Victory Aircraft, Canada. Avro, in Great Britain, became the head firm of a Lancaster production group which included Avro themselves (with two factories), Metropolitan-Vickers, (Manchester,) Vickers-Armstrong, (Chester and Birmingham), Austin Motor Co. (Birmingham,) and Armstrong-Whitworth, (Coventry) plus many small companies through the land engaged in component work.

When the Lancaster entered RAF service, Great Britain stood alone in facing German-occupied Europe, and prior to an invasion of continental Europe by the Allied Armies (which could not take place until sufficient forces had been built up), the only way to carry the war to the enemy heartlands was by way of a massive bomber offensive. It was the Lancaster bomber which spear-headed this offensive on an increasingly relentless scale.

THOUSAND BOMBER RAIDS

In March, 1942 Lancasters of No. 44 Squadron made their first offensive sortie, mine-dropping in the Heligoland Bight, and the first bombing raid by Lancasters was made on Essen a few days later. The RAF bombing offensive was largely orientated to night attacks, though some daylight raids were undertaken. Through 1942, Manchester Squadrons converted to Lancaster Squadrons, and by March 1943 there were 18 Lancaster Squadrons with Bomber Command. By 1945 the Lancaster Force had built up to around 50 Squadrons. Most of these were Mk. I (or the externally similar Mk III, which had American-built Packard Merlin engines), and these represented the major production type. Of the 7,377 Lancasters built, 3,425 were Mk I and 3,039 were Mk III. Some 608,612 tons of bombs were dropped by Lancasters in 1945, mostly on Germany or German-held territory, and 156,000 sorties were flown.

These impressive statistics include the Lancaster's participation in the famous "Thousand bomber raids", huge efforts which started in mid-1942 and involved bringing in all sorts of bomber aircraft (some from Coastal Command) to reach the "magic" 1,000 total. In fact, Thousand bomber raids were not maintained at this level for long, and to a great extent the increasing availability of the ever-reliable Lancaster made it possible to put up very effective raids over the Ruhr and Berlin with much smaller bomber forces, well below the 1,000 total. As the war progressed improved techniques and equipment made night bombing more and more deadly.

In August, 1942, No. 8 Group, The Pathfinder Force, was formed, with elite squadrons to spearhead attacks. Equipped with the "Gee" navigational aid, the Pathfinders sought out the target area and marked it with flares and incendiaries for aircraft of the main bombing force equipped with high explosive bombs. A Lancaster Squadron (No. 83) was included in the Pathfinder Force when it first formed. A notable addition to all RAF bombers, the Lancaster included, was H2S, carried in a bulbous radome, which gave a radar picture of the ground below.

At the end of the war, Lancasters were used to carry released prisoners-of-war home from Germany, and in the post-war years many were converted for maritime patrol work with Coastal Command. The Argentine, Egypt, Sweden and France took deliveries of Lancasters after the war, and the type was also used for experimental work in Britain, while some were converted for civil use. The last RAF Lancasters went out of service in 1954 but those of the Argentine were in use until 1963-64.

Sir Arthur Harris, C-in-C of RAF Bomber Command, 1942-1945, was in no doubt about the Lancaster's unique contribution to Britain's war effort. In his letter to the Lancaster production group at the end of the war he said "As the user of the Lancaster during the last 3½ years of bitter, unrelenting warfare, I would say this to those who placed that shining sword in our hands; without your genius and your effort we would not have prevailed—the Lancaster was the greatest single factor in winning the war".



Lancaster B I. VN/N R5689. 50 Squadron, Summer 1942.

LANCASTER

(Read before You start Assembly)

★This kit may be assembled into a model plane in either flying attitude or on the ground as parked. Decide which to build. Also, some sections may be constructed or fixed in two different ways. For instance, you have the option of constructing the bomb bay in an open or closed position and also of fixing the engines or not.

★You will need a sharp knife, a pair of tweezers, a file, and a pair of pliers.
★Do not break parts away from sprue, but cut off carefully with a pair of pliers.

★For overall painting, see the painting illustrations at page and For painting of parts, see the instructions given in the assembly drawings. The interior, landing gears and engines should be painted during the assembly work. Transparent parts should be either fixed after the overall painting or masked during it.

1 Construction and Painting of Figures

The kit contains three figures in flying suits and one in a standing posture. They should be completely painted before being put in the model plane. For painting of the Figure in a standing posture, see the colour picture printed on the box side.

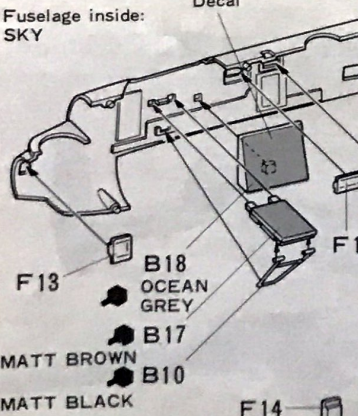
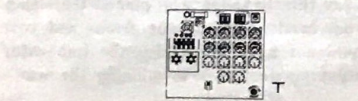
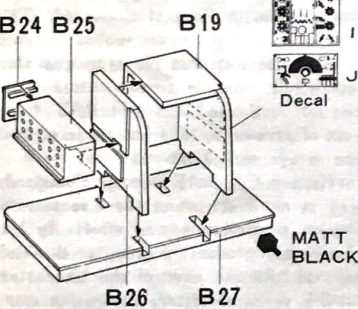
3 Construction of Machine Gun Turrets

★Fix each Figure in position before Step 3. As the inside is narrow, be careful in installing them. If you fix the bomb aimer (Figure S), do not fix Magazines B49 and B50.

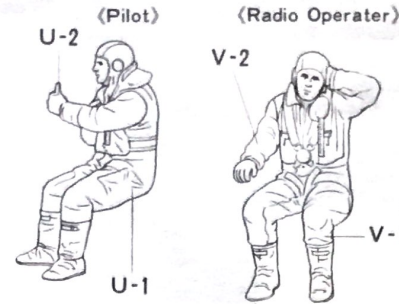
4 Fixing of Fuselage Interior Parts

Small parts are to be fixed to the inside of fuselage. Be sure to check their number and fix them in place.

(Construction of Radio)



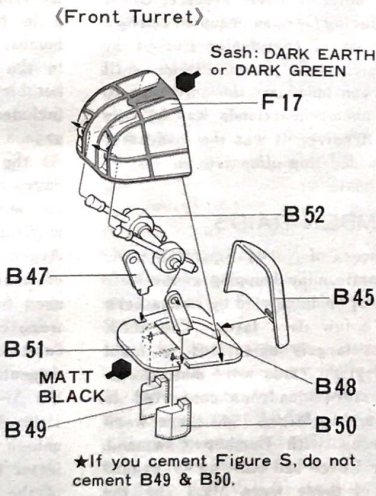
1 Construction and Painting of Figures



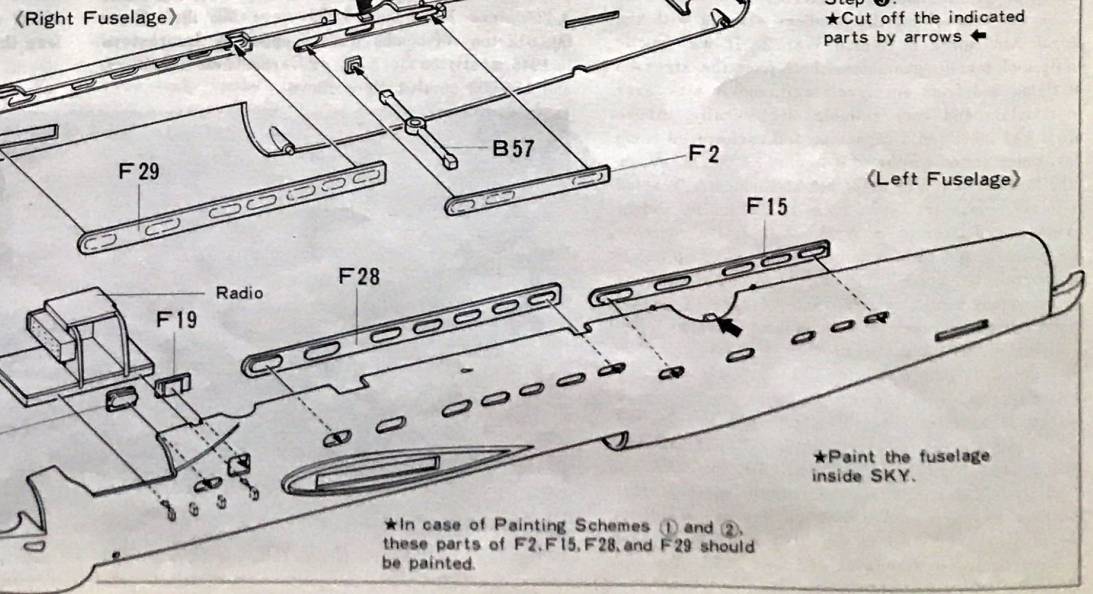
(Painting of Figures)



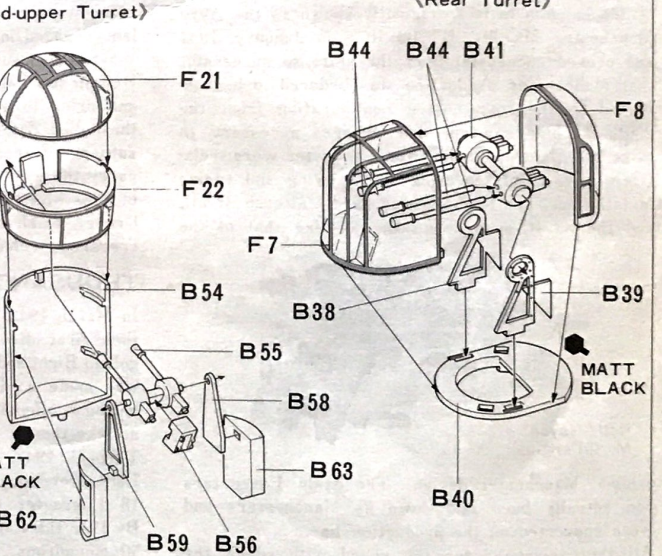
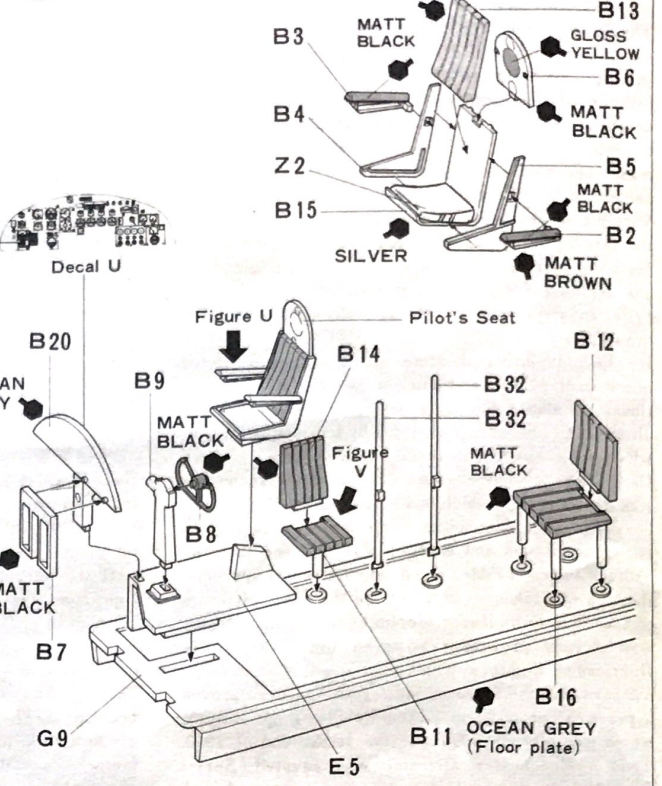
3 Construction of Machine Gun Turrets



4 Fixing of Fuselage Interior Parts



2 Construction of Cockpit



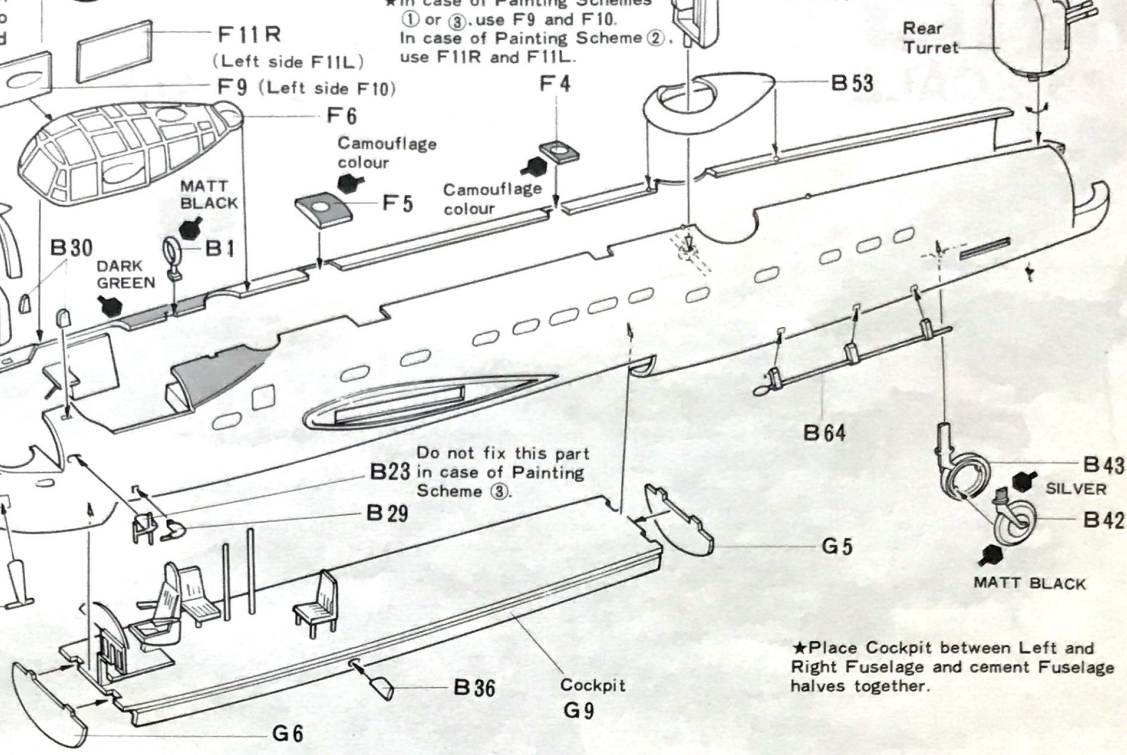
★Right and Left Fuselage should be cemented at Step 4.
★Cut off the indicated parts by arrows →

★In case of Painting Schemes 1 and 2, these parts of F2, F15, F28, and F29 should be painted.

5 (Construction of Fuselage)

Cement Right Fuselage and Left Fuselage together with Cockpit between them. Cement should be applied to both of large surfaces to be joined together.

5 Construction of Fuselage



★In case of Painting Schemes ① or ③, use F9 and F10. In case of Painting Scheme ②, use F11R and F11L.

★Place Cockpit between Left and Right Fuselage and cement Fuselage halves together.

Figure V

Figure U

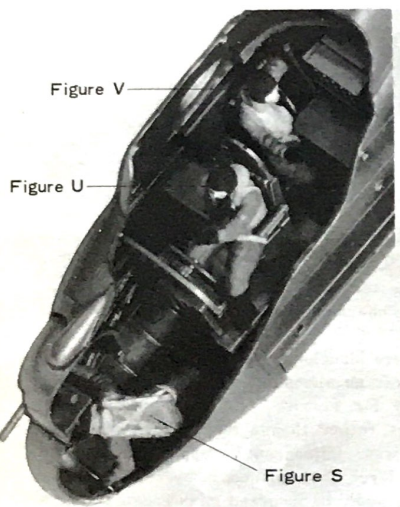
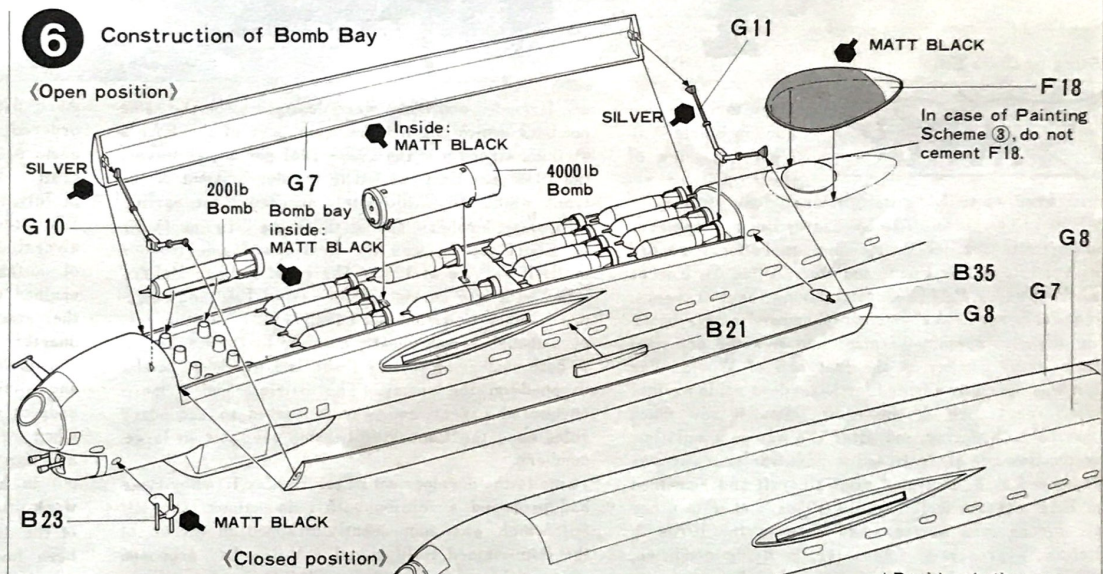


Figure S

6 Construction of Bomb Bay

(Open position)



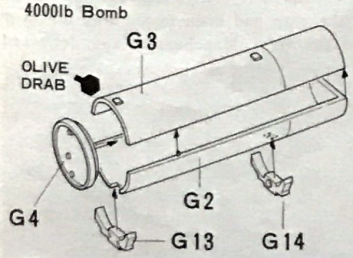
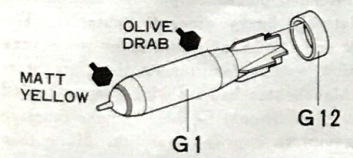
★Decide whether you are to build in open or closed position. If you choose to build in closed position do not fit Bombs. ★In case of Painting Scheme ③, do not fix B21.

6 (Construction of Bomb Bay)

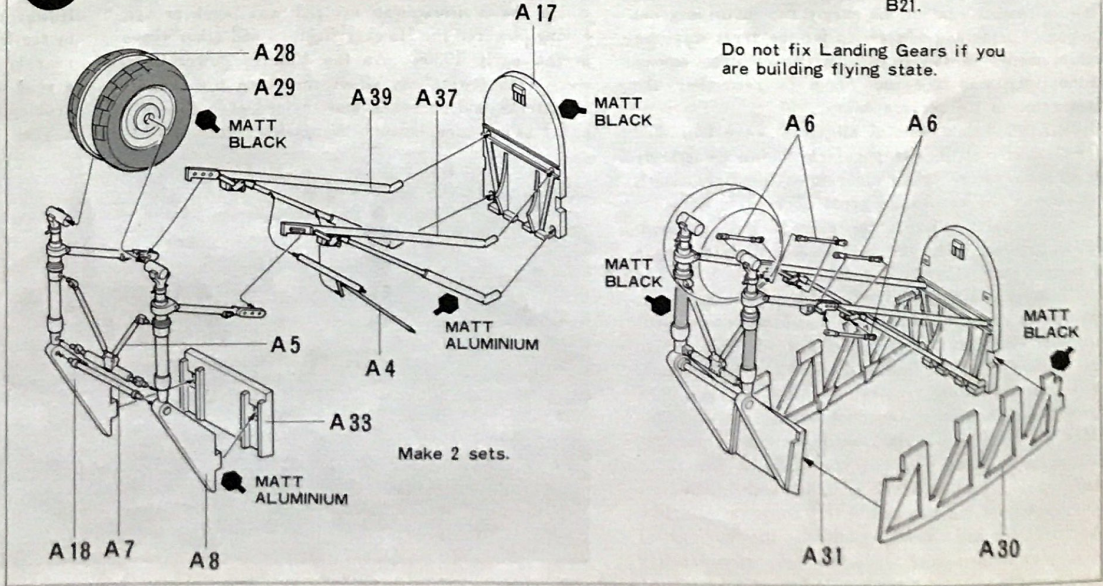
Bomb Bay may be in an open or closed position. Choose either of them. In case of the closed state, no Bombs should be put in.

(Construction of Bombs)

200lb Bomb
Make 18 sets.



7 Construction of Landing Gears



7 (Construction of Landing Gears)

Two Landing Gears, Right and Left, are to be constructed. Since their parts are thin and easy to break, they should be assembled very carefully. The Landing Gears are important components which support the plane. Make sure they are firmly fixed by using sufficient cement. Main wheels are intended to rotate. A8 and A18 should just be put in.

8 Construction of Main Wings

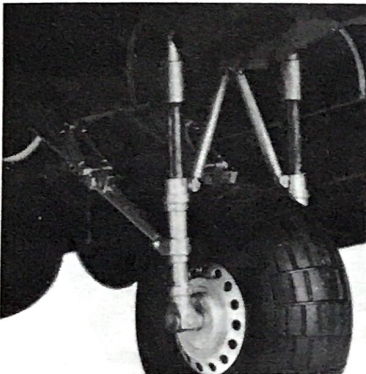
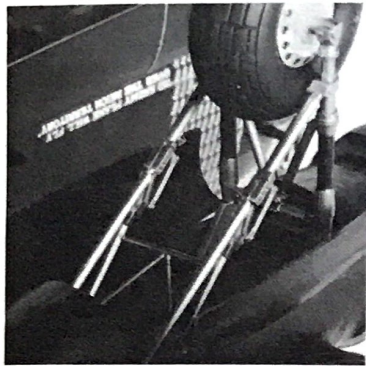
These are large surfaces which must be cemented together. Firmly cement wing parts and hold them together for some time with adhesive tape or the like.

9 Fixing of Landing Gears

Properly cement Landing Gears to already constructed Main Wings. If your model plane is to be in a flying attitude, Landing Gears should not be fixed.

10 Fixing of Engine Cowlings

Fix each Engine Cowling with the Landing Gear contained in it.

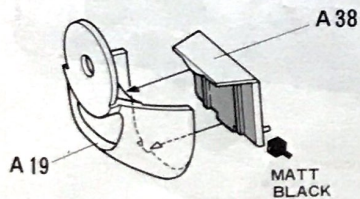


11 Construction of Engines

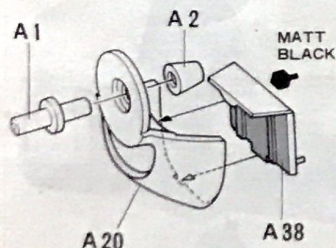
The kit contains only two Engines. They may be fixed to either Right or Left Wing.

Construction of Radiators

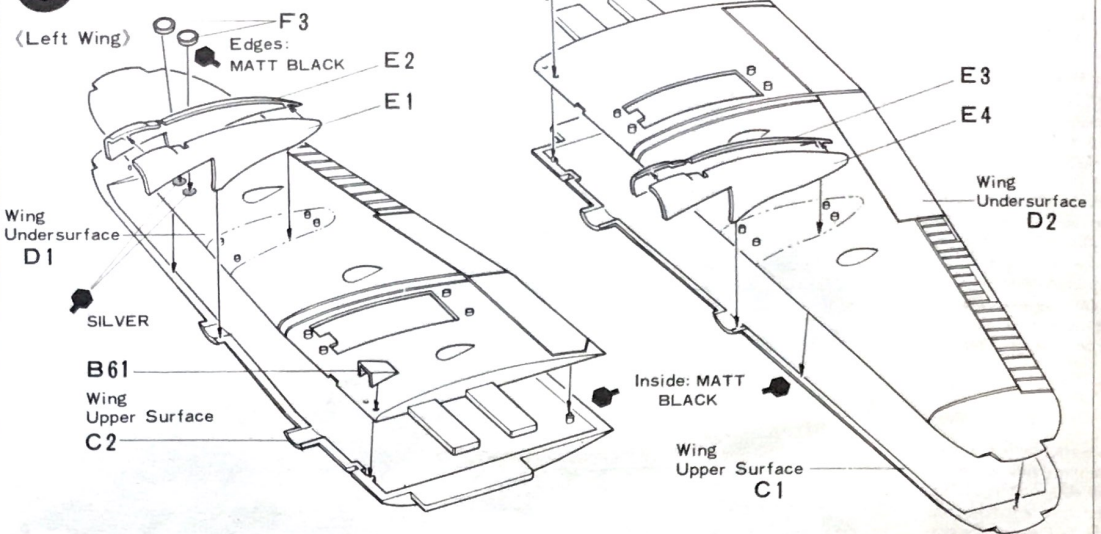
Radiator A
(When you fix Engines.)



Radiator B
(When you do not fix Engines.)

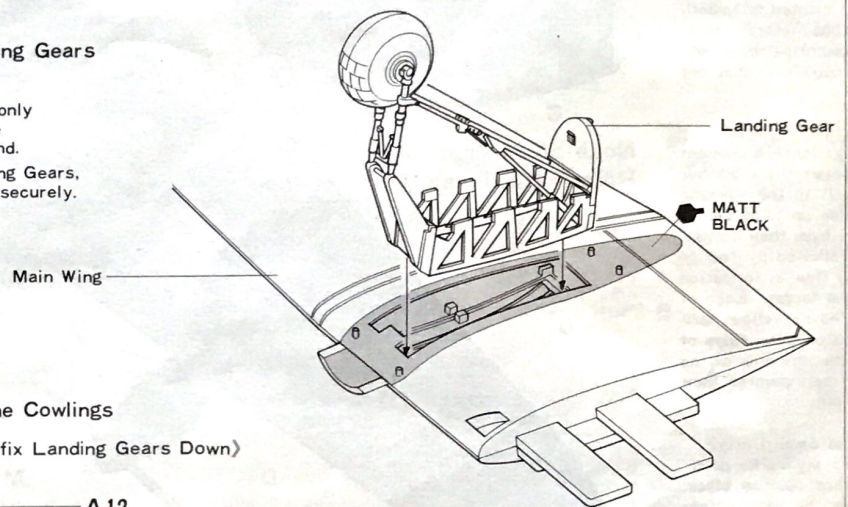


8 Construction of Main Wings



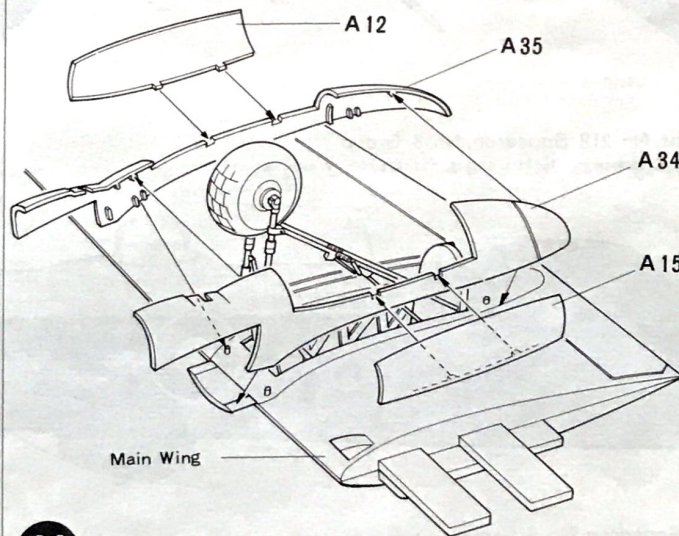
9 Fixing of Landing Gears

- ★ Fix Landing Gears only when aircraft is to be displayed on the ground.
- ★ When you fix Landing Gears, cement them to Wing securely.

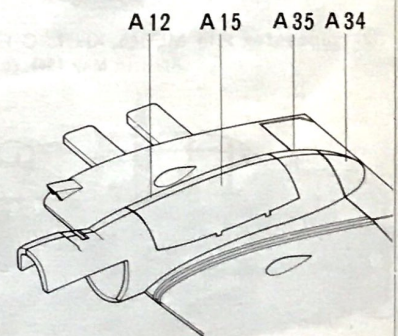


10 Fixing of Engine Cowlings

(When you fix Landing Gears Down)

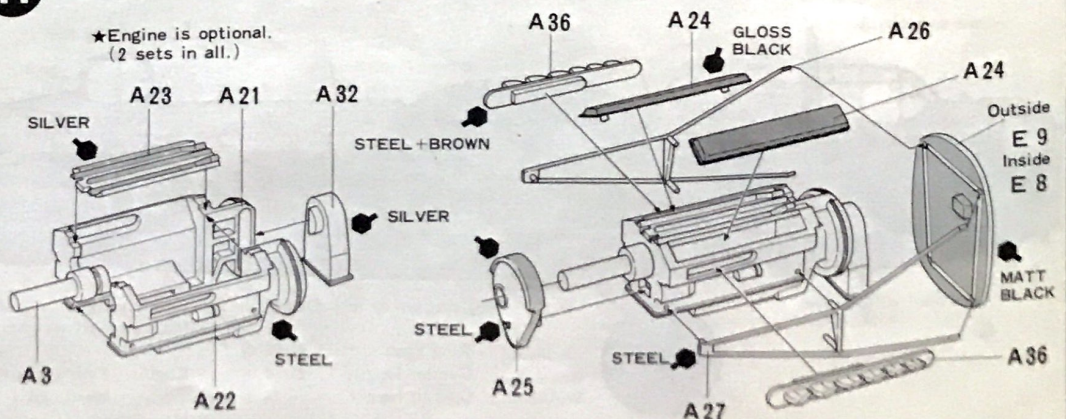


(When you do not fix Landing Gears)



11 Construction of Engines

★ Engine is optional.
(2 sets in all.)



12 (Fixing of Engines)

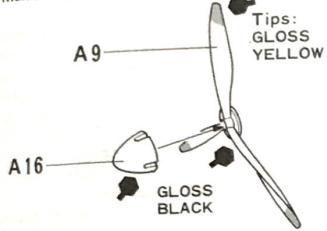
If you fix Engines, use Radiator A. If you don't, use Radiator B.

13 (Construction of Tail Fins)

Be careful not to mistake the right for the left.

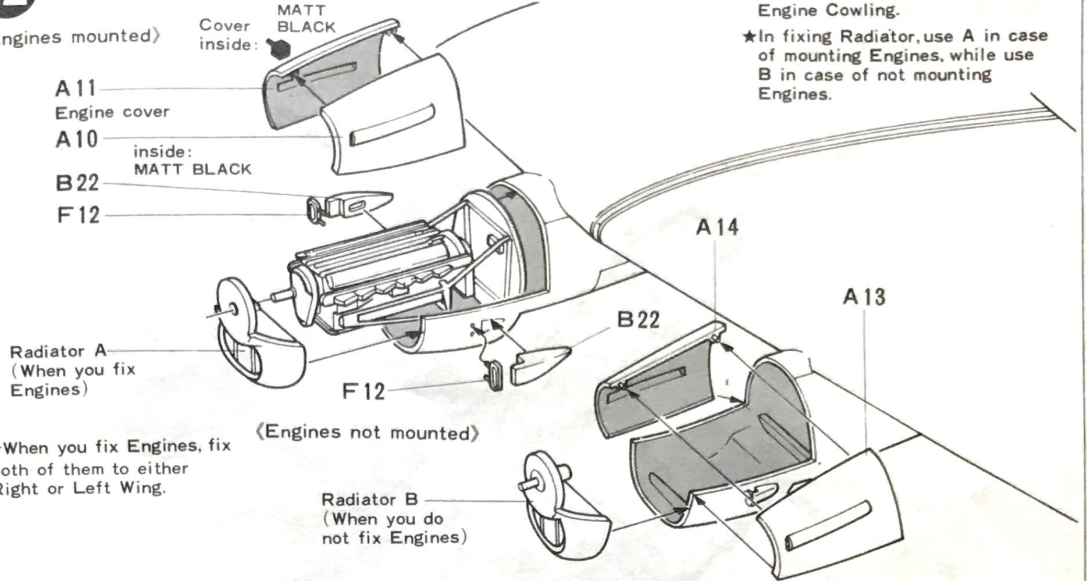
(Construction of Propellers)

Make 4 sets.



12 Fixing of Engines

(Engines mounted)



★Fix B22 and F12 to every Engine Cowling.

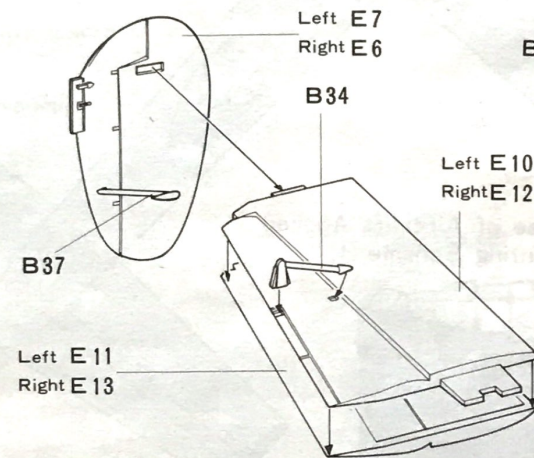
★In fixing Radiator, use A in case of mounting Engines, while use B in case of not mounting Engines.

★When you fix Engines, fix both of them to either Right or Left Wing.

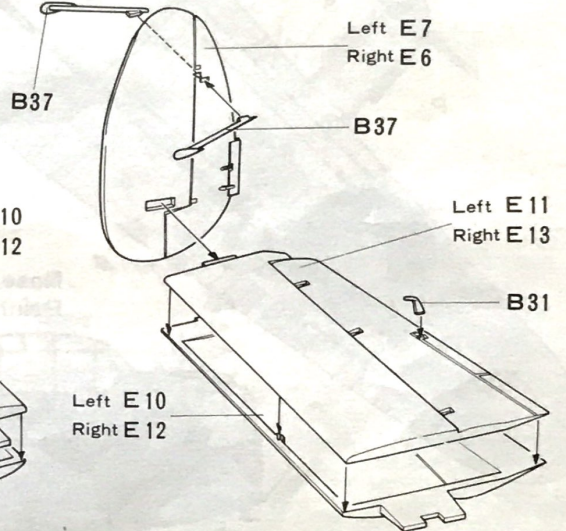
(Engines not mounted)

13 Construction of Tail Unit

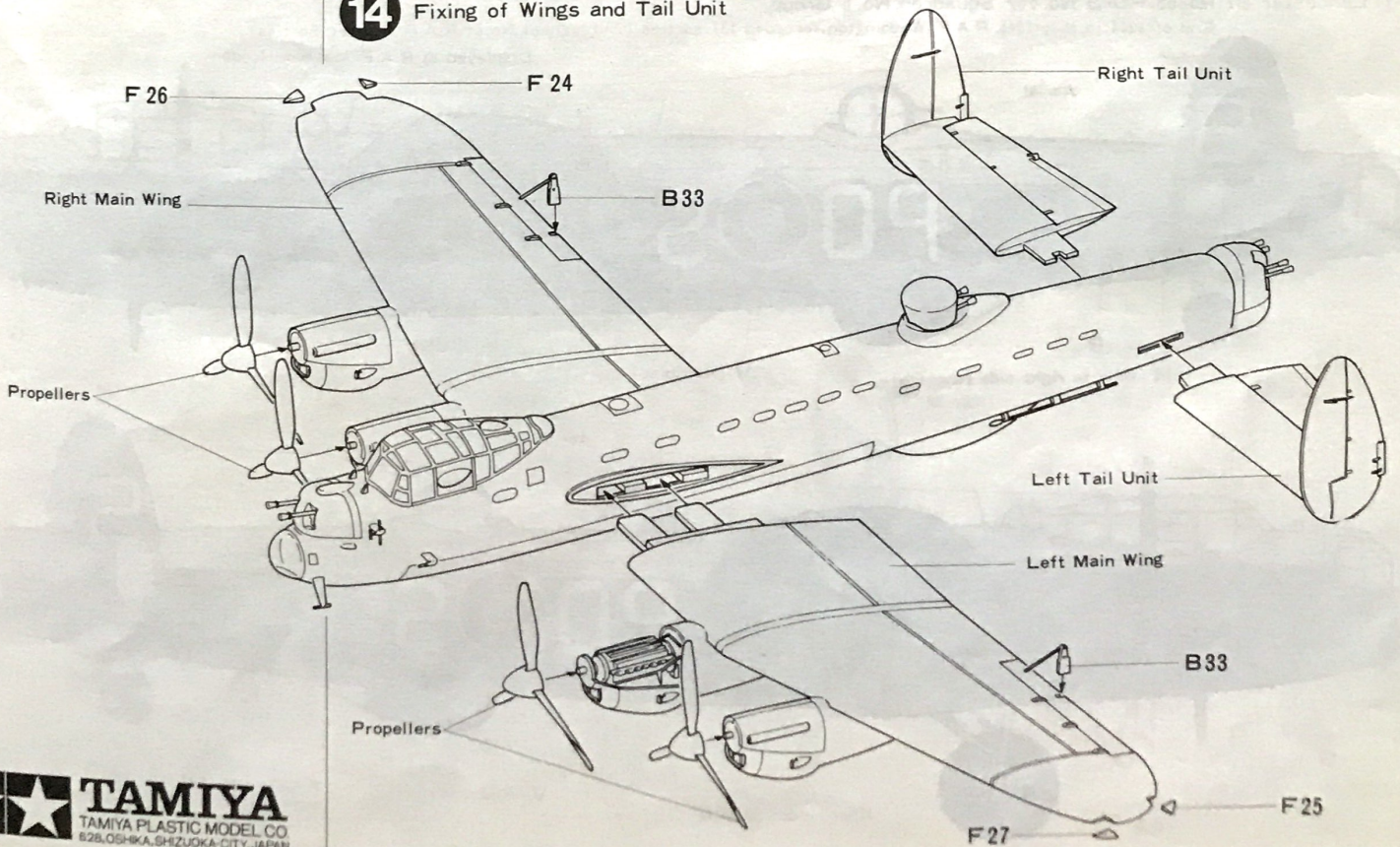
(Construction of Underside)



(Construction of Topside)

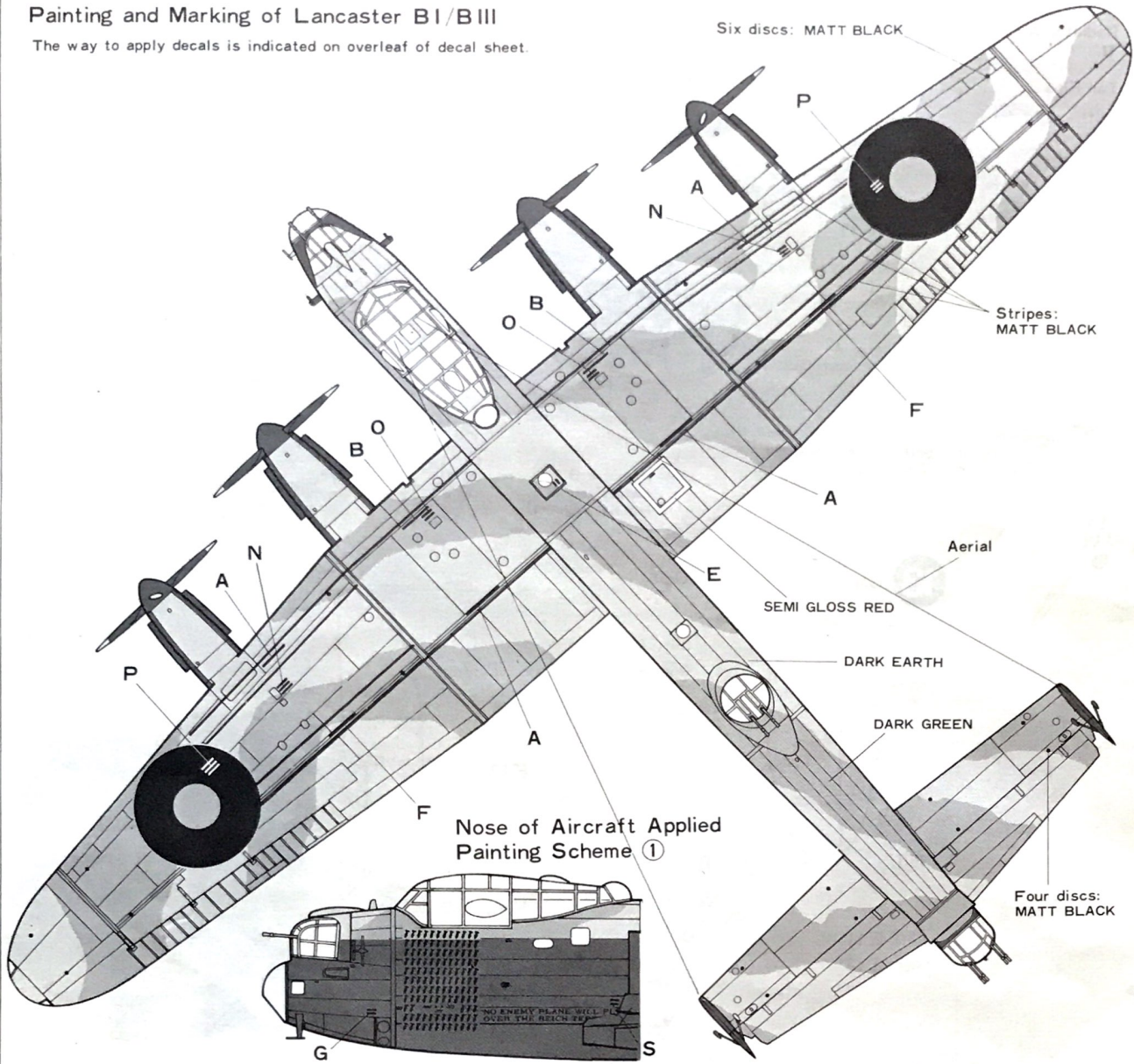


14 Fixing of Wings and Tail Unit



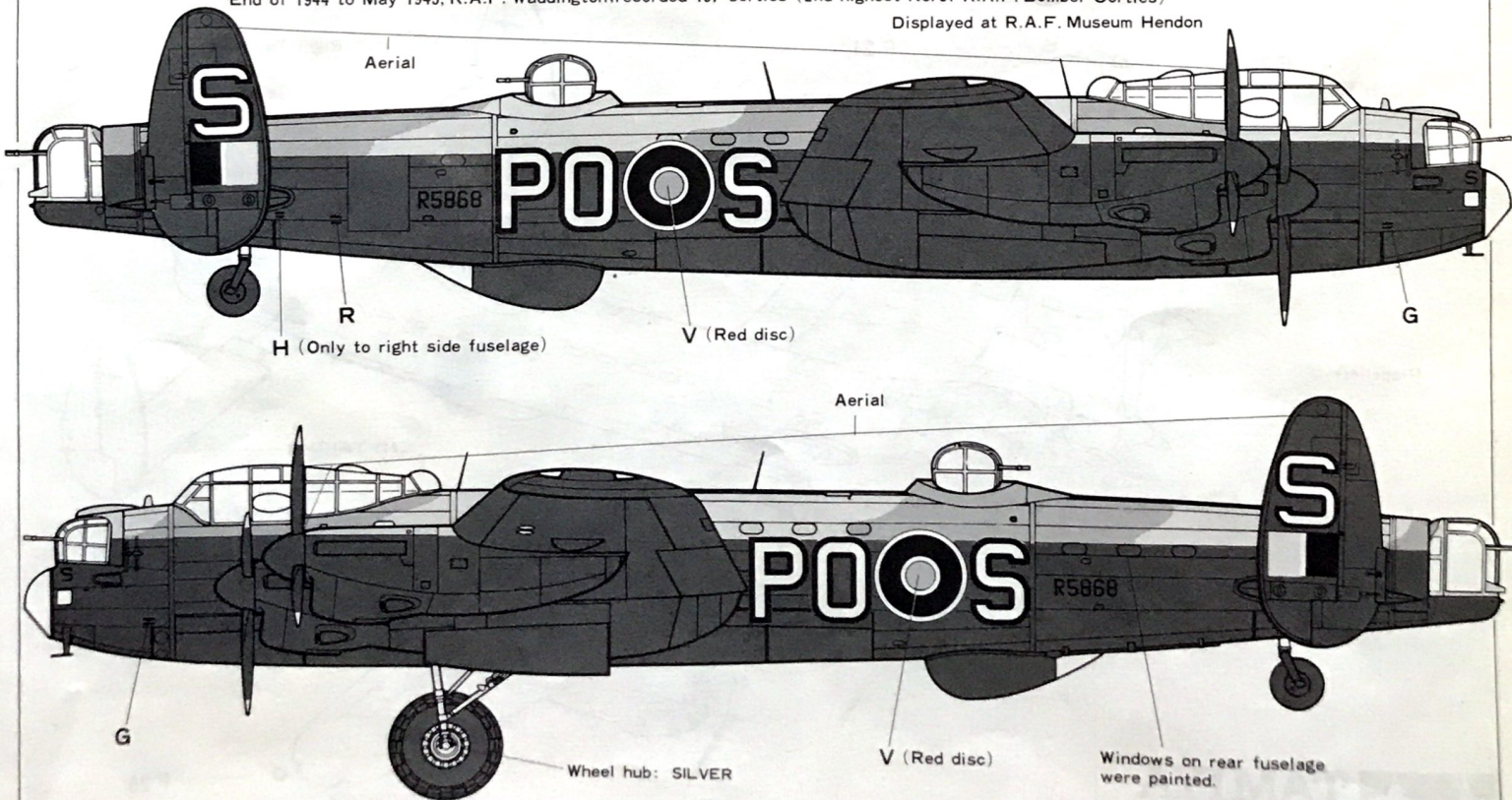
Painting and Marking of Lancaster BI/BIII

The way to apply decals is indicated on overleaf of decal sheet.



Nose of Aircraft Applied Painting Scheme ①

① Lancaster BI R5868, PO/S No. 467 Squadron, No. 5 Group
 End of 1944 to May 1945, R.A.F. Waddington, recorded 137 sorties (2nd highest No. of R.A.F. Bomber Sorties)
 Displayed at R.A.F. Museum Hendon



(About Painting)

It is recommended to use a brush 5-6 mm wide for painting large areas and a brush 1-2 mm wide for painting small parts. When painting where paint is to be applied by means of a device such as a stencil to which you do not intend to return, the work should be covered during the work. If the model plane is standing on a surface, the paint will not spread well. After painting, remove the paint with tepid water, a cleaning agent and rinse. Then, completely remove the paint from the plane and start painting again. Be sure to use paint designed for models. Adjust the thickness of the paint. After painting, remove the paint with a brush, washing them in solvent.

(Painting of Lancaster BI/BIII)

(Basic Painting)
 From July, 1942 onward, bombers were painted in different ways according to their intended use in night bombing. Lancaster was painted as follows: the fuselage, main wings and other parts and the tail fin were painted in night (half-glossy) black. The serial number were written on the sides of the fuselage.

(Special Painting and Markings)
 The "G-H" equipment was used for making radio communication with two ground bases to guide their bombing flights. A plane equipped with this equipment and three other leader planes were used to guide their bombing flights. These leader planes were painted with zonal belts 31 cm wide. The right and left tail fin were painted with their own plane mark, sortie mark.

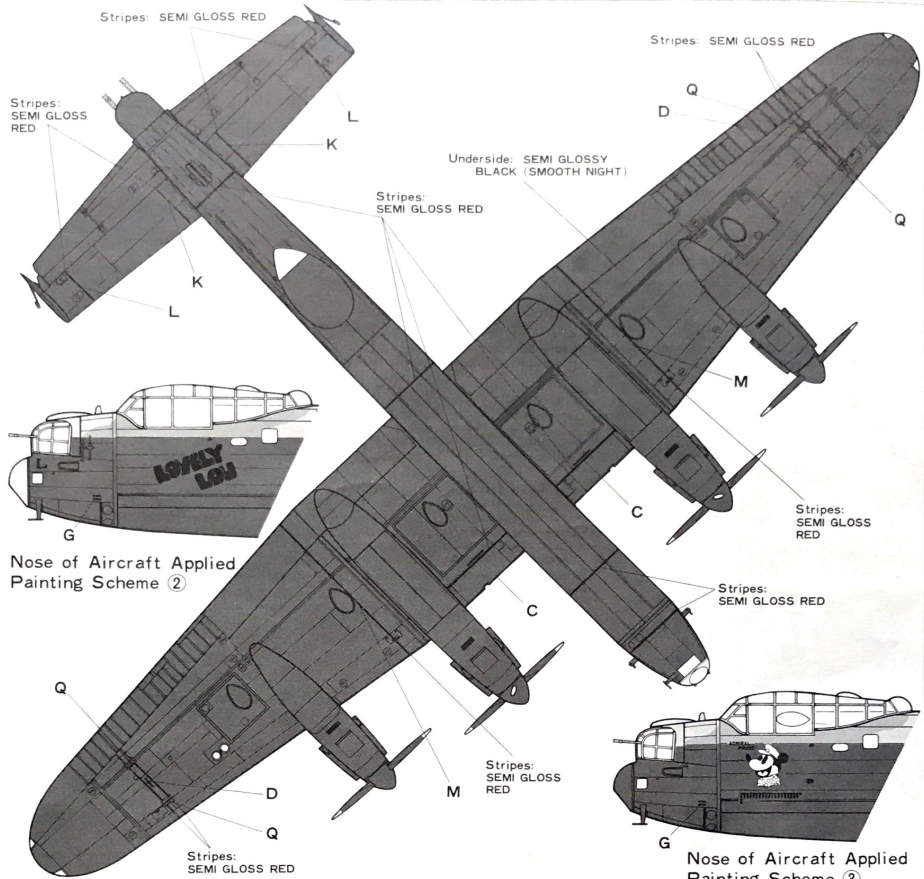
(Painting of Fuselage Interior)
 The fuselage interior was painted in black. The bay interior and wheel wells were painted in black. For painting of other parts, refer to the assembly drawing.

a flat paint brush 10-20
surfaces and a slender
is and surfaces. In spray
ayed on the model plane
as spray gun, those parts
to apply paint should be
with masking tape or the
essential that you do the
ea. away from naked flame.
ned with oil, sweat, etc...
Remove such marks from
water containing neutral
the cleaning agent away
moisture from the model
a place free from dust.
igned for use with plastic
ss of paint with solvent
nt from the brushes by

members were painted in two
to whether they were in
ing or day bombing. The
a night bomber. The top
s and tail planes were
en and dark earth. The
were painted in smooth
The "code letter" repre-
the bomber belonged and
tten usually in dull red
e.

king)
navigational equipment
tion between the bomber
guide it to the bombing
id guide up to 80 planes
110 m from their target.
was followed by two or
ad they flew in formation
t to the target. Each of
identified by yellow hori-
pointed on both sides of
On the left side of the
crew freely painted their
k and picture.

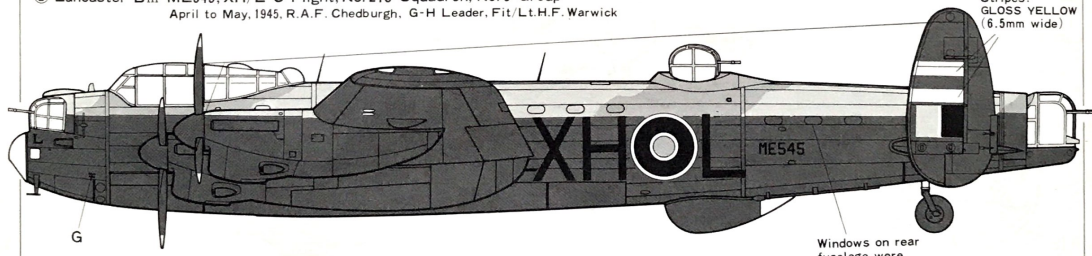
rior and Small Parts)
painted sky. The bomb
ills were painted black.
ts, see the instructions
ings.



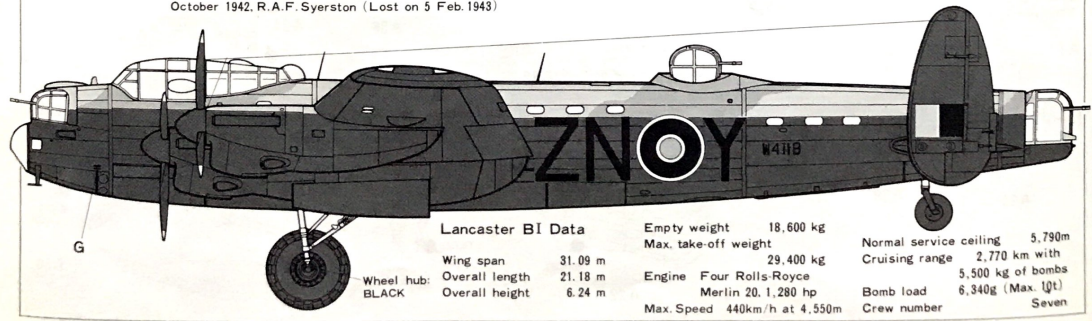
Nose of Aircraft Applied Painting Scheme (2)

Nose of Aircraft Applied Painting Scheme (3)

② Lancaster BIII ME545, XH/L C Flight, No. 218 Squadron, No. 3 Group
April to May, 1945, R.A.F. Chedburgh, G-H Leader, Fit/Lt.H.F. Warwick



③ Lancaster BI W4118, ZN/Y No. 106 Squadron, No. 5 Group
October 1942, R.A.F. Syerston (Lost on 5 Feb. 1943)



Lancaster BI Data

Wing span	31.09 m
Overall length	21.18 m
Overall height	6.24 m
Wheel hub:	BLACK

Empty weight	18,600 kg
Max. take-off weight	29,400 kg
Engine	Four Rolls Royce
	Merlin 20, 1,280 hp
Max. Speed	440km/h at 4,550m

Normal service ceiling	5,790m
Cruising range	2,770 km with
	5,500 kg of bombs
Bomb load	6,340g (Max. 10t)
Crew number	Seven

AVRO LANCASTER BI/BIII

TAMIYA

1/48 アプロランカスターBI/BIII



ランカスターB.I R5868 PO/S 第5爆撃グループ第467飛行隊所属

1944年末～1945年5月 ウェディングトン基地
137回出撃記録（英空軍爆撃機中第2位）

R.A.F. Bomber Command No.5Group No.467 Squadron

