AIRCRAFT MANUFACTURING ACTIVITY IN AUSTRALIA

DE HAVILLAND AIRCRAFT PTY. LTD.
P.O. BOX 30, BANKSTOWN, N.S.W.

MOTH MINOR (D.H.94)

The Moth Minor was a small wooden two seater low winged aircraft, tandem seating. It was primarily designed for Aero Club training and private ownership. The prototype flew in England in mid 1937 and a successful future was envisaged for this aircraft. It was powered by a Gipsy Minor, 4 cylinder air cooled 90 h.p. engine.

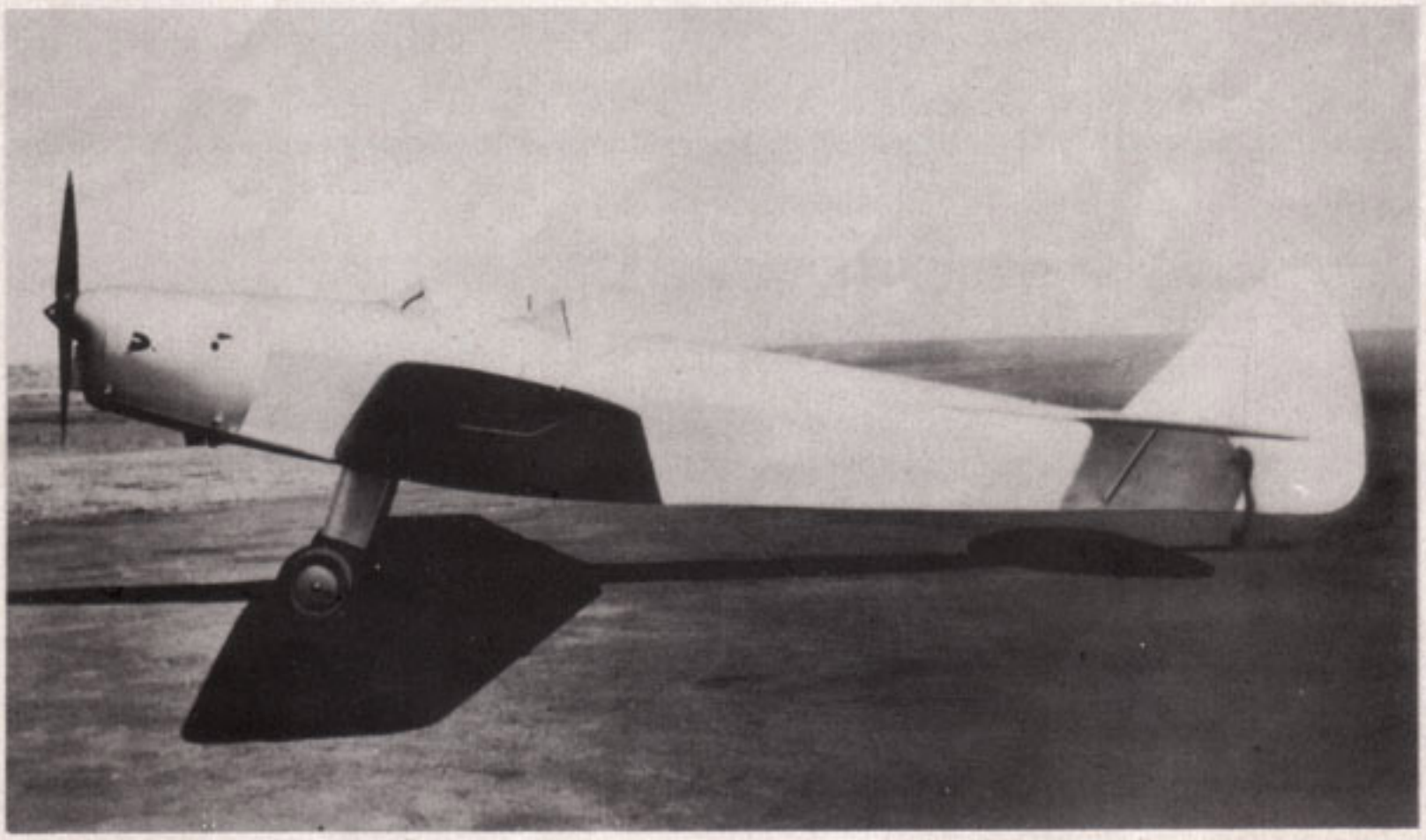
Basic particulars of the Moth Minor are as follows:-

Cruising Speed	..	..	100 m.p.h.
Stalling Speed	..	..	40 m.p.h.
Ultimate Range	..	..	300 miles
Wing Span	..	..	36 rt. 7 ins.
All Up Weight	..	..	1550 lbs.

First Flight 22nd June, 1937.

As the Aero Clubs in Australia were interested, De Havilland decided to manufacture a small batch here in Australia, and in fact, had an order for several aircraft from an Aero Club. It was the intention initially to import all metal fittings and engines only. Consequently, tooling for manufacture and assembly of all wooden components was assembled at the De Havilland Mascot factory.

The outbreak of war upset plans and only three of these aircraft were completed. As the R.A.A.F. urgently required some trainer aircraft until Tiger Moth deliveries commenced, it was arranged with De Havilland, England for all Moth Minor aircraft in a completed or semi-completed condition to be shipped to Australia and a total of 59 of these were delivered to the R.A.A.F. The assemblies shipped from England incomplete were finished at the Mascot factory. Some remaining after the war were brought for private flying and a few are still operating.



TIGER MOTH (D.H.82 & D.H.82A)

The original Tiger Moth was designated DH82. A total of 54 aircraft of this mark were manufactured, all by De Havilland in England. The modified version, designated DH82A, became the standard Tiger Moth aircraft and some 10,000 of these were manufactured throughout the world. De Havilland, Australia manufactured 1085.

Basic particulars of the Tiger Moth are as follows:-

Wing Span	..	.. 29.3 ft.
Total Weight	..	.. 1850 lbs.
Cruising Speed	..	.. 95 m.p.h.
Safe Range (Still Air)		.. 200 st. miles
Stalling Speed	..	.. 45 m.p.h.
Engine	..	.. Gipsy Major 130 h.p.
First Flight		26th October, 1931.

The DH82 and DH82A differed only in detail and these differences would not be distinguishable from a distance. They are as follows:-

a. The DH82 slots were free whereas those on the DH82A incorporated pilot operated locking mechanism.

b. The rear seat was adjustable on the DH82 and fixed on the DH82A.

c. The DH82 had four hinges on each aileron - the DH82A only three.

d. Other minor differences were on the instrument panel and in some of the instruments.

During the war, many Australian manufactured Tiger Moths were exported for use in the Empire Air Training Scheme. The numbers were approximately as follows:-

Dutch East Indies	..	60
India	..	25
Madras Flying Club	..	3
Burma	..	2
New Zealand	..	20
South Africa & Southern Rhodesia		395

The remainder of the aircraft were delivered to the R.A.A.F. for basic flying training.

After the war, the R.A.A.F. disposed of most of their Tiger Moths to Aero Clubs throughout the country and many are still in use for training. Aerial agriculture operators are also using many Tiger Moths for crop dusting and spraying.


65
17-565
DE HAVILLAND
1000TH
TIGER MOTH


76
DH82A TIGER MOTH

DRAGON (D.H.84A)

The original Dragon was designed in the United Kingdom in 1934 and many were produced for various operators including Butler Air Transport in their early days. One design was specially fitted out with long range tanks and was flown across the Atlantic by Amy Mollison and a co-pilot.

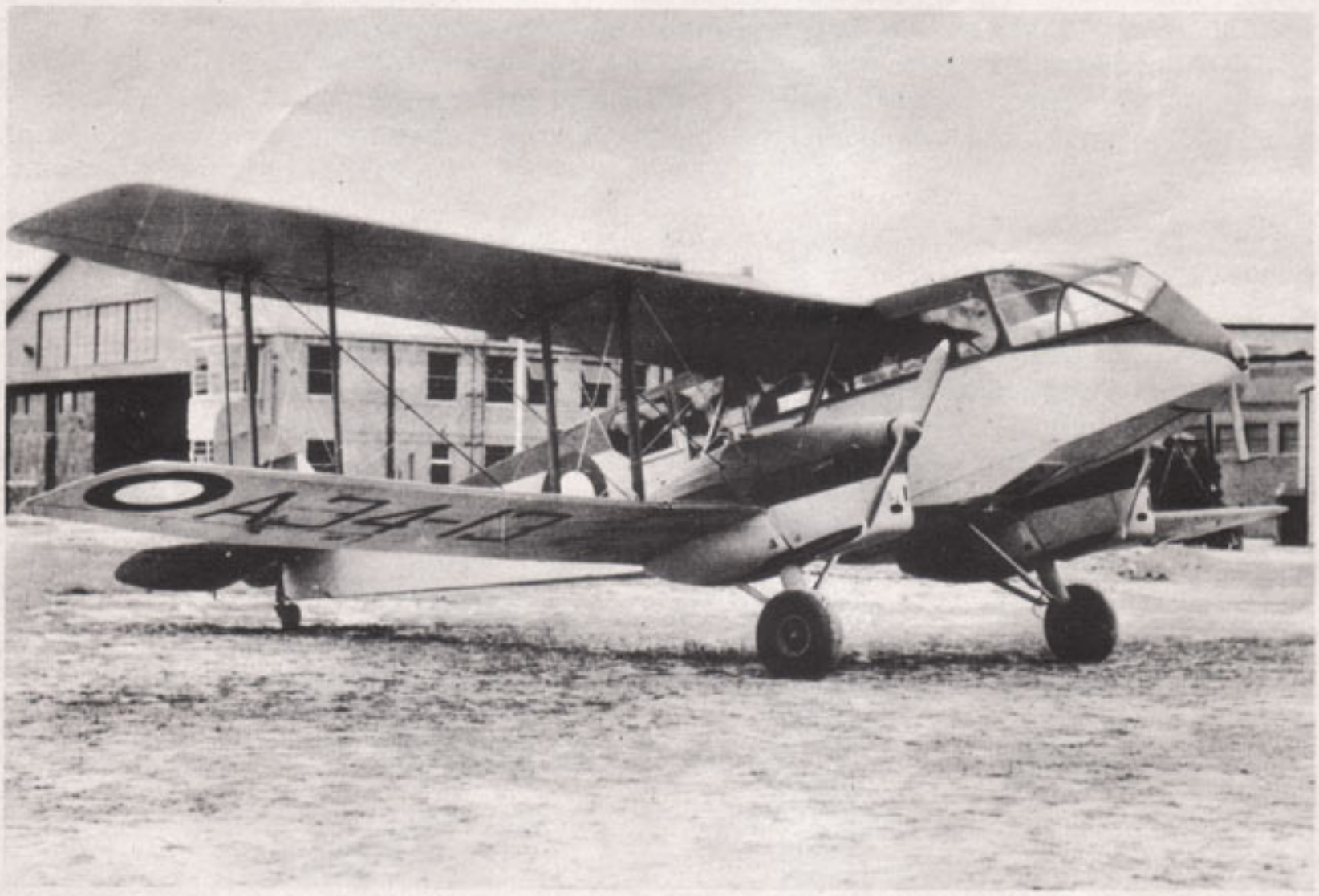
Basic particulars of the Dragon are as follows:-

Cruising Speed	..	..	134 m.p.h.
Wing Span	..	..	47 ft. 4 ins.
Range	..	..	750 miles.
Maximum Weight	..	..	4,500 lbs.
First Flight			November, 1932.

All these aircraft were fitted with two air cooled, four cylinder Gipsy Major 130 h.p. engines and wooden propellers, all of which were manufactured locally.

Eighty seven of the DH84A Dragon were manufactured in Australia to perform R.A.A.F. training duties similar to that performed by the more developed "Dominie" in the R.A.F. Approximately 40 were fitted as Navigational Trainers and the remainder were subsequently delivered as freighters. The first locally built aircraft flew in 1942.

After the war, they were sold on the disposal market and although many have been written off, some are still flying, mainly in New Guinea.



MOSQUITO (D.H.98)

Initially designed in the United Kingdom, the first aircraft flew in 1940. Forty marks of this aircraft were conceived and 6711 aircraft in their various versions were built in the United Kingdom, Canada and Australia.

Basic particulars of the Mosquito are as follows:-

Wing Span	..	..	54.16 ft.
All Up Weight	..	..	23,600 lbs.
Maximum Speed	..	..	422 m.p.h.
First Flight			25th November, 1940.

Mosquito F.B. Mark 40 - Packard Merlin 31 or 33.

The first 100 had Mark 31 engines and the later ones used Mk. 33 engines. A total of 178 were completed but a number of these were converted as below to other types. Their R.A.A.F. serial numbers were in the series A52-1 to A52-212, the fuel tankage was 513 gallons internal (including No. 12 Tank) and all aircraft were subsequently fitted for carrying 100 gallon drop tanks.

Mosquito P. R. Mark 40 - Packard Merlin 31.

These aircraft were all completed before Mark P.M. 33 engines became available. The first was converted and delivered on 26th May, 1944 and five more were delivered by October, 1944. Their R.A.A.F. serial numbers were A52-2, A52-4, A52-6, A52-7, A52-9 and A52-26. The internal fuel capacity was 656 gallons and 2 x 100 gallon drop tanks were fitted, extra oil and oxygen was also included. They were unarmed, but the camera installation consisted of one adjustable vertical camera in the nose, two fixed vertical cameras and two fixed oblique cameras in the rear fuselage. The tankage was the same as the Mark 40 except that No. 10 tanks were replaced by No. 1 Tanks and extra No. 12 tank was fitted. These aircraft gave notably good service carrying out mapping and reconnaissance in the World War II drive north from Australia in 1944.

Mosquito P.R. Mark 41 - Packard Merlin 69.

This was a conversion from the last batch of undelivered Mark 40 aircraft and was practically identical to the Mark 40 aircraft except for extra radio equipment and the two stage, two speed Merlin 69 engines. These were fitted with extra oxygen and long range oil tanks as well as the normal larger radiator installation. A P.R. Mark 41 aircraft was entered in the New Zealand Air Race in 1953, but its engines were changed to the higher altitude Merlin 77 engines to enable flight at higher altitudes. This aircraft crashed in the Indian Ocean near Burma before the race commenced. The R.A.A.F. serial numbers for these aircraft were A52-300 to A52-327 inclusive. They were used extensively after the war up till 1953 in a large scale aerial survey of Australia. The first was delivered on 29th May, 1947 and the last on 22nd July, 1948.

Mosquito F. B. Mark 42 - Packard Merlin 69.

A production Model Mark 40 aircraft A52-90 was utilised for the conversion to the Packard Merlin 69 engine. This project was dropped however, after test flight and the aircraft was then used as the prototype for the P.R. Mark 41 and was re-serial numbered A52-300. Apart from engines it was very similar to a Mark 40.

Mosquito contd....

Mosquito Mark 43 - Packard Merlin 33.

This was also built as a conversion from F. B. Mark 40's and was therefore almost identical to them including armament and fuel system, except for the addition of dual controls as in a T. Mark 3 together with the dual elevator trim tab controls. All the Mark 43's used Packard Merlin 33 engines. Twenty one were delivered with serial Nos. A52-1050 to 1071. The first was delivered on 27th June, 1946 and the last on 2nd May, 1947.

Mosquito Mark 2.

The Mosquito Mark 2 was imported from England as a sample and this was assembled and flown at the end of 1942. The R.A.A.F. Serial No. was A52-1001.

Mosquito Mark 3.

Eleven English T. Mark 3 airframes were imported and eight of these were assembled by us. The remaining three were assembled by the R.A.A.F. It is not clear from our records, but it is apparent that the majority, if not all of these were imported without engines and were fitted with Packard 31 or 33 engines. The serial numbers allotted were A52-1002 to A52-1012. The first was delivered in November, 1943 and the last of our eight was delivered in August, 1944.

D.H.G. GLIDER

A prototype with a single piece 59 ft. span wing, was built in 1942 and given the Company type number DHG1 and registration number EG1. This was subsequently taken to Laverton for test flying and given the R.A.A.F. Serial No. A57-1001.

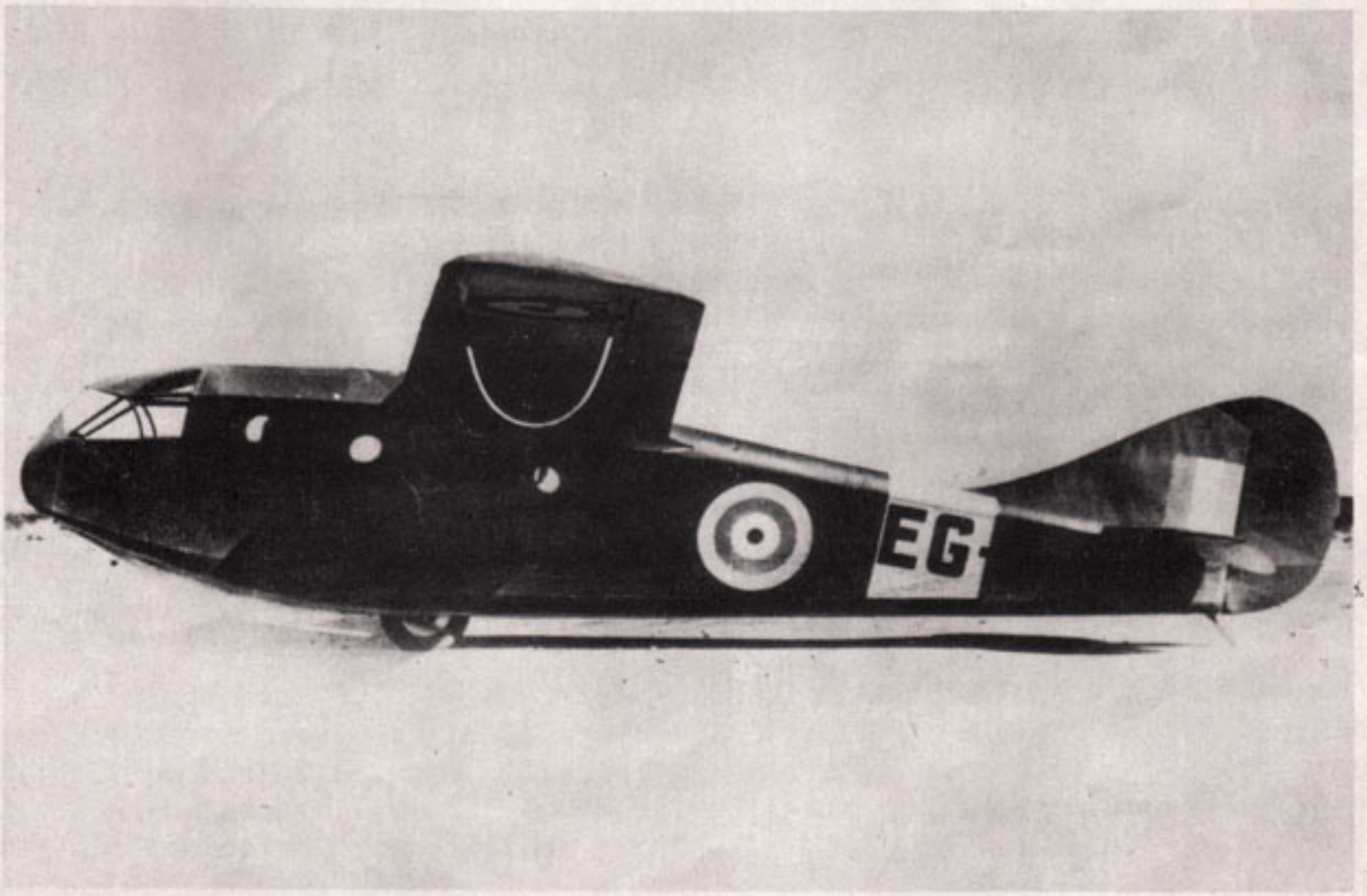
It had a maximum permissible all up weight of 2,800 lbs. and carried 1550 lbs. load including a pilot and six fully armed troops. It had a maximum nominal towing speed of about 130 m.p.h. and was towed by aircraft varying from Spitfires to Wapitis.

A second prototype with a single piece wing was also constructed, but then the R.A.A.F. ordered six production models with a wing in three parts for ease or transport and these were delivered in 1943. These Gliders were given the Company type number of DHG2 and received R.A.A.F. serial numbers A57-1003 to 1008. These aircraft had a slightly larger capacity of six troops and a pilot or 1,800 lbs., a wing span of 50 ft. 6 inches and a gross weight of 3,250 lbs.

The maximum recommended towing speed was 130 m.p.h. with a stalling speed of 48 m.p.h. and maximum diving speed of 200 m.p.h.

The structure for both types was all wood, except for a single metal tubular frame on which was mounted the single wheel.

The eventual disposal of these aircraft is uncertain, but one was used extensively for research work with Lamina Flow Wings at C.S.I.R.O. and others were used at the School of Land, Sea and Air Warfare at Richmond and Williamtown.



DROVER (D.H.A.3)

The Drover was designed by the Australian De Havilland Company to replace the robust twin engine Dragons and Dragon Rapides which became so popular before the war for feeder routes throughout the world. The aim was to produce an aircraft less expensive and less refined than the Dove, only by the use of every modern refinement in aerodynamic and structural design. This conflicted with the necessity for obtaining an aircraft of the utmost simplicity, low in first cost and maintenance.

It was decided, therefore, to proceed with the design of a modern, three-engine type using the wellknown and approved Gipsy Major. The particular Gipsy Major adopted was the Series 10. This was substantially the same engine as the pre-war Gipsy Major which gave such good service in the Dragon, Fox Moth and Tiger Moth. The main changes concerned the provision of very comprehensive accessory drives. The engine also featured an improved type of cylinder head permitting the use of leaded fuel and the power was increased from 130 h.p. to 145 h.p.

After the preliminary period of investigation, which embraced discussion with the parent De Havilland Company in England, a mock-up was built and there were consultations with a number of Australian aircraft operators who had had extensive experience with the Dragon and other types of aircraft in bush operation. As many of their ideas as possible were incorporated in the design.

The principal dimensions of the Drover are as follows:-

Wing Span	.. ..	57 ft.
Length	.. ..	36 ft. 6 ins.
Height over rudder	.. ..	10 ft.
Cabin Length	.. ..	13 ft.
Cabin Width	.. ..	4 ft. 3½ ins.
All Up Weight	.. ..	6,500 lbs.
Cabin Height	.. ..	4 ft. 10 ins.

First Flight 23rd January, 1948.

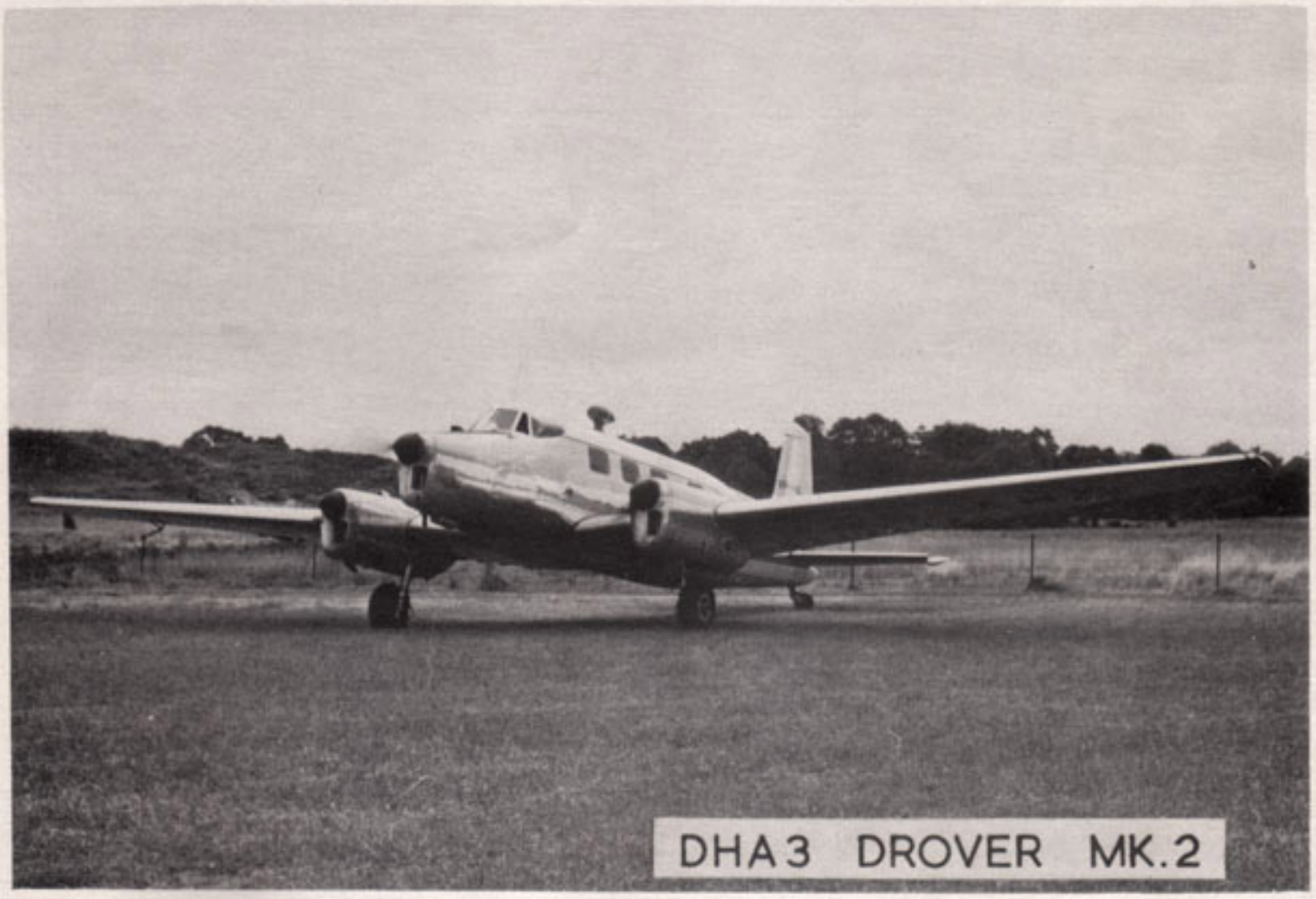
The Drover was the first all-metal civil aircraft to be built in Australia and a total of twenty were manufactured. The first aircraft flew in 1948 and the following lists the original configurations.

7 were of the Freighter version.
8 were of the Seven Passenger version.
5 were of the Ambulance version.

Five of the Freighter version were for use in New Guinea. Three of them were converted later to the 7 Passenger version and these are currently being used in Fiji. The remaining Drovers are still in service within Australia.

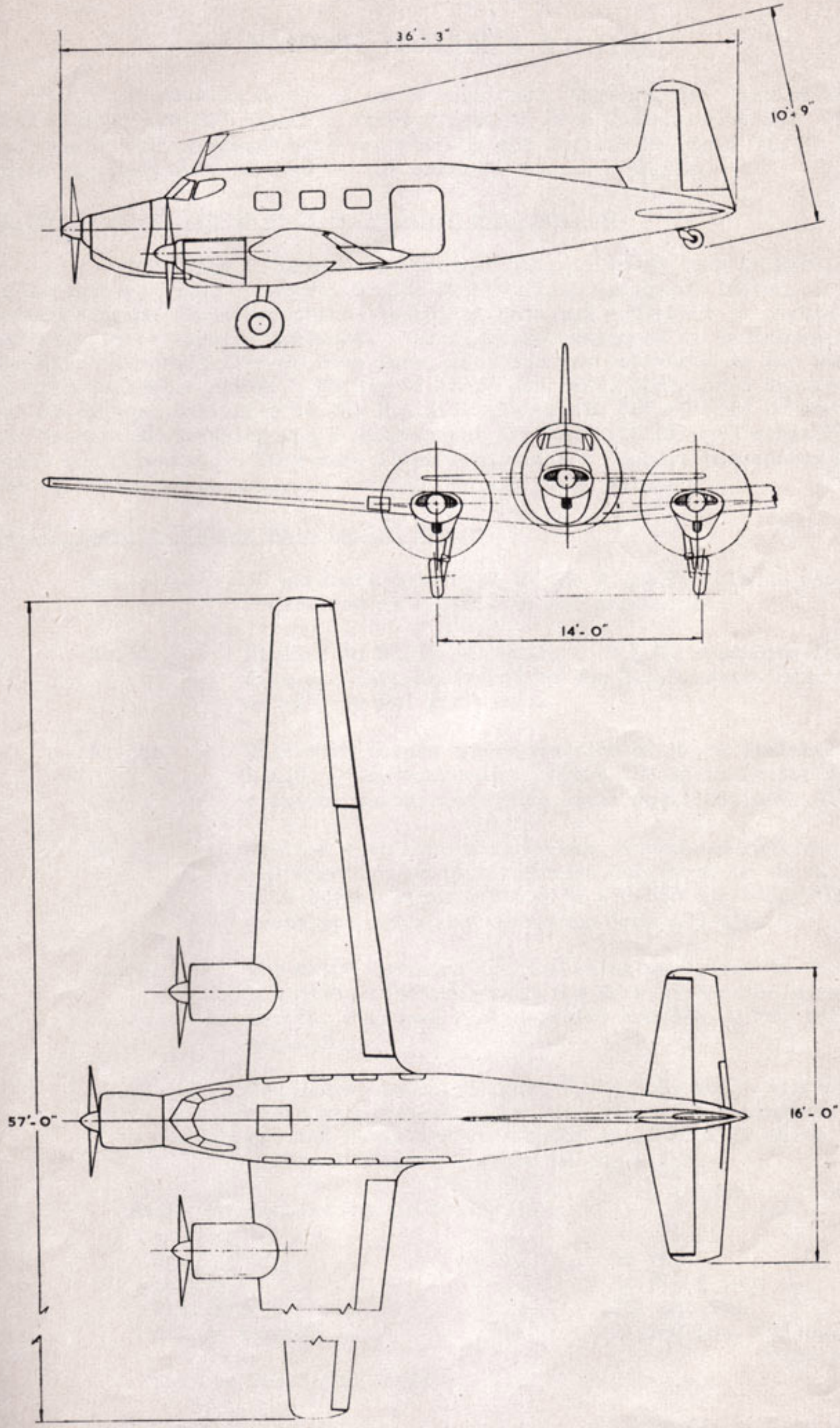
Early in 1960, De Havilland commenced the modification programme on the 6 Drovers employed by the New South Wales and Queensland sections of the Royal Flying Doctor Service. The Gipsy Major engines and De Havilland propellers have been changed to Lycoming 180 h.p. O-360-A1A engines and Hartzell constant speed and feathering propellers.

Several major airframe modifications have also been carried out. These principally concern flap actuation and tail wheel energy absorption capacity.



DHA 3 DROVER MK.2

DHA3 DROVER MK.3



DHA 3 - DROVER MK. 3 FIG. 1-3

VAMPIRE (D.H.100 & D.H.115)

Originally designed by De Havilland, England, the Vampire single seat fighter (DH100) made its first flight on 20th September, 1943. Large numbers of this aircraft were produced by the English Electric Co. at Preston. These aircraft were powered by the original Goblin 2 engine.

DH.100 Vampire Fighter with Rolls Royce Nene Engines.

The R.A.A.F. originally ordered this aircraft from De Havilland in September, 1946. Several Senior De Havilland personnel travelled to the United Kingdom for instruction, technical data and equipment to enable these aircraft to be locally produced. Manufacture commenced at Bankstown in 1947. The first aircraft flew on 29th June, 1949 and was delivered to the R.A.A.F. on 26th September, 1949. Eighty of these aircraft, designated Vampire Mk.30 and Mk.31 were delivered to the R.A.A.F. (later all but 29 were converted to the Vampire Mk.31 which was a single seat fighter with clipped wings for bombs and rockets). They were given registration numbers commencing A79- . The following three numerals were not in any given sequence.

DH.115 Vampire Trainer with Goblin Engine.

Mk.33 - 36 aircraft delivered to the R.A.A.F. These were registered as A79-801 to 836 inclusive.

Mk.34 - Similar to Mk.33 but built to R.A.N. specification. Five aircraft delivered to the R.A.N. registered as A79-837 to 841 inclusive.

Mk.34A - This mark covers the conversion of Mk.34 Trainers for R.A.N. The conversion covers the installation of ejection seats, and other small modifications.

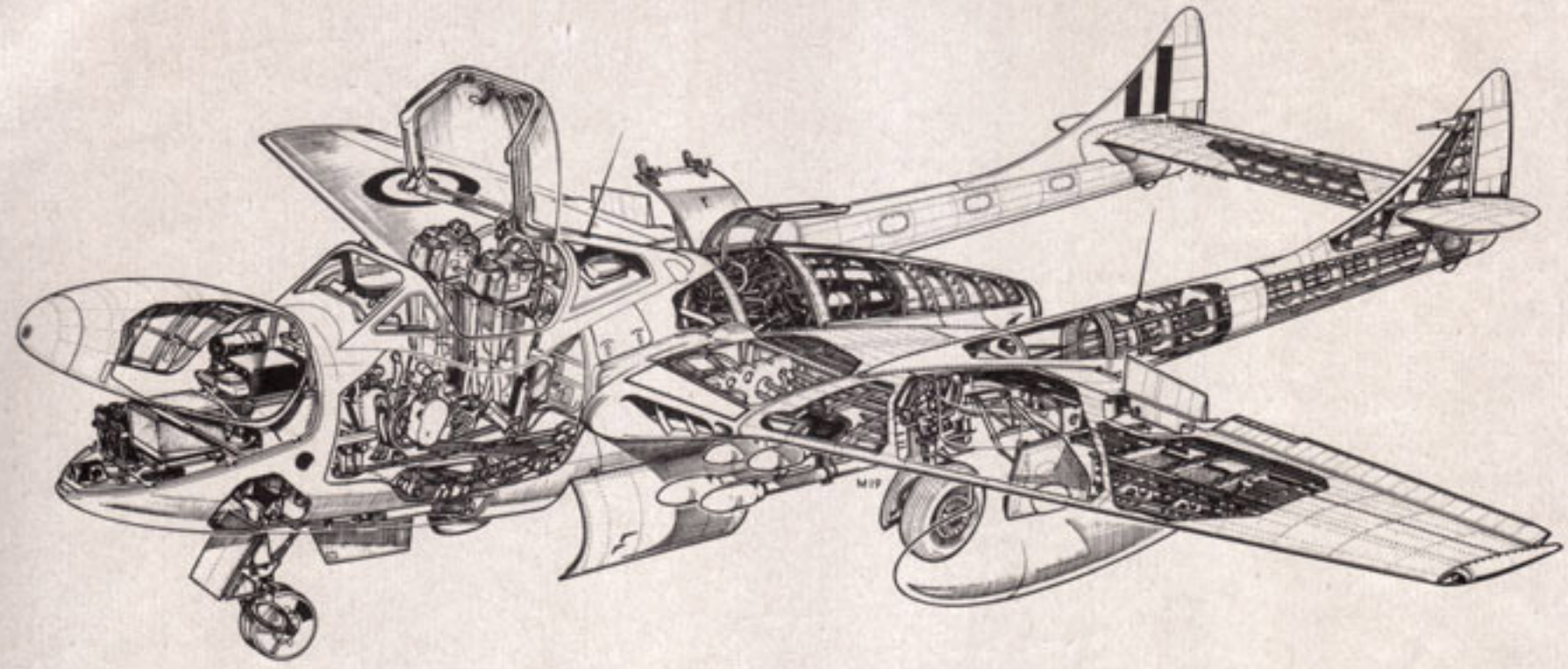
Mk.35 - Trainer with hydraulic brakes, increased fuel capacity and ejection seats. 69 were delivered to the R.A.A.F. with serial marks A79-600 to A79-668 including the prototype which was converted from A79-836.

Mk.35A - All Mk.33 Trainers are now being converted to this standard, identical with the Mark 35 version except for the measured fuel capacity and one or two instrument variations.

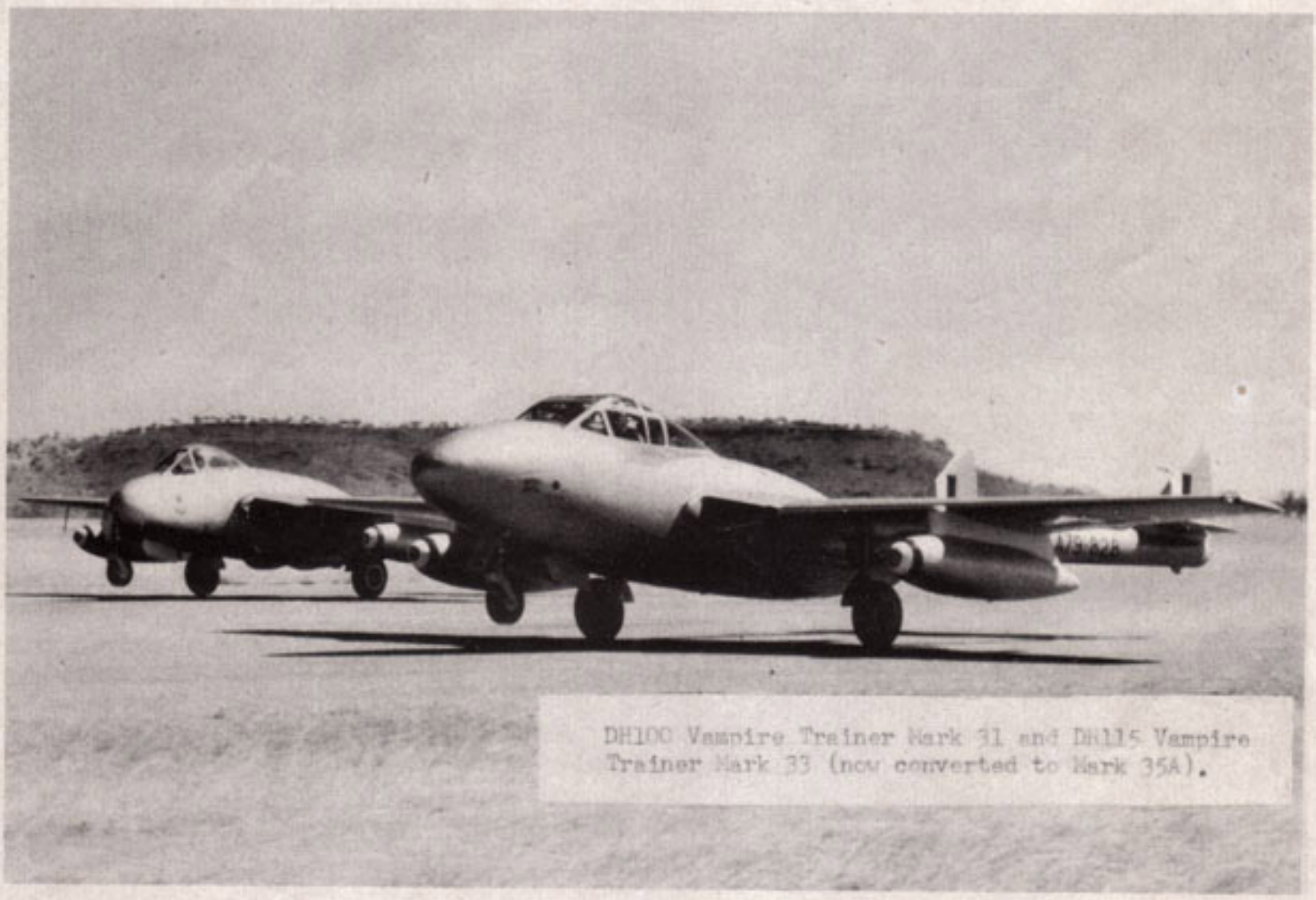
Mk.22 - The R.A.N. imported four of the U.K. built aircraft and these were assembled by the Company at Bankstown. They are the Navalized version of the T Mark 11 which is the standard Vampire Trainer in the R.A.F.

Basic particulars are as follows:-

Span	.. ..	38 ft.
Length	.. ..	34 ft. 5 ins.
Wing Area	.. ..	261 sq. ft.
All Up Weight	.. ..	11,050 lbs. (without drop tanks)
Maximum Speed (sea level)	..	525 m.p.h.
First Flight		27th November, 1950



VAMPIRE TRAINER Mk.35



DH100 Vampire Trainer Mark 31 and DH115 Vampire Trainer Mark 33 (now converted to Mark 35A).