

GENERAL SPECIFICATIONS
 CIVIL, WHEELS, 100 HP ENGINE

WEIGHT EMPTY 1070 lbs
 GROSS WEIGHT 1420 lbs
 MAXIMUM SPEED 115 mph
 CRUISING SPEED 100 mph
 CLIMB RATE 1000 ft/min
 CLIMB TO 5000 FT (100% EFFORT) 15 min
 SERVICE CEILING 10000 ft
 LANDING SPEED 50 mph
 TAKEOFF SPEED 60 mph
 TAKEOFF RUN 1200 ft
 RANGE 1000 miles
 FUEL CAPACITY 100 gal

POWER - HANCOCK 100 HP FOUR CYLINDER
 HORNET 100 HP BROTHER 100 HP
 ENGINE RATED 50 HP AT 2700 RPM

NOTE:
 THIS AIRCRAFT WAS BUILT AS A 30-HP
 MODEL. LATER IT WAS BUILT AS A 100-HP
 MODEL. IT BECAME AN ST-1 LATER WHEN A 25 HP
 HANCOCK 2-CY ENGINE WAS INSTALLED.

CONSTRUCTION NOTES
 FUSelage - ALL METAL, BRONCOLO, ALCLAD, DUST BIN
 WINGS - SPANSE WINGS, STAINLESS ALUMINUM ALLOY WING
 STEEL TUBE COMPRESSION MEMBERS, STEEL
 ALUMINUM TUBES, FABRIC COVERED ALUMINUM
 TAIL SURFACE FINISHED IN 1/8" ALUMINUM TUBES AND
 ALLOY RIBS, FABRIC COVERED

RYAN ST-4
 CIVIL ST-4
 SCALE: ORIGINAL 1:24
 REPROD. 1:48
 DRAWN BY: PAUL R. MATT
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 TEMPLE CITY, CALIF. 91780

STANDARD
 WOODRUM
 ALBUM

DRAWING NO. 9-16-1 PLATE 1 OF 2

RYAN ST-4
 CIVIL ST-4
 SCALE: ORIGINAL 1:24
 REPROD. 1:48
 DRAWN BY: PAUL R. MATT
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STANDARD
 WOODRUM
 ALBUM

DRAWING NO. 9-16-1 PLATE 2 OF 2

Paul Matt Scale Airplane Drawings Volume 2

NORTH AMERICAN AT-60
 CIVIL AT-60
 SCALE: ORIGINAL 1:24
 REPROD. 1:48
 DRAWN BY: PAUL R. MATT
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STANDARD
 WOODRUM
 ALBUM

DRAWING NO. 9-16-2 PLATE 2 OF 2

GENERAL SPECIFICATIONS

WEIGHT EMPTY 1070 lbs
 GROSS WEIGHT 1420 lbs
 MAXIMUM SPEED 115 mph
 CRUISING SPEED 100 mph
 CLIMB RATE 1000 ft/min
 CLIMB TO 5000 FT (100% EFFORT) 15 min
 SERVICE CEILING 10000 ft
 LANDING SPEED 50 mph
 TAKEOFF SPEED 60 mph
 TAKEOFF RUN 1200 ft
 RANGE 1000 miles
 FUEL CAPACITY 100 gal

POWER - HANCOCK 100 HP FOUR CYLINDER
 HORNET 100 HP BROTHER 100 HP
 ENGINE RATED 50 HP AT 2700 RPM

NOTE:
 THIS AIRCRAFT WAS BUILT AS A 30-HP
 MODEL. LATER IT WAS BUILT AS A 100-HP
 MODEL. IT BECAME AN ST-1 LATER WHEN A 25 HP
 HANCOCK 2-CY ENGINE WAS INSTALLED.

WACO UPF-7
 CIVIL UPF-7
 SCALE: ORIGINAL 1:24
 REPROD. 1:48
 DRAWN BY: PAUL R. MATT
 © HISTORICAL AVIATION ALBUM 1970
 TEMPLE CITY, CALIF. 91780

STANDARD
 WOODRUM
 ALBUM

DRAWING NO. 9-17-1 PLATE 1 OF 2

WACO UPF-7
 CIVIL UPF-7
 SCALE: ORIGINAL 1:24
 REPROD. 1:48
 DRAWN BY: PAUL R. MATT
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 TEMPLE CITY, CALIF. 91780

STANDARD
 WOODRUM
 ALBUM

DRAWING NO. 9-17-2 PLATE 2 OF 2

GENERAL SPECIFICATION

WEIGHT EMPTY 800 lbs
 GROSS WEIGHT 1100 lbs
 MAXIMUM SPEED 100 mph
 CRUISING SPEED 80 mph
 CLIMB RATE 1000 ft/min
 CLIMB TO 5000 FT (100% EFFORT) 15 min
 SERVICE CEILING 10000 ft
 LANDING SPEED 50 mph
 TAKEOFF SPEED 60 mph
 TAKEOFF RUN 1200 ft
 RANGE 1000 miles
 FUEL CAPACITY 100 gal

POWER - HANCOCK 100 HP FOUR CYLINDER
 HORNET 100 HP BROTHER 100 HP
 ENGINE RATED 50 HP AT 2700 RPM

NOTE:
 THIS AIRCRAFT WAS BUILT AS A 30-HP
 MODEL. LATER IT WAS BUILT AS A 100-HP
 MODEL. IT BECAME AN ST-1 LATER WHEN A 25 HP
 HANCOCK 2-CY ENGINE WAS INSTALLED.

PIPER J-3 'CUB'
 CIVIL J-3
 SCALE: ORIGINAL 1:24
 REPROD. 1:48
 DRAWN BY: PAUL R. MATT
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 TEMPLE CITY, CALIF. 91780

STANDARD
 WOODRUM
 ALBUM

DRAWING NO. 9-18-1 PLATE 1 OF 2

PIPER J-3 'CUB'
 CIVIL J-3
 SCALE: ORIGINAL 1:24
 REPROD. 1:48
 DRAWN BY: PAUL R. MATT
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 TEMPLE CITY, CALIF. 91780

STANDARD
 WOODRUM
 ALBUM

DRAWING NO. 9-18-2 PLATE 2 OF 2

3-View Scale Drawings by Paul Matt

Volume 1 contains all airplanes listed from A through G. Volume 2 contains all airplanes listed from H through W. If you would like individual, large sheets of any of the below listed scale drawings, send request, catalog #, appropriate fee, and shipping charge of \$3.95. If you want your drawing rolled in a tube — add \$4.00. Clear, concise, uncluttered 3- and 4- view engineering presentations, in large (17" x 22"), easy to work with standard scales. Drawing is highly detailed and is an accurate working print with all dimensions, specifications, airfoils, cross sections, templates, and color scheme included. These drawings are part of the collection of the internationally acclaimed and highly honored *Historical Aviation Album*. All orders are folded unless a tube is ordered. Each has 2 to 6 large sheets. **Rolled in tube — add \$4.00 plus \$3.95 postage. Send to: Aviation Heritage, P.O. Box 665, Destin, FL 32540.**

DRAWING SCALE CODE	
Last letter of catalog number indicates scale of drawing	
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B = 1:16 ... 3/4" = 1'	
C = 1:48 ... 1/4" = 1'	
D = 1:32 ... 3/8" = 1'	
E = 1:8 ... 1 1/2" = 1'	
F = 1:6 ... 2" = 1'	
G = 1:96 ... 1/8" = 1'	

VOLUME 1 CONTENTS:

RETAIL PRICE

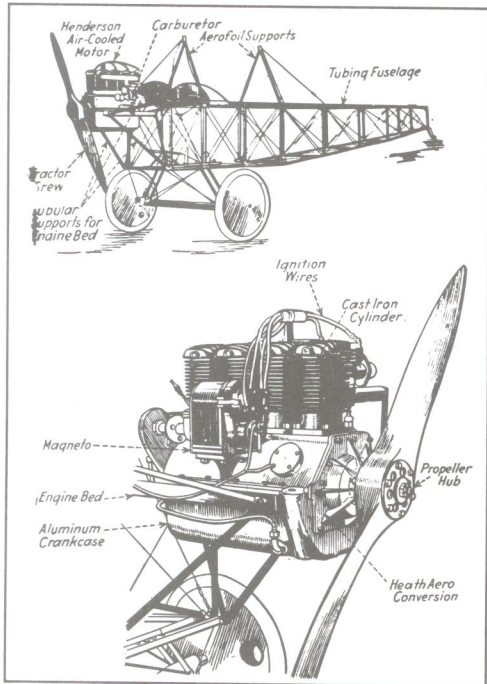
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RETAIL

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Curtiss F92 "Sparrowhawk"	(#18-118A, 2 shts.)	15.00	Piper J-3 "Cub"	(#18-121A, 2 shts.)	
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Douglas O-2	(#11-86A, 3 shts.)	16.50	Taylor E-2 "Cub"	(#18-119A, 2 shts.)	
Douglas O-2H	(#11-87A, 2 shts.)	15.00	Taylor J-2 "Cub"	(#18-120A, 2 shts.)	
Douglas O-38	(#12-92A, 2 shts.)	15.00	Thomas-Boeing MB-3A and		
Douglas O-38E	(#12-93A, 2 shts.)	15.00	Thomas-Morse MB-3	(#4-28B, 2 shts.)	
Douglas M-2	(#14-68A, 2 shts.)	15.00	Timm TC-170 "Collegiate"	(#8-72A, 2 shts.)	
Douglas A-20G "Havoc"	(#15-102D, 6 shts.)	20.00	Verville R-3 Racer	(#6-58A, 2 shts.)	
Etrich 1913 Taube	(#TB-105D, 3 shts.)	16.50	Vought F4U-1 "Corsair"	(#AA-51A, 3 shts.)	
Fairchild FC-1	(#17-111A, 2 shts.)	15.00	Vought SBU-1	(#3-24A, 2 shts.)	
Fairchild FC-2	(#17-112A, 2 shts.)	15.00	Vought XF5U	(#8-70A, 3 shts.)	
Fairchild FC-2W "Stars & Stripes"	(#17-113A, 2 shts.)	15.00	Vultee V-1A Transport	(#2-16A, 2 shts.)	
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Gallaudet D-1	(#3-20A, 2 shts.)	15.00	Waco YKS-6 Cabin	(#2-17A, 2 shts.)	
General Aviation Clark GA-43	(#13-95D, 2 shts.)	15.00	Waterman "Arrowbile"	(#3-25A, 2 shts.)	
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Grumman G-44 "Widgeon"	(#AM5-30A, 2 shts.)	15.00	Wright F2W-2 Racer	(#5-44A, 2 shts.)	
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Heath LNB-4 Parasol

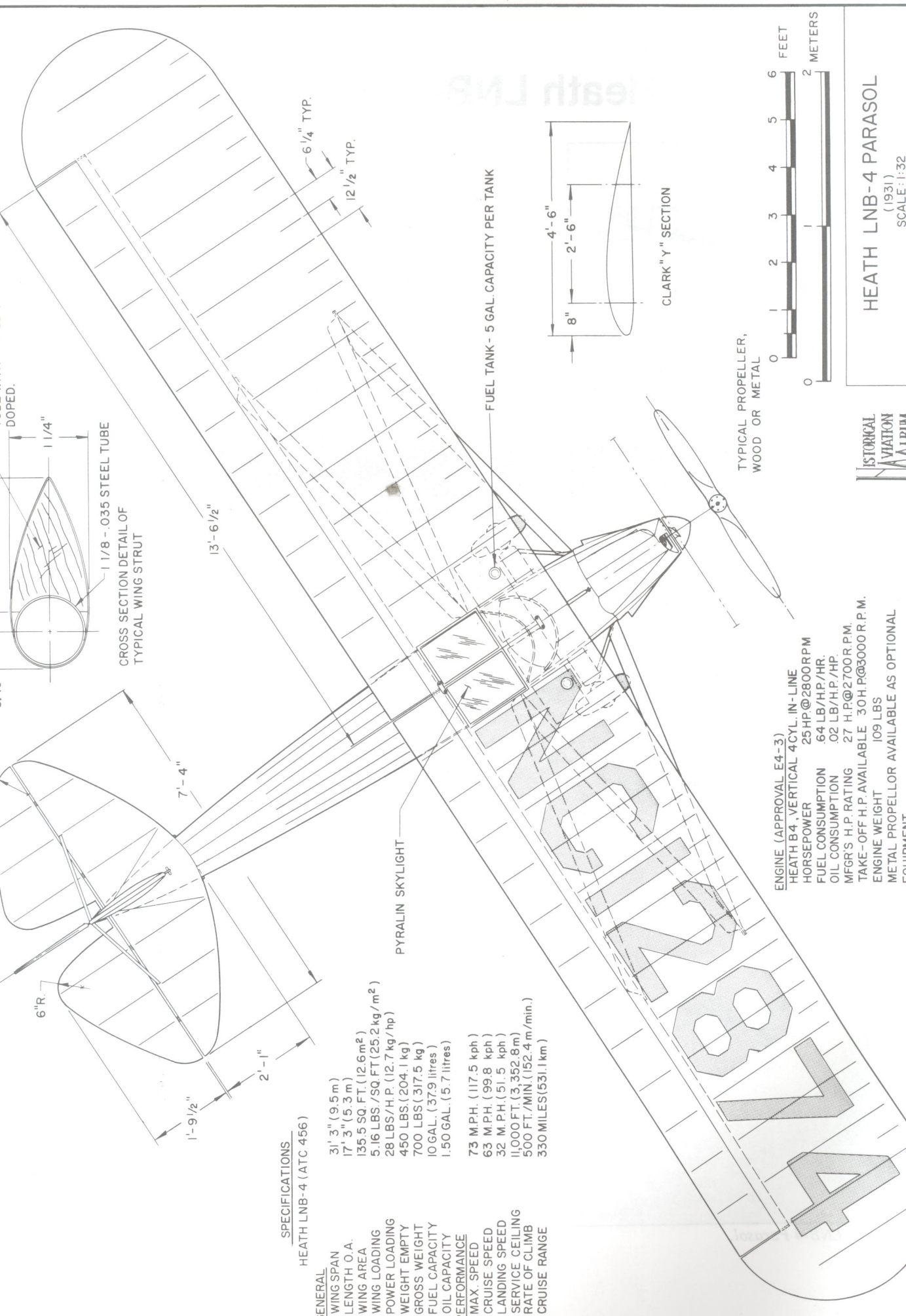


Heath Parasol on floats. Ed Heath by aircraft.

Heath Parasol and Henderson converted motorcycle engine installation.



Heath LNB-4 Parasol.

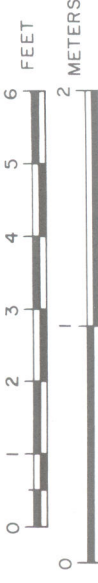


SPECIFICATIONS
HEATH LNB-4 (ATC 456)

GENERAL
WING SPAN 31' 3" (9.5 m)
LENGTH O.A. 17' 3" (5.3 m)
WING AREA 135.5 SQ. FT. (12.6 m²)
WING LOADING 5.16 LBS./SQ. FT. (25.2 kg/m²)
POWER LOADING 28 LBS./H.P. (12.7 kg/hp)
WEIGHT EMPTY 450 LBS. (204.1 kg)
GROSS WEIGHT 700 LBS. (317.5 kg)
FUEL CAPACITY 10 GAL. (37.9 litres)
OIL CAPACITY 1.50 GAL. (5.7 litres)
PERFORMANCE
MAX. SPEED 73 M.P.H. (117.5 kph)
CRUISE SPEED 63 M.P.H. (99.8 kph)
LANDING SPEED 32 M.P.H. (51.5 kph)
SERVICE CEILING 11,000 FT. (3,352.8 m)
RATE OF CLIMB 500 FT./MIN. (152.4 m/min.)
CRUISE RANGE 330 MILES (531.1 km)

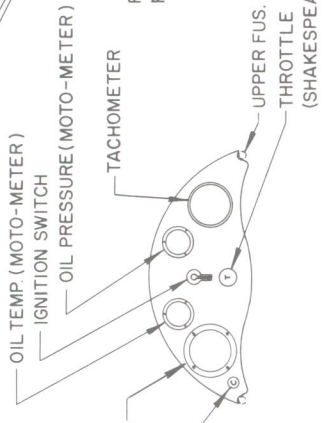
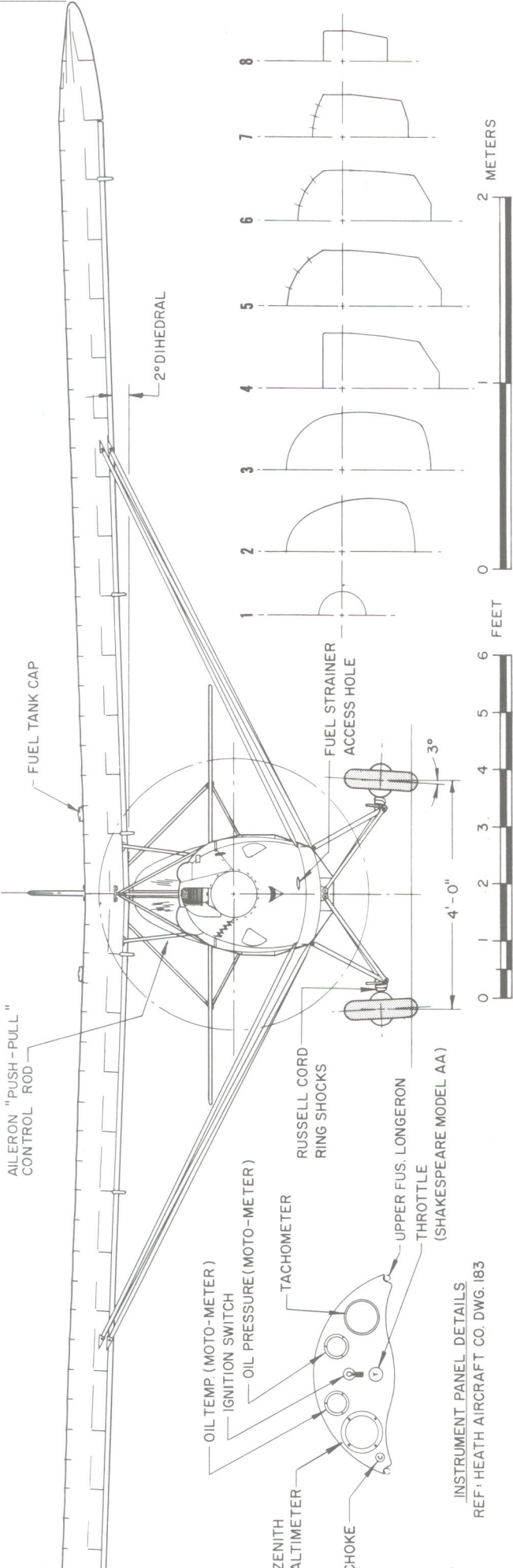
ENGINE (APPROVAL E4-3)
HEATH B4, VERTICAL 4CYL. IN-LINE
HORSEPOWER 25 HP @ 2800 RPM
FUEL CONSUMPTION 64 LB./HP/HR.
OIL CONSUMPTION .02 LB./HP/HP.
MFG'S H.P. RATING 27 H.P. @ 2700 R.P.M.
TAKE-OFF H.P. AVAILABLE 30 H.P. @ 3000 R.P.M.
ENGINE WEIGHT 109 LBS
METAL PROPELLOR AVAILABLE AS OPTIONAL EQUIPMENT

TYPICAL PROPELLER,
WOOD OR METAL

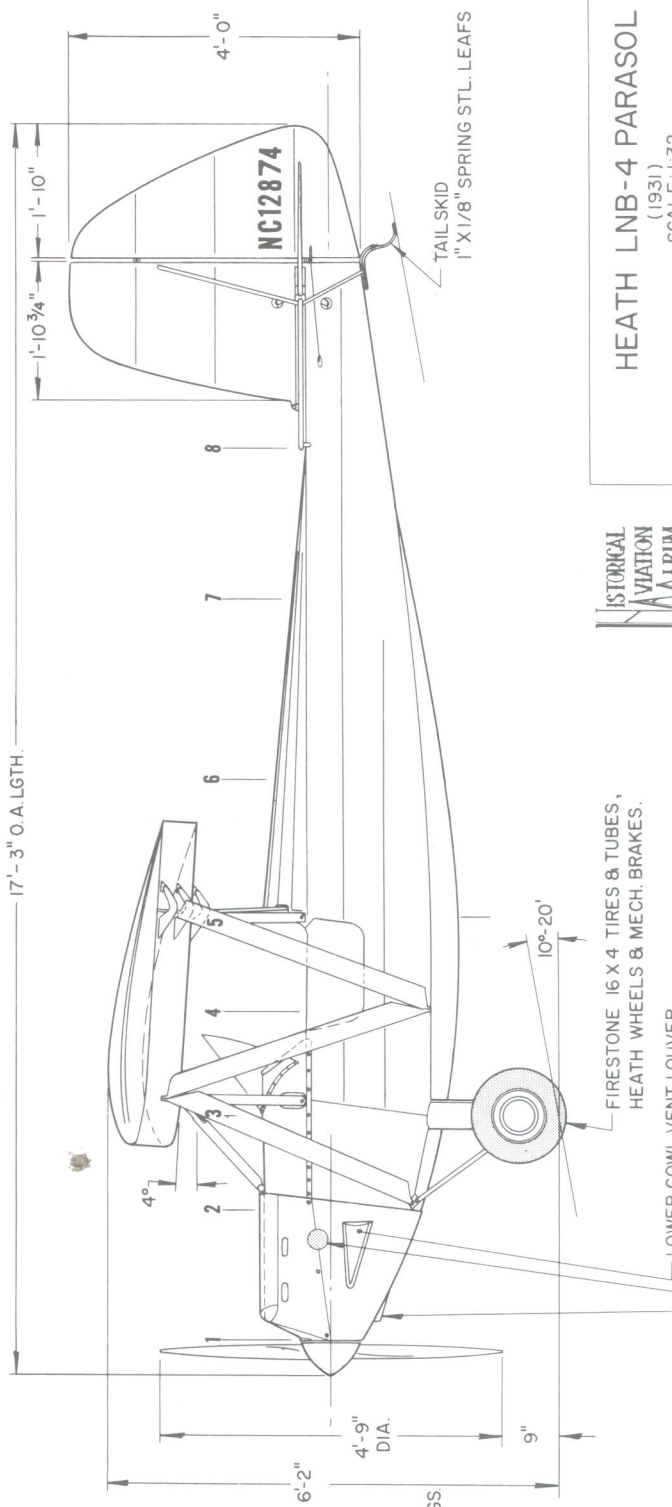


HEATH LNB-4 PARASOL
(1931)
SCALE: 1:32

ISTORICAL AVIATION MUSEUM



INSTRUMENT PANEL DETAILS
REF: HEATH AIRCRAFT CO. DWG. 183



COLOR SCHEME
(FACTORY BUILT)

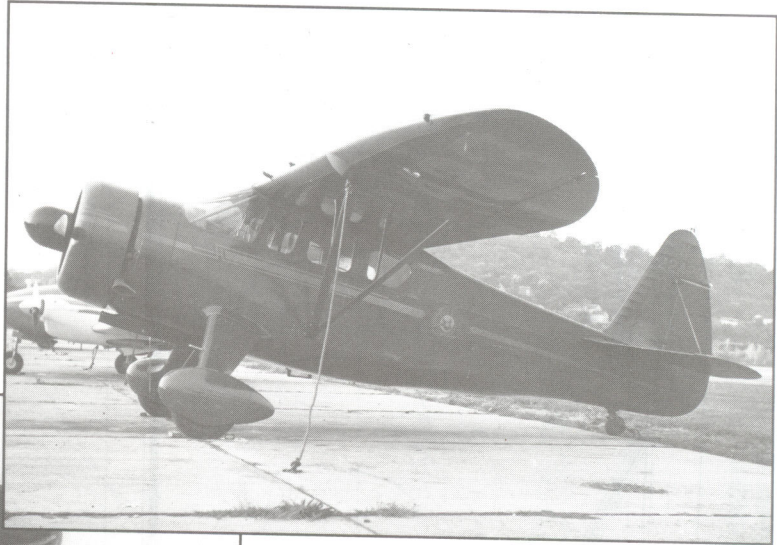
ENTIRE AIRCRAFT FINISHED IN LIGHT CREAM. REGISTRATION LETTERS, NUMERALS & OPTIONAL TRIM FINISH WERE BLACK.

KNOWN REGISTRATION NUMBERS OF FACTORY BUILT LNB-4 AIRCRAFT ARE LISTED AS FOLLOWS:

- NC 10739 - BELIEVED TO BE PROTOTYPE.
- NC 10740
- NC 12874 - AIRCRAFT SHOWN IN THESE DWGS.
- NC 13375
- NC 13646
- NC 15621

Howard DGA 15P

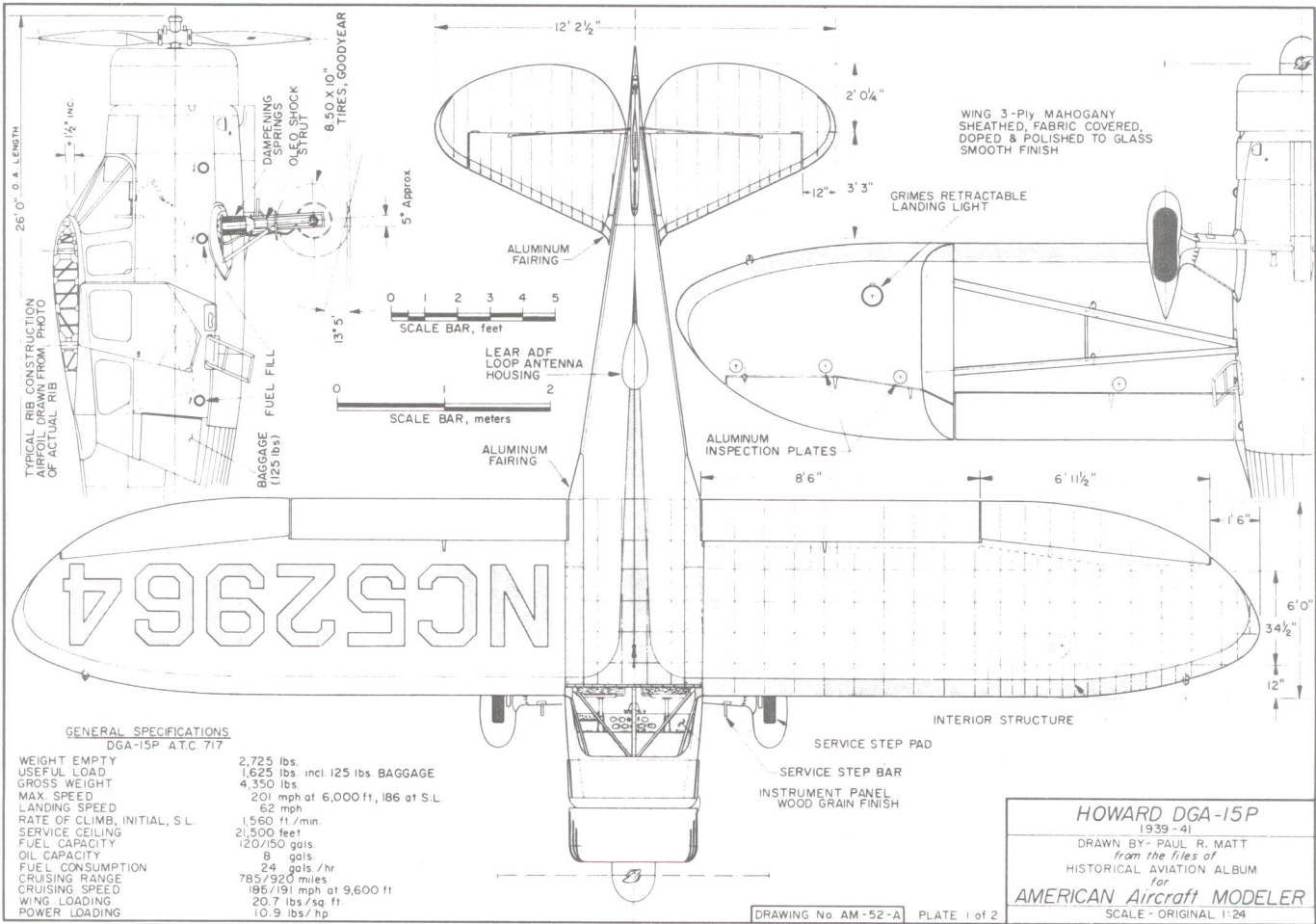
Dark blue and red DGA-15P of the Aeronautical Commission, State of West Virginia, visits Cincinnati, Ohio – 1956.



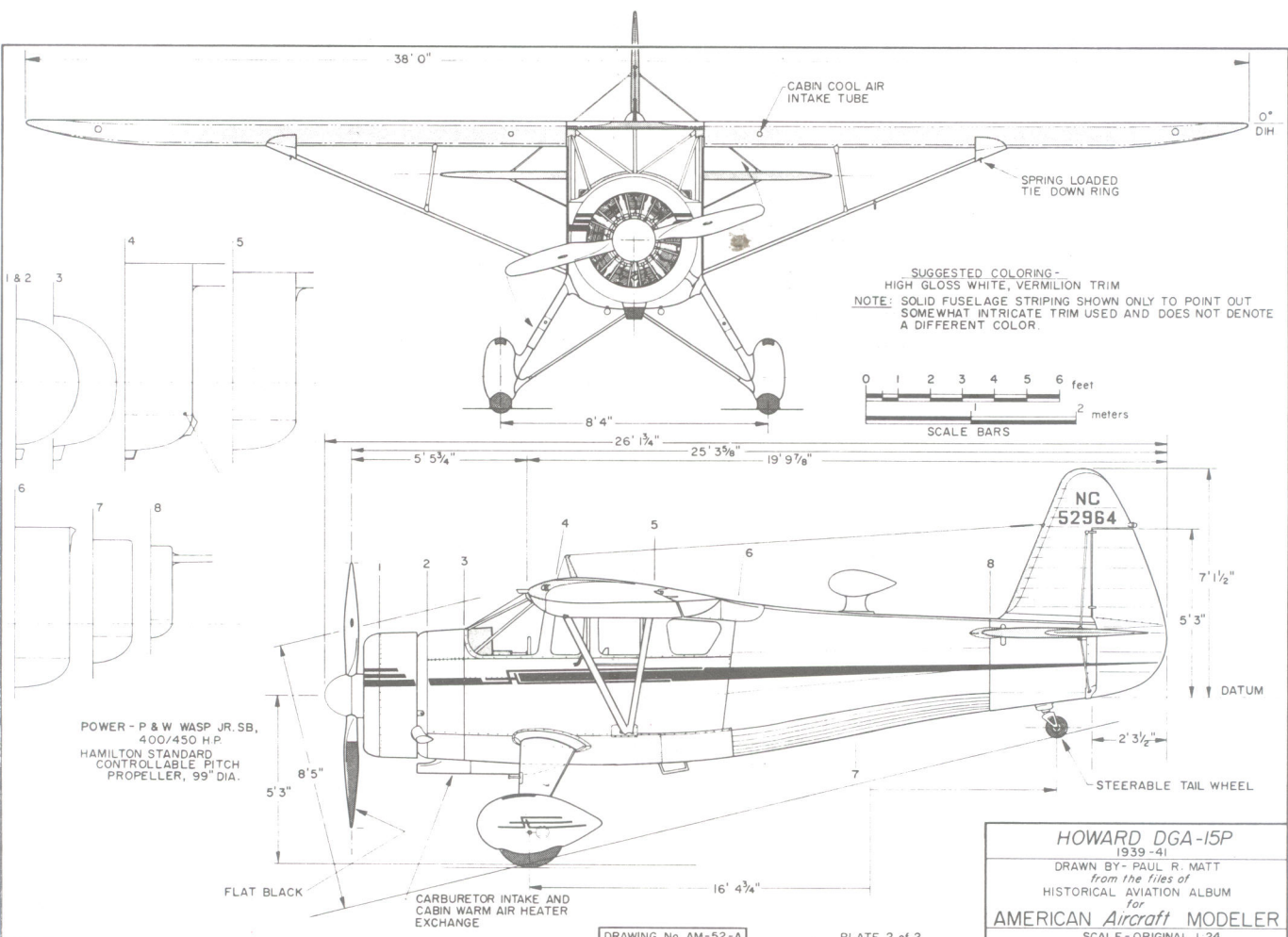
Howard DGA-15P Modified post WWII.



Howard DGA-15P.



HOWARD DGA-15P
1939-41
DRAWN BY - PAUL R. MATT
from the files of
HISTORICAL AVIATION ALBUM
for
AMERICAN Aircraft MODELER
SCALE - ORIGINAL 1:24



HOWARD DGA-15P
1939-41
DRAWN BY - PAUL R. MATT
from the files of
HISTORICAL AVIATION ALBUM
for
AMERICAN Aircraft MODELER
SCALE - ORIGINAL 1:24

GENERAL SPECIFICATIONS

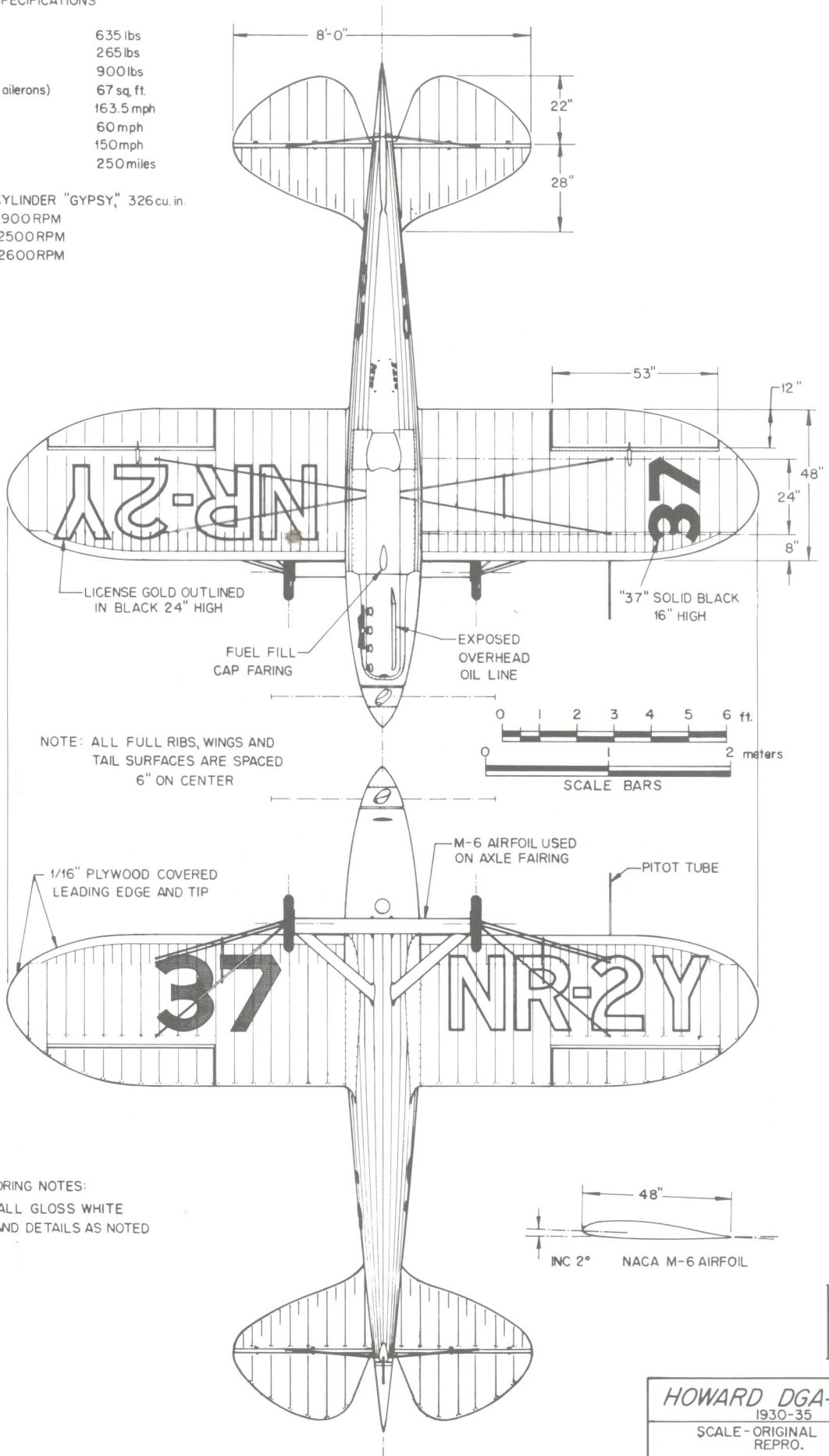
EMPTY WEIGHT 635 lbs
 USEFUL LOAD 265 lbs
 GROSS WEIGHT 900 lbs
 WING AREA (including ailerons) 67 sq. ft.
 MAXIMUM SPEED 163.5 mph
 LANDING SPEED 60 mph
 CRUISING SPEED 150 mph
 CRUISING RANGE 250 miles

POWER: WRIGHT 4 CYLINDER "GYPSY," 326 cu. in.

85HP @ 1900RPM

90HP @ 2500RPM

95HP @ 2600RPM



COLORING NOTES:
 AIRCRAFT ALL GLOSS WHITE
 LETTERING AND DETAILS AS NOTED

HISTORICAL AVIATION ALBUM

HOWARD DGA-3 "PET"

1930-35

SCALE - ORIGINAL 1:24

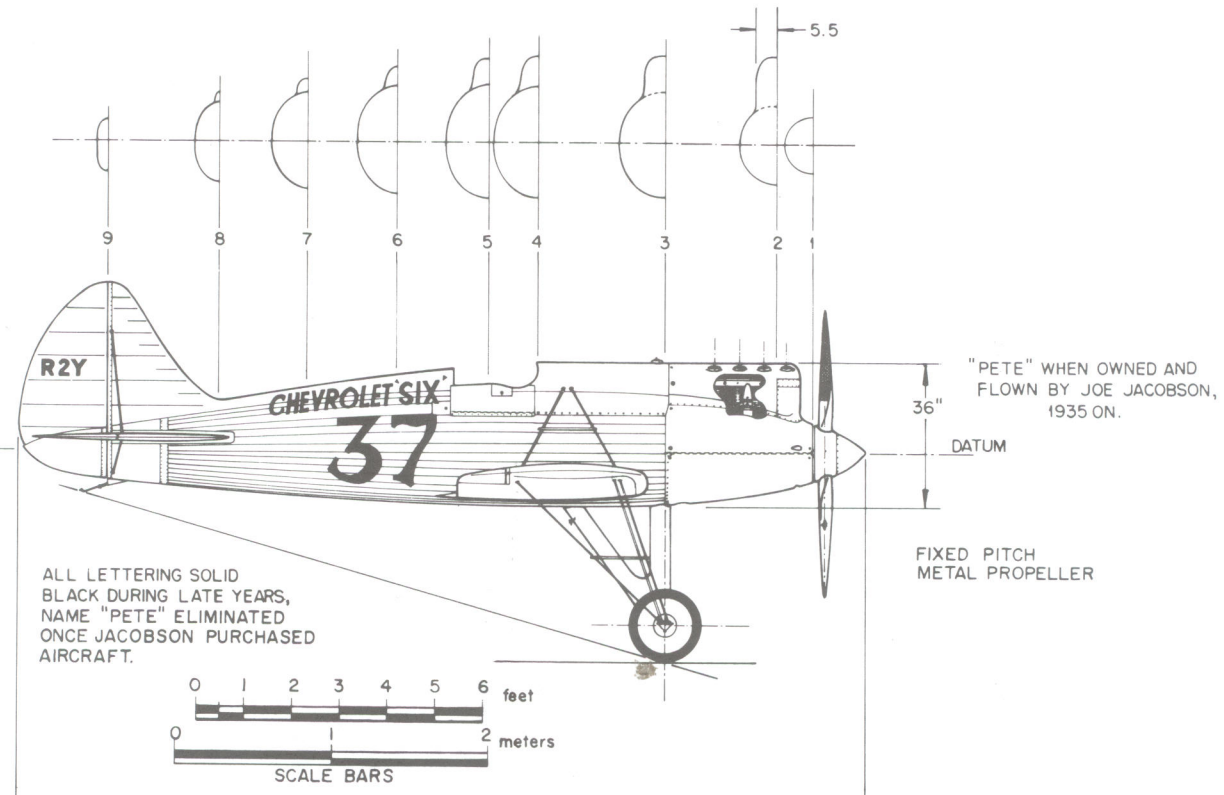
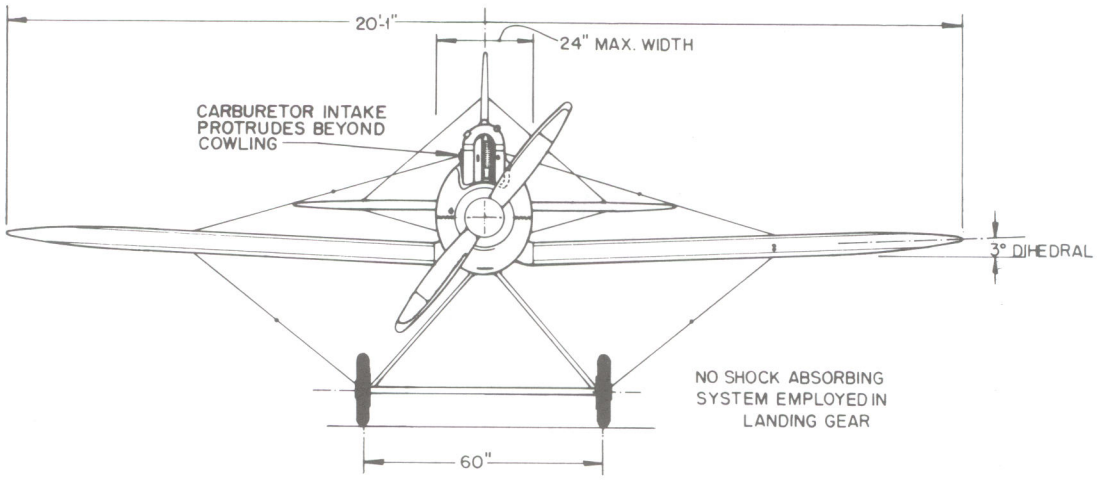
REPRO. 1:48

DRAWN BY - PAUL R. MATT

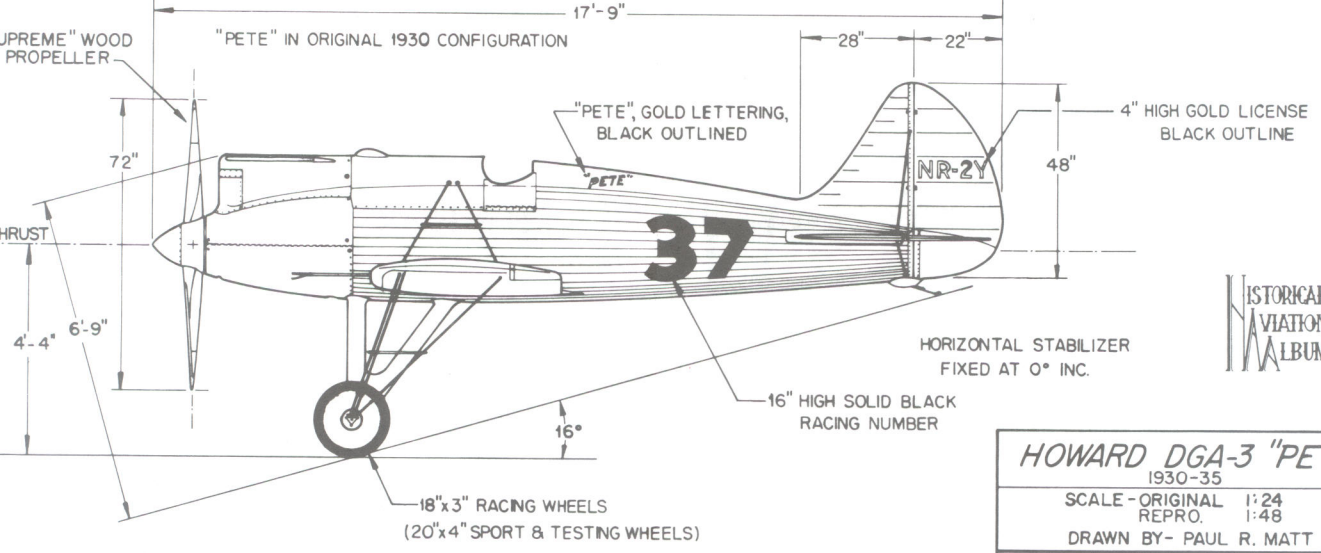
© HISTORICAL AVIATION ALBUM

P.O. BOX 33

TEMPLE CITY, CALIF. 91786



ALL LETTERING SOLID BLACK DURING LATE YEARS, NAME "PETE" ELIMINATED ONCE JACOBSON PURCHASED AIRCRAFT.



HISTORICAL AVIATION ALBUM

HOWARD DGA-3 "PETE"
 1930-35
 SCALE - ORIGINAL 1:24
 REPRO. 1:48
 DRAWN BY - PAUL R. MATT

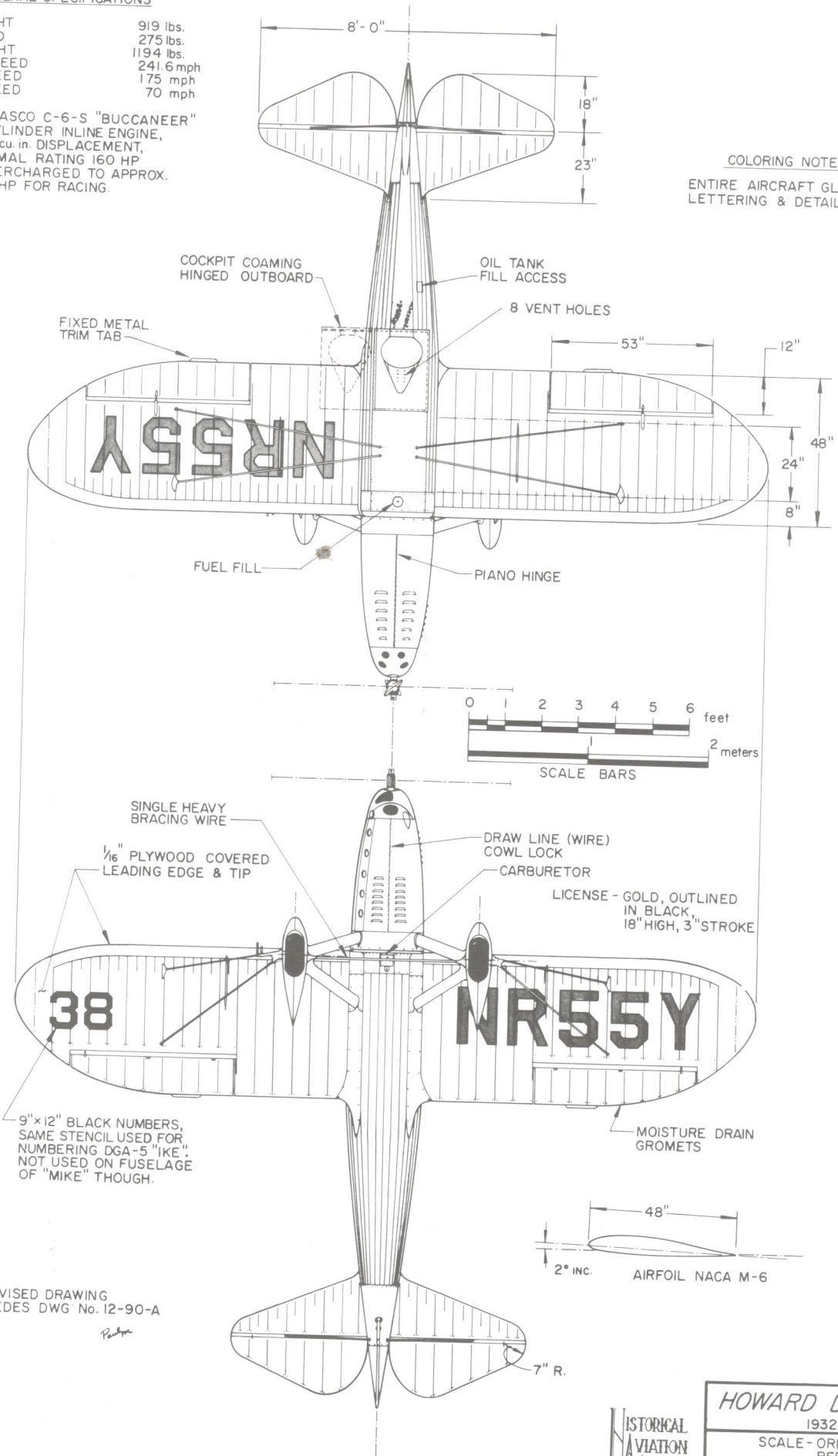
GENERAL SPECIFICATIONS

EMPTY WEIGHT 919 lbs.
 USEFUL LOAD 275 lbs.
 GROSS WEIGHT 1194 lbs.
 MAXIMUM SPEED 241.6 mph
 CRUISING SPEED 175 mph
 LANDING SPEED 70 mph

POWER: MENASCO C-6-S "BUCCANEER"
 6 CYLINDER INLINE ENGINE,
 489 cu. in. DISPLACEMENT,
 NORMAL RATING 160 HP
 SUPERCHARGED TO APPROX.
 200 HP FOR RACING.

COLORING NOTES

ENTIRE AIRCRAFT GLOSS WHITE,
 LETTERING & DETAILS AS NOTED



NOTE:
 THIS IS A REVISED DRAWING
 AND SUPERSEDES DWG No. 12-90-A

Paul R. MA

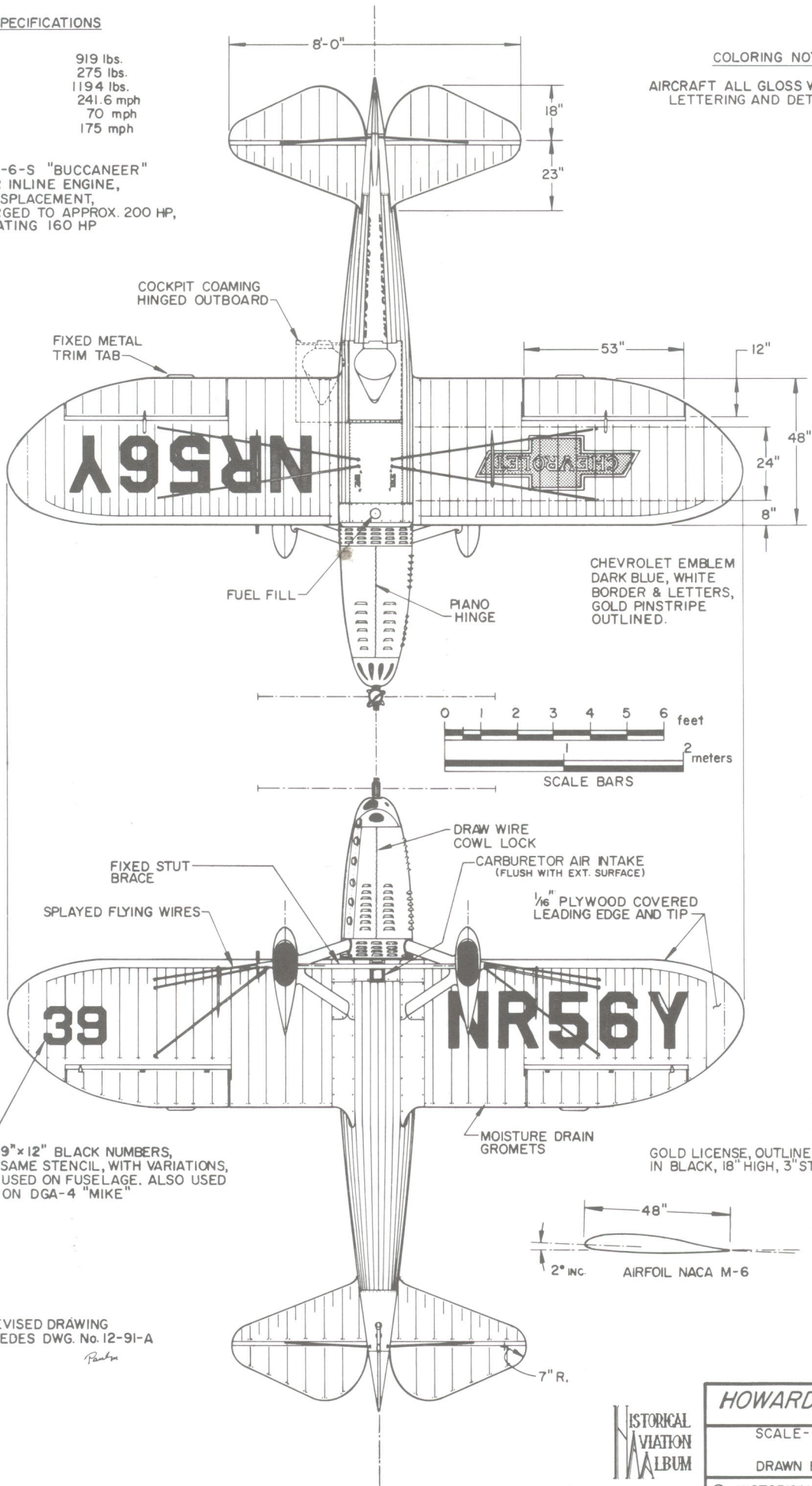
GENERAL SPECIFICATIONS

EMPTY WEIGHT 919 lbs.
 MAXIMUM GROSS WEIGHT 275 lbs.
 MAXIMUM TAKEOFF WEIGHT 1194 lbs.
 MAXIMUM SPEED 241.6 mph
 CRUISE SPEED 70 mph
 CLIMBING SPEED 175 mph

ENGINE: MENASCO C-6-S "BUCCANEER"
 6 CYLINDER INLINE ENGINE,
 489 cu.in. DISPLACEMENT,
 SUPERCHARGED TO APPROX. 200 HP,
 NORMAL RATING 160 HP

COLORING NOTES

AIRCRAFT ALL GLOSS WHITE,
 LETTERING AND DETAILS AS NOTED

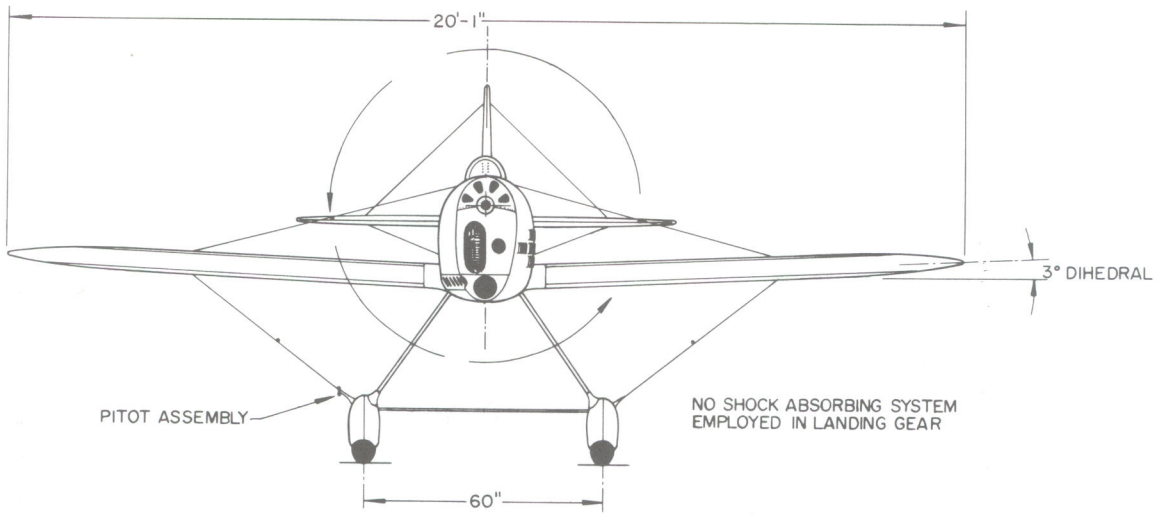


NOTE:
 THIS IS A REVISED DRAWING
 AND SUPERSEDES DWG. No. 12-91-A
 Paul R. Matt

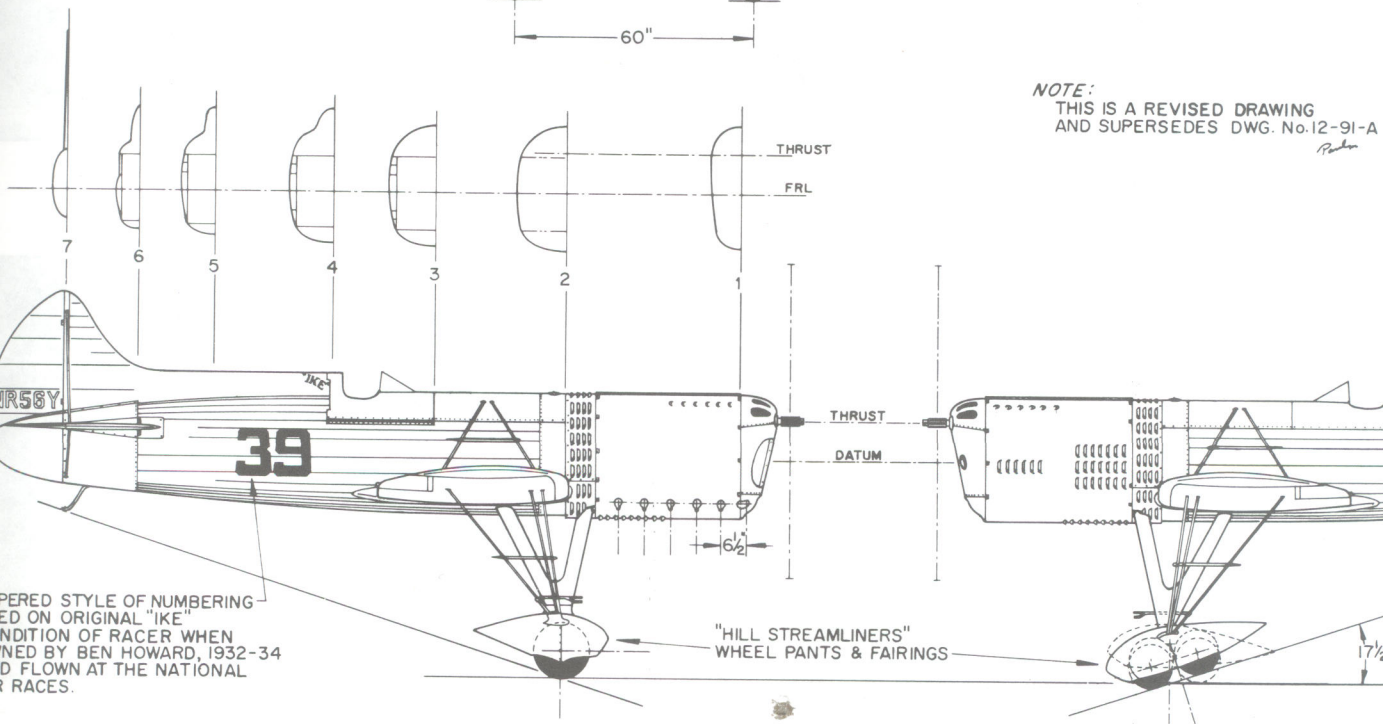
HISTORICAL
 AVIATION
 ALBUM

HOWARD DGA-5 "MIKE"
 1932-37
 SCALE - ORIGINAL 1:24
 REPRO. 1:48
 DRAWN BY - PAUL R. MATT

© HISTORICAL AVIATION ALBUM
 P.O. BOX 33
 TEMPLE CITY, CALIF. 91789



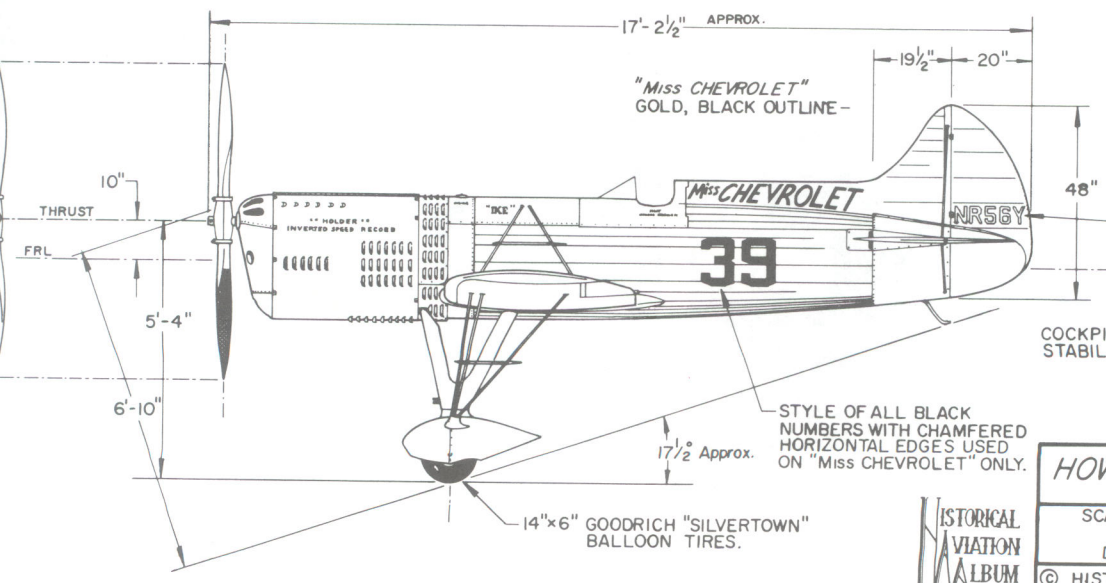
NOTE:
THIS IS A REVISED DRAWING
AND SUPERSEDES DWG. No.12-91-A
Paul



PERED STYLE OF NUMBERING
ED ON ORIGINAL "IKE"
NDITION OF RACER WHEN
NED BY BEN HOWARD, 1932-34
D FLOWN AT THE NATIONAL
R RACES.

ORIGINAL TANDEM LANDING G
EMPLOYED DURING FIRST, 19
RACING SEASON ONLY. 11x5"
TREADED HIGH PRESSURE T

WITH GROUND ADJUSTABLE
METAL PROPELLER.

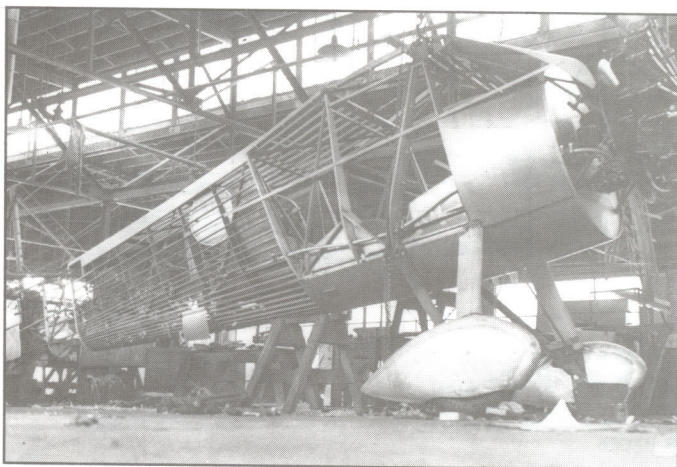
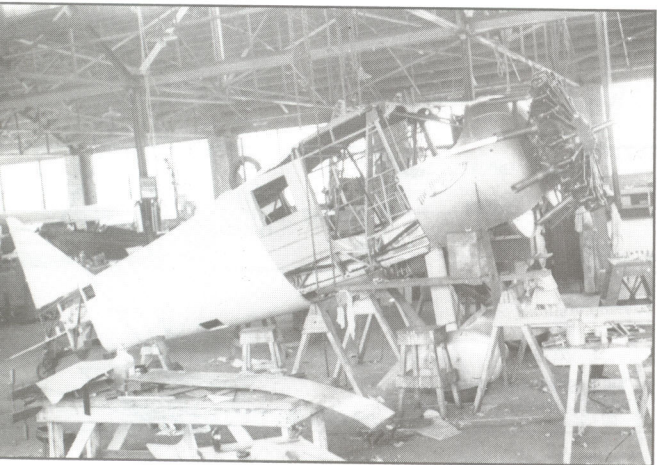
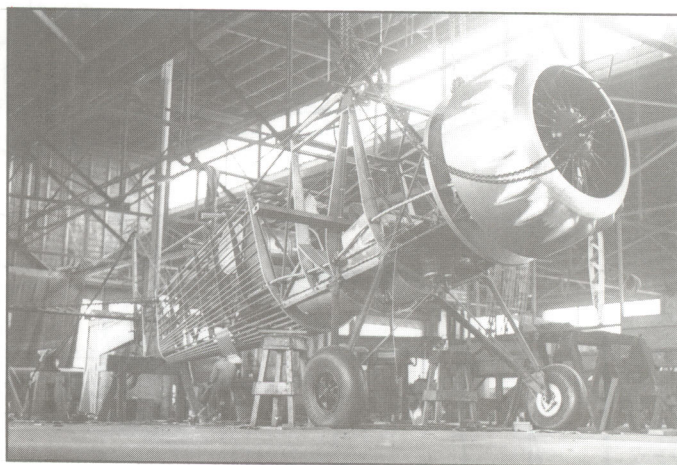
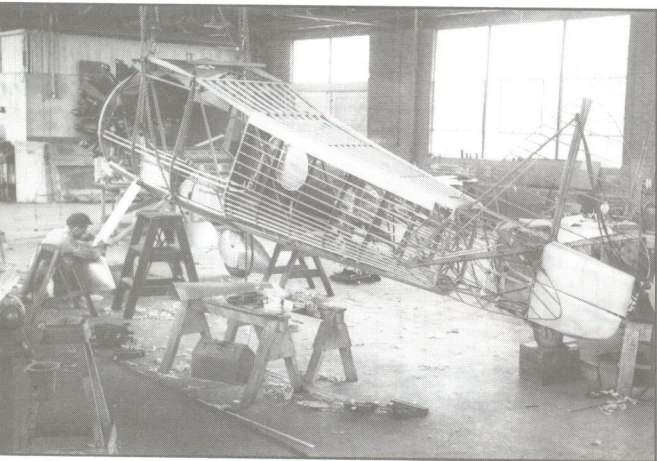


AT LEFT IS "IKE" IN ITS MOST
POPULAR CONDITION, WHEN
OWNED BY HAROLD NEUMAN
1935-36, AND THEN ACQUIRED
BY THE FORDEN-BROWN
AIRSHOWS, INC. 1936-38.

HOWARD DGA-5 "IKE"	
1932-37	
SCALE - ORIGINAL	1:24
REPRO.	1:48
DRAWN BY - PAUL R. MATT	
© HISTORICAL AVIATION ALBUM 19	
P.O. BOX 33	

HISTORICAL
AVIATION
ALBUM

Howard DGA-6 Mister Mulligan



USEFUL LOAD
2700 lbs.
GROSS WEIGHT
5300 lbs.
WING AREA
150.7 sq. ft.
WING LOADING
35 lbs./sq. ft.
POWER LOADING
7.65 lbs/h.p.

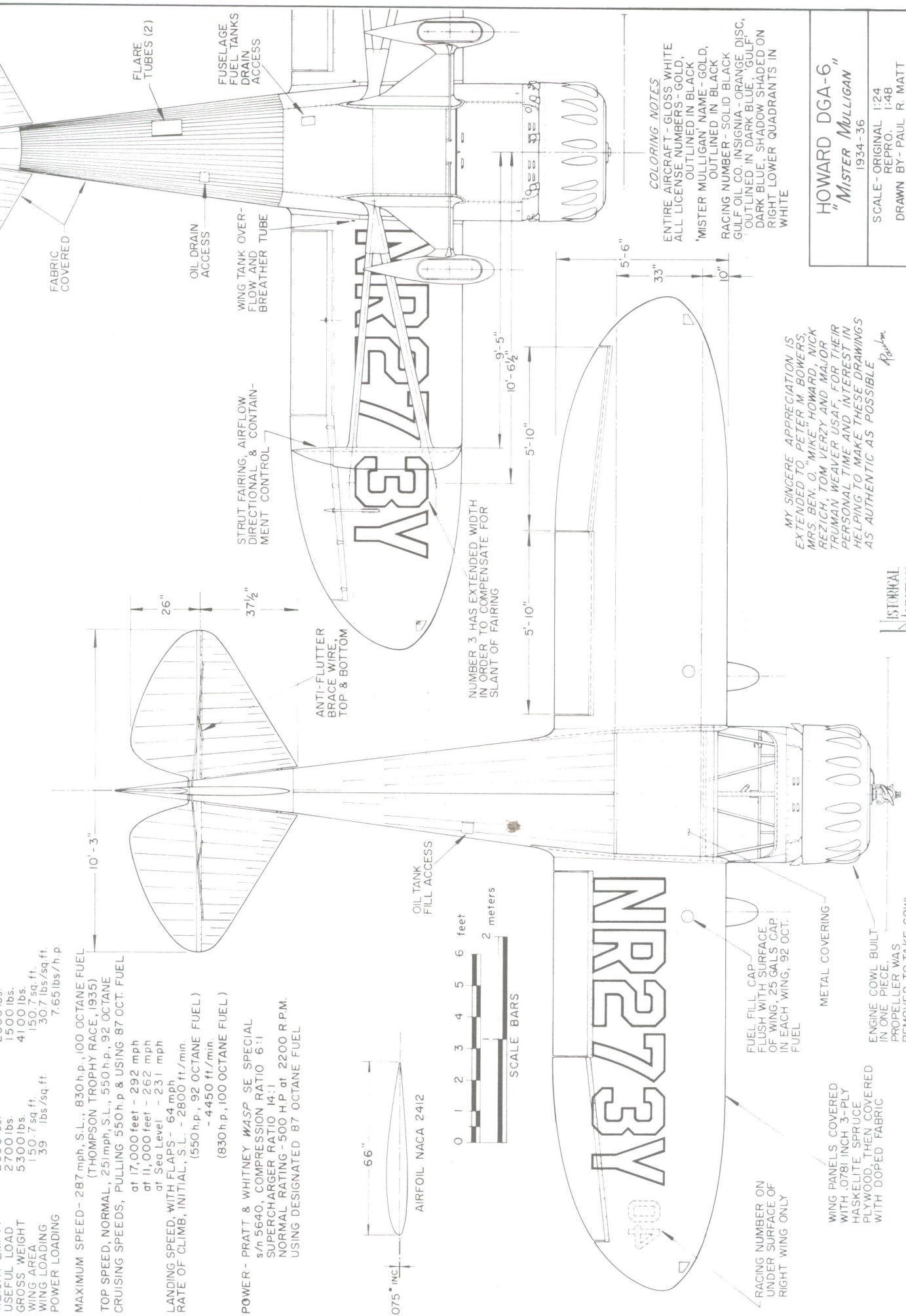
MAXIMUM SPEED - 287 mph, S.L., 830 h.p., 100 OCTANE FUEL
(THOMPSON TROPHY RACE, 1935)

TOP SPEED, NORMAL, 251 mph, S.L., 550 h.p., 92 OCTANE
CRUISING SPEEDS, PULLING 550 h.p. & USING 87 OCT. FUEL

at 17,000 feet - 292 mph
at 11,000 feet - 262 mph
at Sea Level - 231 mph

LANDING SPEED, WITH FLAPS - 64 mph
RATE OF CLIMB, INITIAL, S.L. - 2800 ft./min.
(550 h.p., 92 OCTANE FUEL)
- 4450 ft./min.
(830 h.p., 100 OCTANE FUEL)

POWER - PRATT & WHITNEY WASP SE SPECIAL
s/n 5640, COMPRESSION RATIO 6:1
SUPERCHARGER RATIO 14:1
NORMAL RATING - 500 H.P. at 2200 R.P.M.
USING DESIGNATED 87 OCTANE FUEL



FLARE TUBES (2)
FUSELAGE FUEL TANKS
DRAIN ACCESS
OIL DRAIN ACCESS
WING TANK OVER-FLOW AND BREATHING TUBE
STRUT FAIRING, AIRFLOW DIRECTIONAL & CONTAINMENT CONTROL
ANTI-FLUTTER BRACE WIRE, TOP & BOTTOM
NUMBER 3 HAS EXTENDED WIDTH IN ORDER TO COMPENSATE FOR SLANT OF FAIRING

COLORING NOTES

ENTIRE AIRCRAFT - GLOSS WHITE
ALL LICENSE NUMBERS - GOLD,
OUTLINED IN BLACK
'MISTER MULLIGAN' NAME - GOLD,
OUTLINED IN BLACK
RACING NUMBER - SOLID BLACK
GULF OIL CO. INSIGNIA - ORANGE DISC,
OUTLINED IN DARK BLUE, GULF
DARK BLUE; SHADOW SHADED ON
RIGHT LOWER QUADRANTS IN
WHITE

**HOWARD DGA-6
"MISTER MULLIGAN"**
1934-36

SCALE - ORIGINAL 1:24
REPRO. 1:48
DRAWN BY - PAUL R. MATT

MY SINCERE APPRECIATION IS
EXTENDED TO PETER M. BOWERS,
MRS. BEN. O. "MIKE" HOWARD, NICK
REZICH, TOM VERZY AND MAJOR
TRUMAN WEAVER USAF, FOR THEIR
PERSONAL TIME AND INTEREST IN
HELPING TO MAKE THESE DRAWINGS
AS AUTHENTIC AS POSSIBLE
APM

HISTORICAL

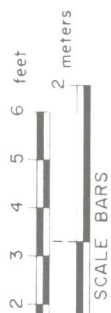
ENGINE COWL BUILT
IN ONE PIECE
PROPELLER WAS
REPLACED

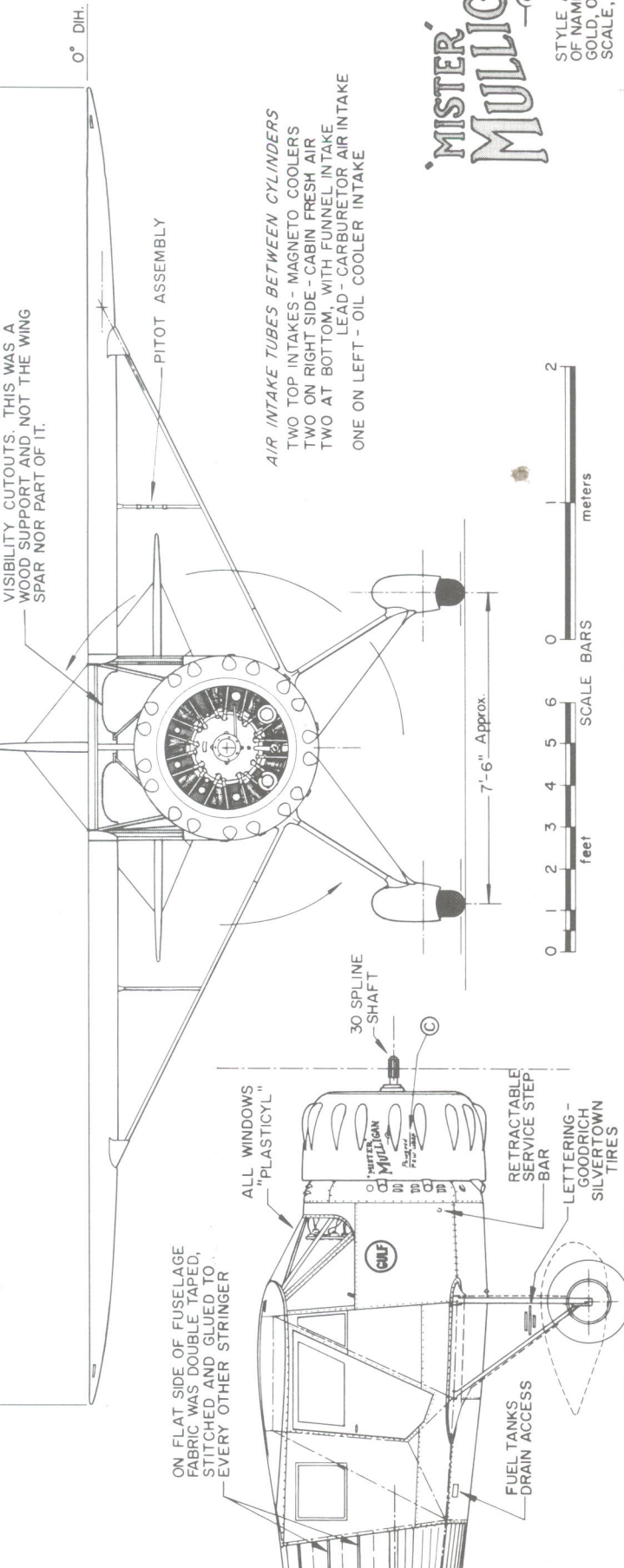
WING PANELS COVERED
WITH .0781 INCH 3-PLY
HASKELITE SPRUCE
PLYWOOD, THEN COVERED
WITH DOPED FABRIC

RACING NUMBER ON
UNDER SURFACE OF
RIGHT WING ONLY

FUEL FILL CAP
FLUSH WITH SURFACE
OF WING; 25 GALS. CAP
IN EACH WING, 92 OCT.
FUEL

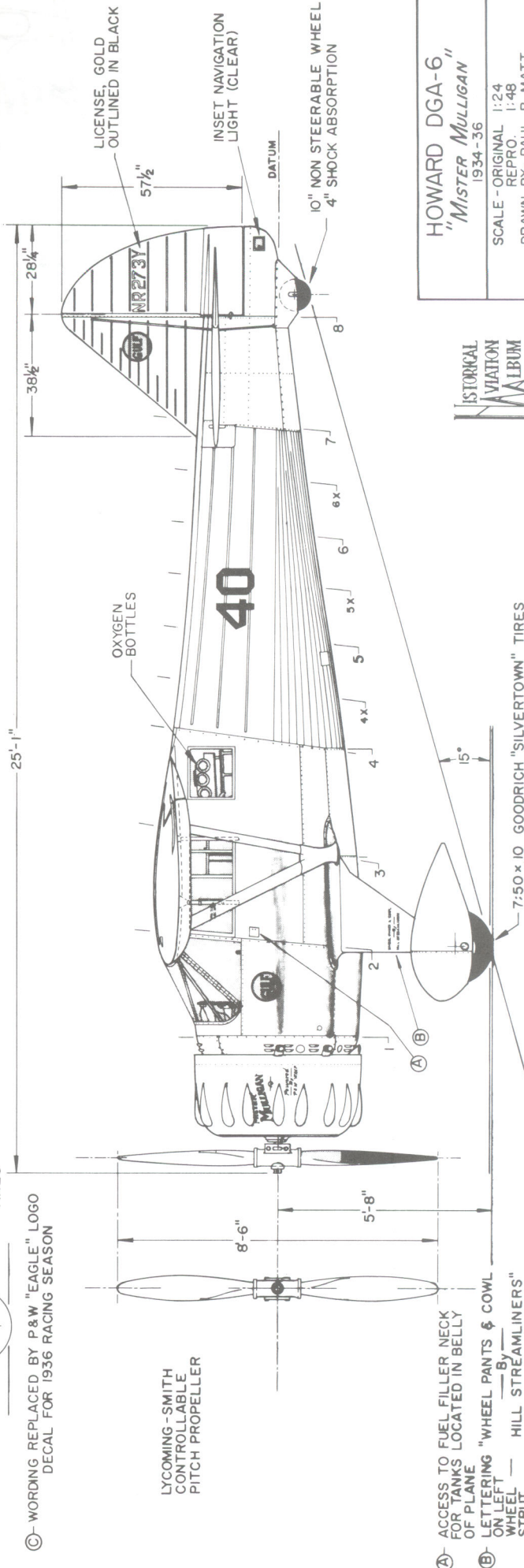
METAL COVERING





MISTER MULLIGAN

STYLE AND PLACEMENT OF NAME ON ENGINE COWLING, GOLD, OUTLINED IN BLACK. SCALE, 4 X SCALE OF G.A.



© WORDING REPLACED BY P & W "EAGLE" LOGO DECAL FOR 1936 RACING SEASON

HOWARD DGA-6
 "MISTER MULLIGAN"
 1934-36

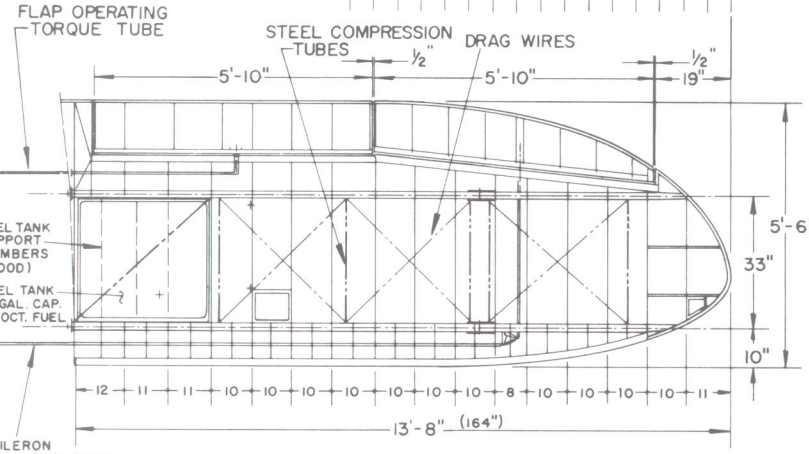
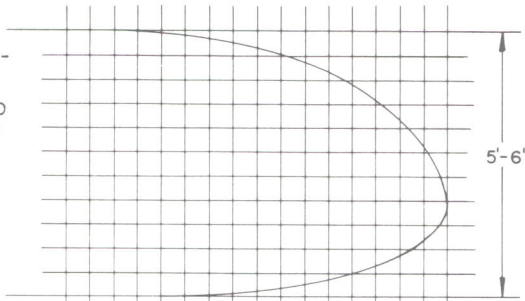
SCALE - ORIGINAL 1:24
 REPRO. 1:48
 DRAWN BY - PAUL R. MATT



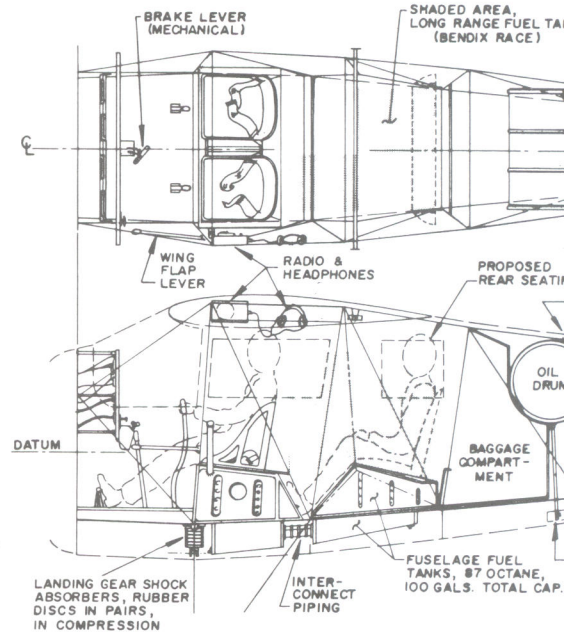
A - ACCESS TO FUEL FILLER NECK FOR TANKS LOCATED IN BELLY OF PLANE
 B - LETTERING "WHEEL PANTS & COWL ON LEFT WHEEL - HILL STREAMLINERS" STRUT

"MISTER MULLIGAN" WING TIP LAYOUT
ON 6 INCH INCREMENTS

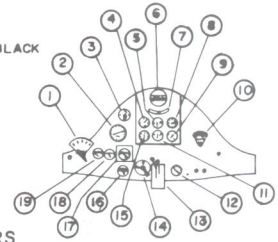
DRAG WIRES WERE USED IN CONSTRUCTION OF WING IN CONJUNCTION WITH THE .0781 INCH 3-PLY ELITE SPRUCE PLYWOOD. ASSEMBLY WAS THEN COVERED WITH FABRIC, DOPED, SANDED AND POLISHED TO A SMOOTH FINISH



INTERIOR OF CABIN - NATURAL MAHOGANY PLY-VENEER FLOORBOARD - PAINTED DARK GRAY

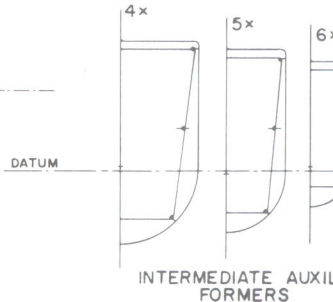
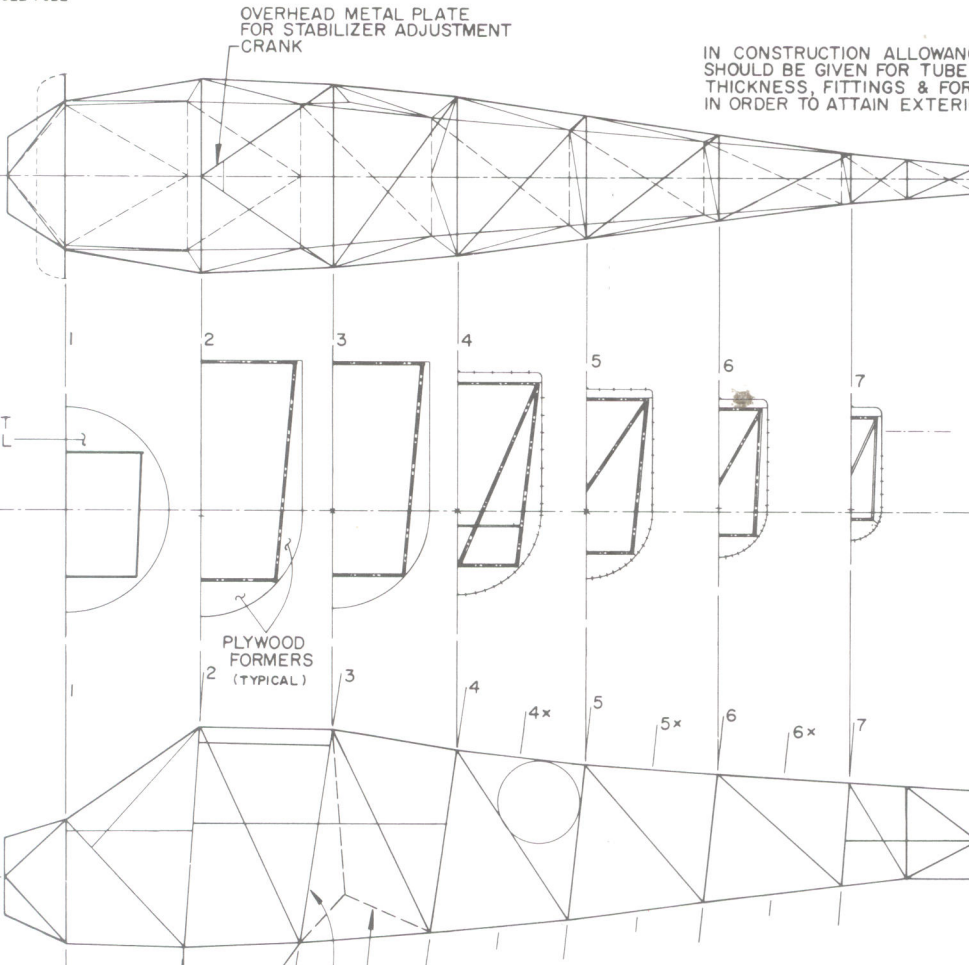


INSTRUMENT PANEL, BLACK CENTER FLIGHT INSTRUMENT SQUARE, CRINKLE FINISH



IN CONSTRUCTION ALLOWANCE SHOULD BE GIVEN FOR TUBE THICKNESS, FITTINGS & FORMERS IN ORDER TO ATTAIN EXTERIOR SHAPE

- 1. PROP. PITCH CONTROL INDEX
- 2. ARTIFICIAL HORIZON
- 3. CLOCK
- 4. AIRSPEED
- 5. TURN INDICATOR
- 6. COMPASS
- 7. BALL & BANK
- 8. RATE OF CLIMB
- 9. TACHOMETER
- 10. ENGINE PRIM
- 11. THROTTLE & MIXTURE C
- 12. IGNITION SWI
- 13. ALTIMETER
- 14. MULTI POSIT
- 15. ON ENGINE H
- 16. TEMPERATU
- 17. OIL PRESSUR
- 18. OIL TEMPERA
- 19. OIL TEMPERA



TAIL WHEEL SHOCK ASSEMBLY, RUBBER DISCS.

STRUCTURE ON RIGHT SIDE ONLY

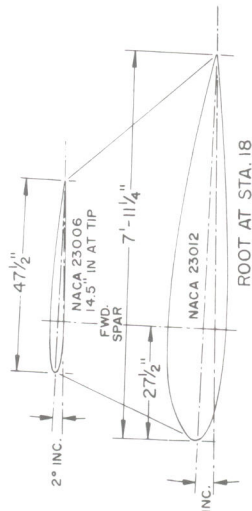
THIS TUBE OMITTED ON RIGHT SIDE TO ALLOW FOR CABIN DOOR

EXACT DIMENSIONS CANNOT BE GIVEN ON INTERIOR STRUCTURES AS THEY ARE NO LONGER AVAILABLE. DRAWINGS ARE RECONSTRUCTED FROM SURVIVING TECHNICAL DATA, PHOTOS AND PERSONAL REMEMBRANCES OF THOSE MORE CLOSELY ASSOCIATED WITH THE ACTUAL AIRCRAFT

HOWARD DGA-6
"MISTER MULLIGAN"
1934-36
SCALE - ORIGINAL 1:24
REPRO. 1:48
DRAWN BY - PAUL R. MATT
© HISTORICAL AVIATION ALBUM
P. O. BOX 33

WEIGHT EMPTY 4097.40 lbs.
 TOP SPEED, APPROX. 330 mph
 WING AREA 191 sq. ft.
 WING LOADING 32.5 lbs./sq. ft.
 POWER LOADING 8.66 lbs./H.P.
 FUEL CAPACITY 280 gals.
 OIL CAPACITY 30 gals.

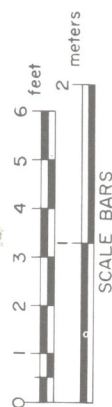
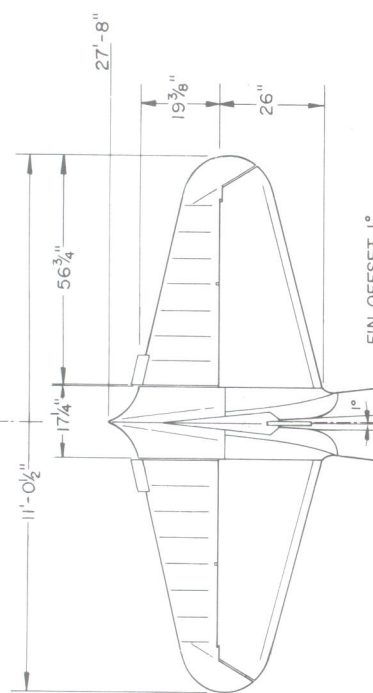
POWER: PRATT & WHITNEY SA5-G (R-1535),
 TWIN WASP Jr., s/n 27. (Redesignated s/n 281)
 700 HP at 2500rpm. PROPELLER REDUCTION
 GEARING 4:3. POWER BOOSTED TO APPROX.
 900 HP THROUGH "DOPED" FUEL AND
 CARBURATION ADJUSTMENTS.



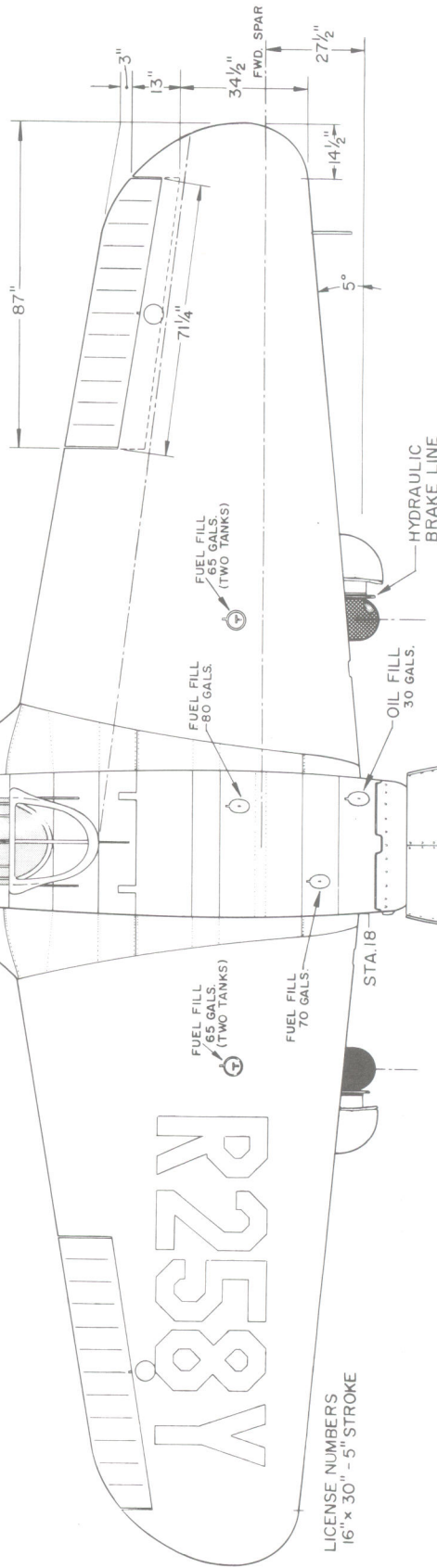
FUSELAGE AND FIXED TAIL SURFACES - ALUMINUM,
 FUSELAGE PROPER - FLAT SHEET, BUTT JOINED,
 FLUSH, SHAVED, BURNISHED & POLISHED RIVETING
 CONTROL SURFACES - METAL FRAMEWORK - FABRIC
 COVERED, WING FLAPS - WOOD FRAMEWORK,
 PLYWOOD COVERED.
 WINGS - WOOD SPARS AND RIBS, PLYWOOD COVERED,
 SHAVED, CLOTH COVERED, DOPED AND POLISHED,
 LANDING GEAR - ALUMINUM BOX CONSTRUCTION,
 RIGID EXCEPT FOR SHORT 5" SHOCK STRUT AT
 WHEEL AXEL.

COLORING NOTES

FUSELAGE, FIXED TAIL SURFACES - NATURAL ALUMINUM.
 ELEVATORS AND RUDDER - SILVER DOPED.
 WINGS - DARK ROYAL BLUE, (Hughes Tool Co. blue)
 (MUNSELL 5PB 2/4)
 LICENSE NUMBERS ON WINGS - DEEP YELLOW,
 (Hughes Tool Co. yellow)
 (MUNSELL 7.5 Y 8/12)
 ALL SURFACES WERE EXTREMELY SMOOTH IN FINISH.



SPRING LOADED
 FLUSH ENTRY
 STEPS



LICENSE NUMBERS
 16" x 30" - 5" STROKE

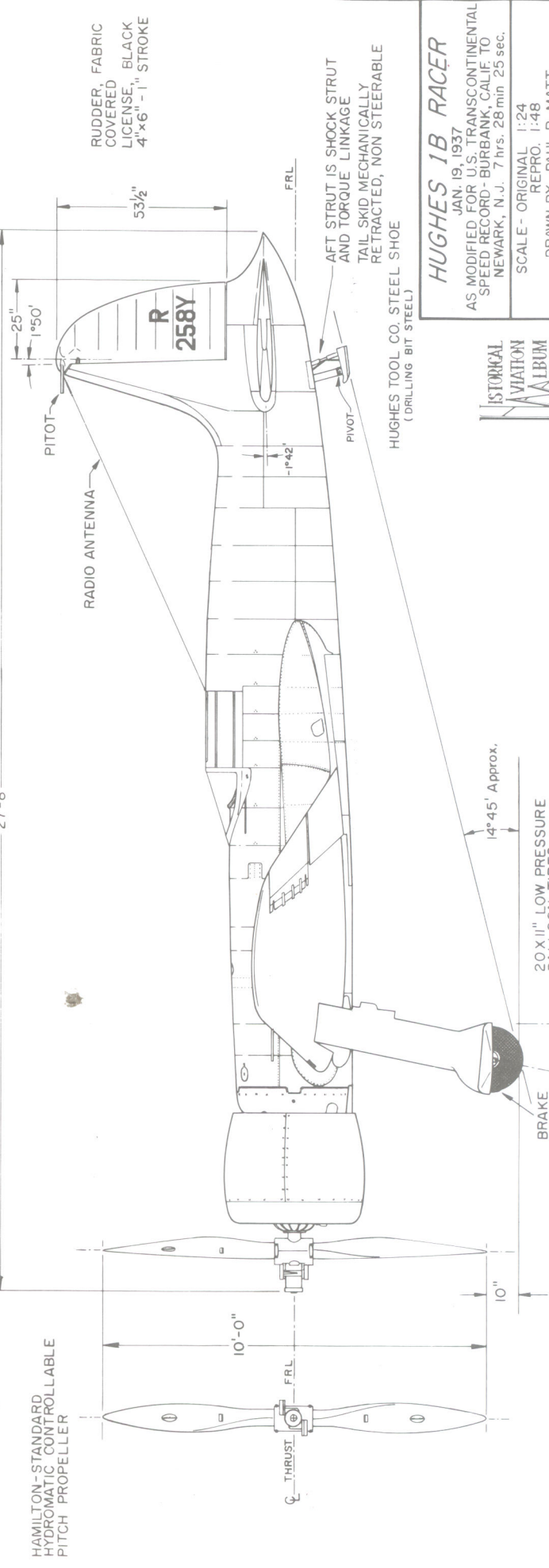
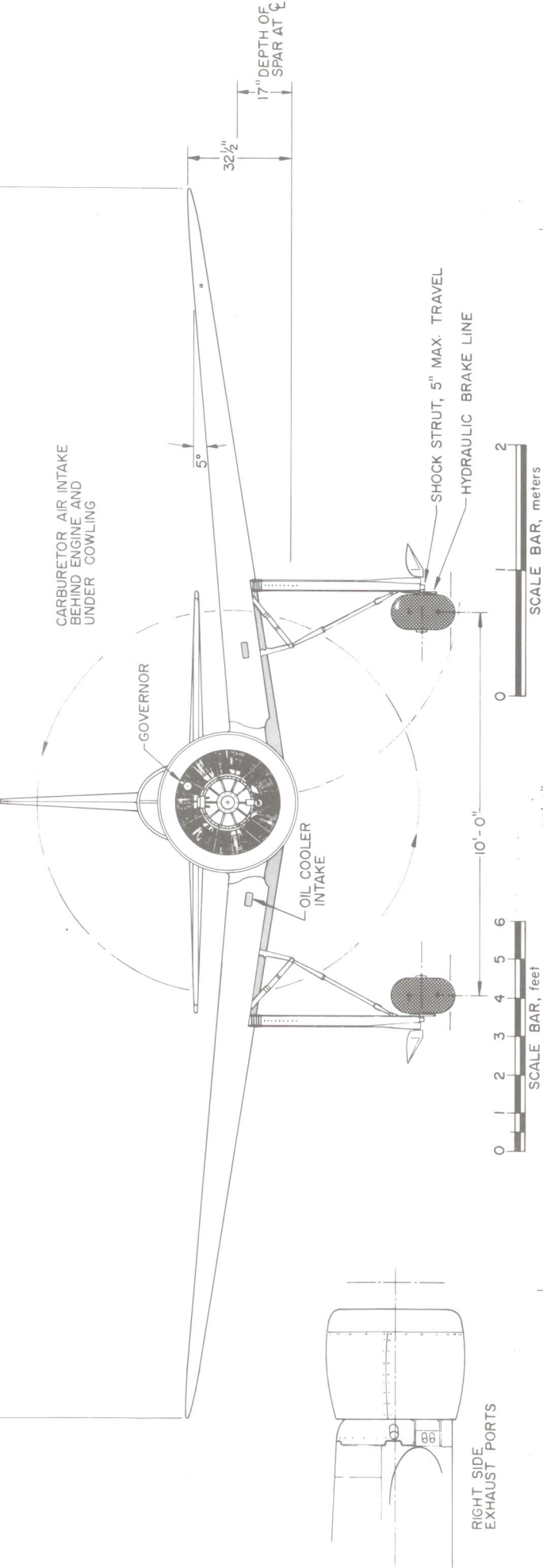
MY SINCERE APPRECIATION IS EXTENDED TO THE
 FOLLOWING MEN FOR THEIR SPECIAL INTEREST AND
 PERSONAL HELP IN MAKING THESE DRAWINGS AS
 ACCURATE AND COMPLETE AS POSSIBLE -
 MESSRS. RICHARD "DICK" PALMER, GLENN ODEKIRK,
 EARL MARTYN, VAN STORM, ROBERT HIRSCH, JOEY
 LEINLEIN, AND WALTER ROYNE AND ROBERT MIKESH

HISTORICAL
 AVIATION
 MUSEUM

HUGHES 1B RACER

JAN. 19, 1937

AS MODIFIED FOR U.S. TRANSCONTINENTAL
 SPEED RECORD - BURBANK, CALIF. TO
 NEWARK, N.J. 7 hrs. 28 min. 25 sec.



HUGHES 1B RACER
 JAN. 19, 1937
 AS MODIFIED FOR U.S. TRANSCONTINENTAL SPEED RECORD - BURBANK, CALIF. TO NEWARK, N.J. 7 hrs. 28 min 25 sec.
 SCALE - ORIGINAL 1:24
 REPRO. 1:48



ELEVATORS,
FABRIC COVERED
FIXED METAL
TRIM TABS

SPRING LOADED
FAIRING DOORS

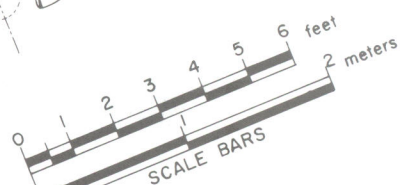
FLUSH HOLE,
RELIEF TUBE

FLAPS MECHANICALLY OPERATED
BY LEVER IN COCKPIT,
DIRECT TORQUE LINKAGE

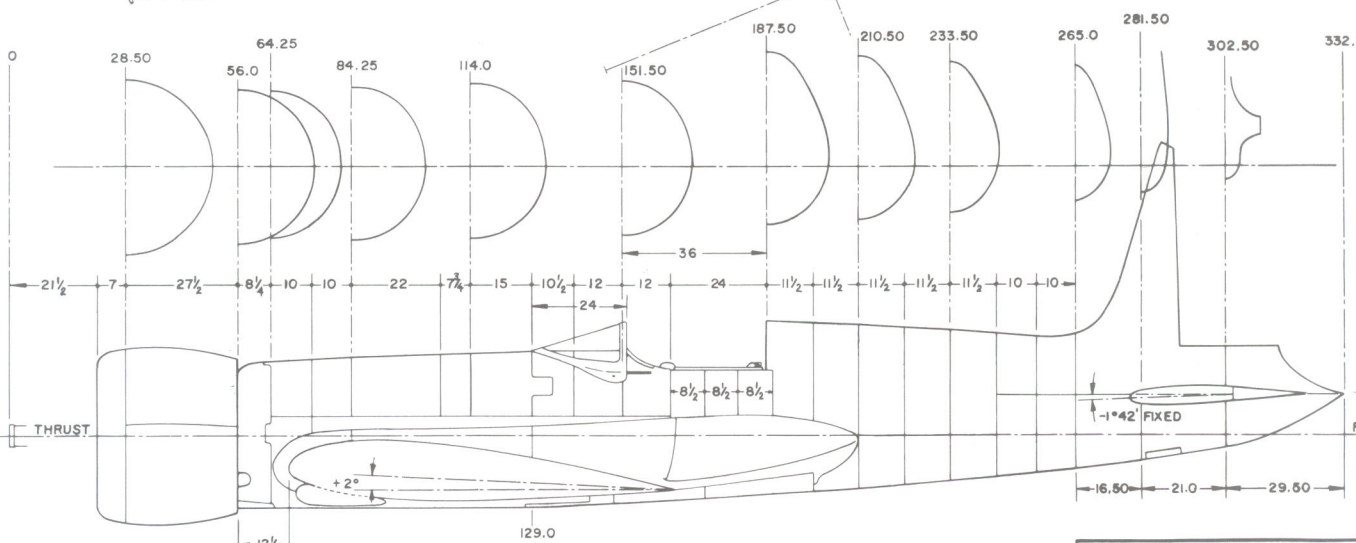
AILERON,
FABRIC COVERED

EMERGENCY FUEL
DUMP PORTS, ALL TANKS,
COLD SOLDERED PLATES.

INSET, FLUSH
INSPECTION PANEL



COLOR LINE—
BLUE OUTBOARD
3 - 1/4" GAPS
RETRACTION
ACTIVATING
ARMS

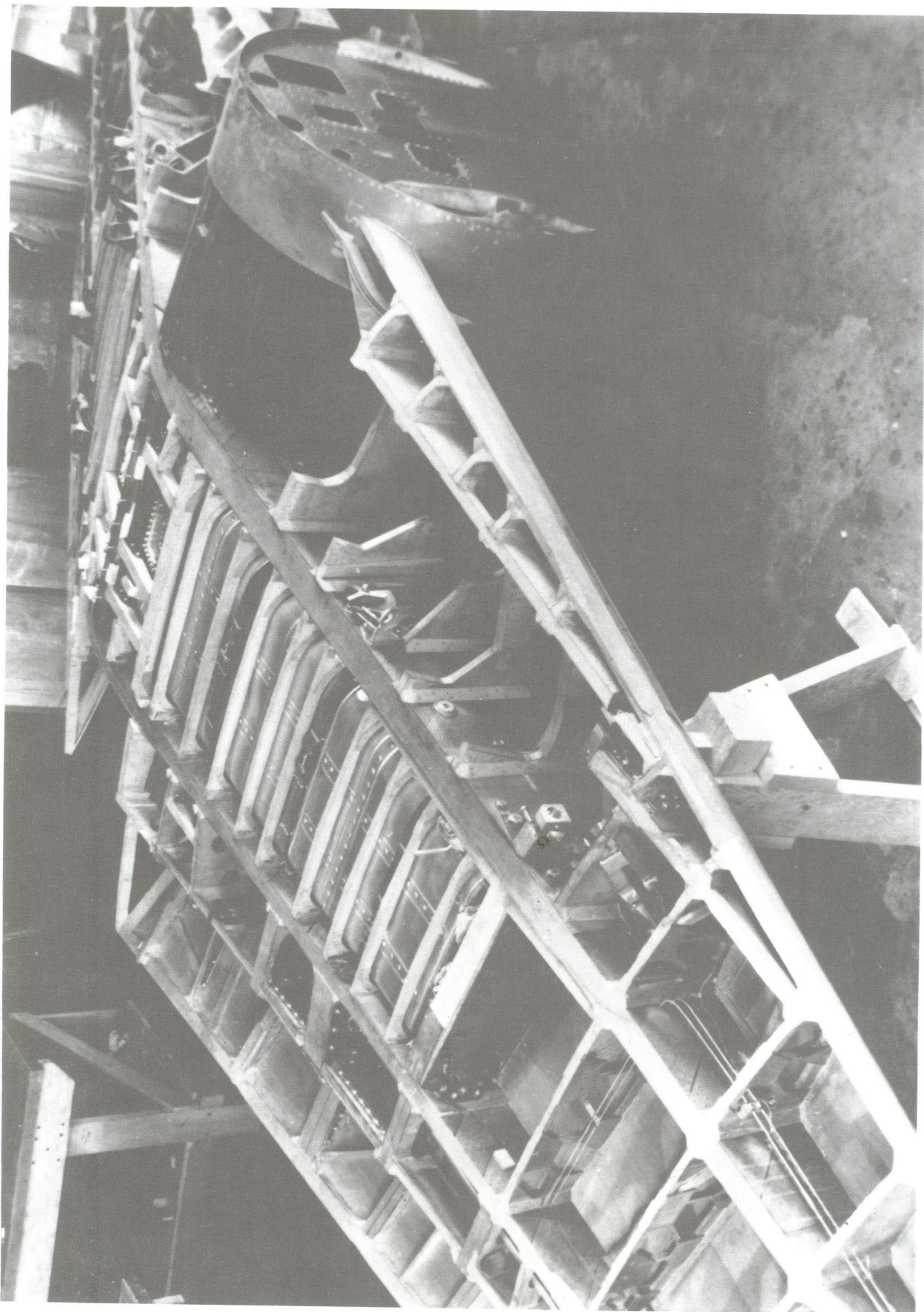


ALL DIMENSIONS IN PROFIE VIEW ARE INCHES

HISTORICAL
AVIATION
ALBUM

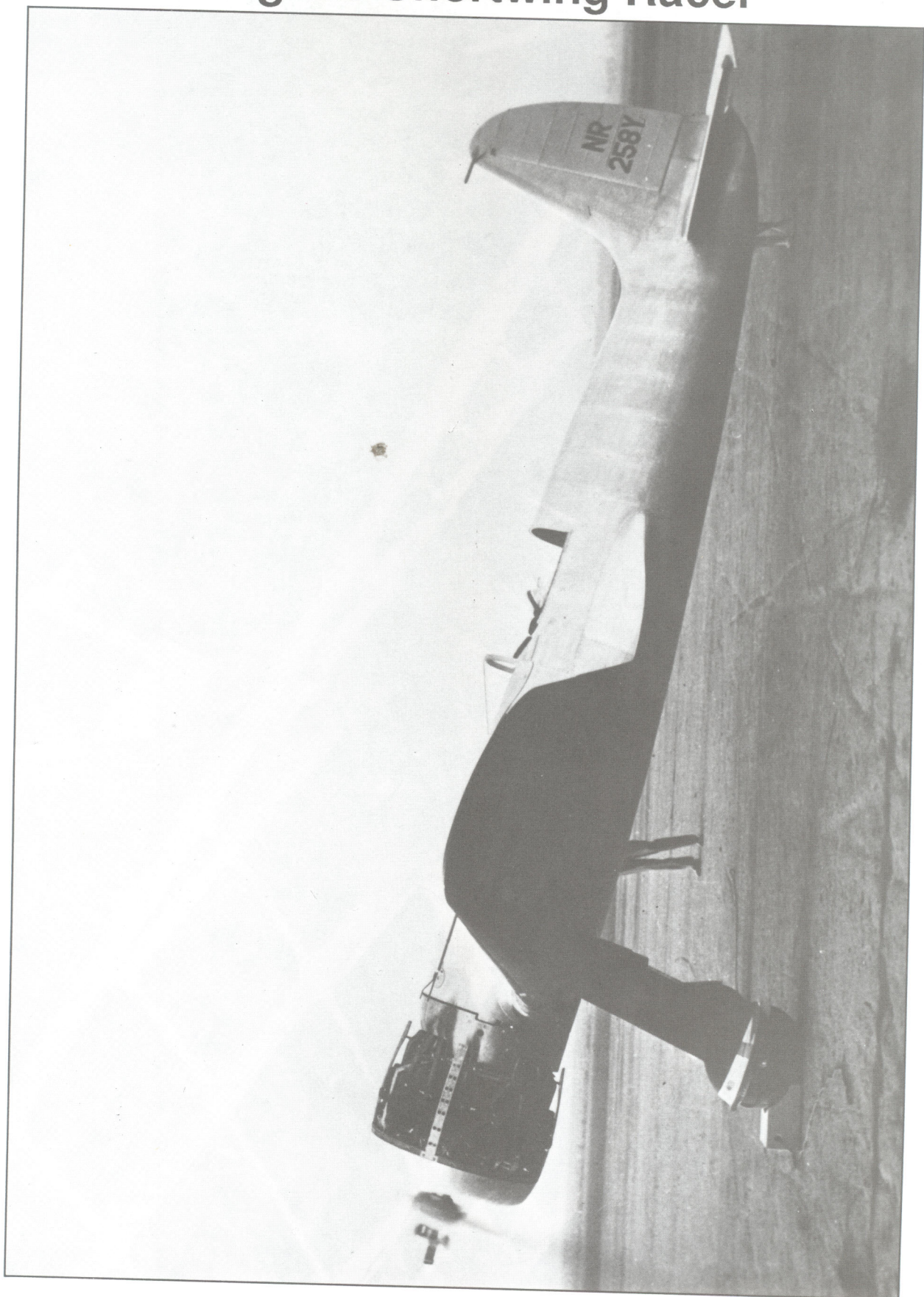
HUGHES 1B RACER
JAN. 19, 1937
AS MODIFIED FOR U.S. TRANSCONTINENTAL
SPEED RECORD - BURBANK, CALIF.
NEWARK, N.J. 7 hrs. 28 min.

SCALE - ORIGINAL 1:24
REPRO. 1:48
DRAWN BY - PAUL R. MATTHEWS
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Hughes 1B Racer, "Longwing" under construction in 1937.

Hughes Shortwing Racer



OWER LOADING

7.85 lbs./HP.

FUEL CAPACITY

250 gals.

OIL CAPACITY

30 gals.

OWER: PRATT & WHITNEY SA1-G (R-1535),
 TWIN WASP Jr., s/n 22, 700 HP at 2500 rpm
 PROPELLER REDUCTION GEARING 4:3
 POWER BOOSTED TO APPROX. 900 HP
 THROUGH "DOPED" FUEL AND
 CARBURATION ADJUSTMENTS.



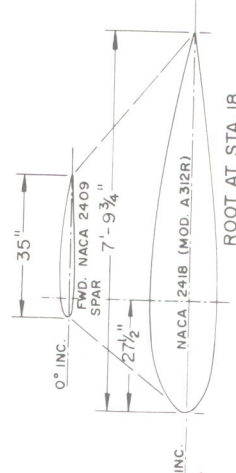
FIN OFFSET 1°

COLORING NOTES

FUSELAGE, FIXED TAIL SURFACES - NATURAL ALUMINUM.
 ELEVATORS AND RUDDER - SILVER DOPED.
 WINGS - DARK ROYAL BLUE, (Hughes Tool Co. blue)

(MUNSELL 5PB 2/4)
 LICENSE NUMBERS ON WINGS - DEEP YELLOW,
 (Hughes Tool Co. yellow)

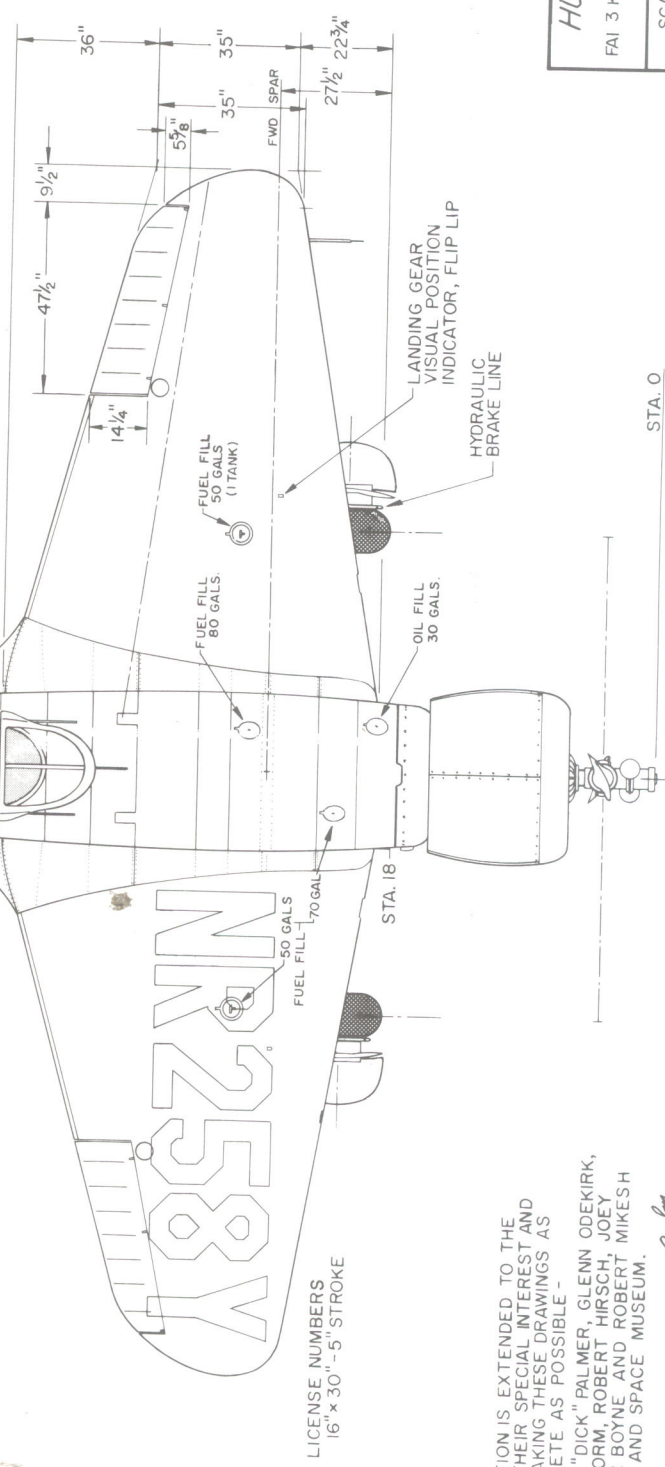
(MUNSELL 7.5 Y 8/12)
 ALL SURFACES WERE EXTREMELY SMOOTH IN FINISH.



ROOT AT STA. 18



SCALE BARS



LICENSE NUMBERS
 16" x 30" - 5" STROKE



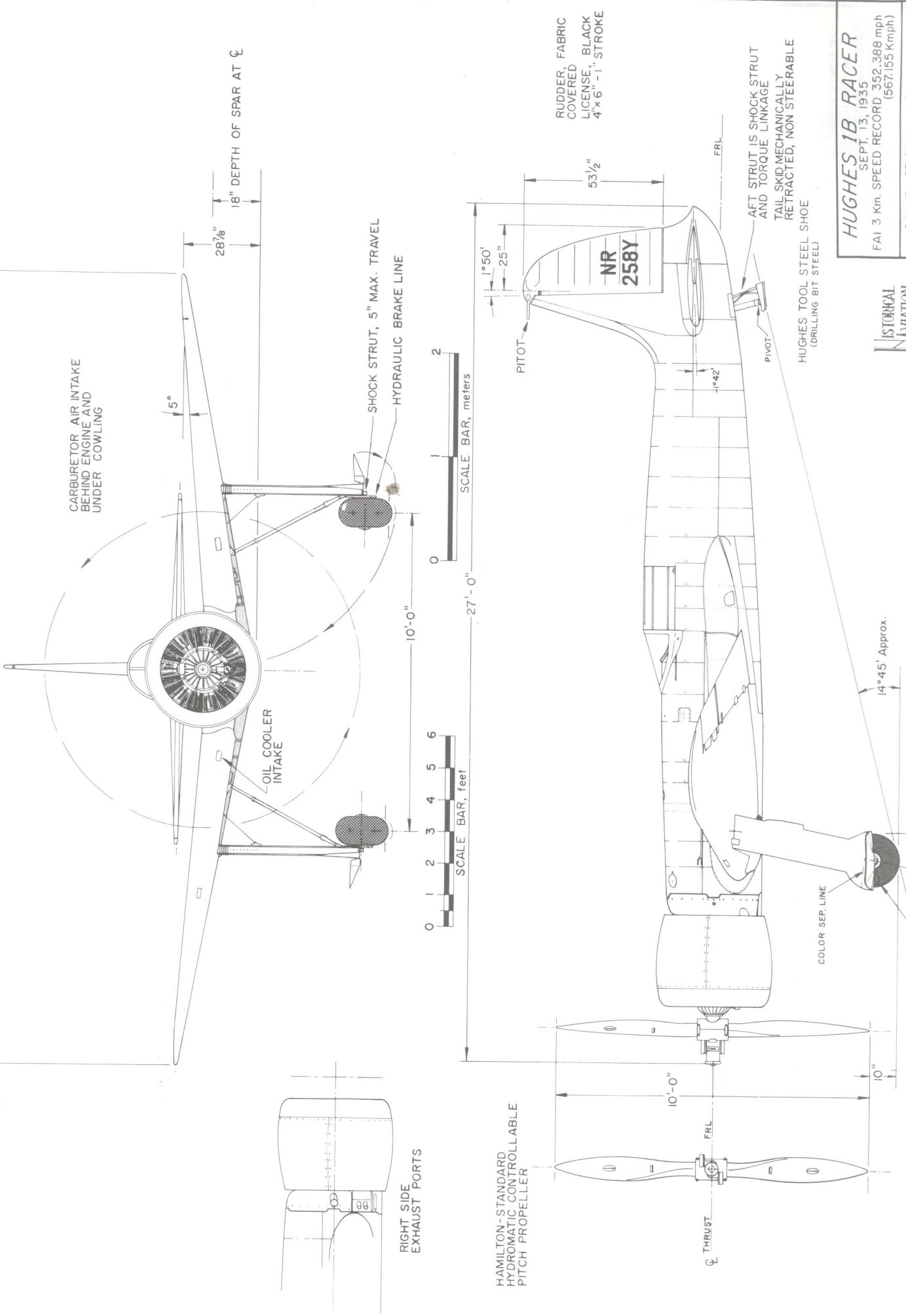
HUGHES 1B RACER
 SEPT. 13, 1935
 FAI 3 KM. SPEED RECORD 352.388 mph
 (567.155 Kmph)

SCALE - ORIGINAL 1:24
 REPRO. 1:48
 DRAWN BY - PAUL R. MATT

STA. 0

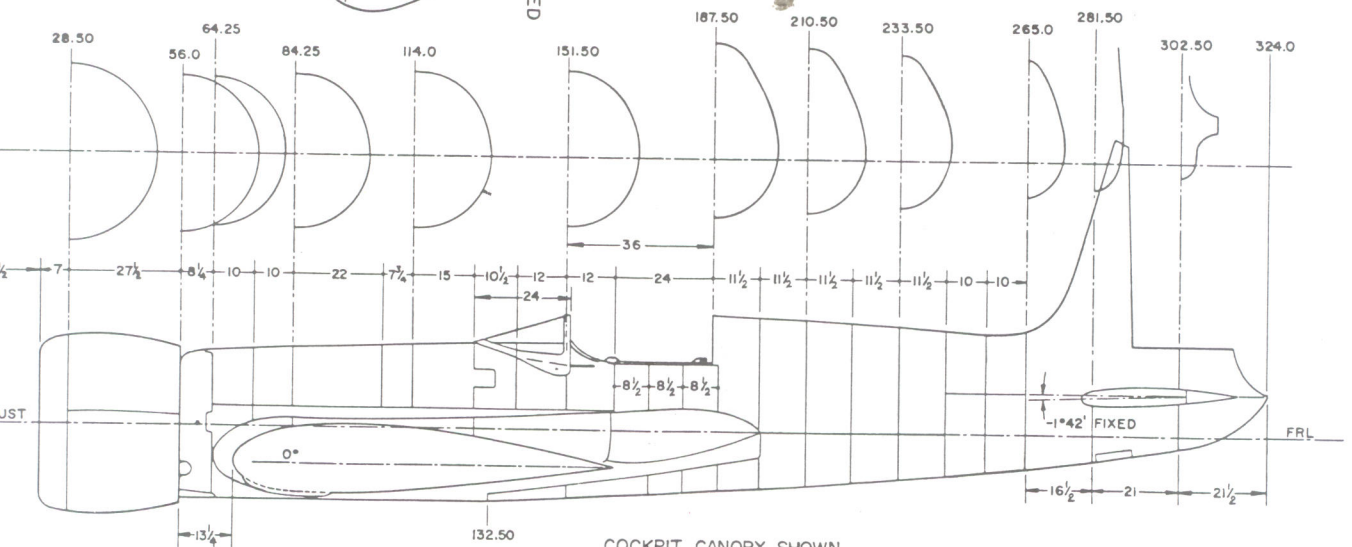
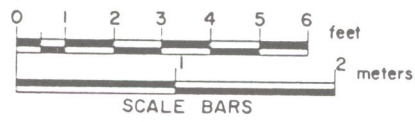
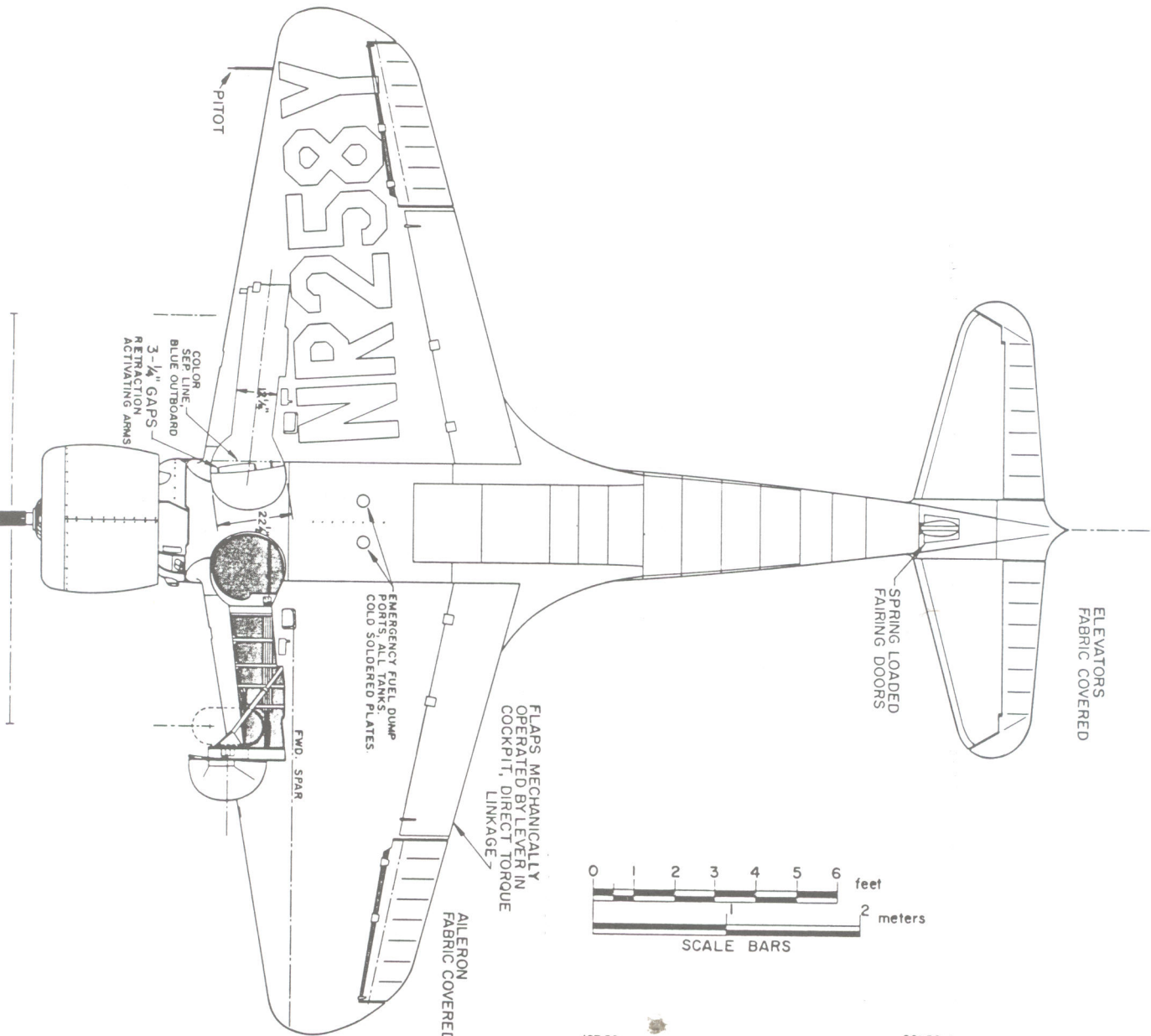
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 MESSRS. RICHARD "DICK" PALMER, GLENN ODEKIRK,
 L. MARTYN, VAN STORM, ROBERT HIRSCH, JOEY
 LEIB, AND WALTER BOYNE AND ROBERT MIKESH
 OF THE NATIONAL AIR AND SPACE MUSEUM.

Paul R. Matt



HUGHES 1B RACER
 SEPT. 13, 1935
 FAI 3 Km. SPEED RECORD 352.388 mph
 (567.155 Kmph)

ISTORICAL
 AVIATION



STRAIGHT KEEL LINE
STA. 56 TO STA. 132.5

COCKPIT CANOPY SHOWN
IN OPEN POSITION, WINDSHIELD
SLIDES FORWARD, SIDE PANELS
SLIDE DOWN INTO FUSELAGE

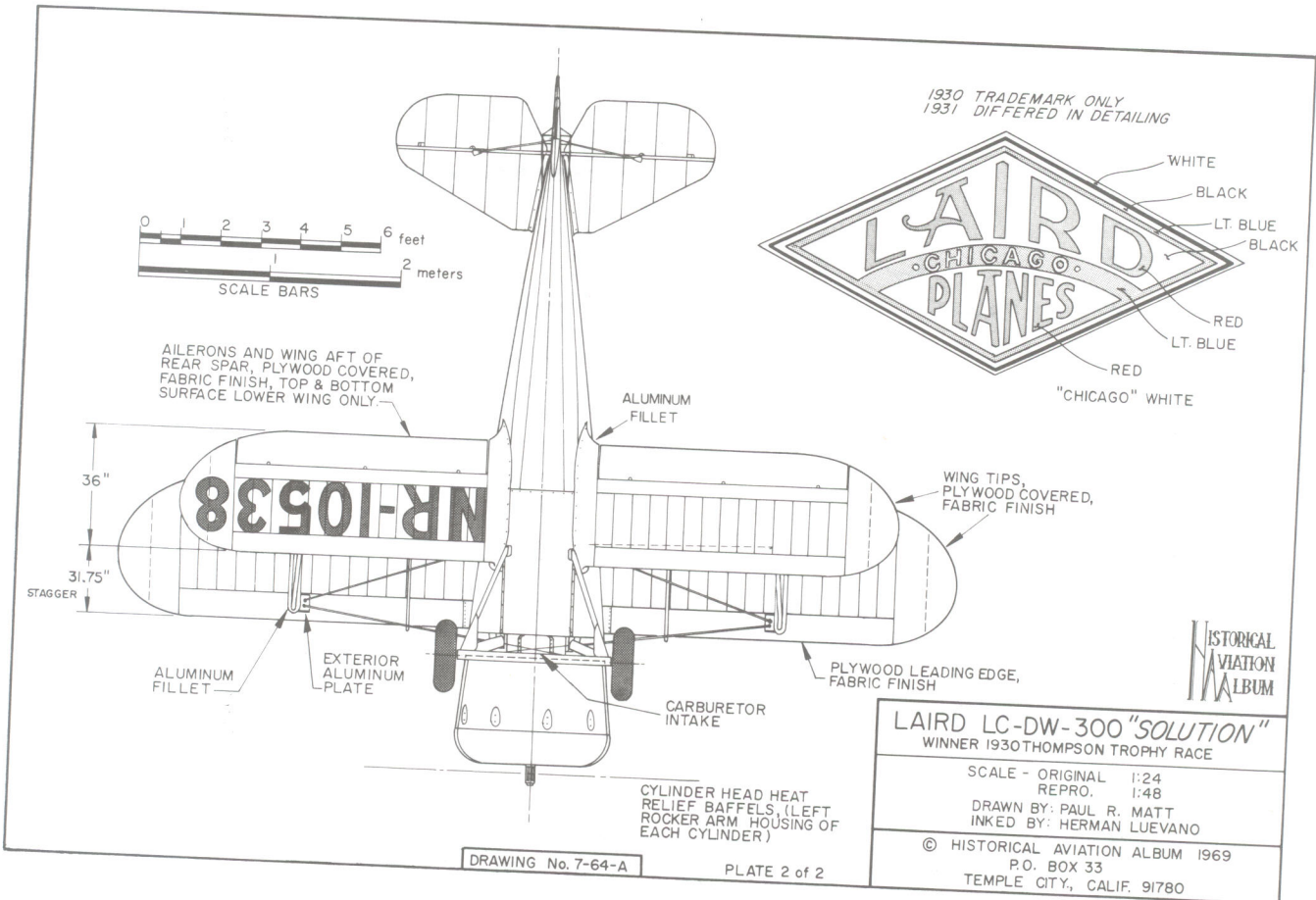
ALL DIMENSIONS IN PROFILE VIEW ARE INCHES

HUGHES 1B RACER
SEPT. 13, 1935
FAI 3 Km. SPEED RECORD 352.388 mph
(567.155 Km)



SCALE - ORIGINAL 1:24
REPRO. 1:48
DRAWN BY - PAUL R. MATT
© HISTORICAL AVIATION ALBUM

Laird LC-DW-300 "Solution"



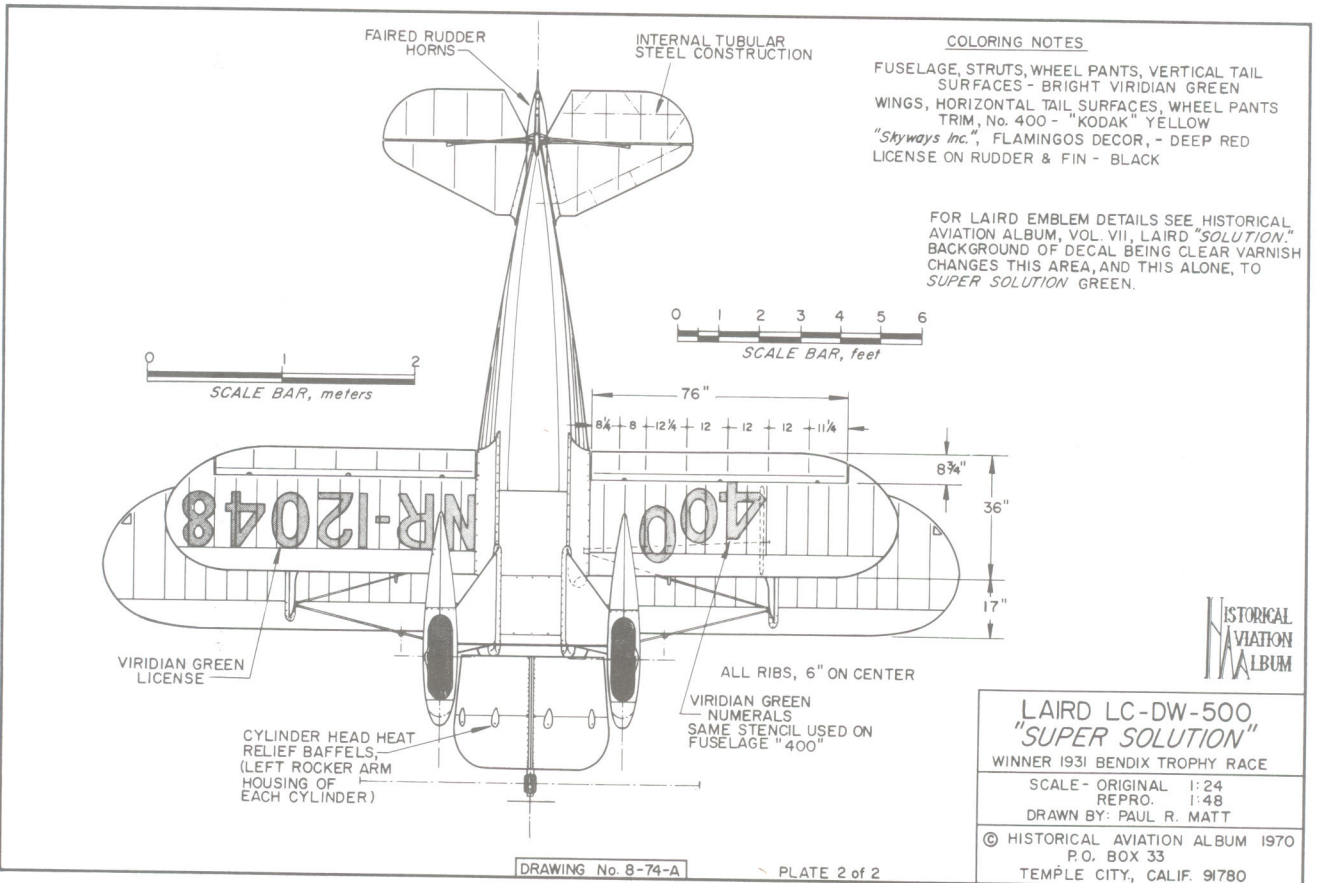
HISTORICAL
AVIATION
ALBUM

Laird LC-DW-500 "Super Solution"



Laird Super Solution

Jimmy Doolittle in front of Laird Super Solution, September, 1931.

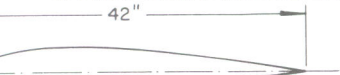


GENERAL SPECIFICATIONS
BENDIX TROPHY CONDITION

WEIGHT EMPTY 1,580 lbs.
GROSS WEIGHT 2,160 lbs. (Approx.)
FUEL CAPACITY 112 gals.
OIL CAPACITY 11 gals.

ENGINE - PRATT & WHITNEY WASP JR.
ENGINE USED IN BOTH BENDIX AND THOMPSON RACES WAS THE DIRECT DRIVE WASP Jr., S/N X-27 "YELLOW JACKET," COMPRESSION RATIO 6:1, BLOWER GEAR RATIO 10:1, BOOSTED TO APPROX. 525 H.P. (NORMAL 435/450 H.P.)

WINNER BENDIX TROPHY RACE, BURBANK, CALIF. TO CLEVELAND, OHIO, SEPT. 4, 1931, THENSE TO NEWARK, N.J., 2,882 MILES IN 11 HRS., 16 MIN. FOR FULL TRANSCONTINENTAL SPEED RECORD. AVERAGE SPEED FOR BENDIX RACE 223.038 MPH AND 217 MPH AVERAGE FOR ENTIRE FLIGHT



AIRFOIL M-12 (TWICE SCALE)
DEVELOPED INTO NACA 2212

NAVIGATION LIGHT

BANKLIN GOTHIC TYPE LETTERING, BRIDIAN GREEN

HAND FORMED COWL & WHEEL PANTS BY HILL STREAMLINERS OF CINCINNATI, OHIO

ENTIRE AMIDSHIP COCKPIT ENCLOSURE SWINGS OPEN ON EITHER SIDE ON TOPSIDE LONGERON, ALLOWING SIDE TO FOLD OUTWARD. CLEAR TO WINDSCREEN SLIDES PARALLEL SIDE TRACKS.

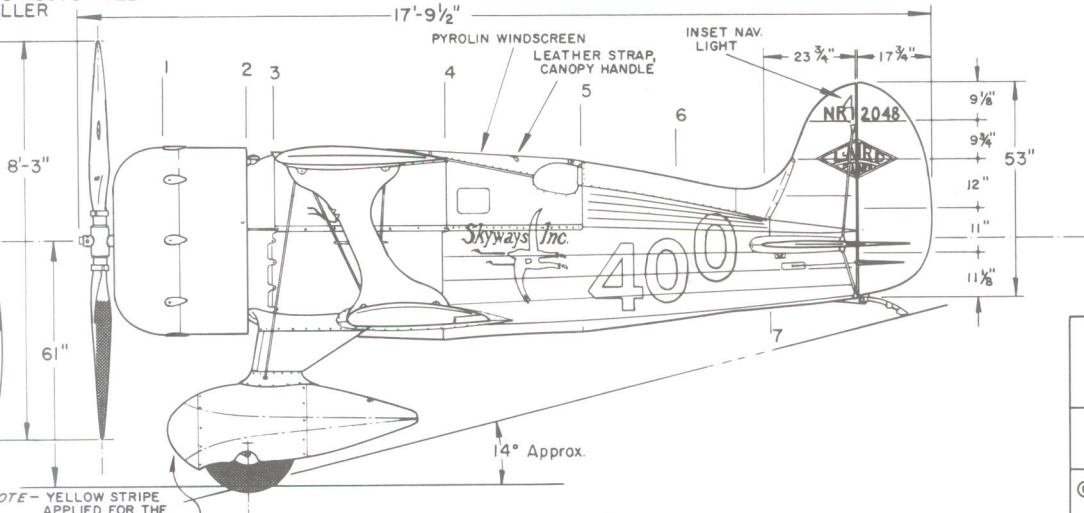
ENGINE S/N 36382-36385
SIGN No. 21A1-7

NON-STANDARD ADJUSTABLE COLLAR

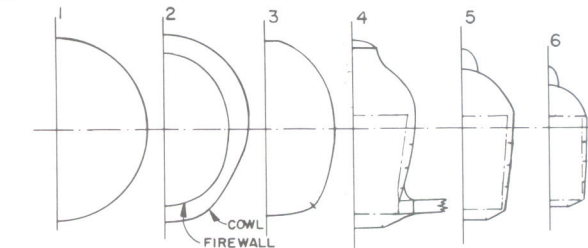
6.50 x 10" B.F. GOODRICH TIRES

CARBURETOR INTAKE & OIL COOLER BEHIND BOTTOM CYLINDER WITHIN COWL.

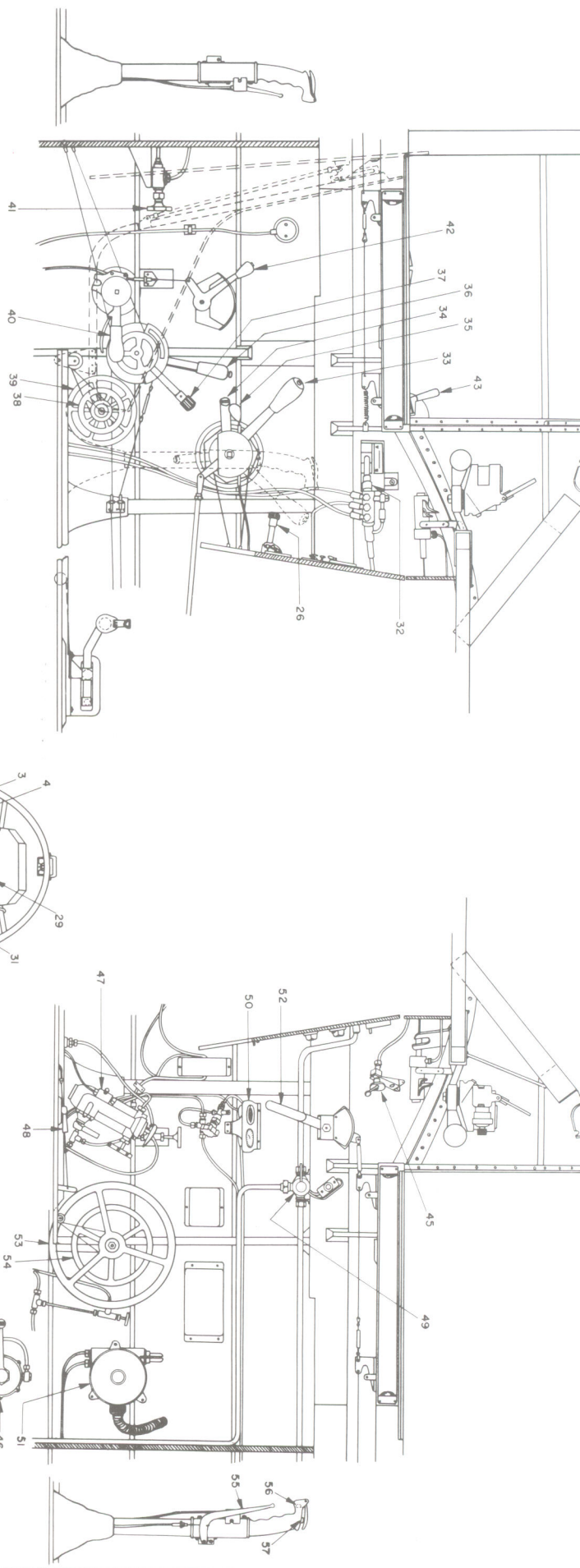
OUR SINCERE APPRECIATION IS EXTENDED TO MAJ. ROBERT H. USAF RET., MAJ. TRUMAN C. W. USAF RET., E. M. "MATTY" LAIRD, EV. CASSENGERES (CAHA) FOR THEIR ASSISTANCE IN THE PREPARATION OF THESE DRAWINGS



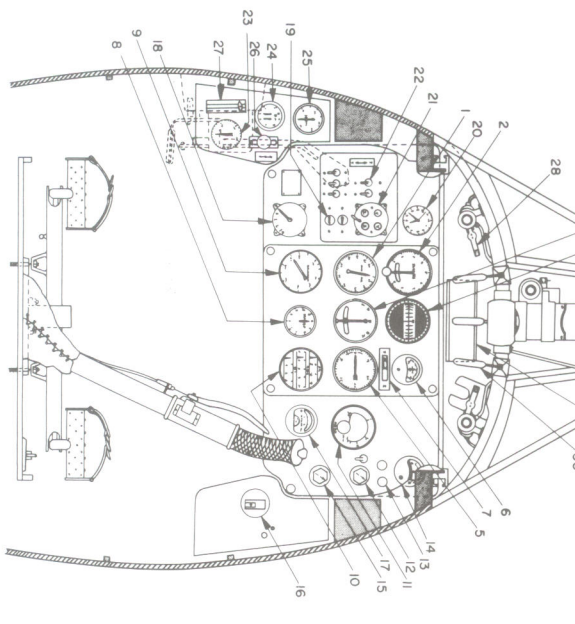
NOTE - YELLOW STRIPE APPLIED FOR THE



LAIRD LC-DW-50
"SUPER SOLUTION"
WINNER 1931 BENDIX TROPHY RACE
SCALE - ORIGINAL 1:24
REPRO. 1:48
DRAWN BY: PAUL R. MATT
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P.O. BOX 33



- 1 AIRSPEED INDICATOR
- 2 TURNER
- 3 TURN AMB BANK
- 4 COMPASS
- 5 VERTICAL SPEED INDICATOR
- 6 COURSE INDICATOR (RATE OF CLIMB)
- 7 REVERSING SWITCH, C.I. (RIGHT/LEFT OF BEAM)
- 8 REVERSING SWITCH, C.I. (DOWN/UP)
- 9 BOOST INDICATOR
- 10 THREE NEEDLE INDICATOR
- 11 FUEL LEVEL
- 12 COCKPIT ILLUMINATION
- 13 CHECK LIGHT, BOMB RELEASE
- 14 AMPERE METER
- 15 FUEL METER
- 16 FREQUENCY REVERSING SWITCH
- 17 CYLINDER HEAD TEMP.
- 18 IGNITION SWITCH
- 19 STARTER SWITCH
- 20 CLOCK
- 21 UNDERCARRIAGE INDICATOR
- 22 SWITCHES
- 23 PRESSURE GAUGE
- 24 BRAKE PRESSURE GAUGE
- 25 AIR INSTALLATION PRESSURE
- 26 UNDERCARRIAGE CONTROL
- 27 LANDING FLAP INDEX
- 28 AIR CANNON CHARGING
- 29 DIRECTION FINDER
- 30 MANUAL CHARGING OF CANNONS
- 31 LANDING FLAP CONTROL
- 32 THROTTLE
- 33 PROPELLER PITCH CONTROL
- 34 ENGINE STOP
- 35 BOOSTER CONTROL
- 36 OIL CONTROL CONTROL
- 37 FUEL CONTROL, RIM TAB
- 38 FUEL CONTROL, RIM TAB
- 39 BOMB BLOCKING, ARMING
- 40 MAIN AIR VALVE
- 41 COCKPIT AERATION
- 42 COCKPIT CLOSING LEVER
- 43 COCKPIT AERATION, CZECH
- 44 MIXING VALVE, FUEL TO OIL
- 45 FUEL PUMP
- 46 FUEL INJECTION PUMP
- 47 FUEL COCK
- 48 HYDRAULICS MAIN VALVE
- 49 OXYGEN PRESSURE
- 50 OXYGEN PRESSURE
- 51 EMERGENCY CANOPY RELEASE
- 52 SIDE LOUVRES CONTROL
- 53 FRONTAL LOUVRE CONTROL
- 54 BRAKE LEVER
- 55 CANNON TRIGGER
- 56 BOMB TRIGGER, RELEASE

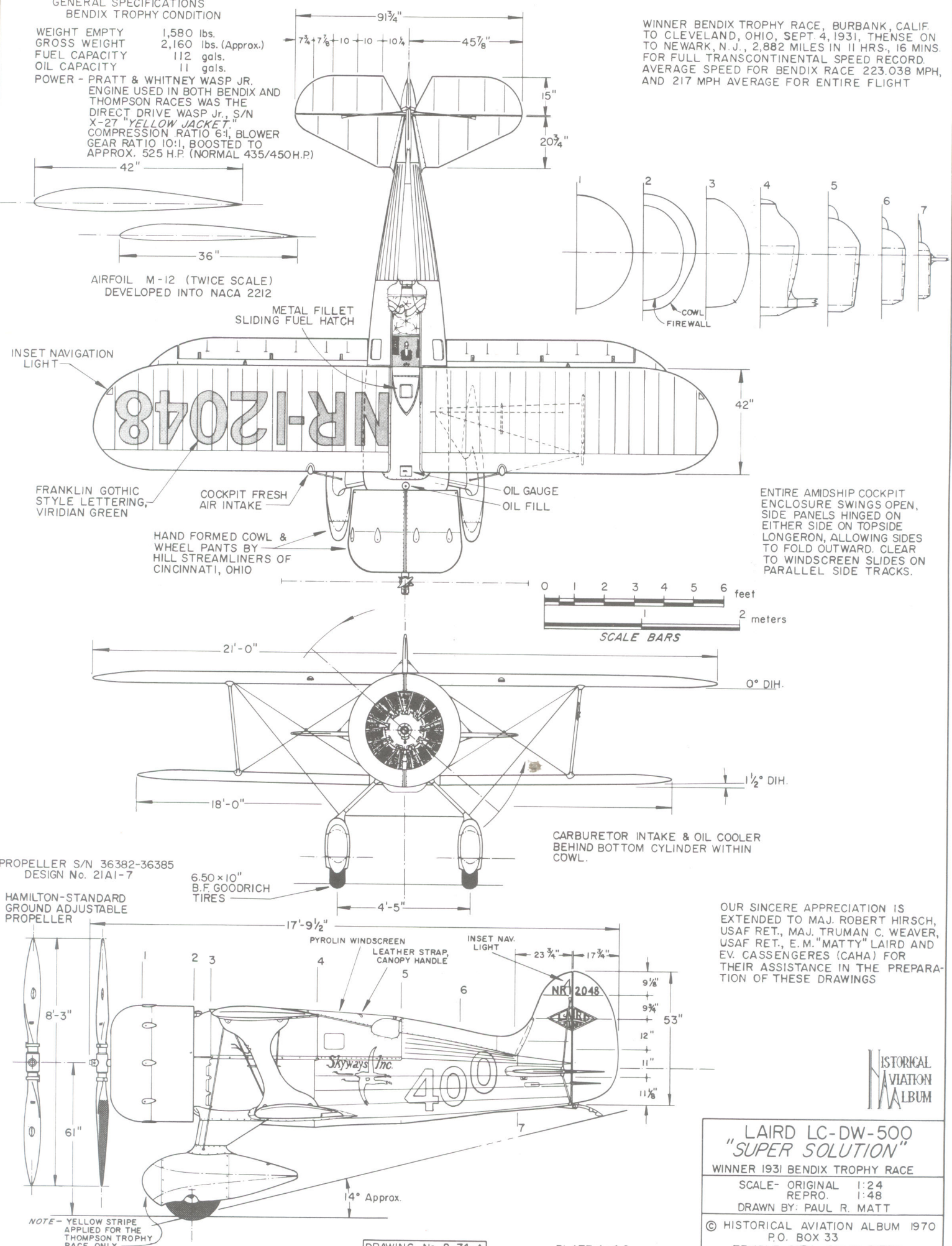


LAVOCHKIN LA-7
 SCALE - SEE SCALE BAR
 DRAWN BY - JOSEF KRYBUS
 PAUL
 PRAGUE
 CZECHOSLOVAKIA
 LINKED & TRANSLATED FOR

GENERAL SPECIFICATIONS
BENDIX TROPHY CONDITION

WEIGHT EMPTY 1,580 lbs.
GROSS WEIGHT 2,160 lbs. (Approx.)
FUEL CAPACITY 112 gals.
OIL CAPACITY 11 gals.
POWER - PRATT & WHITNEY WASP JR. ENGINE USED IN BOTH BENDIX AND THOMPSON RACES WAS THE DIRECT DRIVE WASP JR., S/N X-27 "YELLOW JACKET". COMPRESSION RATIO 6:1, BLOWER GEAR RATIO 10:1, BOOSTED TO APPROX. 525 H.P. (NORMAL 435/450 H.P.)

WINNER BENDIX TROPHY RACE, BURBANK, CALIF. TO CLEVELAND, OHIO, SEPT. 4, 1931, THENSE ON TO NEWARK, N.J., 2,882 MILES IN 11 HRS., 16 MINS. FOR FULL TRANSCONTINENTAL SPEED RECORD. AVERAGE SPEED FOR BENDIX RACE 223.038 MPH, AND 217 MPH AVERAGE FOR ENTIRE FLIGHT



OUR SINCERE APPRECIATION IS EXTENDED TO MAJ. ROBERT HIRSCH, USAF RET., MAJ. TRUMAN C. WEAVER, USAF RET., E.M. "MATTY" LAIRD AND EV. CASSENGERES (CAHA) FOR THEIR ASSISTANCE IN THE PREPARATION OF THESE DRAWINGS



LAIRD LC-DW-500
"SUPER SOLUTION"
WINNER 1931 BENDIX TROPHY RACE

SCALE- ORIGINAL	1:24
REPRO.	1:48
DRAWN BY: PAUL R. MATT	
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P.O. BOX 33	
TEMPLE CITY, CALIF. 91780	

GENERAL SPECIFICATIONS

WEIGHT EMPTY 3,195 lbs.
 (WHEN AIRCRAFT ORIGINALLY LEFT THE LAIRD FACTORY)
 WEIGHT EMPTY 3,300 lbs.
 (IN LATER MODIFICATIONS)
 GROSS WEIGHT, LIGHT LOAD 3,765 lbs.
 GROSS WEIGHT, FULL LOAD 3,765 lbs.
 (LAIRD CONSTRUCTION LIMITS)
 GROSS WEIGHT, OVERLOAD 4,923 lbs.
 (TURNER'S FIGURE)
 WING AREA 95 sq. ft.
 WING LOADING, FULL LOAD COND. lbs./sq. ft.
 POWER LOADING 4.92 lbs./hp
 MAX. SPEED, ESTIMATED STRAIGHT AWAY FLIGHT AT S.L. 330/350 m.p.h.
 (LAIRD CO. & UNITED AIRCRAFT COMPUTATIONS)
 ROSCOE TURNER'S PERSONAL CLAIM 412 m.p.h. (1939)
 LANDING SPEED, WITH FLAPS 87 m.p.h.

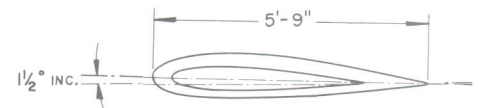
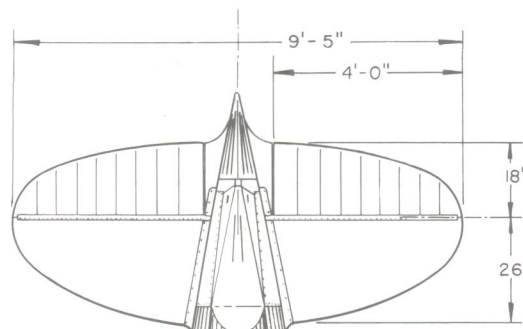
POWER: PRATT & WHITNEY SIB3-G, s/n 177
 14 cyl. TWIN ROW WASP SR, 1830 cu. in.
 DISPLACEMENT. MFRG. RATING
 900 hp AT 2450 RPM AT 6,500 FEET
 1,000 hp AT 2600 RPM, S.L., TAKEOFF
 USING 87 OCTANE FUEL

THOMPSON TROPHY RACE RECORD

3RD PLACE AT 253.802 m.p.h. 1937
 1ST PLACE AT 283.419 m.p.h. 1938
 1ST PLACE AT 282.536 m.p.h. 1939

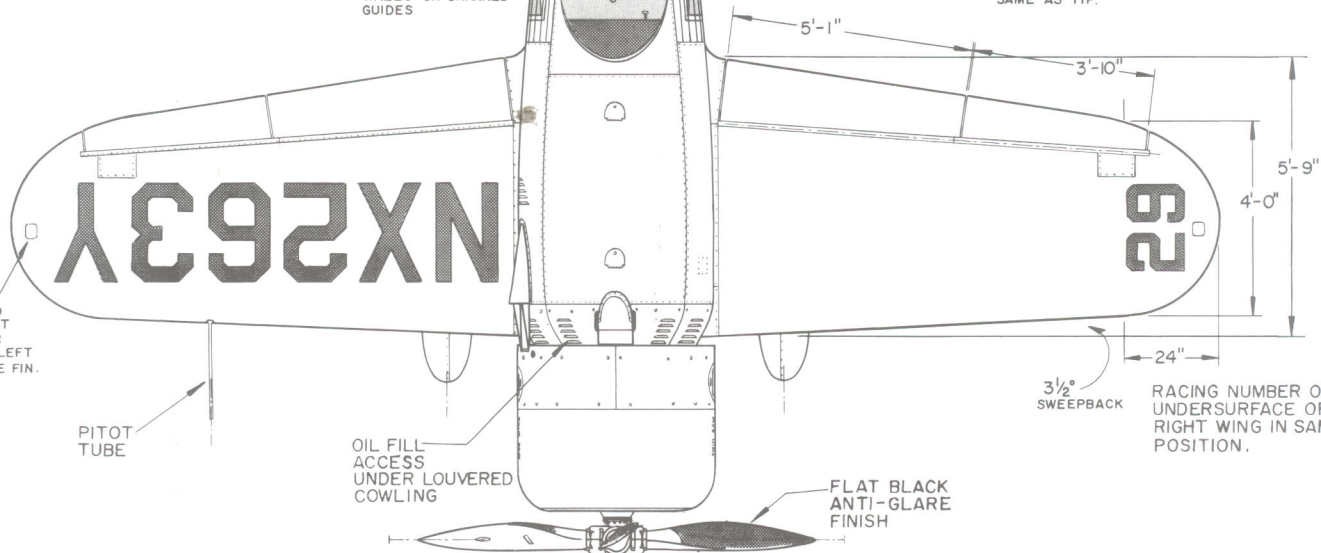
CONSTRUCTION NOTES

FUSELAGE - WELDED STEEL TUBULAR STRUCTURE, WOOD AND METAL FORMERS, IRISH LINEN COVERED AMIDSHIP, ALUMINUM COVERED FORWARD AND AFT PORTIONS
 WING - ONE PIECE, TWO LAMINATED FULL SPAN SPRUCE SPARS, REINFORCED PLYWOOD RIBS, SINGLE WIRE MACWHITE TIE LINES, 3/32" THREE PLY HASKELITE VENEER COVERING AND IRISH LINEN FINISHED
 AILERONS & FLAPS - SAME CONSTRUCTION AS WING, ALL TORQUE TUBE OPERATED
 HORIZONTAL STABILIZER - SAME AS WING, ADJUSTABLE FROM COCKPIT
 ELEVATORS & RUDDER - WELDED STEEL TUBING, LINEN COVERED
 FIN - STEEL TUBE, ALUMINUM FAIRED, LINEN COVERED

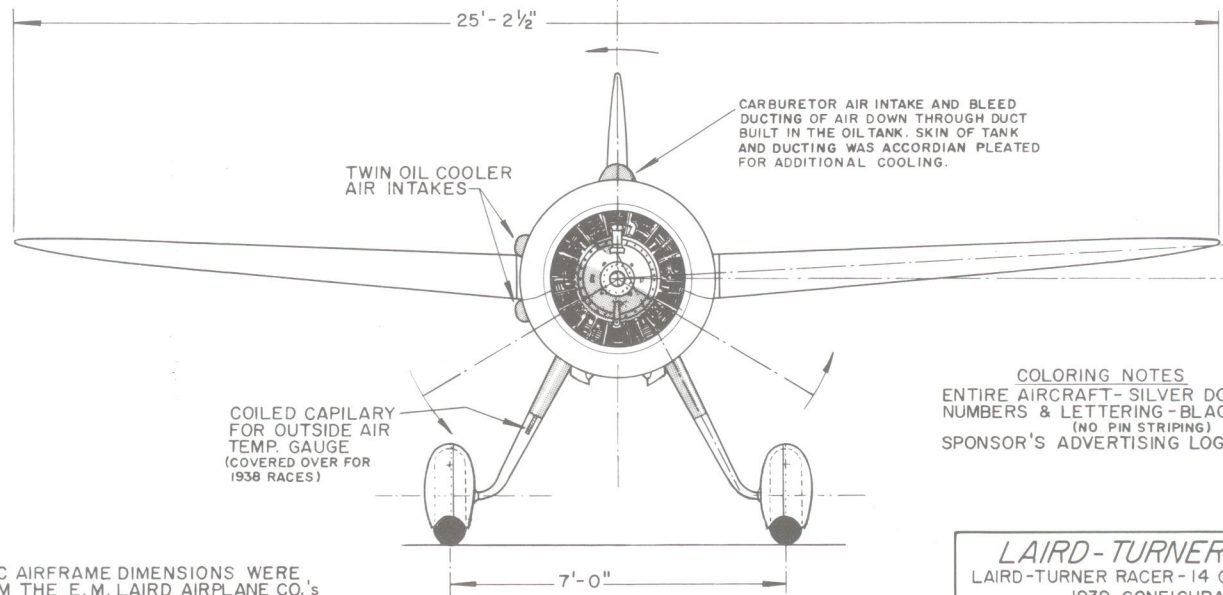


AIRFOIL NACA 23000 SERIES (EXACT SECTION UNKNOWN) ROOT AND THEORETICAL TIP
 AIRFOIL NOT SYMMETRICAL, NO WASH-IN OR WASH-OUT, ROOT SECTION SAME AS TIP.

COCKPIT WINDOWS PART AT CENTER LINE, SLIDE DOWN INTO FUSELAGE WALLS ON CHANNEL GUIDES



FABRIC PATCH OVER ABANDONED NAVIGATION LIGHT FITTING, SIMILAR TREATMENT ON LEFT WING AND ON THE FIN.



COLORING NOTES
 ENTIRE AIRCRAFT - SILVER DOPED
 NUMBERS & LETTERING - BLACK
 (NO FIN STRIPING)
 SPONSOR'S ADVERTISING LOGO - AS NOTED

NOTE:
 OUR BASIC AIRFRAME DIMENSIONS WERE TAKEN FROM THE E.M. LAIRD AIRPLANE CO.'S BLUEPRINTS AND A REVIEW OF SURVIVING LAWRENCE BROWN AIRCRAFT CO. MATERIAL

LAIRD-TURNER LTR-14
 LAIRD-TURNER RACER - 14 CYLINDER ENGINE
 1939 CONFIGURATION
 SCALE - ORIGINAL 1:24
 REPRO. 1:48
 DRAWN BY - PAUL R. MATT



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 P.O. BOX 33
 TEMPLE CITY, CALIF 91780

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ROSCOE TURNER'S PERSONAL CLAIM	412 m.p.h. (1939)
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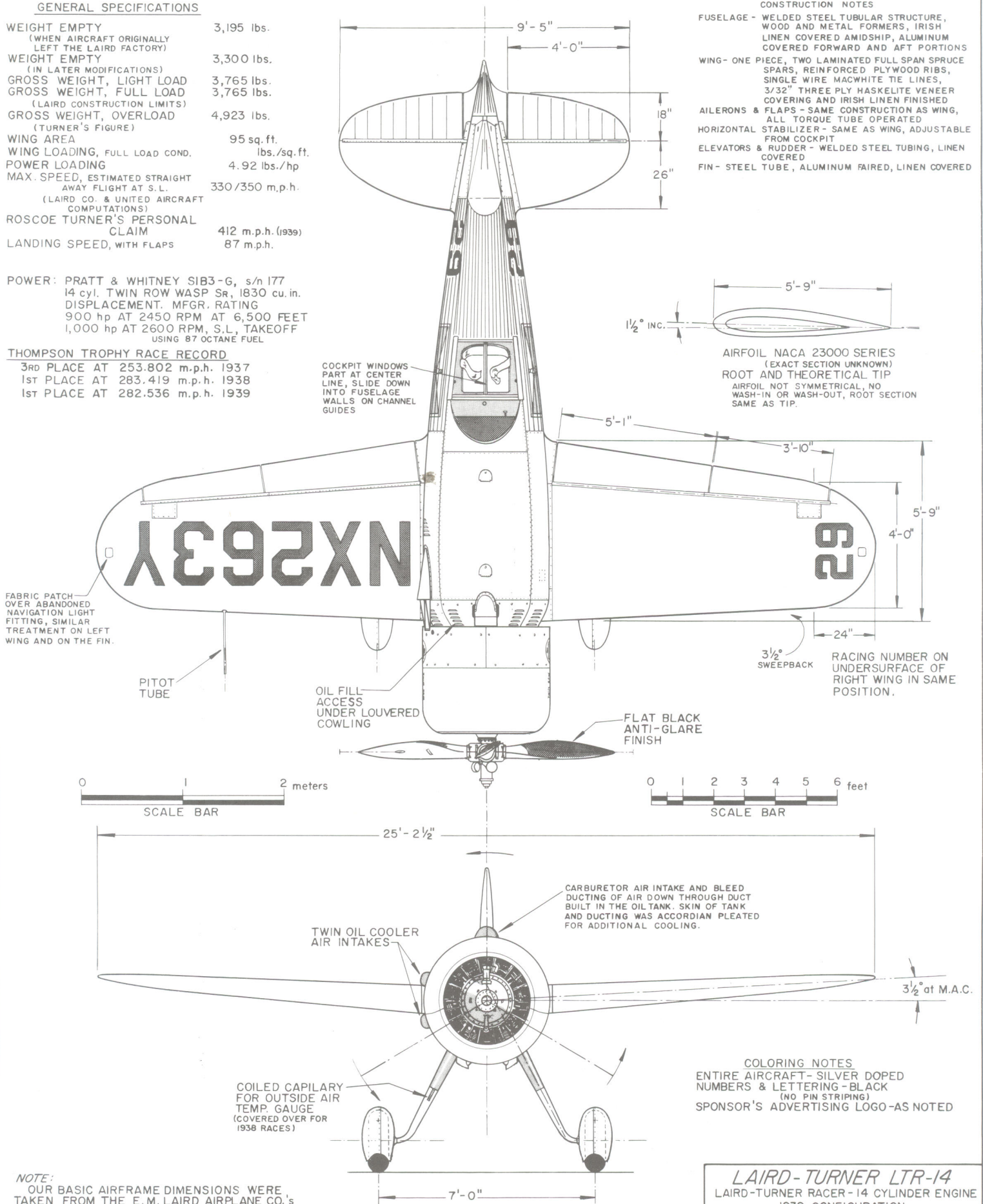
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900 hp AT 2450 RPM AT 6,500 FEET
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THOMPSON TROPHY RACE RECORD

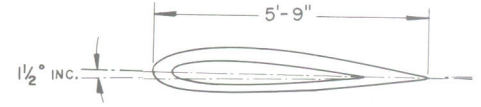
3RD PLACE AT	253.802 m.p.h.	1937
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COCKPIT WINDOWS
PART AT CENTER
LINE, SLIDE DOWN
INTO FUSELAGE
WALLS ON CHANNEL
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AIRFOIL NACA 23000 SERIES
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WASH-IN OR WASH-OUT, ROOT SECTION
SAME AS TIP.

FABRIC PATCH
OVER ABANDONED
NAVIGATION LIGHT
FITTING, SIMILAR
TREATMENT ON LEFT
WING AND ON THE FIN.

PITOT
TUBE

OIL FILL
ACCESS
UNDER LOUVERED
COWLING

FLAT BLACK
ANTI-GLARE
FINISH

3 1/2°
SWEEPBACK

RACING NUMBER ON
UNDERSURFACE OF
RIGHT WING IN SAME
POSITION.



TWIN OIL COOLER
AIR INTAKES

CARBURETOR AIR INTAKE AND BLEED
DUCTING OF AIR DOWN THROUGH DUCT
BUILT IN THE OIL TANK. SKIN OF TANK
AND DUCTING WAS ACCORDIAN PLEATED
FOR ADDITIONAL COOLING.

COILED CAPILARY
FOR OUTSIDE AIR
TEMP. GAUGE
(COVERED OVER FOR
1938 RACES)

3 1/2° at M.A.C.

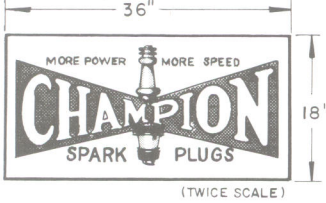
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NUMBERS & LETTERING - BLACK
(NO PIN STRIPING)
SPONSOR'S ADVERTISING LOGO - AS NOTED

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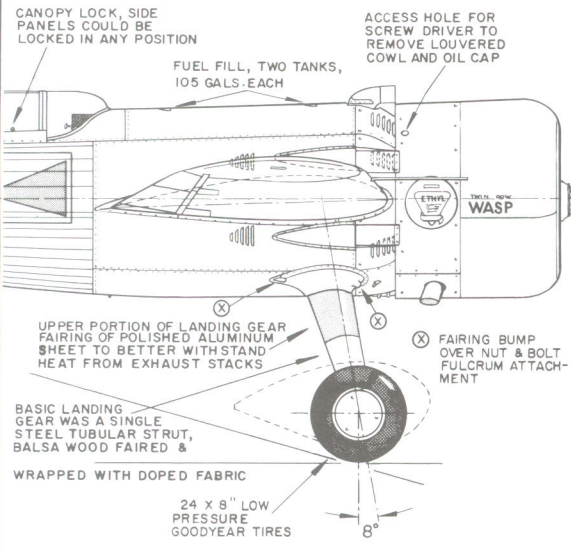
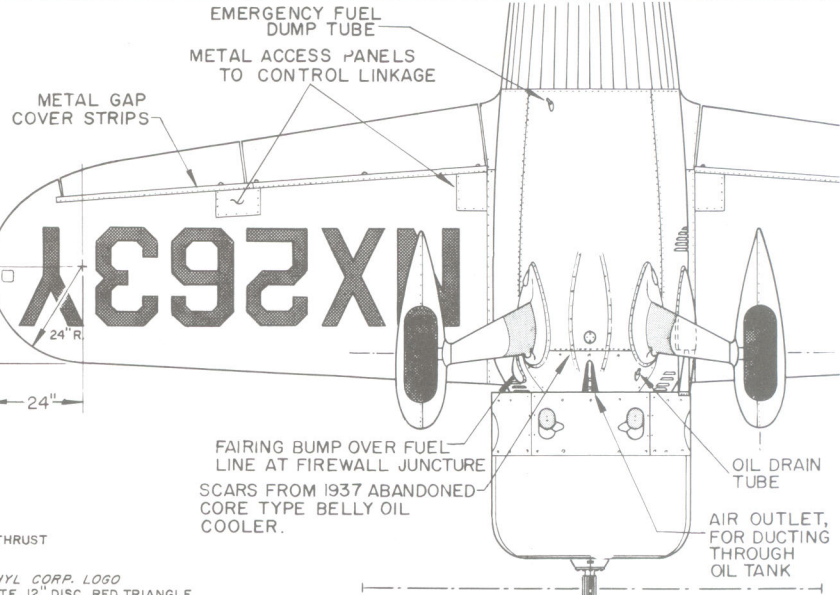
LAIRD-TURNER LTR-14
LAIRD-TURNER RACER - 14 CYLINDER ENGINE
1939 CONFIGURATION
SCALE - ORIGINAL 1:24
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DRAWN BY - PAUL R. MATT



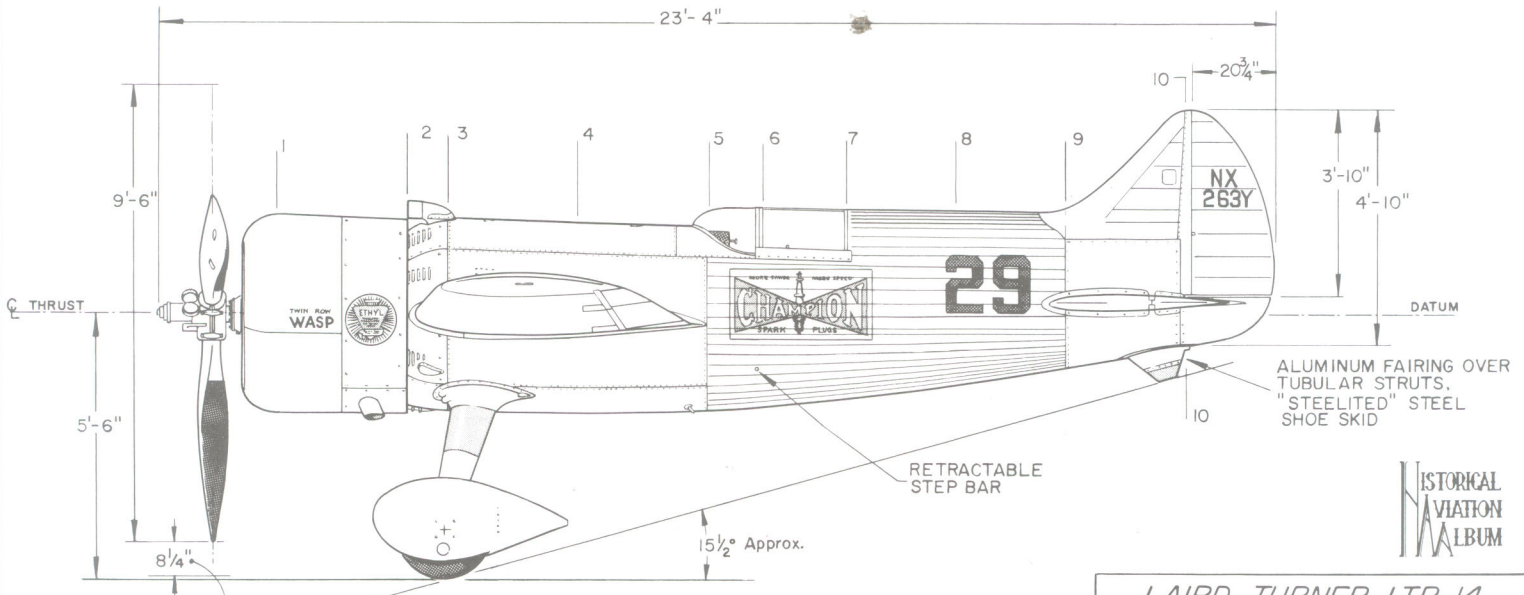
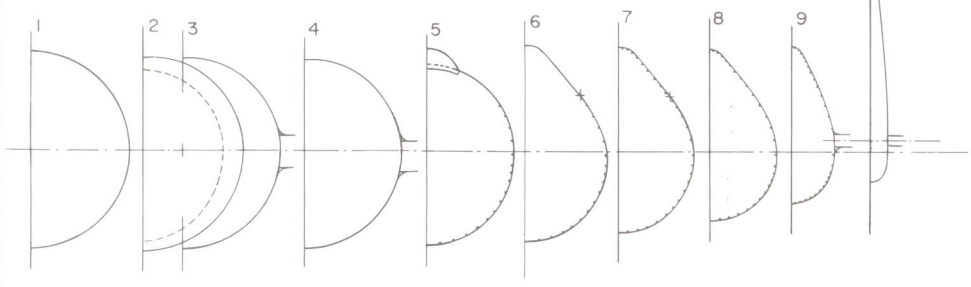
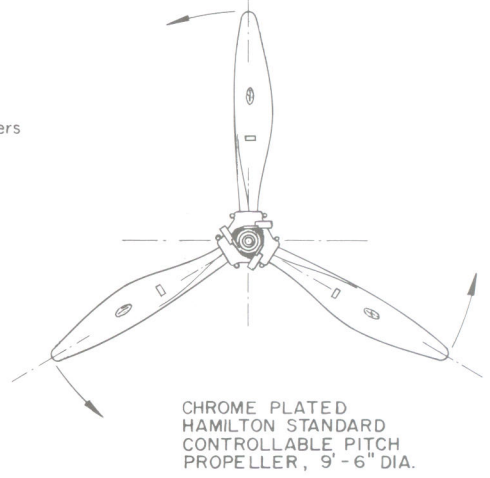
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(TWICE SCALE)
CHAMPION SPARK PLUG LOGO
 YELLOW BACKGROUND, DARK BLUE PINCHED BAR, 'CHAMPION' WHITE, SPARK PLUG WHITE WITH TONE OF GRAY, BLACK & COPPER. ALL LETTERING & OUTLINES - BLACK



ETHYL CORP. LOGO
 WHITE 12" DISC, RED TRIANGLE, YELLOW 'ETHYL' & RADIATING SUN BURST, OTHER LETTERING & OUTLINING - BLACK



TAKEOFF CLEARANCE UNDER NORMAL CONDITIONS

OUR SINCERE THANKS TO E.M. "MATTY" LAIRD AND MAJ. ROBERT HIRSCH FOR THEIR VALUABLE ASSISTANCE IN THE PREPARATION OF THESE DRAWINGS

HISTORICAL AVIATION ALBUM

LAIRD-TURNER LTR-14	
LAIRD-TURNER RACER - 14 CYLINDER ENGINE 1939 CONFIGURATION	
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TEMPLE CITY, CALIF. 91780	

GENERAL SPECIFICATIONS

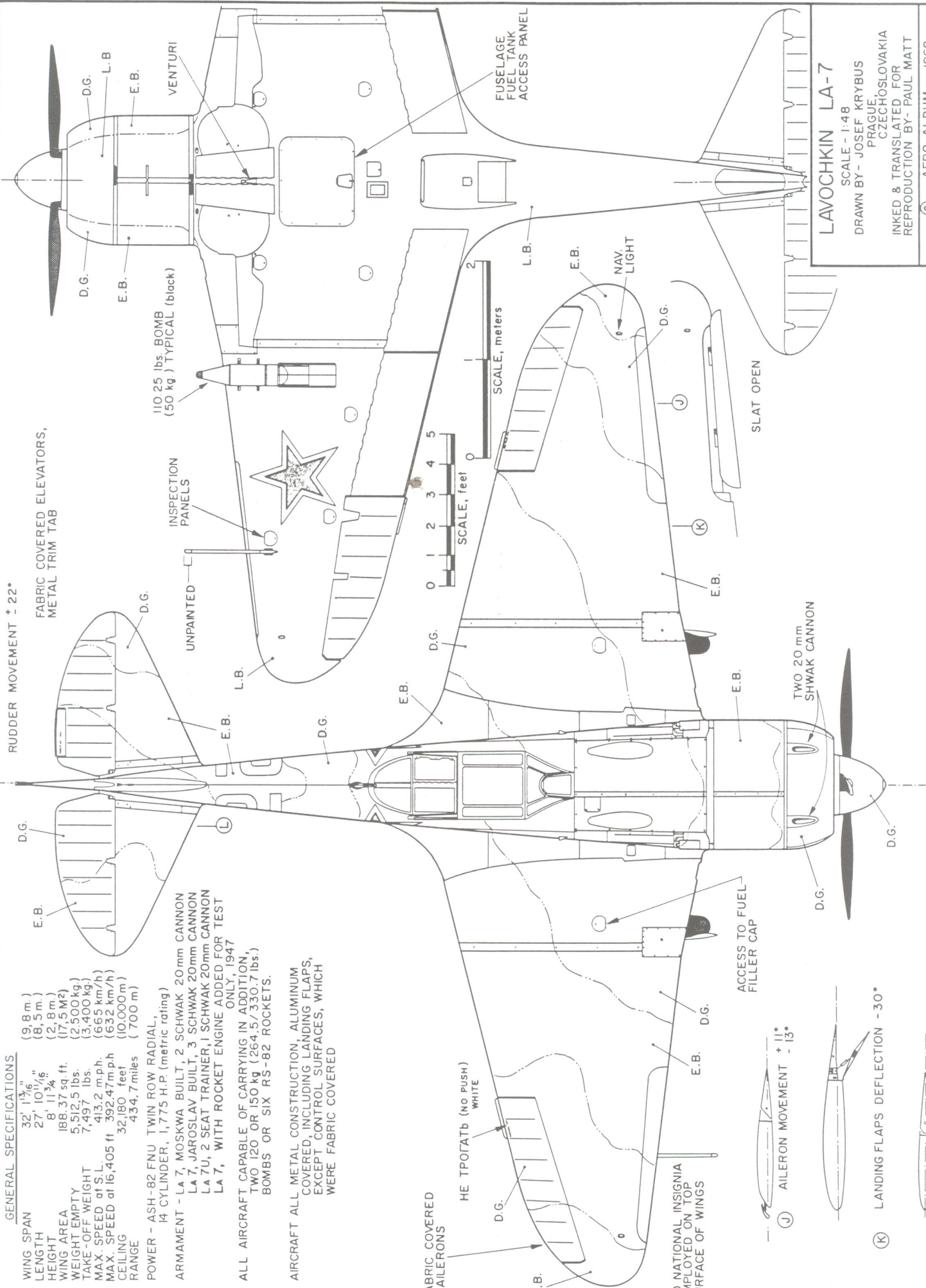
WING SPAN 32' 1 13/16"
 LENGTH 27' 10 1/16"
 HEIGHT 8' 11 3/4"
 WING AREA 188.37 sq. ft.
 WEIGHT EMPTY 5,512.5 lbs.
 TAKE-OFF WEIGHT 7,497 lbs.
 MAX. SPEED at S.L. 413.2 m.p.h.
 MAX. SPEED at 16,405 ft 392.47 m.p.h.
 CEILING 32,180 feet
 RANGE 434.7 miles

POWER - ASH-82 FNU TWIN ROW RADIAL,
 14 CYLINDER, 1,775 H.P. (metric rating)

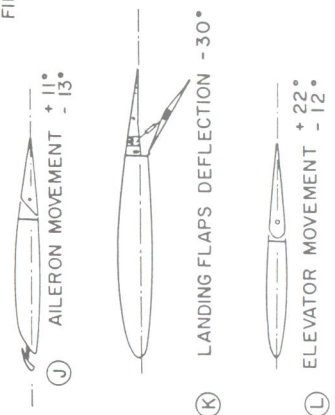
ARMAMENT - LA 7, MOSKWA BUILT, 2 SCHWAK 20mm CANNON
 LA 7, JAROSLAV BUILT, 3 SCHWAK 20mm CANNON
 LA 7U, 2 SEAT TRAINER, 1 SCHWAK 20mm CANNON
 LA 7, WITH ROCKET ENGINE ADDED FOR TEST ONLY, 1947

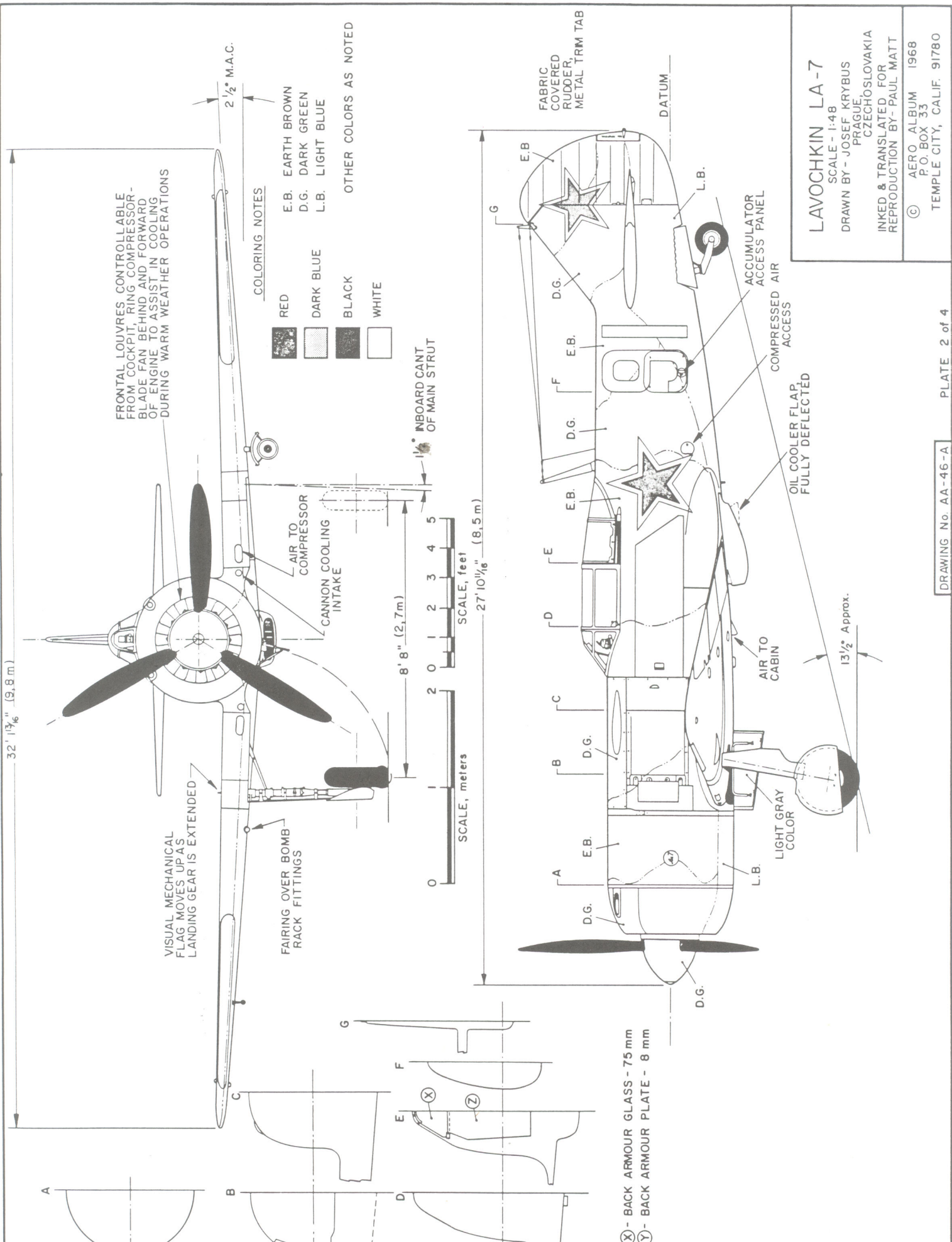
ALL AIRCRAFT CAPABLE OF CARRYING IN ADDITION,
 TWO 120 OR 150 kg (264.5/330.7 lbs.)
 BOMBS OR SIX RS-82 ROCKETS.

AIRCRAFT ALL METAL CONSTRUCTION, ALUMINUM
 COVERED, INCLUDING LANDING FLAPS,
 EXCEPT CONTROL SURFACES, WHICH
 WERE FABRIC COVERED



LAVOCHKIN LA-7
 SCALE - 1:48
 DRAWN BY - JOSEF KRYBUS
 PRAGUE
 CZECHOSLOVAKIA
 INKED & TRANSLATED FOR
 REPRODUCTION BY - PAUL MATT
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FRONTAL LOUVRES CONTROLLABLE FROM COCKPIT. RING COMPRESSOR-BLADE FAN BEHIND AND FORWARD OF ENGINE TO ASSIST IN COOLING DURING WARM WEATHER OPERATIONS

VISUAL MECHANICAL FLAG MOVES UP AS LANDING GEAR IS EXTENDED

FAIRING OVER BOMB RACK FITTINGS

AIR TO COMPRESSOR
CANNON COOLING INTAKE

1/8" INBOARD CANT OF MAIN STRUT

COLORING NOTES

- RED
- DARK BLUE
- BLACK
- WHITE

- E.B. EARTH BROWN
- D.G. DARK GREEN
- L.B. LIGHT BLUE

OTHER COLORS AS NOTED

2 1/2" M.A.C.

32' 1 3/16" (9.8 m)

SCALE, feet
27' 10 1/16" (8.5 m)

SCALE, meters
8' 8" (2.7 m)

(X) - BACK ARMOUR GLASS - 75 mm
(Y) - BACK ARMOUR PLATE - 8 mm

FABRIC COVERED RUDDER, METAL TRIM TAB

DATUM

ACCUMULATOR ACCESS PANEL
COMPRESSED AIR ACCESS

OIL COOLER FLAP FULLY DEFLECTED

AIR TO CABIN

LIGHT GRAY COLOR

13 1/2" Approx.

LAVOCHKIN LA-7

SCALE - 1:48

DRAWN BY - JOSEF KRYBUS
PRAGUE, CZECHOSLOVAKIA

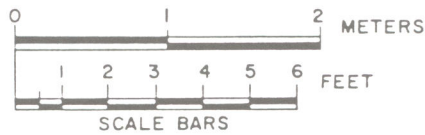
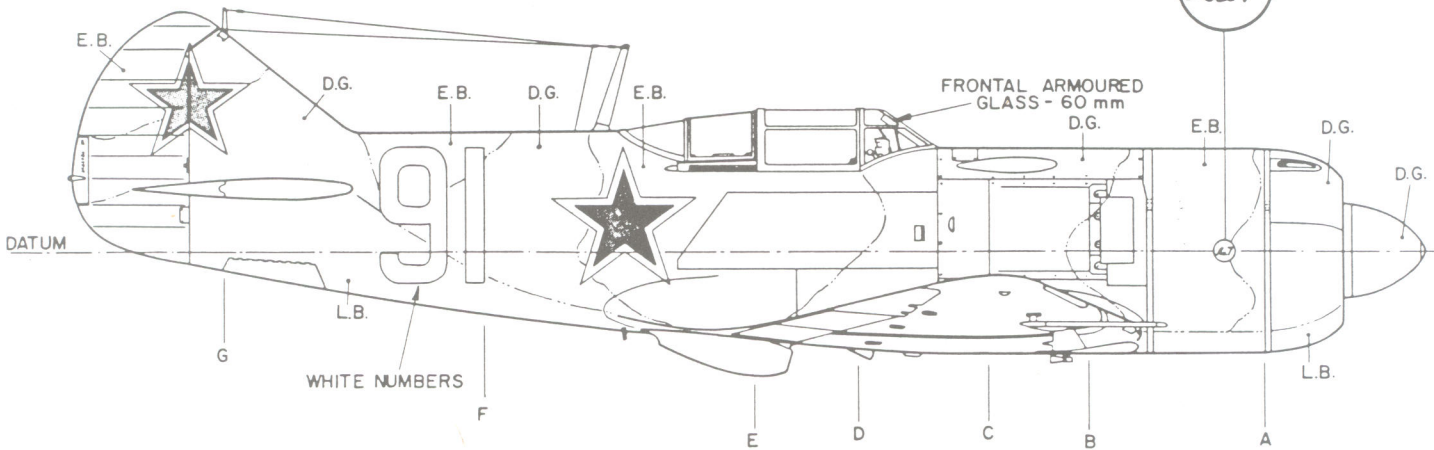
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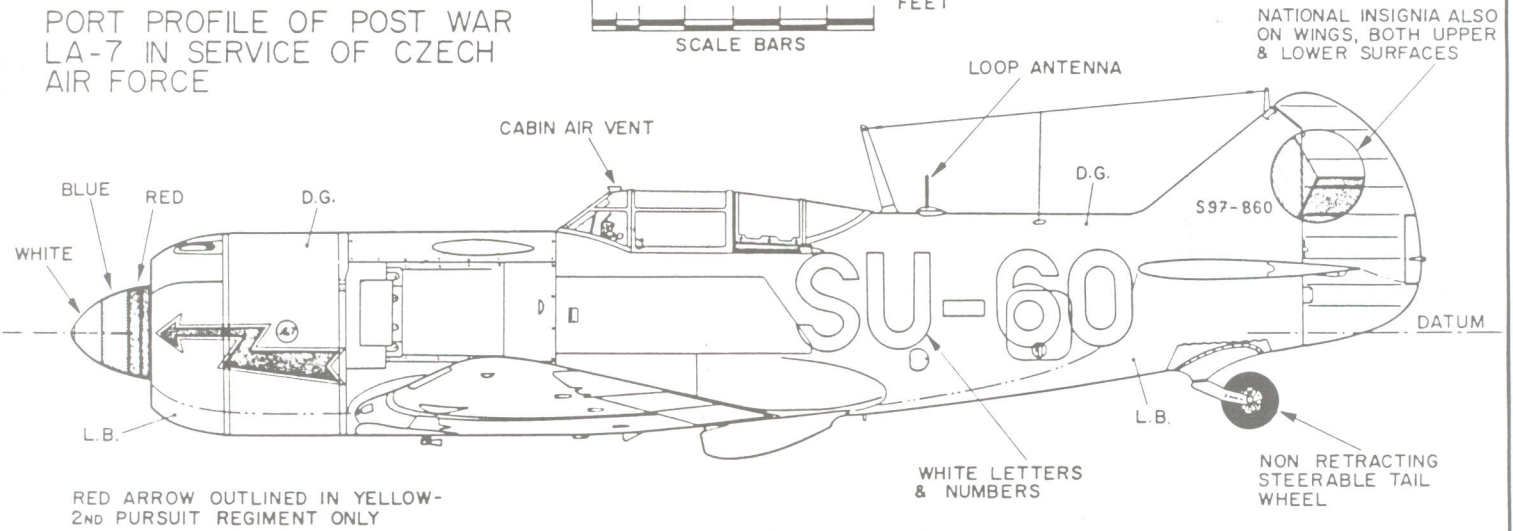
TEMPLE CITY, CALIF. 91780

STARBOARD PROFILE USSR LA-7 No. 91

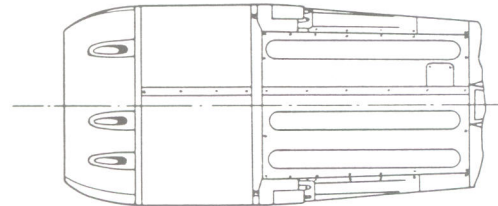
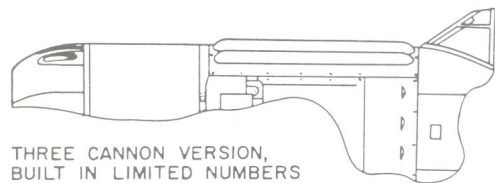
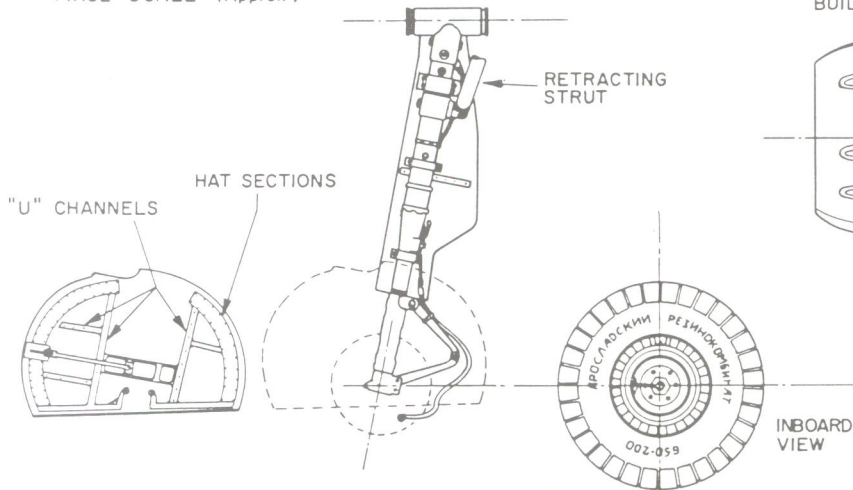
La7 WHITE



PORT PROFILE OF POST WAR LA-7 IN SERVICE OF CZECH AIR FORCE



MAIN LANDING GEAR DETAILS
TWICE SCALE (Approx.)

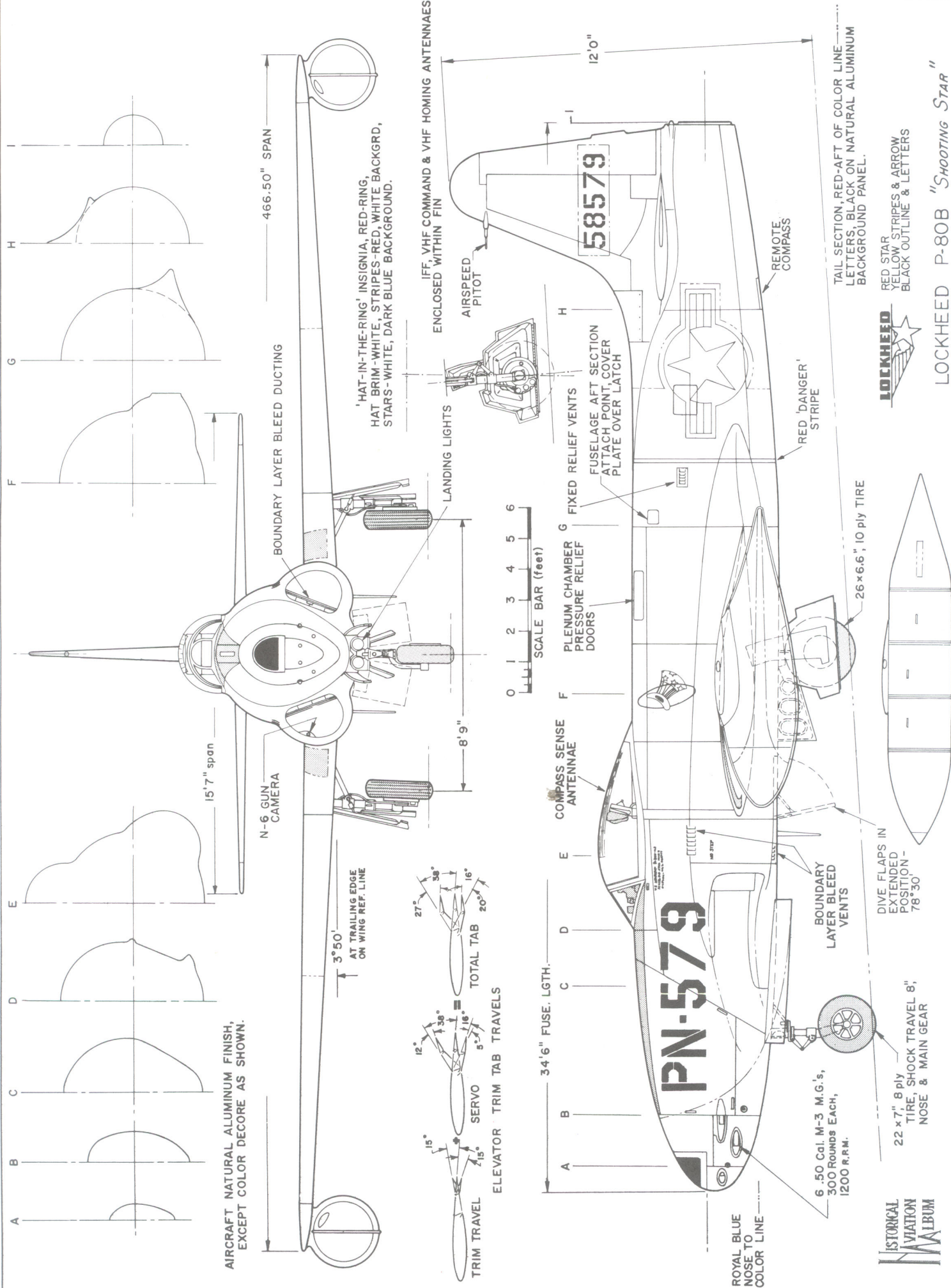


LAVOCHKIN LA-7

SCALE - 1:48
DRAWN BY - JOSEF KRYBUS
PRAGUE,
CZECHOSLOVAKIA
INKED & TRANSLATED FOR
REPRODUCTION BY - PAUL MATT

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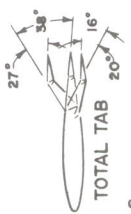
AIRCRAFT NATURAL ALUMINUM FINISH,
EXCEPT COLOR DECORE AS SHOWN.



466.50" SPAN

15'7" span

3°50'
AT TRAILING EDGE
ON WING REF. LINE



TRIM TRAVEL
SERVO
ELEVATOR TRIM TAB TRAVELS



34'6" FUSE. LGTH.

58579

PN-579

ROYAL BLUE
NOSE TO
COLOR LINE

6.50 Cal. M-3 M.G.'s,
300 ROUNDS EACH,
1200 R.R.M.

22 x 7" 8 ply
TIRE, SHOCK TRAVEL 8"
NOSE & MAIN GEAR

BOUNDARY
LAYER BLEED
VENTS

DIVE FLAPS IN
EXTENDED
POSITION -
78°30'

26 x 6.6" 10 ply TIRE



ALL TIP TANKS CYLINDRICAL
IN CROSS SECTION

ALTERNATE WINGTANK 'KOREAN WAR'
(FLETCHER, 260 gals. capacity)



LOCKHEED
RED STAR
YELLOW STRIPES & ARROW
BLACK OUTLINE & LETTERS

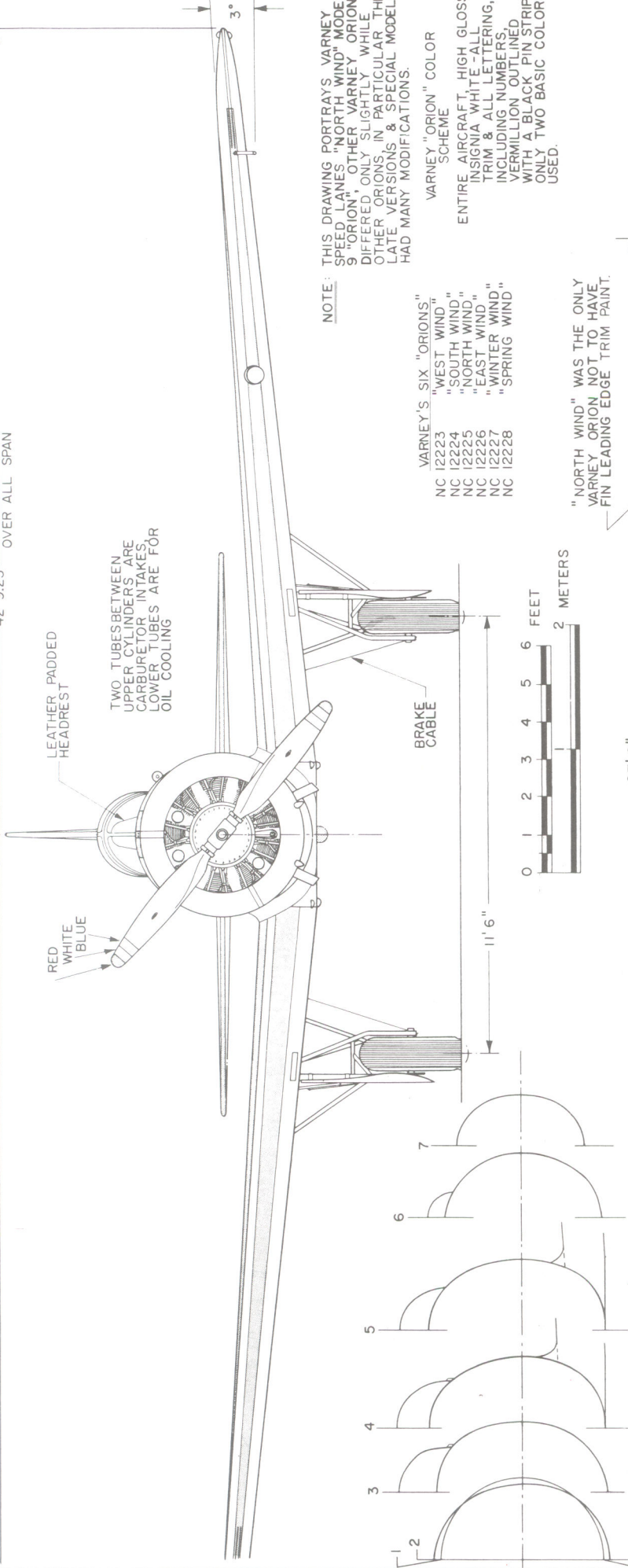
TAIL SECTION RED-AFT OF COLOR LINE
LETTERS, BLACK ON NATURAL ALUMINUM
BACKGROUND PANEL.

LOCKHEED P-80B "SHOOTING STAR"

SCALE: 1:48
DRAWN BY: PAUL R. MATT © 1965
INKED BY: ROBLIN LAMBERT

PLATE 2

42' 9.25" OVER ALL SPAN

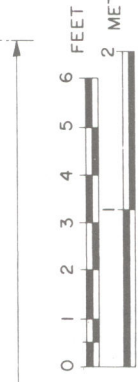


LEATHER PADDED HEADREST

TWO TUBES BETWEEN UPPER CYLINDERS ARE CARBURETOR INTAKES. LOWER TUBES ARE FOR OIL COOLING

RED WHITE BLUE

BRAKE CABLE

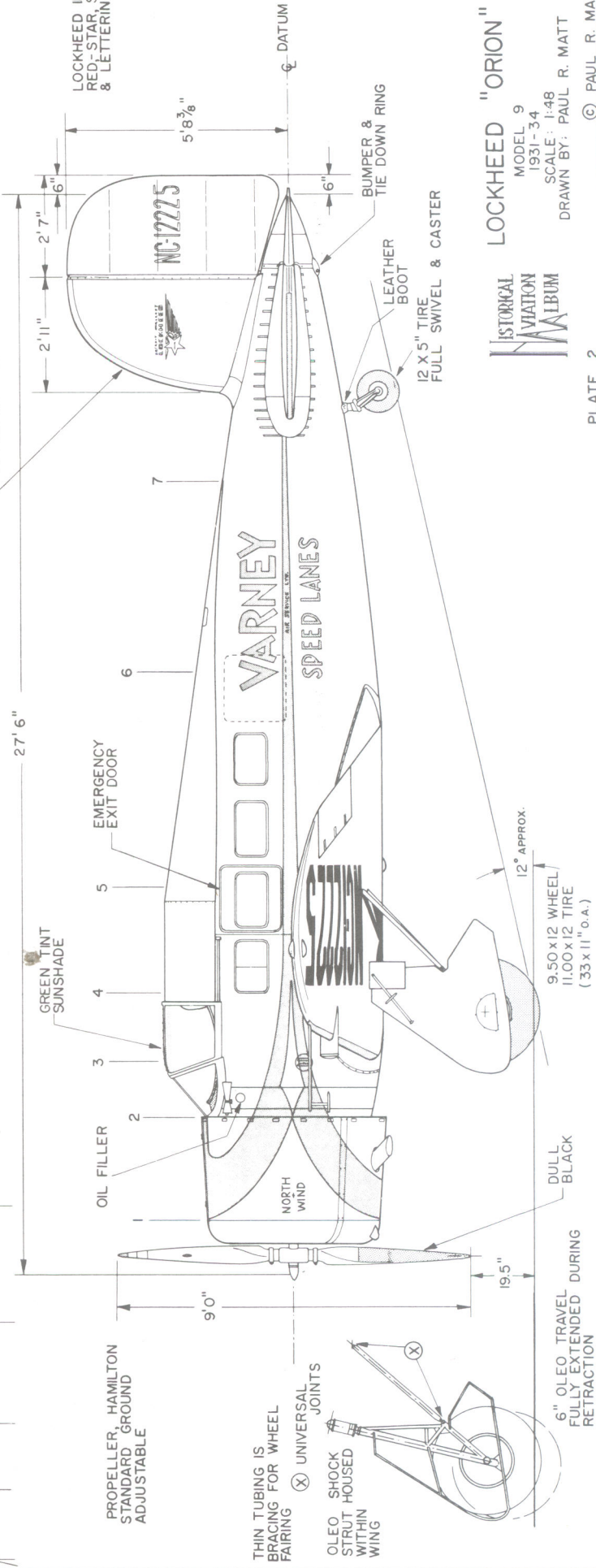


NOTE: THIS DRAWING PORTRAYS VARNEY SPEED LANES "NORTH WIND" MODEL 9 "ORION". OTHER VARNEY ORIONS DIFFERED ONLY SLIGHTLY WHILE OTHER ORIONS, IN PARTICULAR THE LATE VERSIONS & SPECIAL MODELS, HAD MANY MODIFICATIONS.

VARNEY'S SIX "ORIONS" SCHEME
 "WEST WIND" NC 12223
 "SOUTH WIND" NC 12224
 "NORTH WIND" NC 12225
 "EAST WIND" NC 12226
 "WINTER WIND" NC 12227
 "SPRING WIND" NC 12228

VARNEY "ORION" COLOR SCHEME
 ENTIRE AIRCRAFT, HIGH GLOSS INSIGNIA WHITE-ALL TRIM & ALL LETTERING, INCLUDING NUMBERS, VERMILLION OUTLINED WITH A BLACK PIN STRIPE ONLY TWO BASIC COLORS USED.

"NORTH WIND" WAS THE ONLY VARNEY ORION NOT TO HAVE FIN LEADING EDGE TRIM PAINT.



27' 6"

5' 8 3/8"

2' 11"

2' 7"

6"

6"

6"

6"

6"

6"

6"

6"

6"

6"

6"

6"

6"

6"

6"

6"

6"

6"

6"

6"

LOCKHEED INSIGNIA RED-STAR, STRIPES & LETTERING

DATUM

BUMPER & TIE DOWN RING

LEATHER BOOT

12 X 5" TIRE FULL SWIVEL & CASTER

VARNEY SPEED LANES

EMERGENCY EXIT DOOR

GREEN TINT SUNSHADE

OIL FILLER

NORTH WIND

9' 0"

19.5"

9.50 X 12 WHEEL FULLY EXTENDED DURING RETRACTION

11.00 X 12 TIRE (33 X 11" o.a.)

DULL BLACK

PROPELLER, HAMILTON STANDARD GROUND ADJUSTABLE

THIN TUBING IS BRACING FOR WHEEL FAIRING

OLEO SHOCK STRUT HOUSED WITHIN WING

UNIVERSAL JOINTS

6" OLEO TRAVEL FULLY EXTENDED DURING RETRACTION

DULL BLACK

9.50 X 12 WHEEL FULLY EXTENDED DURING RETRACTION

11.00 X 12 TIRE (33 X 11" o.a.)

DULL BLACK

LOCKHEED "ORION"

MODEL 9 1931-34



SCALE: 1:48 DRAWN BY: PAUL R. MATT

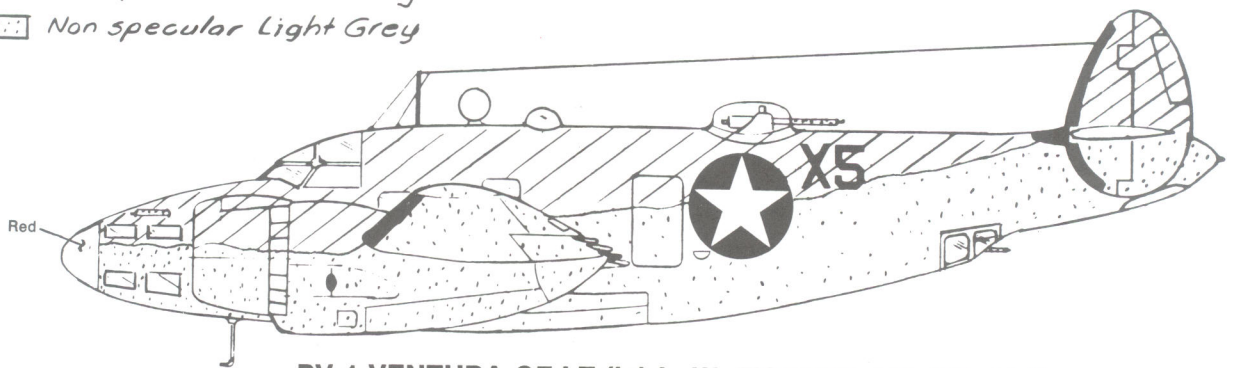
© PAUL R. MATT 1962



PLATE 2

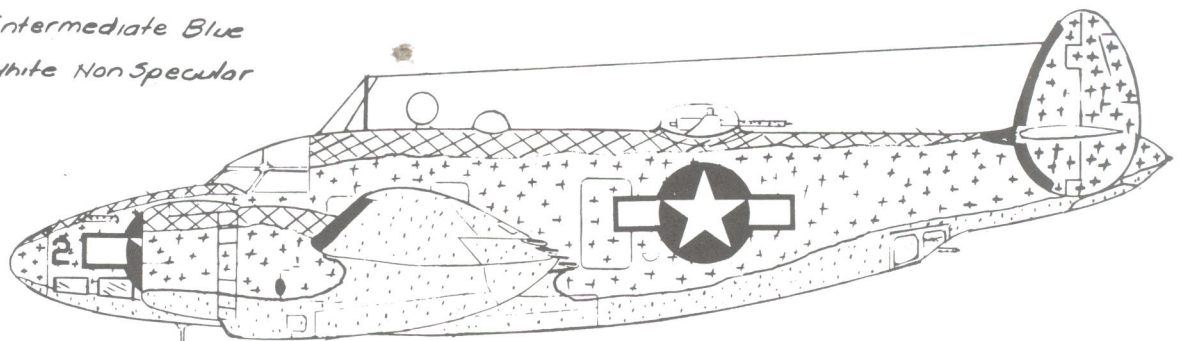
Lockheed Vega PV-1 "Ventura"

-  Non specular Blue Grey
-  Non specular Light Grey

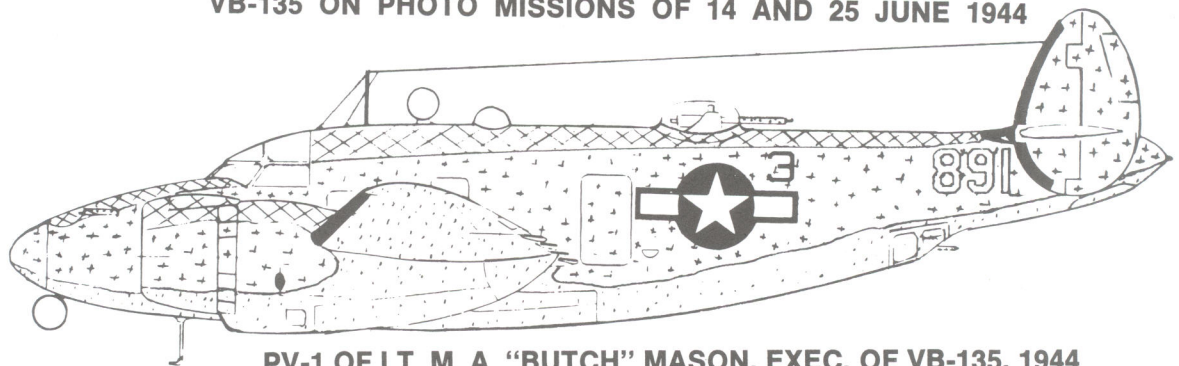


PV-1 VENTURA OF LT.(jg) L. W. FISCHER, VB-135, 1943

-  Dark Sea Blue Non Specular
-  Intermediate Blue
-  White Non Specular

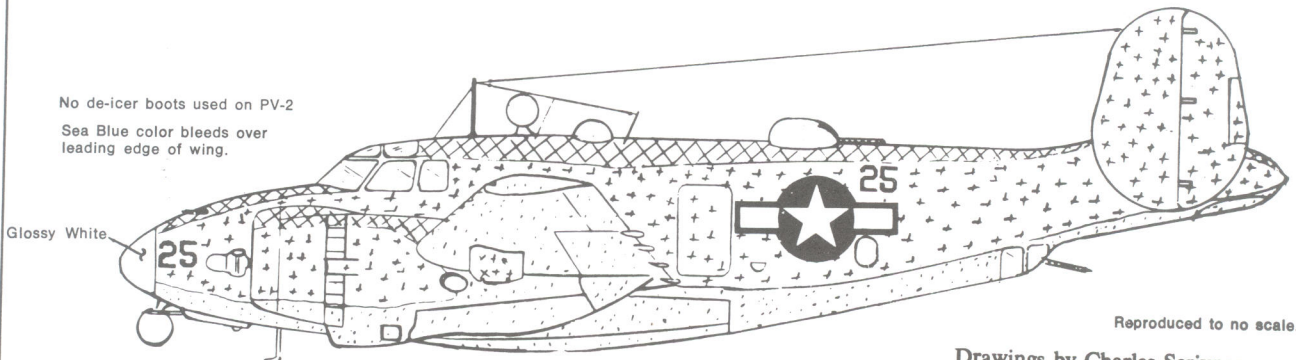


SPECIALLY EQUIPPED PV-1 FLOWN BY LT. L. A. "PAT" PATTESON
VB-135 ON PHOTO MISSIONS OF 14 AND 25 JUNE 1944



PV-1 OF LT. M. A. "BUTCH" MASON, EXEC. OF VB-135, 1944

No de-icer boots used on PV-2
Sea Blue color bleeds over
leading edge of wing.

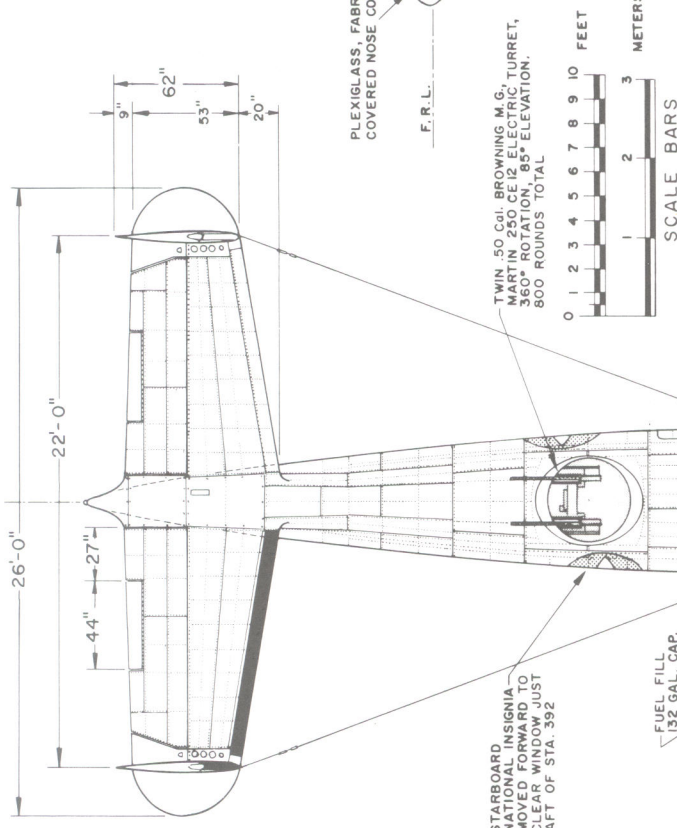
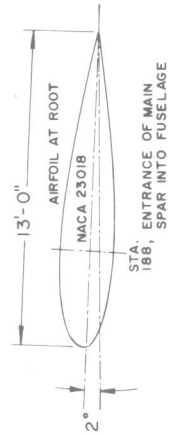
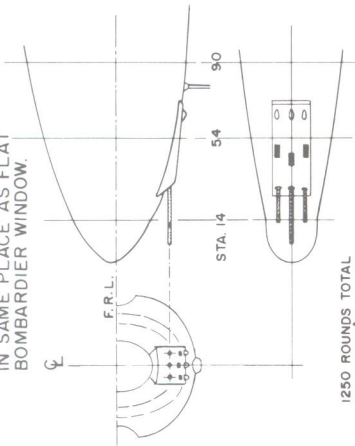


PV-2 HARPOON OF LCDR. GLENN DAVID, SKIPPER OF VPB-139, 1945

Reproduced to no scale.

Drawings by Charles Scrivner

3--50 Cal. CHIN GUN PACK,
 FITTED ON LATE MODELS,
 MID-1943, REPLACED AND
 IN SAME PLACE AS FLAT
 BOMBARDIER WINDOW.



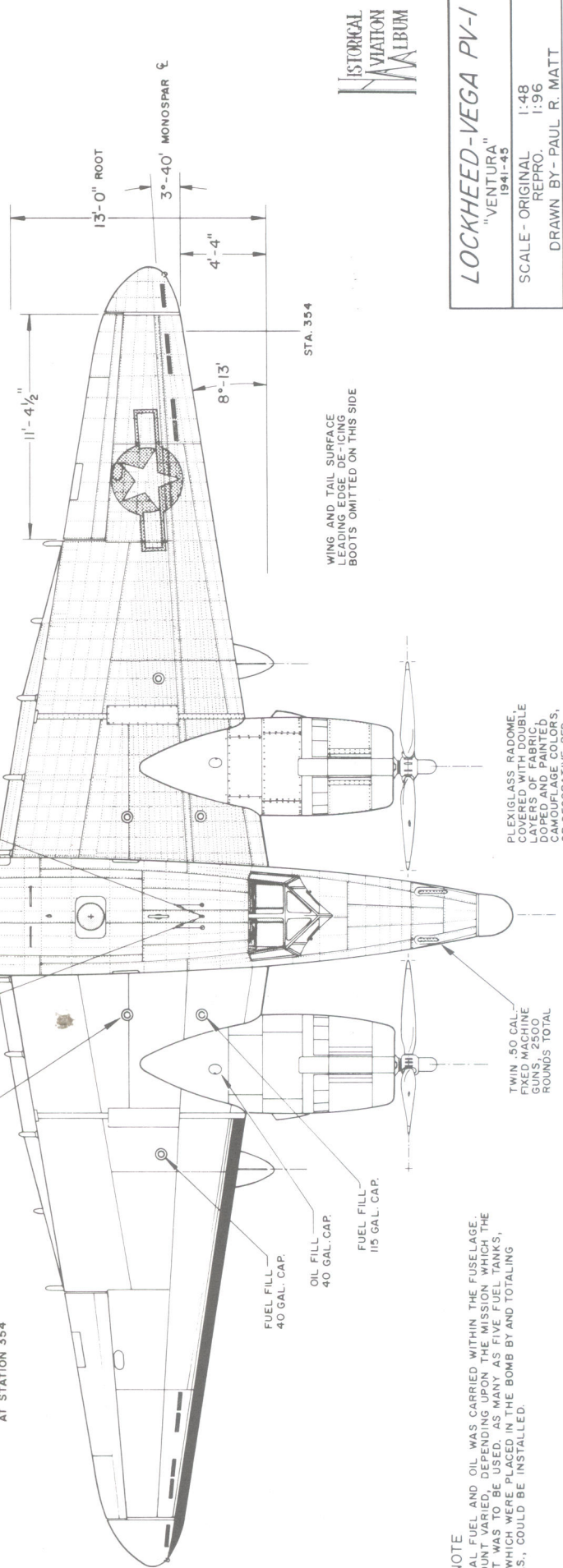
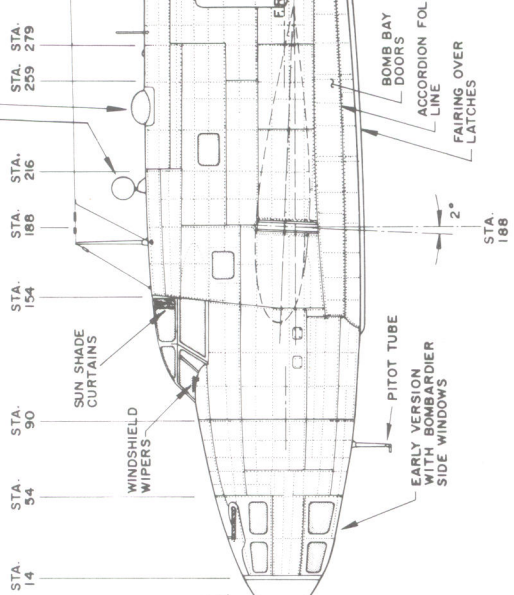
TWIN .50 Cal. BROWNING M.G.
 MOUNTED IN 350 CAL. ELECTRIC TURRET,
 WHICH ROTATES TO 85° ELEVATION,
 800 ROUNDS TOTAL

STARBOARD
 NATIONAL INSIGNIA
 MOVED FORWARD TO
 CLEAR WINDOW JUST
 AFT OF STA. 392

FUEL FILL
 132 GAL. CAP.

NOTE
 ADDITIONAL FUEL AND OIL WAS CARRIED WITHIN THE FUSELAGE
 THE AMOUNT VARIED, DEPENDING UPON THE MISSION WHICH THE
 AIRCRAFT WAS TO BE USED, AS MANY AS FIVE FUEL TANKS,
 TWO OF WHICH WERE PLACED IN THE BOMB BY AND TOTALING
 896 GALS., COULD BE INSTALLED.

INBOARD PROFILE
 FORWARD FUSELAGE
 AREA



WING AND TAIL SURFACE
 LEADING EDGE SCUFFING
 BOOTS OMITTED ON THIS SIDE

PLEXIGLASS RADOME
 COVERED WITH DOUBLE
 LAYERS OF FABRIC,
 DOPED AND PAINTED
 CAMOUFLAGE COLORS,
 OR PURPLE-RED
 OR WHITE

TWIN .50 CAL.
 FIXED MACHINE
 GUNS, 2500
 ROUNDS TOTAL



LOCKHEED-VEGA PV-1
 "VENTURA"
 1941-45

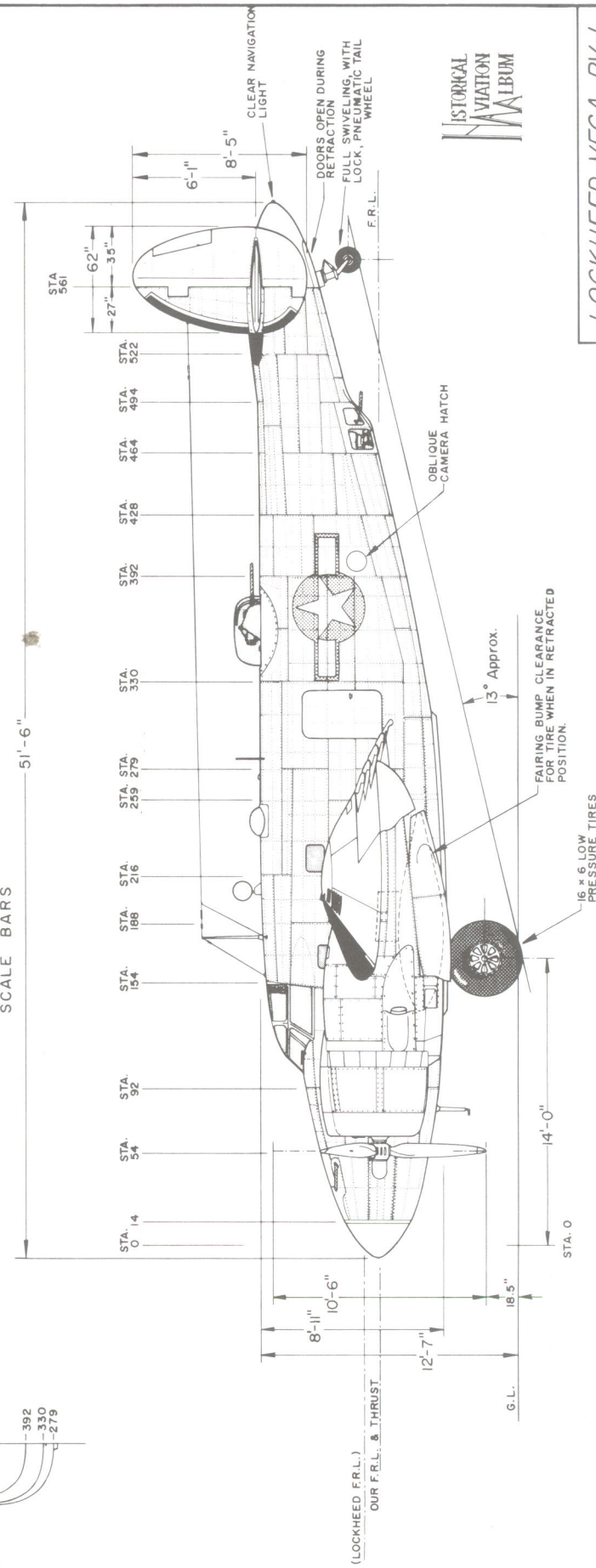
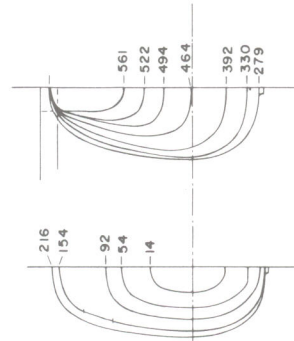
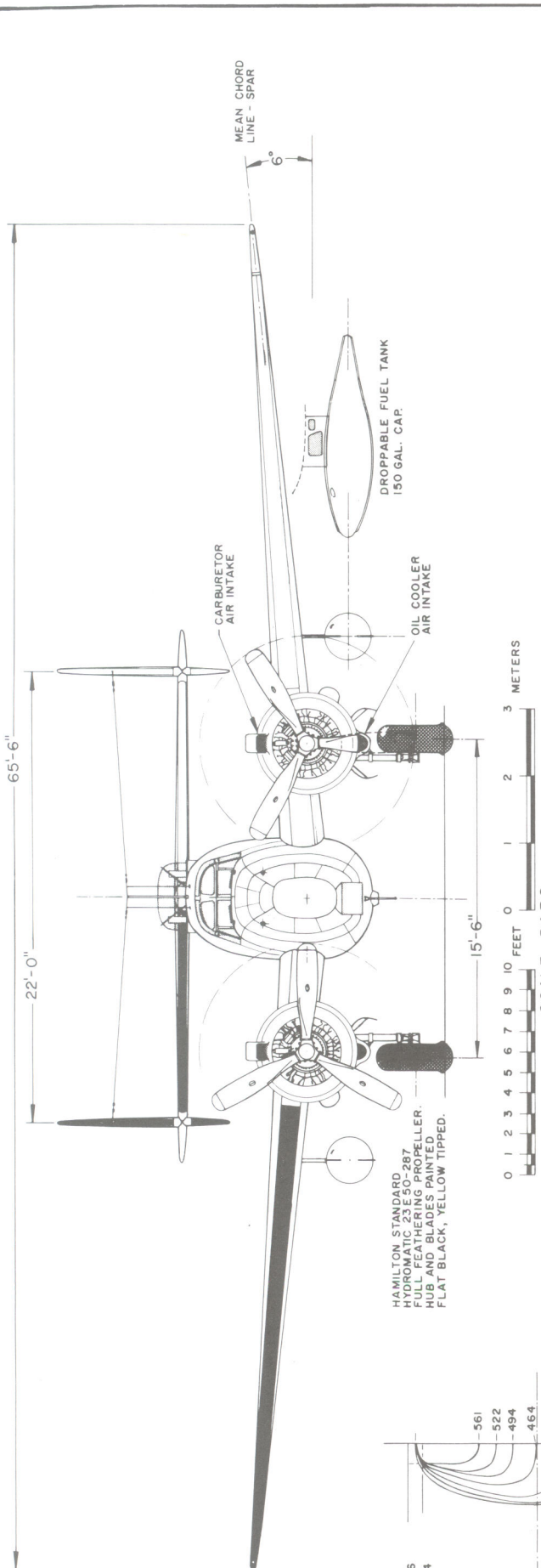
SCALE - ORIGINAL 1:48
 REPRO. 1:96

DRAWN BY - PAUL R. MATT
 P.O. BOX 33

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 TEMPLE CITY, CALIF. 91780

DRAWING No. EE-101-C

PLATE 1 of 3



LOCKHEED-VEGA PV-1
"VENTURA"
1941-45

SCALE - ORIGINAL 1:48
REPRO. 1:96

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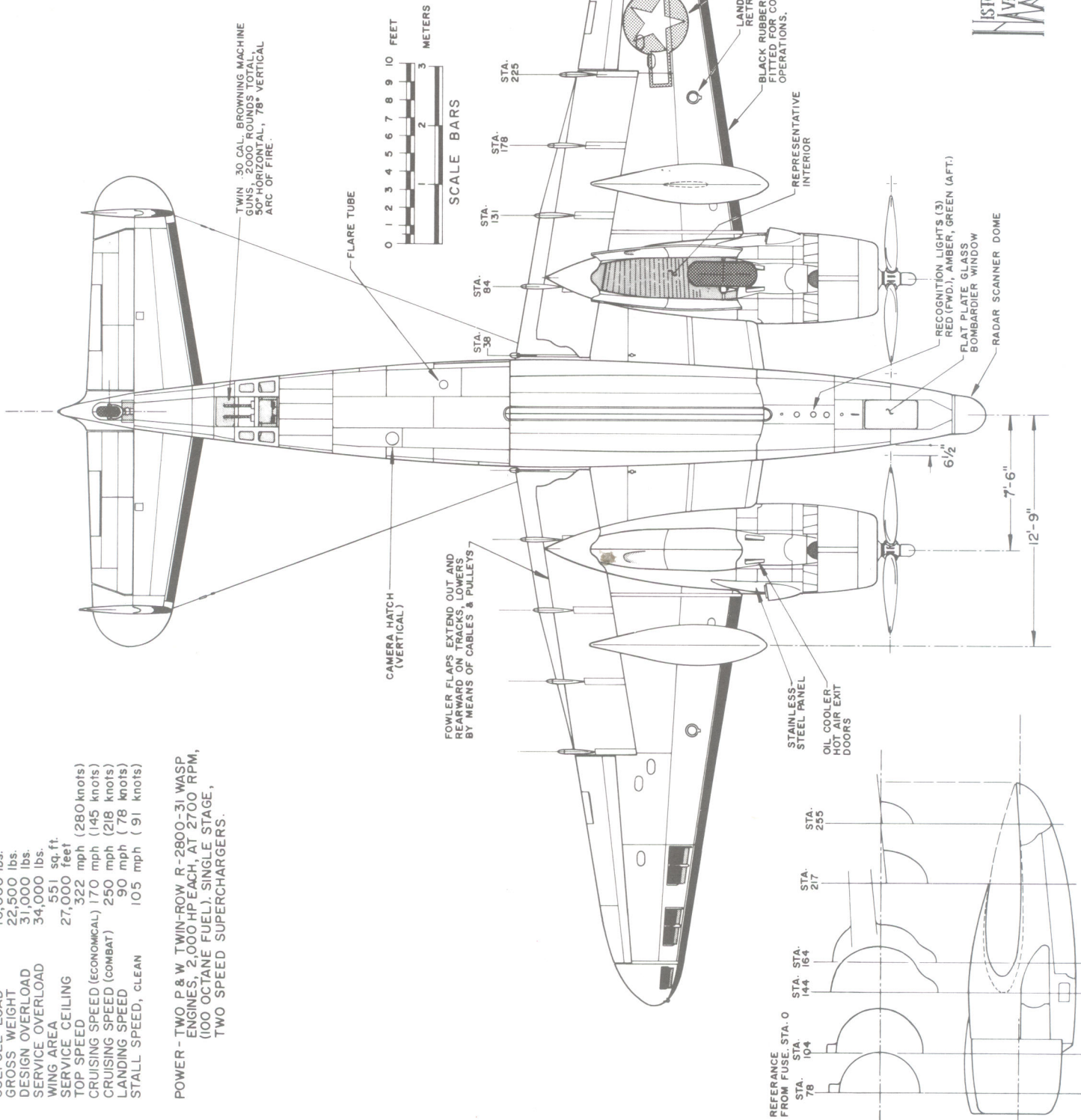
GENERAL SPECIFICATIONS

WEIGHT - EMPTY 12,500 lbs.
 USEFUL LOAD 10,000 lbs.
 GROSS WEIGHT 22,500 lbs.
 DESIGN OVERLOAD 31,000 lbs.
 SERVICE OVERLOAD 34,000 lbs.
 WING AREA 551 sq. ft.
 SERVICE CEILING 27,000 feet
 TOP SPEED 322 mph (280 knots)
 CRUISING SPEED (ECONOMICAL) 170 mph (145 knots)
 CRUISING SPEED (COMBAT) 250 mph (218 knots)
 LANDING SPEED 90 mph (78 knots)
 STALL SPEED, CLEAN 105 mph (91 knots)

POWER - TWO P & W TWIN-ROW, R-2800-31 WASP ENGINES, 2,000 HPEACH, AT 2700 RPM, (100 OCTANE FUEL), SINGLE STAGE, TWO SPEED SUPERCHARGERS.

NOTE: MAJOR PANELING AND RIVET LINES ONLY SHOWN ON THESE DRAWINGS. ALL SUCH DETAILING WAS NOT NECESSARILY TRANSFERRED FROM ONE VIEW TO ANOTHER.

COLORING NOTES
 U.S. NAVY PV-1 MODELS
 1942-43, BLUE GRAY-PLANVIEW AND UPPER SURFACES.
 LIGHT GRAY-UNDERSURFACES.
 1944-45, TRI-COLOR, DARK SEA BLUE UPPER AND PLANVIEW SURFACES BLENDING TO INTERMEDIATE ON SIDE VIEW SURFACES - WHITE UNDERSURFACES.
 ALL COLORS WERE NON-SPECULAR, DULL FINISH.



MY SINCERE APPRECIATION IS EXTENDED TO CHARLES SCRIVNER FOR TECHNICAL MATERIAL SUITABLE TO MAKE THESE DRAWINGS AS ACCURATE AS POSSIBLE AT THIS TIME.

Paul R. Matt

LOCKHEED-VEGA PV-1
 "VENTURA"
 1941-45

SCALE - ORIGINAL 1:48
 REPRO. 1:96
 DRAWN BY - PAUL R. MATT

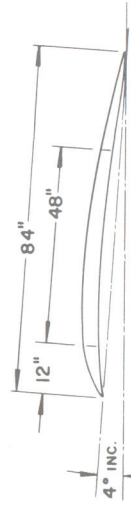
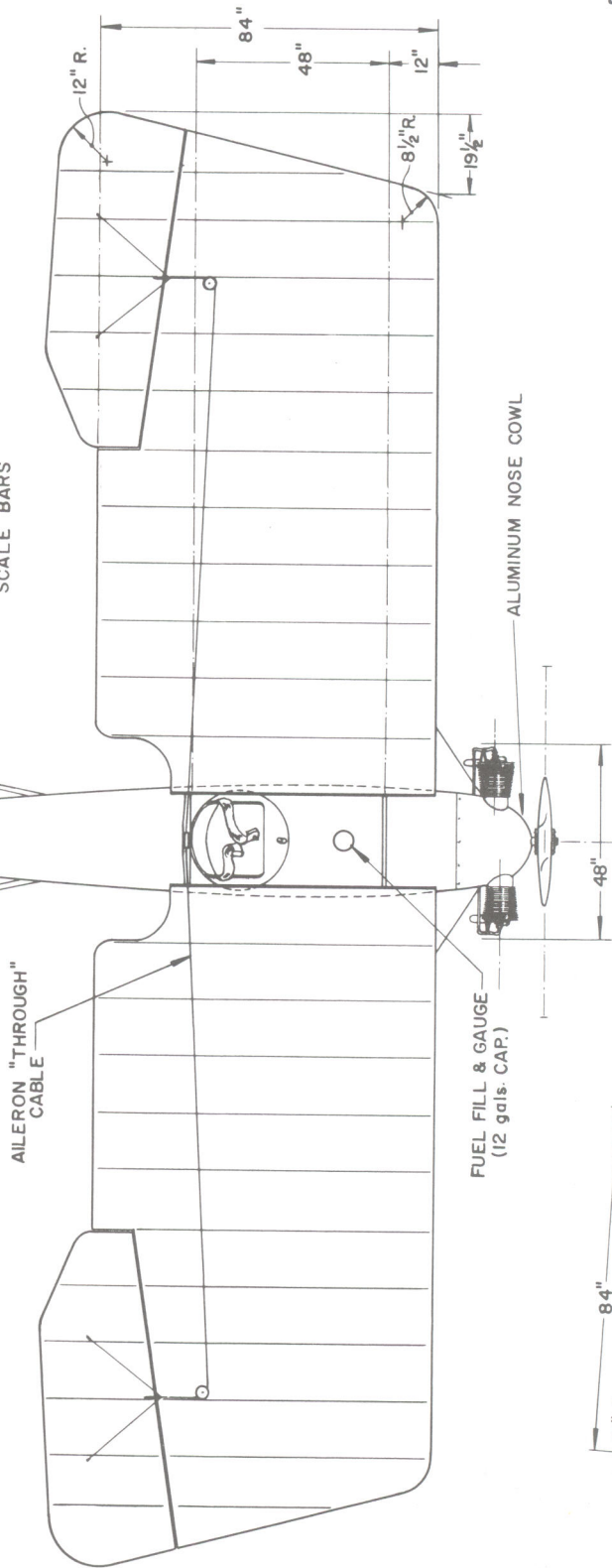
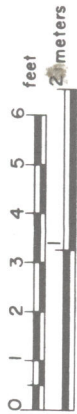
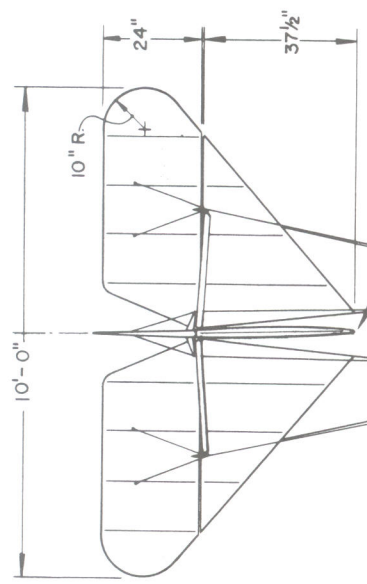
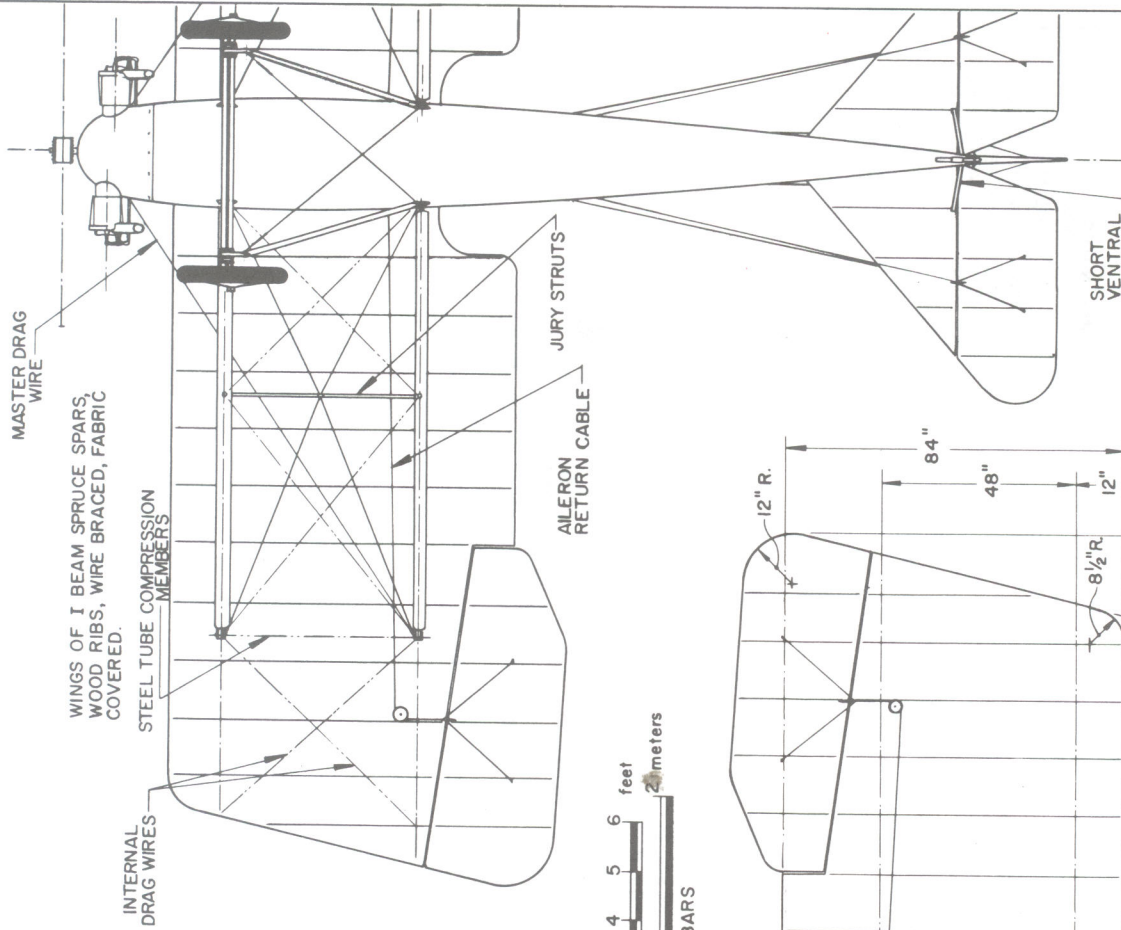
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GENERAL SPECIFICATIONS

WEIGHT EMPTY 595 lbs.
 USEFUL LOAD 393 lbs.
 GROSS WEIGHT 978 lbs.
 TOP SPEED 72 mph.
 CRUISING SPEED 60 mph.
 LANDING SPEED 30 mph.
 CLIMB 4,800 FT. IN 10 MIN.
 RANGE AT CRUISE 240 miles
 WING AREA, INCL. AILERONS 187 sq. ft.
 WING LOADING 5.2 lbs./sq. ft.
 POWER LOADING 13.5 lbs./h.p.

POWER: CATO AIR COOLED 2-CYL.
 HORIZONTALLY OPPOSED ENGINE
 5" BORE 6" STROKE
 NORMAL RATING 68 h.p.
 MAX. RATING 72 h.p. AT 1825 r.p.m.

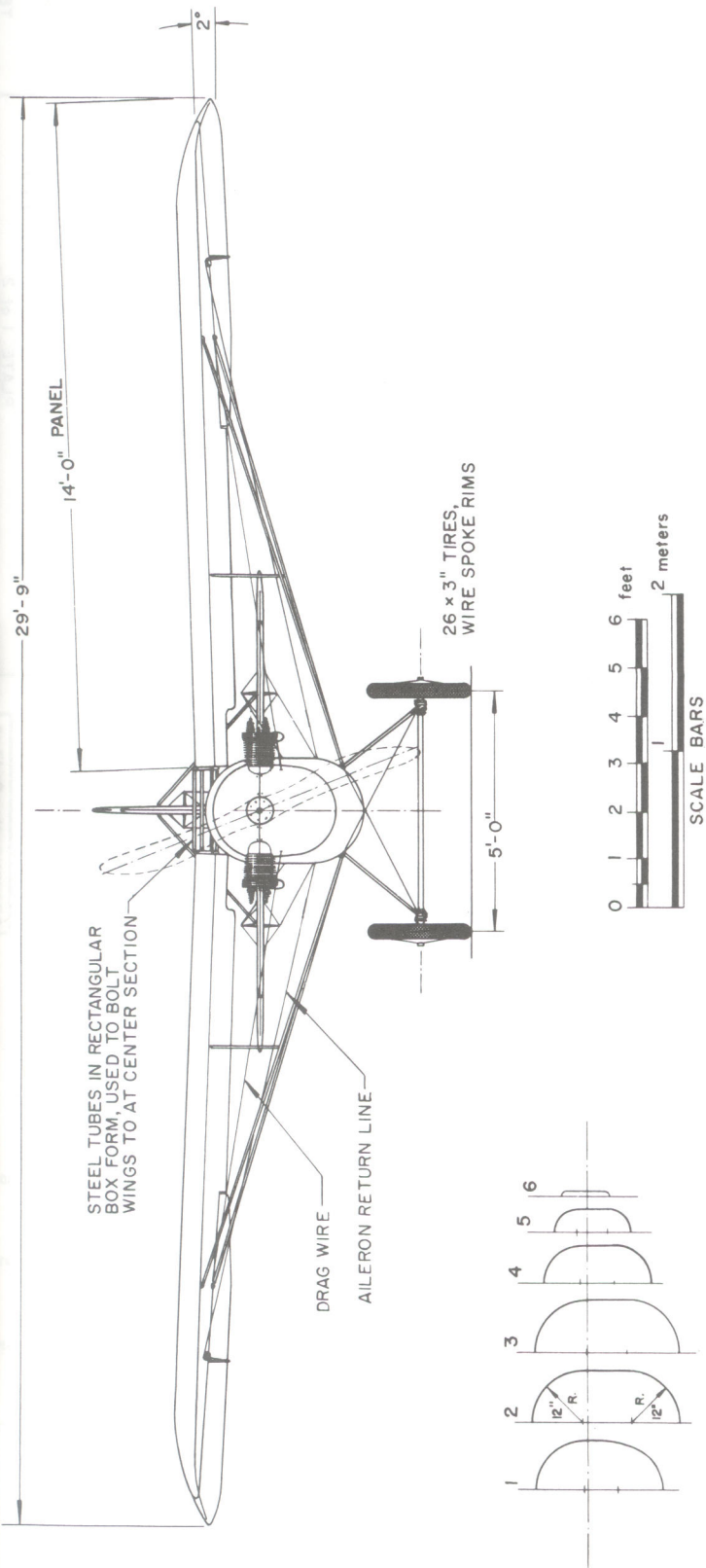


CATO No. 4 AIRFOIL
 (MODIFIED U.S.A. 6 SECTION)
 ORDINATES UPON REQUEST

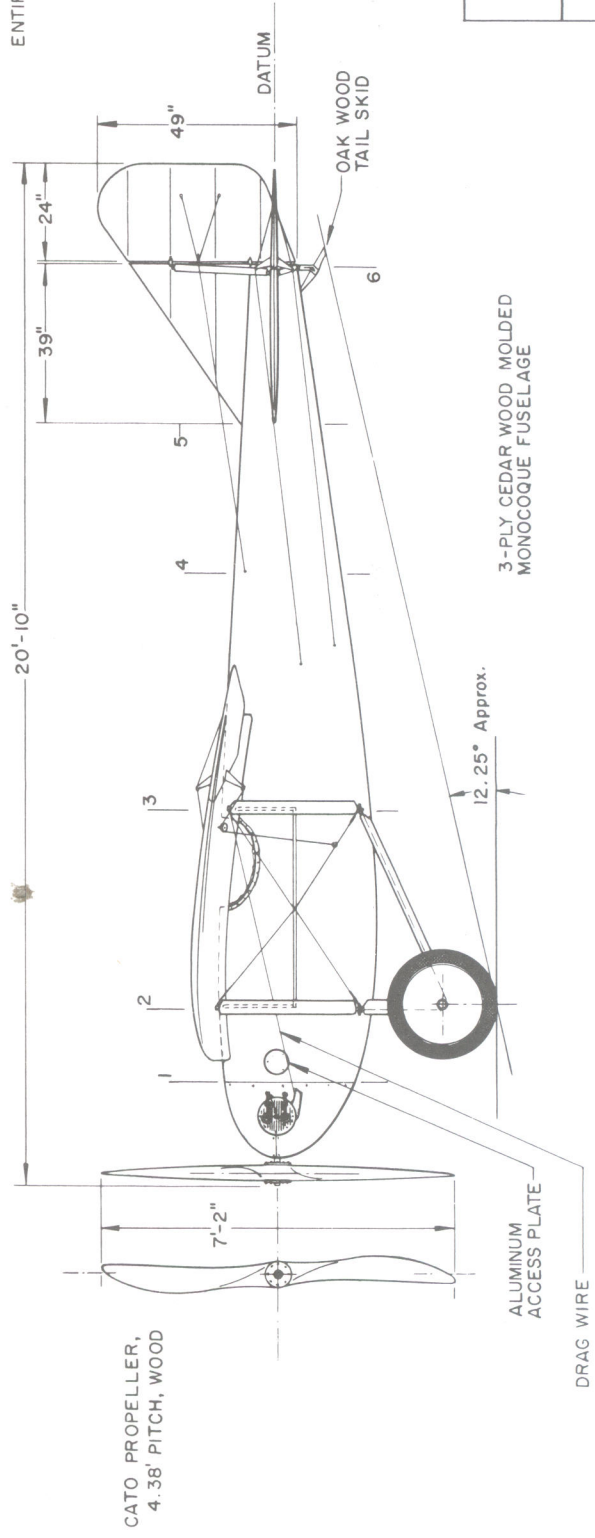
O.A. OPERATING CLEARANCE OF ENGINE



LWF-CATO Model L
 "BUTTERFLY"
 1919-1920
 SCALE - ORIGINAL 1:24
 REPRO. 1:48
 DRAWN BY- PAUL R. MATT
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 TEMPE, ARIZ. 85280



COLORING NOTE
 ENTIRE AIRCRAFT SILVER DOPED



ELEVATOR FIXED AT 0°



LWF-CATO Model L
 "BUTTERFLY"
 1919-1920

SCALE - ORIGINAL 1:24
 REPRO. 1:48

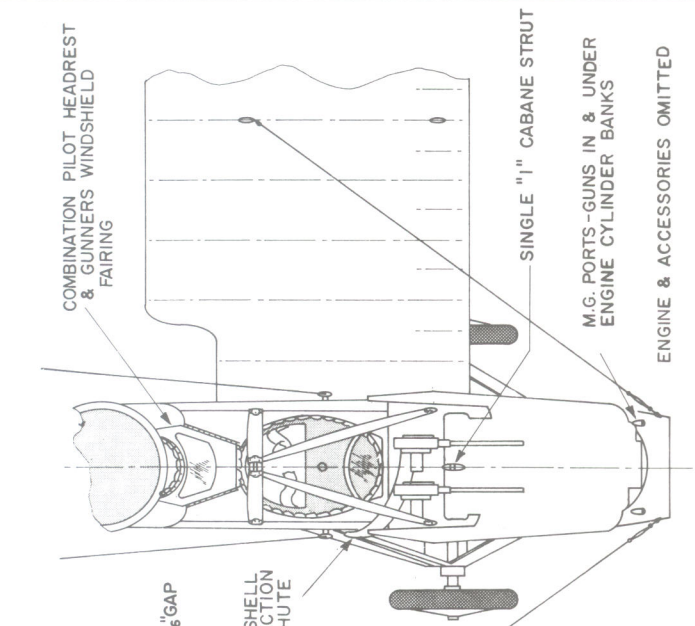
DRAWN BY- PAUL R. MATT

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GENERAL SPECIFICATIONS:

WEIGHT EMPTY 2,675 lbs.
 PILOT & GUNNER 330 "
 WATER (14 gals.) 118 "
 FUEL (90 gals.) & OIL (6 gals.) 598 "
 ARMAMENT, 7 GUNS 302 "
 GROSS WEIGHT 4,023 "
 TOP SPEED 134
 SERVICE CEILING 24,000 ft.
 CLIMB to 10,000 feet 9 min 20 sec.
 WING AREA 516 sq. ft.
 ENDURANCE at FULL SPEED 3 hrs.
 CRUISING SPEED 90 m.p.h.
 LANDING SPEED 50 m.p.h.
 CRUISE as BOMBER, 90 m.p.h., - 4 hr. duration
 CRUISE, LIBERTY 12 rated 435 B.H.P. at 2,100 r.p.m.
 CRUISE, at 1,800 r.p.m.

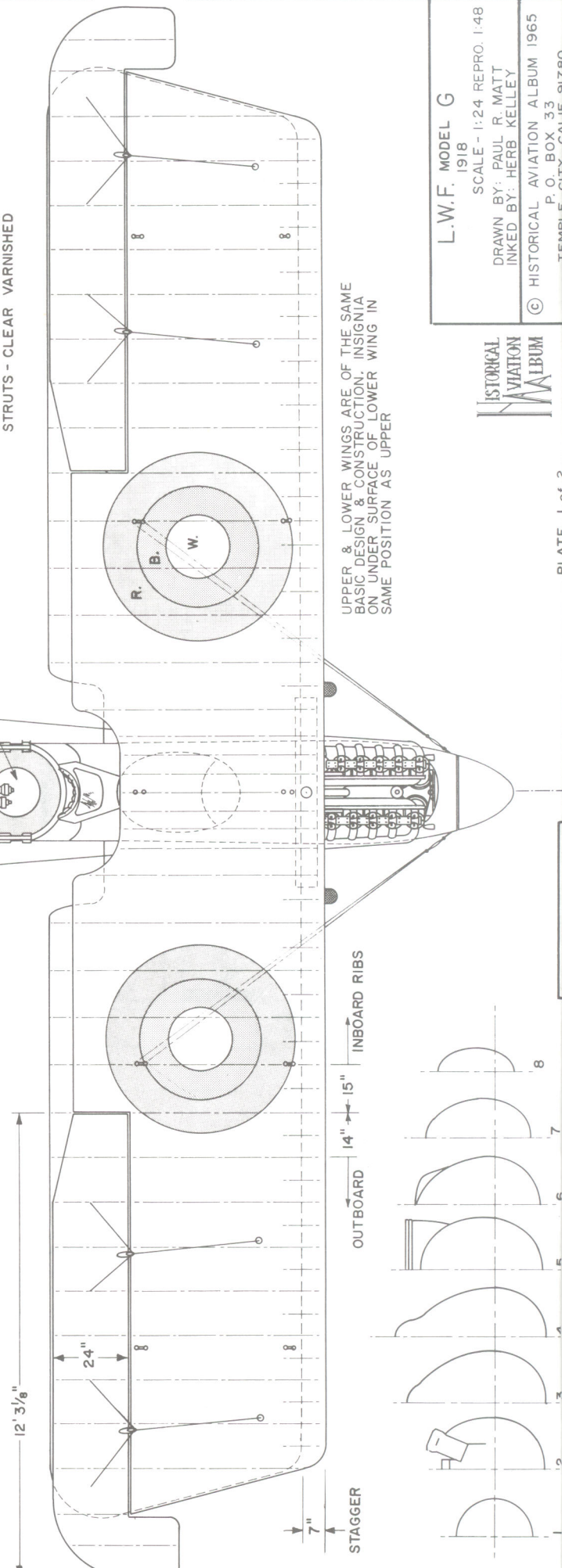
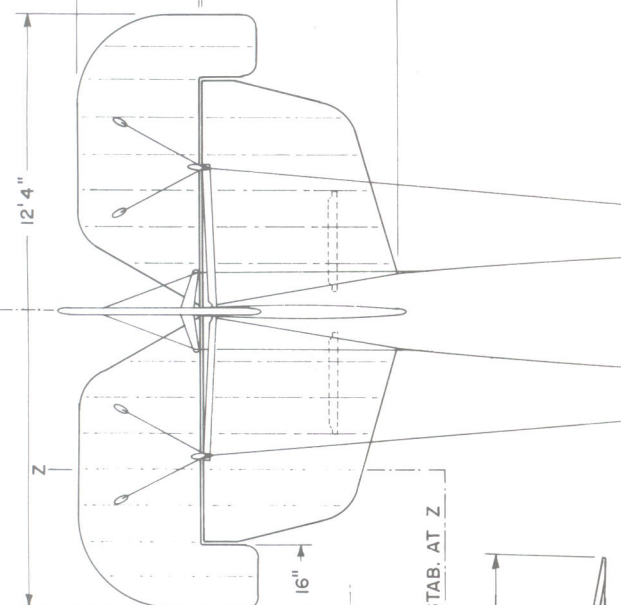
PERF. FIGURES,
 FULL LOAD - NO BOMBS



COLORING NOTES
 ALL PLAN VIEW SURFACES - DARK EARTH BROWN
 (UPPER SURFACES OF WINGS, TAIL SURFACES & TOP OF FUSELAGE TO COLOR LINE)
 UNDER SURFACES - PALE SKY BLUE
 STRUTS - CLEAR VARNISHED

.30 BROWNING M.G.s
 (ALL GUNS SAME)

GUNNER'S STOOL



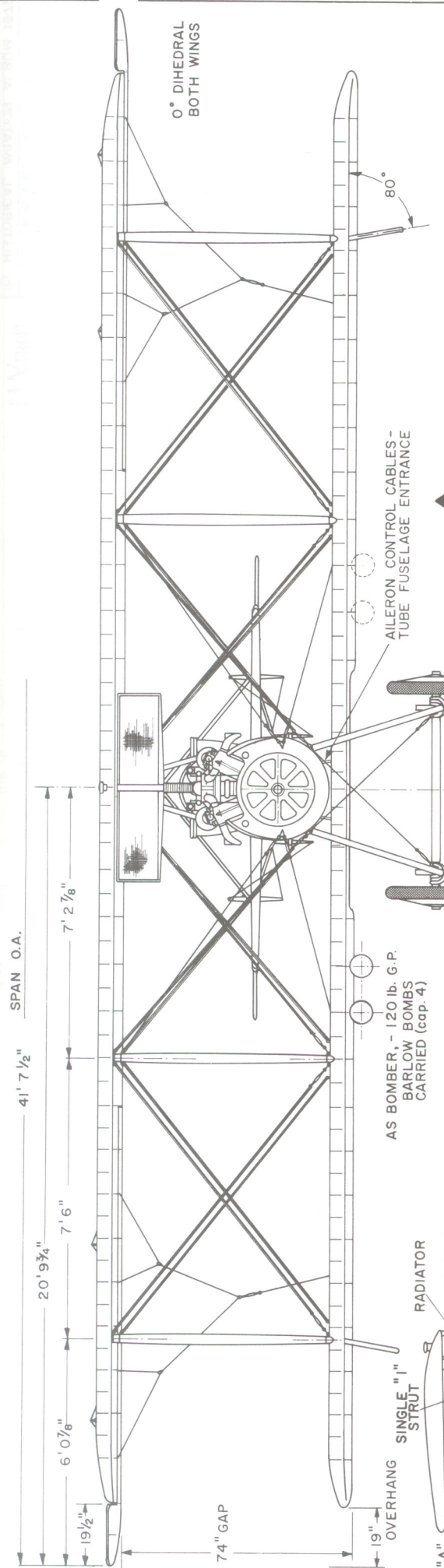
L.W.F. MODEL G
 1918

SCALE - 1:24 REPRO. 1:48

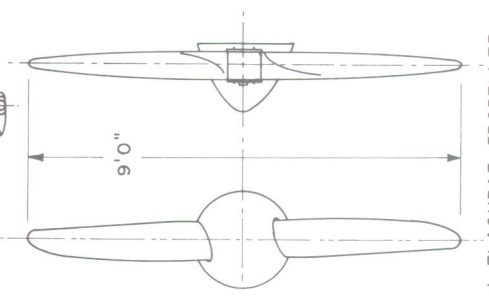
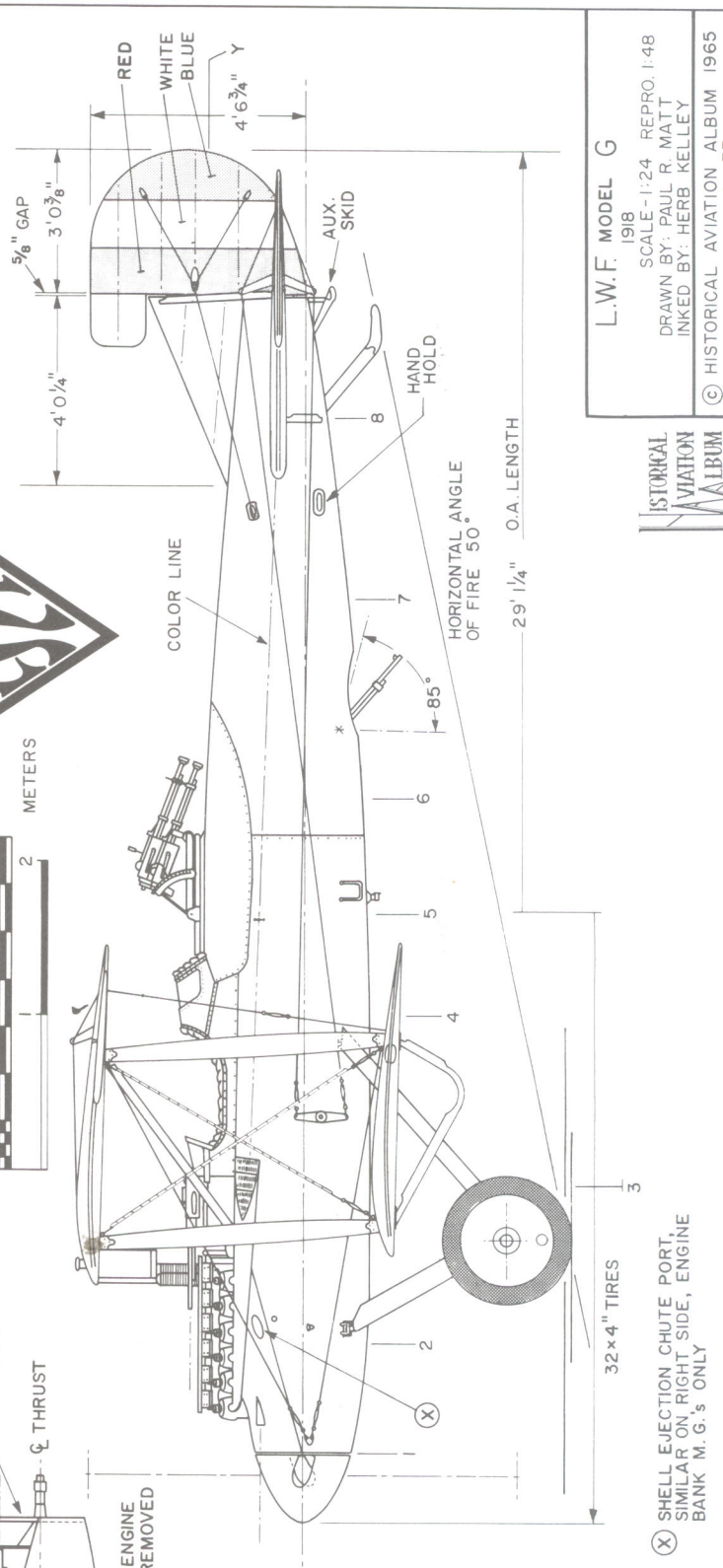
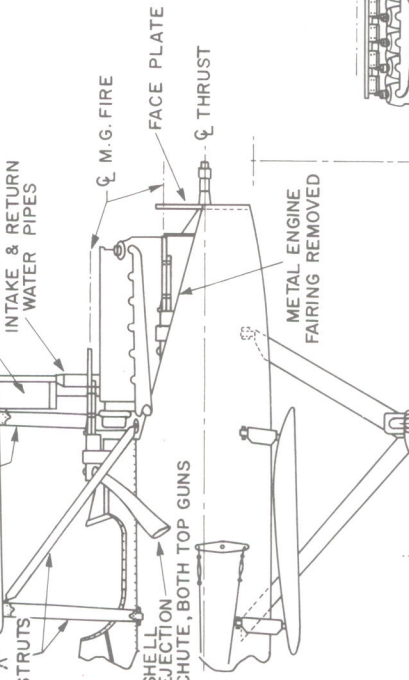
DRAWN BY: PAUL R. MATT
 INKED BY: HERB KELLEY

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TRADEMARK OF THE L.W.F. ENGINEERING COMPANY, INC.
 NOT IN ANY WAY AFFILIATED WITH THE ORIGINAL LOWE, WILLARD, FOWLER COMPANY



L.W.F. MODEL G
 1918
 SCALE - 1:24 REPRO. 1:48
 DRAWN BY: PAUL R. MATT
 INKED BY: HERB KELLEY
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INTERPLANE BRACING REF

① STRUTS

CENTER VERTICAL, RUDDER ONLY, NO FIN EMPLOYED

24'-0"

10'-0"

28'-0"

5'-6"

2'-6"

11"

18'-6"

11'-0"

6'-4"

16"

60" NATIONAL INSIGNIA

AILERON CABLE PULLEY HOUSING & SLIP GUIDES

AILERON CABLE AND GUIDE SLEEVES

PLY VEENER LEADING EDGE

UPPER AND LOWER WINGS OF SAME PHYSICAL SHAPE, SIZE AND CONSTRUCTION

FLACHBAR WOOD PROPELLER

106'-8" O. A. SPAN

53'-4"

PITOT VENTURI MAST

10'-0"

24"

AUX FUEL TANKS (CAPACITY UNKNOWN)

MAIN FUEL TANKS (CAPACITY UNKNOWN)

TWIN .30 CAL. LEWIS GUNS ON SCARFF MOUNT

ENGINE SERVICE 'CATWALK'

BOMBARDIER'S WINDOW

SLATTED OPENING FOR IMPROVED DOWNWARD VISION FROM COCKPIT

WIND DRIVEN GENERATORS

BALL SOCKET

CUTOUT FOR SINGLE VENTRAL 30 CAL LEWIS M. G. ON SOCKET SWIVEL

CENTER SECTION PLY VEENER COVERED LOWER WING ONLY

FUSELAGE POD & OUTBOARD BOOMS OF 3-PLY WOOD MONOCOQUE CONSTRUCTION. EXCEPTIONALLY SMOOTH AND FREE OF IMPERFECTIONS.

SCALE BARS

0 1 2 3 4 5 6 7 8 9 10 feet

0 1 2 3 meters

GENERAL SPECIFICATIONS

WEIGHT EMPTY 12,400 LBS.

USEFUL LOAD 7,600 LBS.

GROSS WEIGHT 20,000 LBS.

WING AREA (INCL. AILERONS) 2,000 SQ.FT.

POWER LOADING 110 M.P.H.

TOP SPEED, S. L. CRUISE ENDURANCE, COMPUTED 10 HRS

CLIMB, INITIAL, S. L. 650 FT./MIN

SERVICE CEILING, COMPUTED 17,000 FT

LANDING SPEED 55 M.P.H.

POWER: 3 LIBERTY 12s 400 HP @ 1700 RPM

COLORING NOTES

ENTIRE AIRCRAFT GLOSS OLIVE DRAB (GREEN)

A. S. NUMBER & WHEEL COVERS - WHITE

NATIONAL INSIGNIA, RED, WHITE & BLUE

LWF Model H-1

"OWL"

1919-23

SCALE - ORIGINAL 1:48

REPRO. 1:96

DRAWN BY - PAUL R. MATT

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