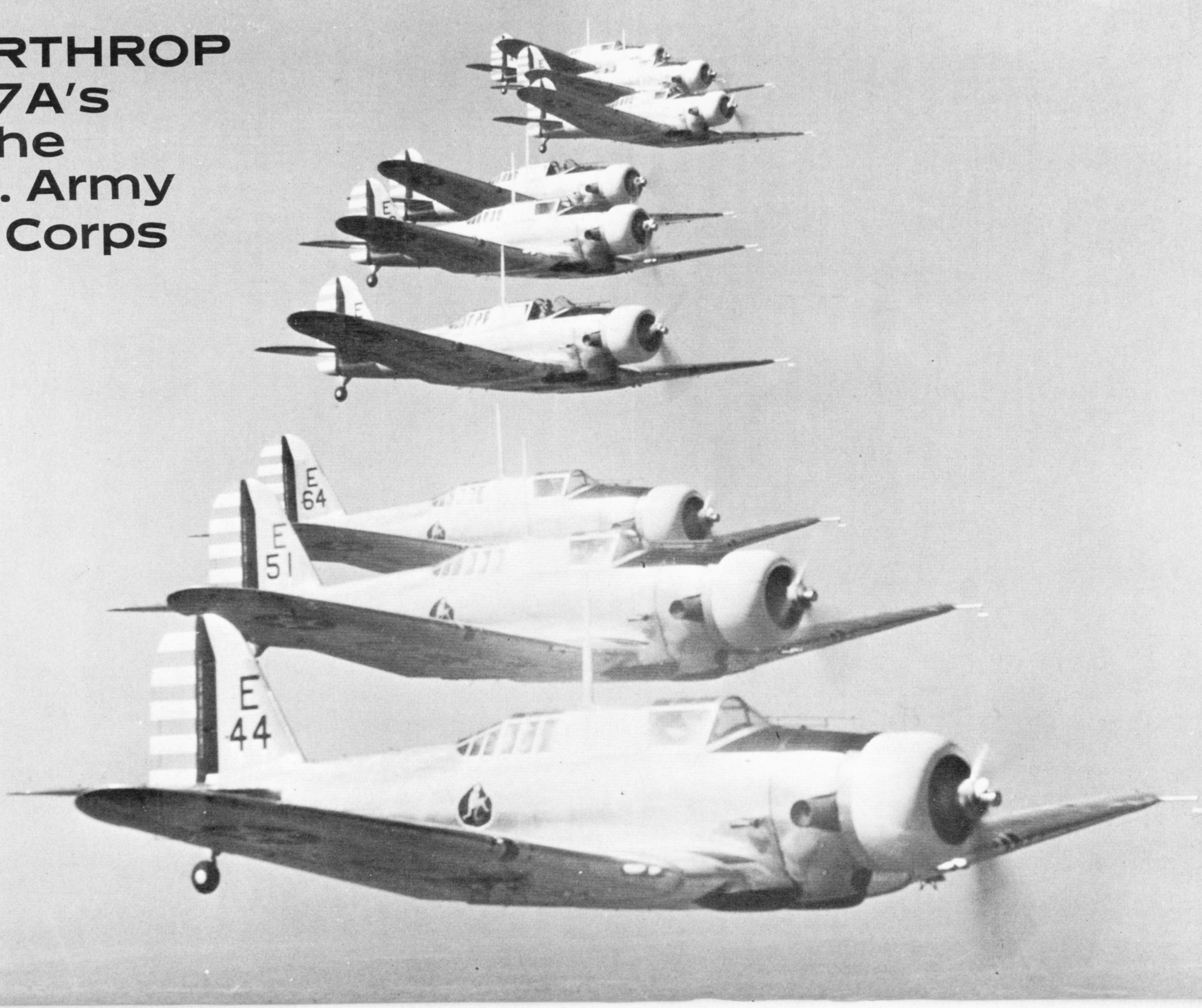
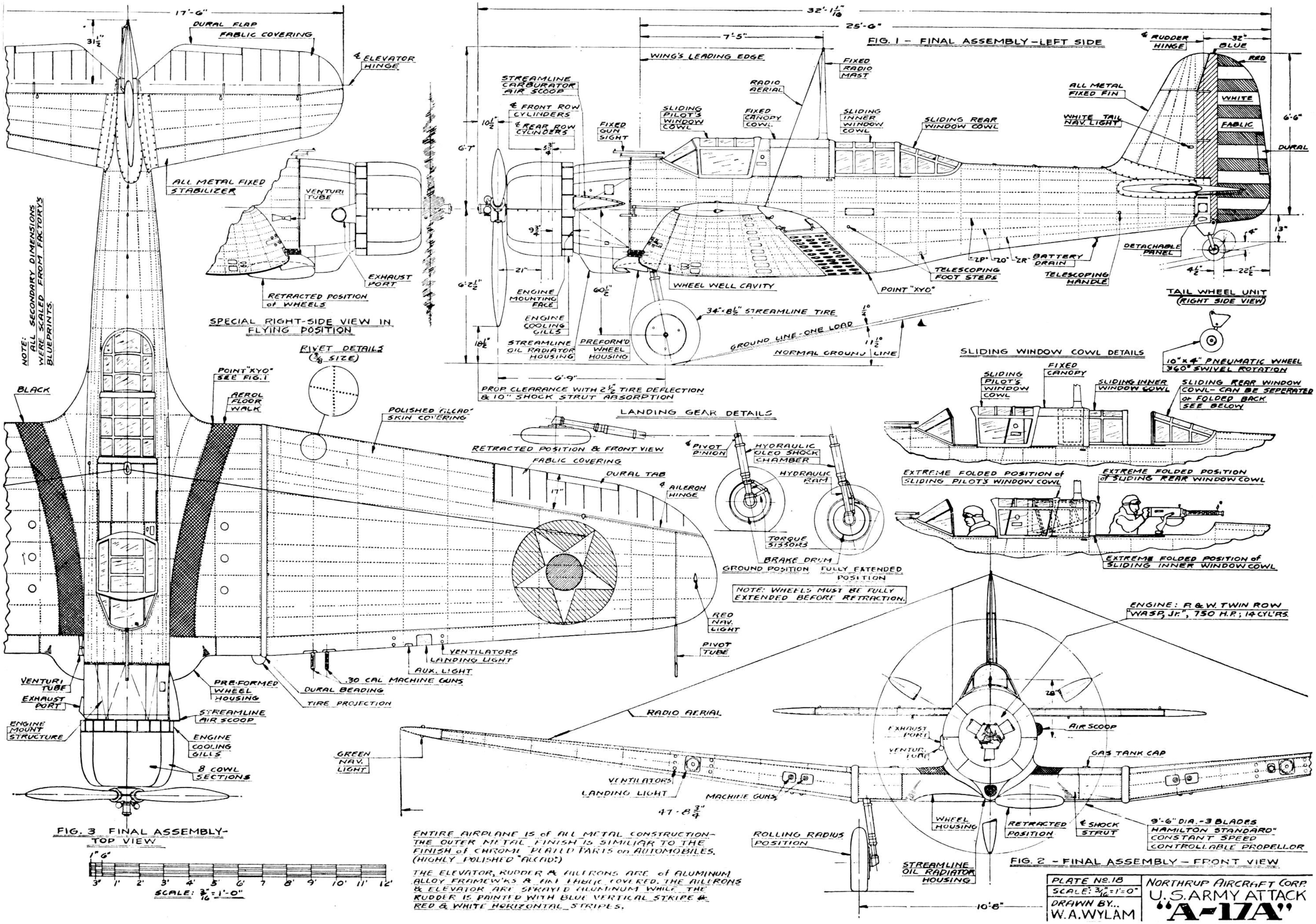
NORTHROP A-17A's of the U.S. Army Air Corps





ENTIRE AIRPLANE IS of ALL METAL CONSTRUCTION- THE OUTER METAL FINISH IS SIMILIAR TO THE FINISH of CHROMI PLAILD PARTS on AUTOMOBILES. (HIGHLY POLISHED "ALCAD!)

THE ELEVATOR, RUDDER & AILERONS ARE of ALUMINUM ALLOY FRAMEWORKS & ARE FABLIC COVERED. THE AILERONS & ELEVATOR ARE SPRAYED ALUMINUM WHILE THE RUDDER IS PAINTED WITH BLUE VERTICAL STRIPE & RED & WHITE HORIZONTAL STRIPES.

PLATE No. 18	NORTHRUP AIRCRAFT CORP.
SCALE: 3/16 = 1'-0"	U.S. ARMY ATTACK
DRAWN BY... W.A.WYLAM	"A-17A"

TYPICAL AILERON FRAME

ALUMINUM ALLOY RIB

DURAL

CONTROL HORN

DURAL SHEETING

4" SQUARES

FLETTNER FLAP

BOTTOM SURFACE LEADING EDGE

TYPICAL HORIZONTAL STABILIZER AIRFOIL

4" MAX. WIDTH

99"

60½"

5½"

1"

4½" DIA. HOLES 69 HOLES CENTER FLAP

4½" DIA. HOLES 67 HOLES PANEL FLAP

SPACING

3" DIA. GAS TANK CAPS

℄ WING PLAN

℄ HORIZONTAL THRUST

℄ PIVOT PINION

THIS IS REALLY PART of THE FUSELAGE — SEE FIG. 5 BELOW

AEROL FLOOR WALK

FUSELAGE OUTLINE

2" DIA. DURAL BEADING

SECTION "A-A"

6½" MAX. WIDTH

TYPICAL VERTICAL STABILIZER AIRFOIL

4" MAX. WIDTH

℄ AILERON HINGE

END of DURAL LEADING EDGE

PIVOT TUBE

CENTER SECTION AIRFOIL

MAX. WIDTH

FIG. 4
WING'S LAYOUT PLAN & ERECTION

THIS IS REALLY PART of THE FUSELAGE'S MONOCOQUE SHELL

NOTE: SEE FIG. 10, PLATE Nº 20 FOR ALL FUSELAGE'S CROSS SECTIONS.

FIG. 5 FUSELAGE'S LAYOUT PLAN

STRAIGHT FROM "I-I" TO BEYOND "L-L"

℄ HINGE

℄ TAIL WHEEL

FIG. 6
HORIZONTAL STABILIZER
LAYOUT PLAN & STRUCTURE

TAB CONTROL

DURAL LEADING EDGE

ALUMAL. BEAM

ALUMINUM ALLOY RIB

FIG. 7
VERTICAL STABILIZER
LAYOUT PLAN & STRUCTURE

ALL METAL SECTION

FIG. 4A
WING'S LAYOUT PLAN-SIDE VIEW

℄ WING PLAN

℄ THRUST

℄ PIVOT PINION

℄ WING SECTION REF. LINE

PARALLEL TO ℄ THRUST

DURAL BEADING

ROLLING RADIUS POSITION (10" SHOCK ABSORPTION)

FULLY EXTENDED POSITION (BEFORE RETRACTION)

PLATE Nº 19	NORTHRUP AIRCRAFT CORP.
SCALE 3/16" 1'-0"	U.S. ARMY ATTACK
DRAWN BY... W.A WYLAM	"A-17A"

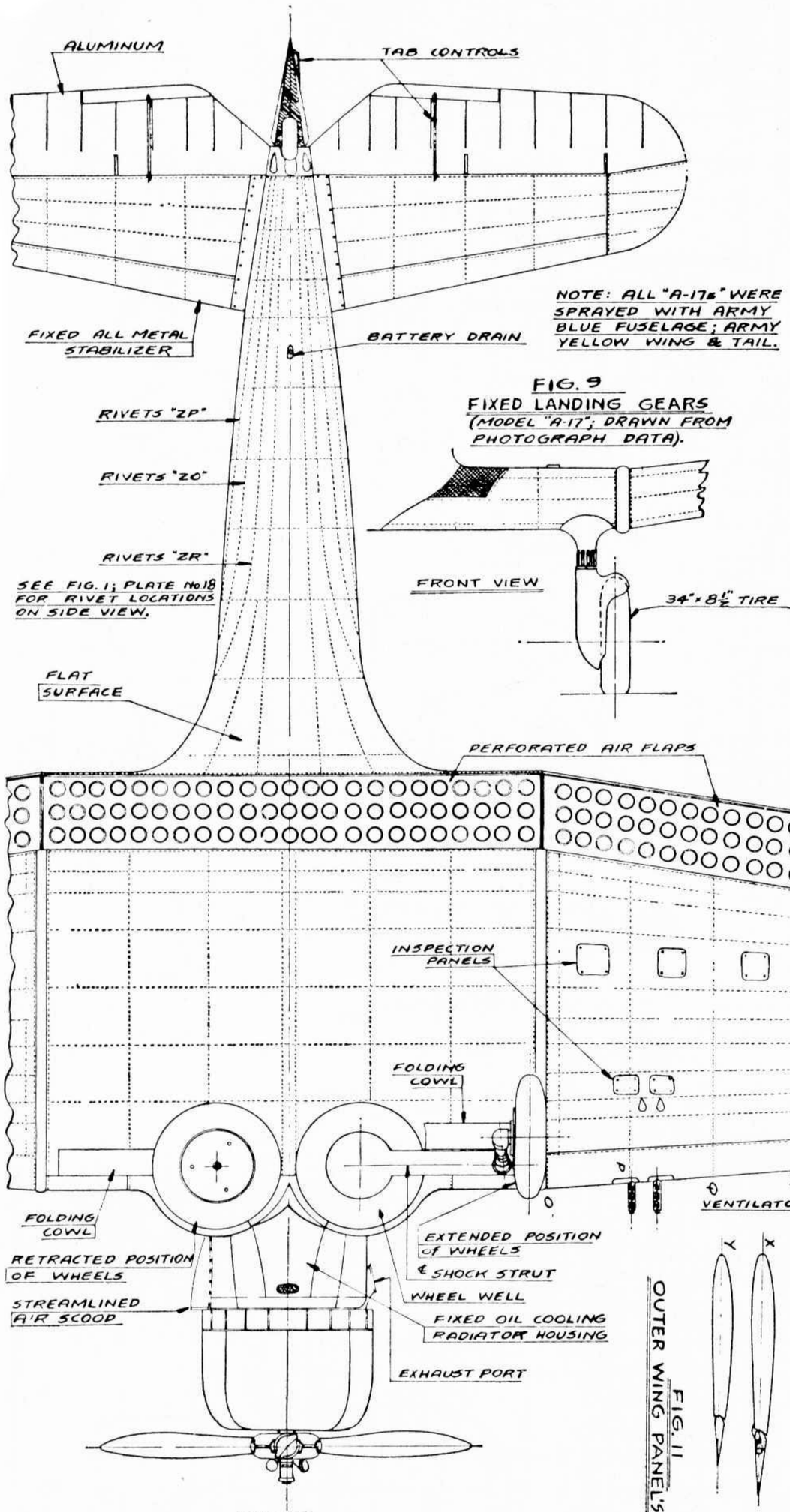


FIG. 9
FIXED LANDING GEARS
(MODEL "A-17"; DRAWN FROM PHOTOGRAPH DATA).

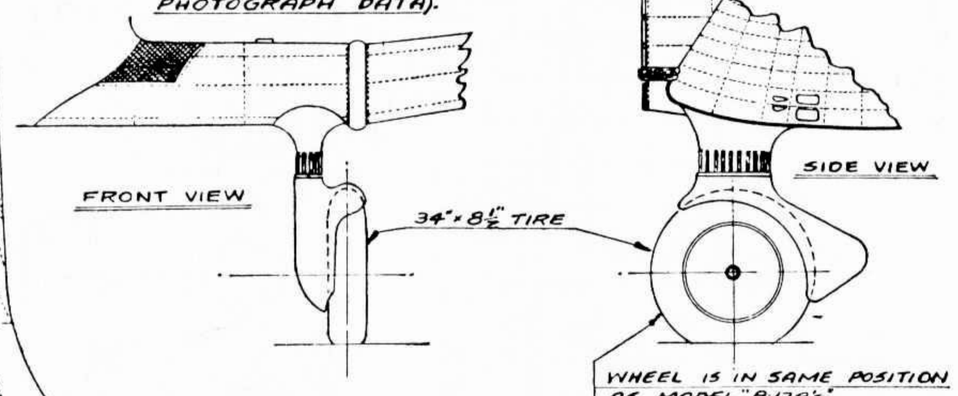


FIG. 8
SPECIAL BOTTOM VIEW

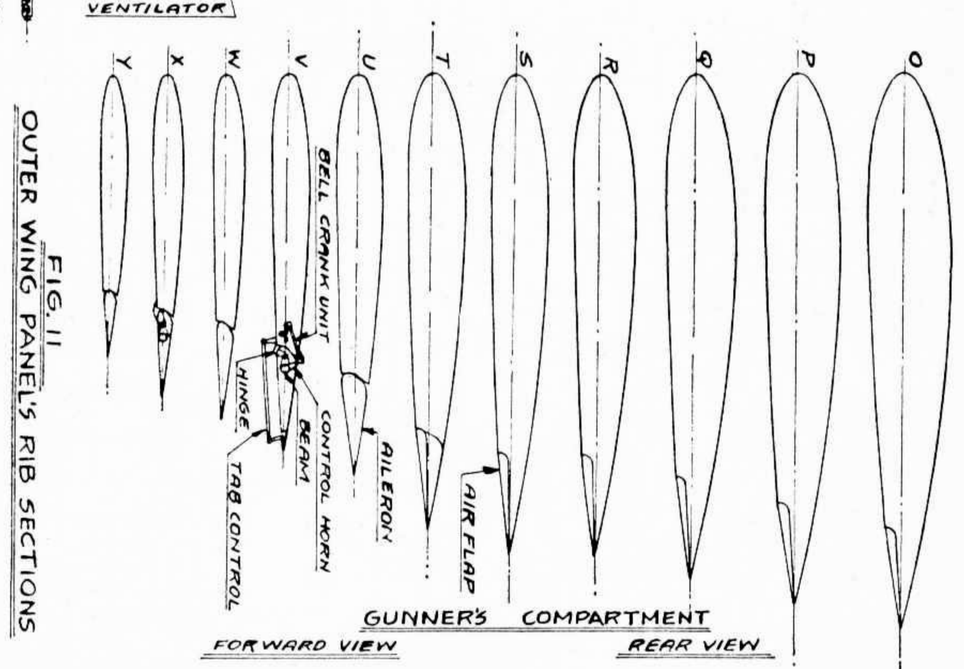


FIG. 11
OUTER WING PANEL'S RIB SECTIONS

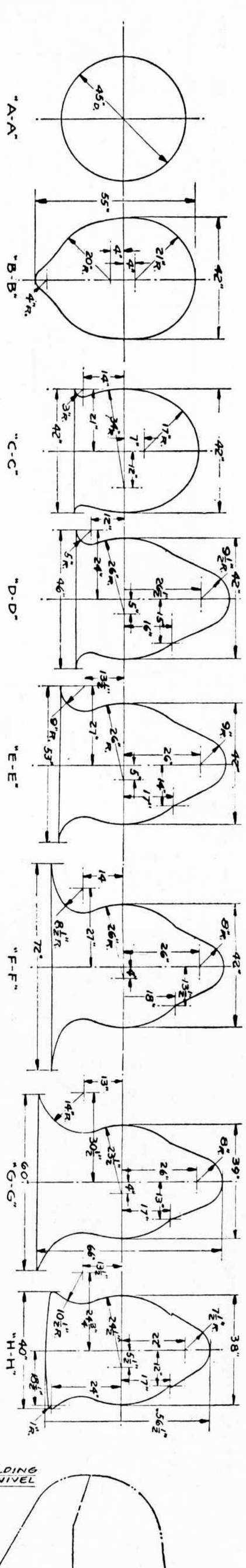


FIG. 10 FUSELAGE'S CROSS SECTIONS

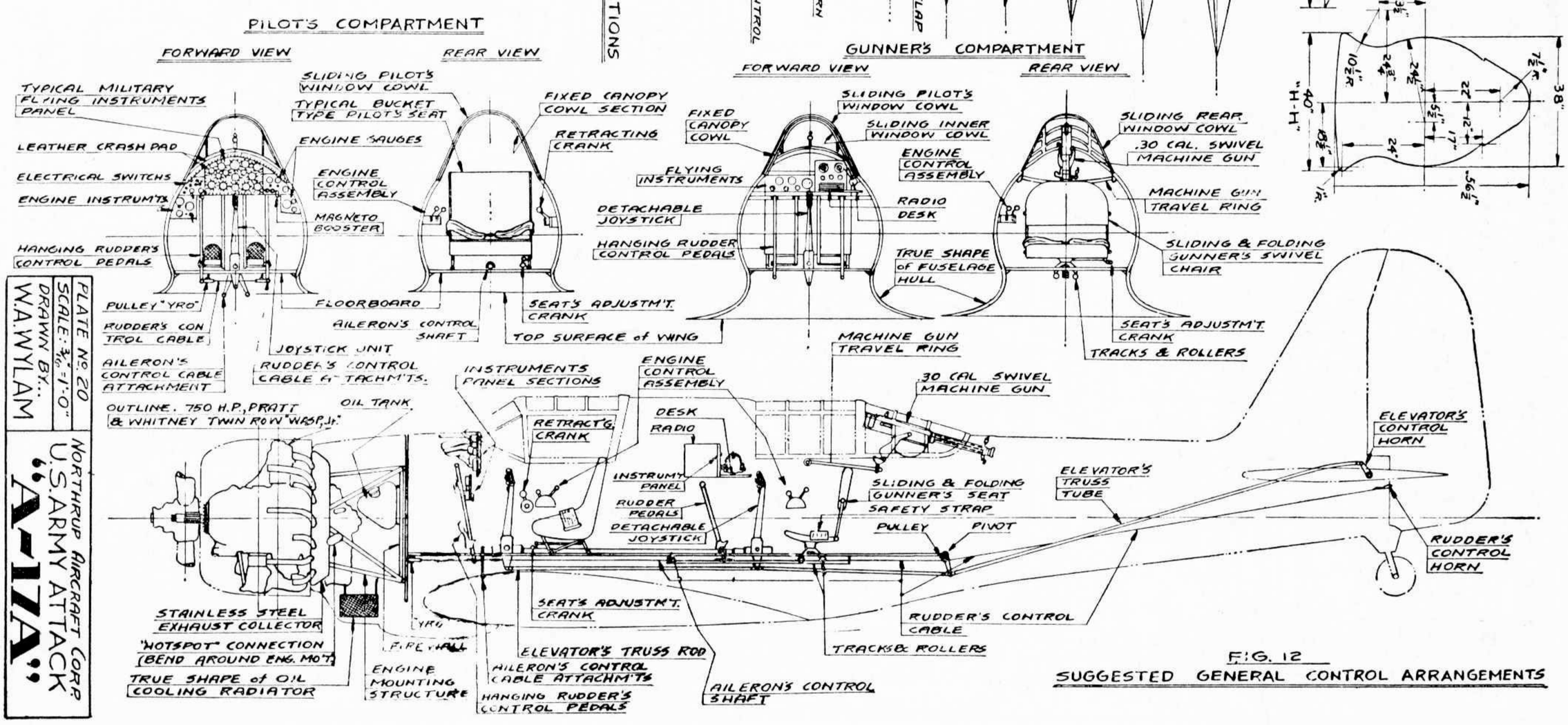
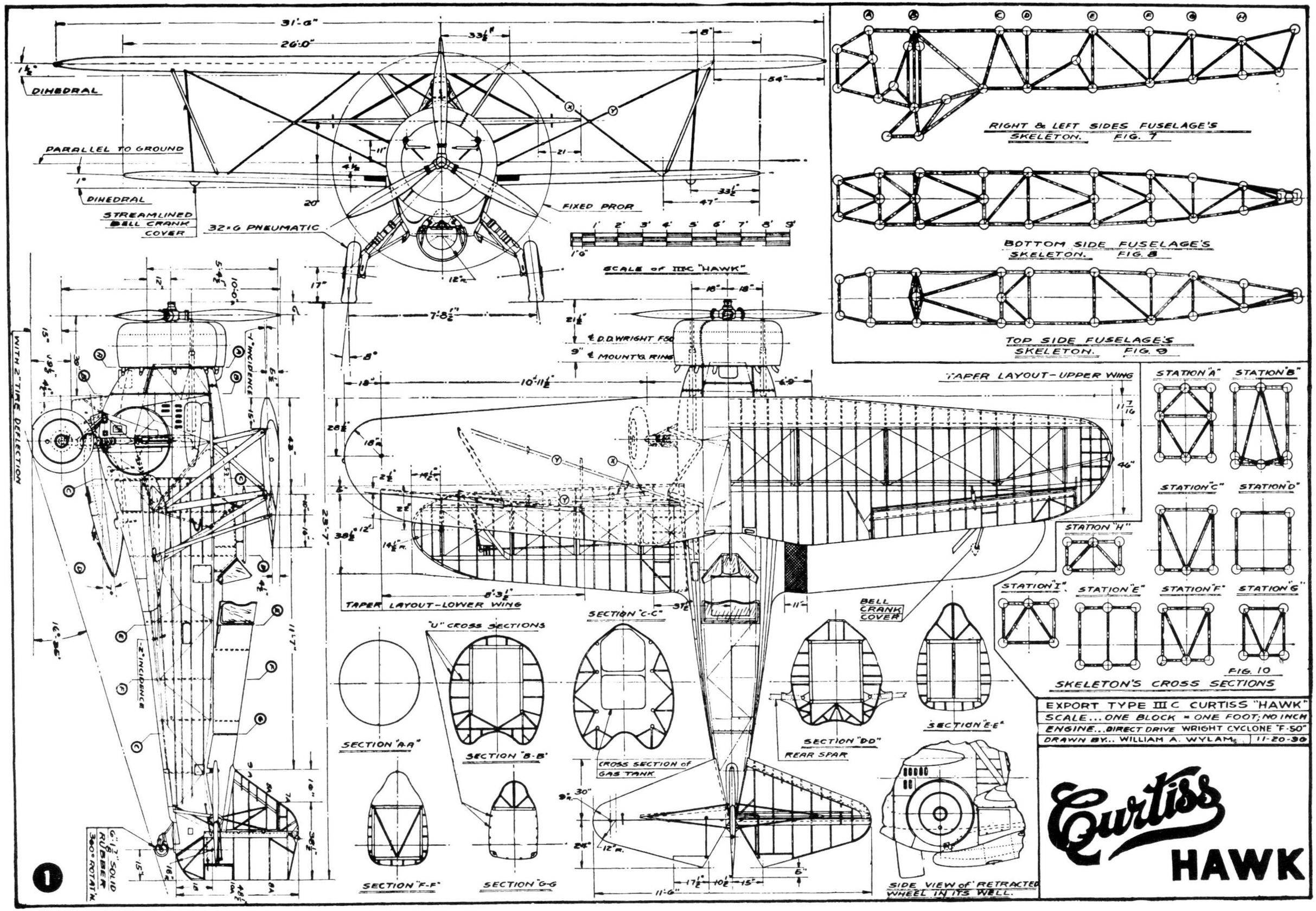


FIG. 12
SUGGESTED GENERAL CONTROL ARRANGEMENTS

PLATE No. 20
SCALE: 3/16" = 1'-0"
DRAWN BY... W.A. WYLAM
NORTHRUP AIRCRAFT CORP.
U.S. ARMY ATTACK
"A-17A"


31'-6"
26'-0"
33½"
8"
54"
1½°
DIHEDRAL
PARALLEL TO GROUND
1°
DIHEDRAL
STREAMLINED BELL CRANK COVER
32"-6 PNEUMATIC
FIXED PROP
33½"
47"
11"
21"
4½"
20"
12½"
17"
7'-8½"
1'-0"
SCALE of IIIC "HAWK"
18"
18"
21½"
℄ D.D. WRIGHT F50
9" ℄ MOUNT'G. RING
8"
18"
10'-11½"
6'-0"
28½"
18"
2½"
14½" R.
6"
2½"
38½"
12" R.
8'-3½"
TAPER LAYOUT-LOWER WING
TAPER LAYOUT-UPPER WING
11 7/16"
46"
11'-7"
WITH 2" TIRE DEFLECTION
15°
3°
1° INCIDENCE
-2° INCIDENCE
16°-36'
7°
3°
10"
36½"
15"
16½"
18"
10"
48½"
6"
6" ø 1/8" SOLID RUBBER 360° ROTAT'N
"U" CROSS SECTIONS
SECTION "A-A"
SECTION "B-B"
SECTION "C-C"
SECTION "D-D"
REAR SPAR
SECTION "E-E"
BELL CRANK COVER
CROSS SECTION of GAS TANK
30"
9" R.
24"
12" R.
SECTION "F-F"
SECTION "G-G"
17½"
10½"
15"
6"
11'-6"
SIDE VIEW of RETRACTED WHEEL IN ITS WELL.
STATION "A"
STATION "B"
STATION "C"
STATION "D"
STATION "H"
STATION "I"
STATION "E"
STATION "F"
STATION "G"
FIG. 10
SKELETON'S CROSS SECTIONS
A B C D E F G H
RIGHT & LEFT SIDES FUSELAGE'S SKELETON. FIG. 7
BOTTOM SIDE FUSELAGE'S SKELETON. FIG. 8
TOP SIDE FUSELAGE'S SKELETON. FIG. 9
EXPORT TYPE IIIC CURTISS "HAWK"
SCALE... ONE BLOCK = ONE FOOT; NO INCH
ENGINE... DIRECT DRIVE WRIGHT CYCLONE "F-50"
DRAWN BY... WILLIAM A. WYLAM 11-20-30
Curtiss HAWK
1

RIB 1
RIB 2
RIB 3
RIB 4
RIB 5
RIB 6
RIB 7
RIB 8
RIB 9
RIB 10
RIB 11
RIB 12
RIB 13
RIB 14
RIB 15
RIB 16
RIB 17

LOWER WING'S RIBS

UPPER WING'S RIBS

RIB 18
RIB 19
RIB 20

RIB 41
RIB 40
RIB 39
RIB 38
RIB 37
RIB 36
RIB 35
RIB 34
RIB 33
RIB 32
RIB 31
RIB 30
RIB 29
RIB 28
RIB 27
RIB 26
RIB 25
RIB 24
RIB 23
RIB 22
RIB 21

REFER TO SIDE VIEW OF THREE-VIEW DRAWINGS.

RIB-7A
RIB-8A
RIB-9A
RIB-10A

RUDDER & FIN RIBS

NOSE RIB
1A 2A 3A 4A 5A 6A

STABILIZER & ELEVATOR RIBS

SIAM
RED
BLUE

SIAM

CANTON-CHINA

SHANGHAI-CHINA

ARGENTINA

SKY BLUE
GOLD
ARGENTINA

CANTON & SHANGHAI-CHINA

BUILD-UP BOX CONSTRUCTION of BEAMS
BOLTED ALUMIUM ALLOY FITTINGS

REAR BEAM — UPPER WING

FRONT BEAM — UPPER WING

FRONT BEAM — LOWER WING

REAR BEAM — LOWER WING

FLOATS ARE SPECIAL EQUIPT.
INFLATED POSITION
EMERGENCY FLOATS
32" 24" 12"
25"
BEAMS' CENTERS

FUSELAGE
BOMB RACK
18½"
BEAMS' CENTERS
18 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
30
32½" 54½"
33" 42½" 40½" 34"
LOCATION of INSIGNIA

34" 32" 32" 29"
16"
RETRAE. WHEEL MECHANISMS

SEE AIR BOMB'S DRWGS. WHEN PRINTED. USE DEMOLITION BOMB — 100 LBS.

R	WIRES & STRUTS ATTACH'TS.
U	SPRUCE
Q	ALUM. ALLOY FITTINGS
P	FUSELAGE SKELETON'S CENTERS
O	COUNTER BALANCE
N	WHEEL WELL
M	RETRACTING CHAIN
L	RETRACTING HANDLE
K	RETRACTING SCREW
J	ALUM. ALLOY AILERON RIBS
I	ALUM. ALLOY NOSE RIBS
H	¼" SQUARE SPRUCE STRIPS
G	DRILLED ALUM. ALLOY SHEET RIB
F	MAIN GAS TANK'S VALVE ENRAN'E.
E	OIL COOLING RADIATOR
D	TRANPARENTS INSPECTORS
C	INSPECTION DOORS
B	AUX. GAS TANK'S WIND COWL
A	AUX. GAS TANK'S EMGEY. VALVE

SCALE: SAME AS THREE-VIEWS'
DRAWN BY... WILLIAM A. WYLAM
CURTISS EXPORT HAWK "III-C"

2

NOT STANDARD
PILOT SEAT
SAFETY STRAP
HINGED SEAT SUPPORT
FIG. 1

1' 2' 3' 4' 5' 6'
1" 6" 12"
SCALE of DRAWINGS on this PAGE

RUDDER FLAP'S CONTROL SPINNER
GAS THROTTLE
ENGINE CONTROL ASSEMBLY
ROUNDS COUNTER
CONTRO'E. PROP. CONTROL
MACH. GUNS' CHARG'RS
FIG. 2
FIRE EXTINGUISHER
AUX. TANK'S RELEASE
BOMB RELEASE HANDLE

INSTRUMENT PANEL
BOOSTER for MAGNETO
BLACK FUSE BOXES
STABIL'R. ADJ'R.
RETRAC'E. WH'L. CONTROL
FIG. 3
FLARES' CONTROLS

COMPASS
BANK & TURN INDIC'R.
AIR-SPEED INDICATOR
CLOCK
AUX. GAS GAUGE
CONT'L'E. PROP. GAUGE
SWITCHS-NAV. LIGHTS
RHEOSTAT
IGNITION SWITCH
AUX. TANK SWITCH
RUD'R. FLAP'S SPINNER
ENGINE CON'L ASSEMBLY
CONTROLL'E. PROPELL'R. CONTROL
MACH. GUN'S CHARGERS (BOTH SIDES)
RADIO DIAL
STATIC GAUGE
RADIO BATTERY GAUGE
AIR PLANE BATTERY GAUGE

OIL THERMOMETER (IN)
OIL PRESSURE GAUGE
OIL THERMOMETER (OUT)
TACHOMETER
ALTIMETER
GAS PRESSURE GAUGE
OXYGEN PRESSURE
MAGNETO BOOS'R.
OXYGEN TEMP'E.
WEATHER TEMP'E.
OXYGEN TANK
RETR'E. WH'L. CON'L.
STAB'R. ADJU'R.
MAP-CASE SPACE
FLARES' CONTROL
SEE "XYZ" ON FUSELAGE-BELOW
PULLEY
FLOORBOARD
KNURLED or PLAIN PEDALS
FIG. 4

ALL SHADED AREAS ARE DEPRESSIONS
DETACHABLE
TWO SEPERATE PEICES
RIVETED JOYS'K. MOUNT
FIG. 5
24"

FIXED & UN-MOVABLE FLAP'S HORN
LOOSE & FREE MOVING ARM CENTERS
ELEVATOR'S TRUSS TUBE
POSITION of PILOT SEAT
1 1/2" R.
24 1/2"
18 1/2"
7"
13 1/2"
14 1/2"
1/2"

ARMAMENTS ARE A STRICT SECRET

MOTOR-MOUNT RING
OIL TANK
GASOLENE TANKS
CRASH PAD
INSTRUMENTS' PANEL
STABILIZER ADJUSTOR
RUDDER FLAP'S SPINNER CONTROL
PULLEY
CORRUGATED ALUM'N. ALY
SCREW POST
"XYZ" PULLEY
BRAKE'S CORD
FERRULE
BRAKE ARM
STAB'R. AJ'R. CHAIN
BRACE
TAIL-WHEEL'S RELEASE CORD
ELEVATOR'S TRUSS HORN
RUDDER'S CONTROL CORD'S HORN
FLOORBOARD
ELEVATOR'S TRUSS TUBE
SAFETY STRAP
PILOT SEAT
BRAKE WIRE'S PULLEY
JOYSTICK'S MOUNTING POST
TURNING POINT
FIXED AND HINGED TAIL-WHEEL UNIT
STEEL SPRING
RUDDER CONTROL CORD
BRACE
RUDDER'S FLAP'S CONTROL CHAIN
TAIL WHEEL'S RELEASE CORD
ELEVATOR'S TRUSS TUBE

I	AILERON TRUSS TUBE
H	VIEW— FLOORBOARD
G	VIEW— RIGHT SIDE of COCKPIT
F	VIEW— LEFT SIDE of COCKPIT
E	VIEW— BACKWARD DIRECTION
D	VIEW— FORWARD of COCKPIT
C	LEATHER CUSHION
B	SEWED CANVAS— LIGHT BROWN
A	HIGHLY POLISHED ALUM'N. ALLOY

THE ABOVE FUSELAGE DR'W'G. IS FIG. 6

DRAWN BY.... WILLIAM A. WYLAM

3

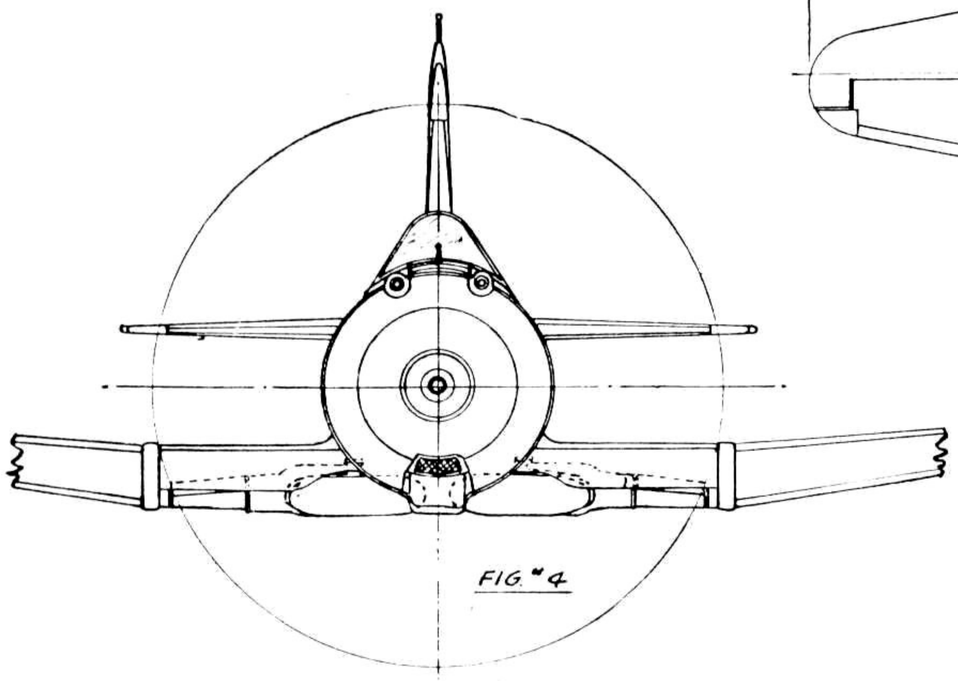


FIG. "4

FRONT VIEW - FLYING POSITION
(WHEELS RETRACTED)

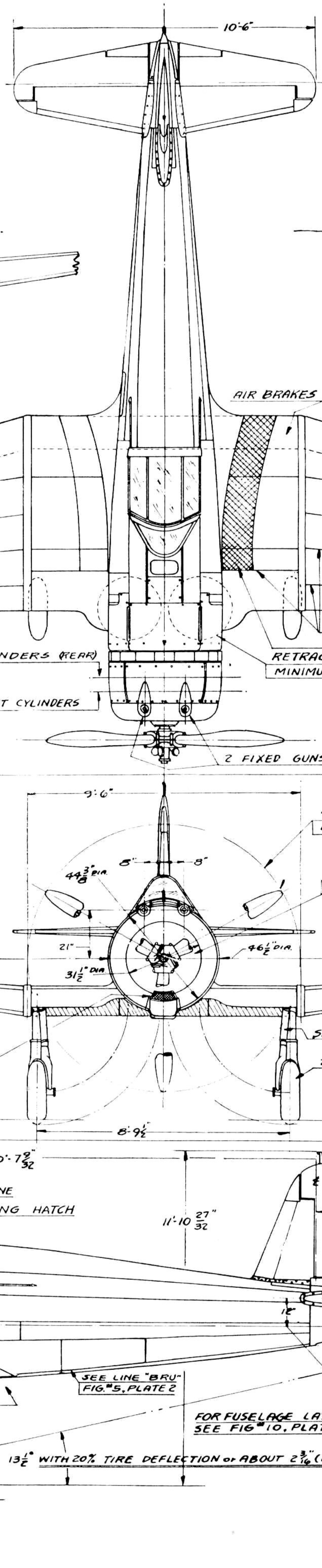


FIG. "3

FOR HORIZONTAL STABILIZER LAYOUT, SEE FIG. 8, PLATE 2

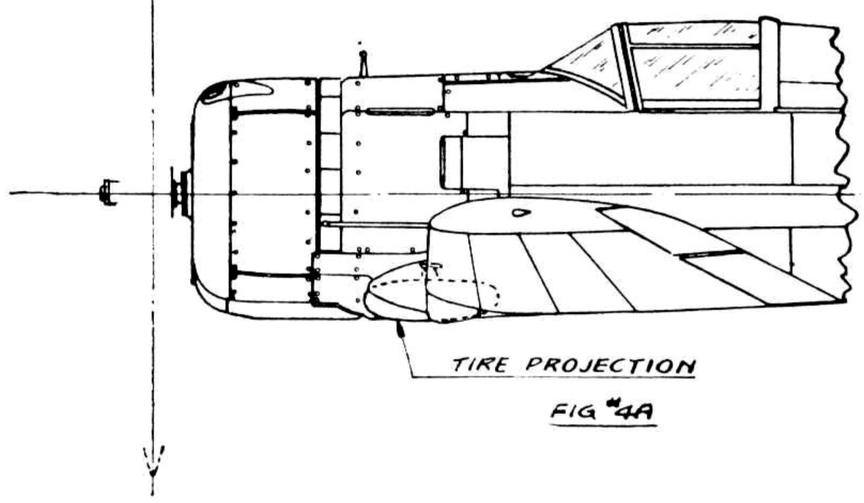


FIG. "4A

SIDE VIEW - FLYING POSITION
(WHEELS RETRACTED)

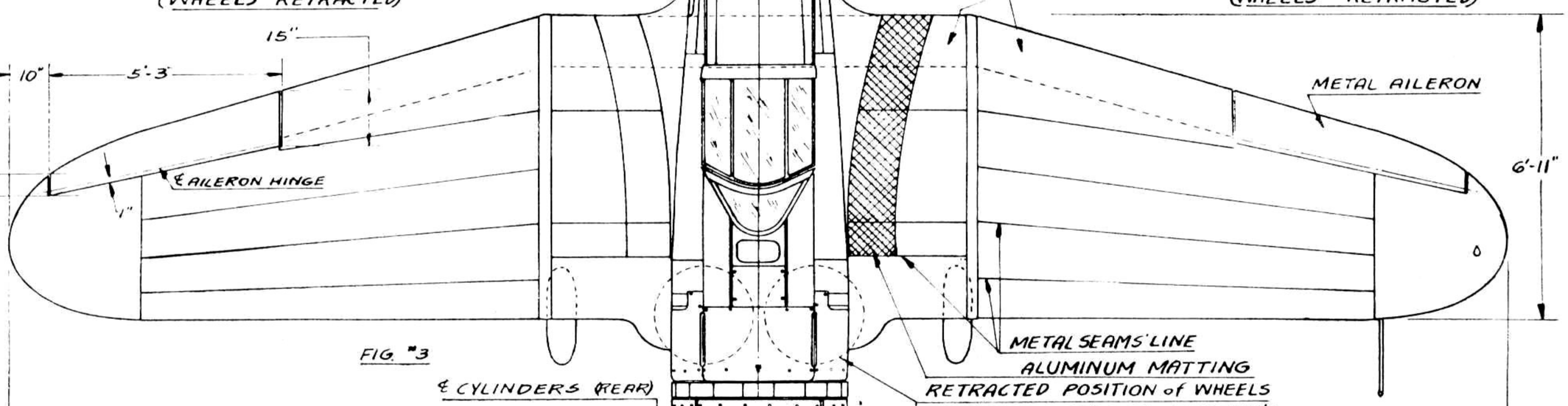


FIG. "3

FOR ENTIRE WING LAYOUT SEE FIG. 5A, 6 & 6A PLATE 2

ALL SECONDARY MEASUREMENTS WERE SCALED FROM FACTORY THREE-VIEW DRAWINGS.

9'-6" HAMILTON STANDARD CONTROLLABLE PROPELLOR

P. & W. TWIN WASP, Jr. "SB4G" 750 H.P.
MAXIMUM DIA. 44⅛" ; MAX. LENGTH 53 17/64"

SHOCK ABSORBER

27" STREAMLINE TIRE

AIRSPEED TUBE

FIG. "2

FOR VERTICAL STABILIZER LAYOUT SEE FIG. "7, PLATE 2

DATA & PHOTOGRAPHS ON WING & FUGE. RIVET LINES; & LANDING GEAR MECHANISM ARE UNOBTAINABLE.

ENTIRE AIRPLANE IS OF ALL METAL CONTRUCTION WITH FLUSH TYPE RIVETS.

COLOR SCHEME of FIRST PLANE: STANDARD U.S. ARMY BLUE FUSELAGE, YEL'W-ORANGE WING & TAIL WITH RED, WHITE & BLUE MARKINGS.

10"×3" PNEUMATIC WHEEL
360° ROTATION
HEIGHT ℄ RUDDER HINGE
NORMAL SETTING +2°
SETTING SHOWN = 0°

FOR FUSELAGE LAYOUT SEE FIG "10, PLATE 2

PLATE Nº 1	3-VIEW ASSEMBLY CHANCE VOUGHT "V-143"
SCALE: 3/16" = 1'0"	
DRAWN BY... W.A.WYLAM	

FIG "1

CHANCE-VOUGHT AIRC'T. SPECIAL LAYOUT & SECTIONS "V-143"

PLATE 1. SCALE: 3/16"=1'0" DRAWN BY W.A.WYLAM

GENERAL INFORMATION:

ANGULAR MOVEMENTS:

AILERONS	UP-25°-DOWN 8°
ELEVATOR	" 30° " 20°
RUDDER	30° EACH WAY
ELEVATOR TAB	UP 25°-DOWN 25°
RUDDER TAB	25° EACH WAY
INCIDENCE (WING)	+2°
" " (STABILIZER)*	+2°
VERTICAL STABILIZER AREA	5.85 Sq.ft.
HORIZONTAL STABIL'R AREA	14.9 Sq.ft.
WING AREA (WITH AILERONS)	187 Sq.ft.
ASPECT RATIO	6:1

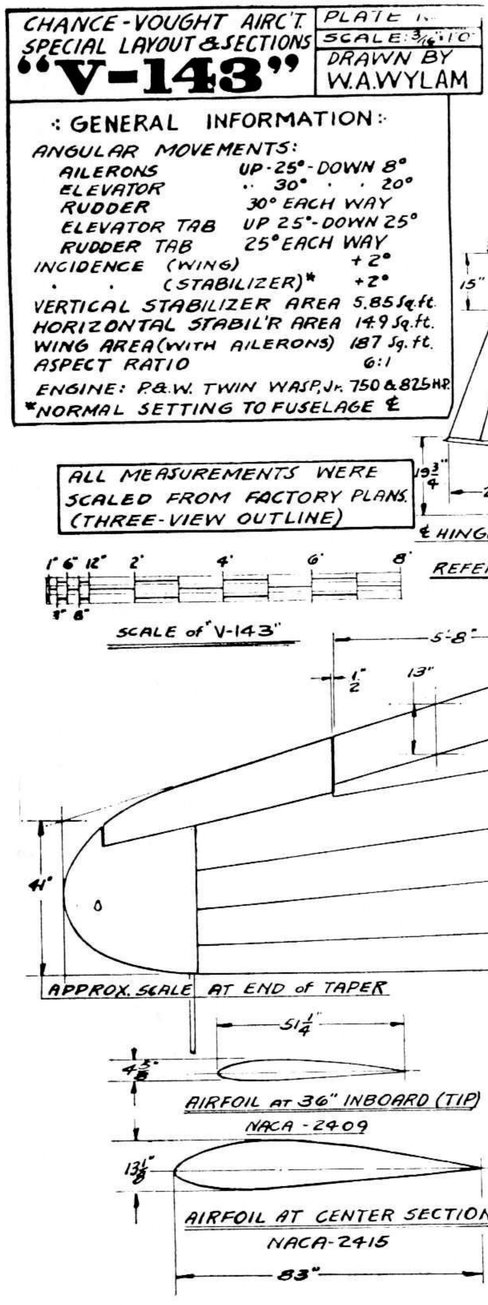
ENGINE: P&W. TWIN WASP, Jr. 750 & 825 HP.

*NORMAL SETTING TO FUSELAGE ℄

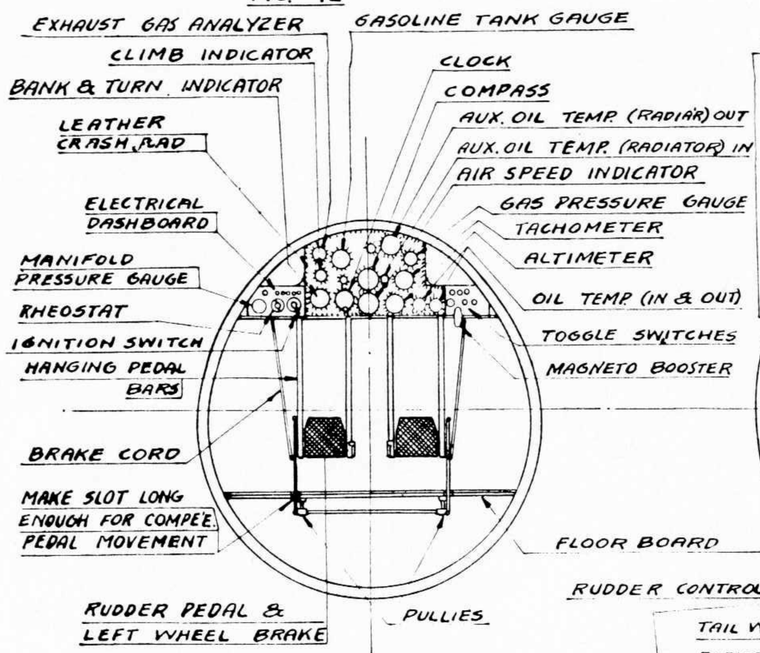
ALL MEASUREMENTS WERE SCALED FROM FACTORY PLANS. (THREE-VIEW OUTLINE)

1'6" 12" 2' 4' 6' 8'

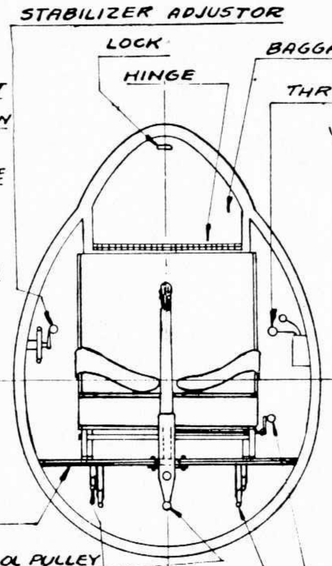
SCALE of "V-143"

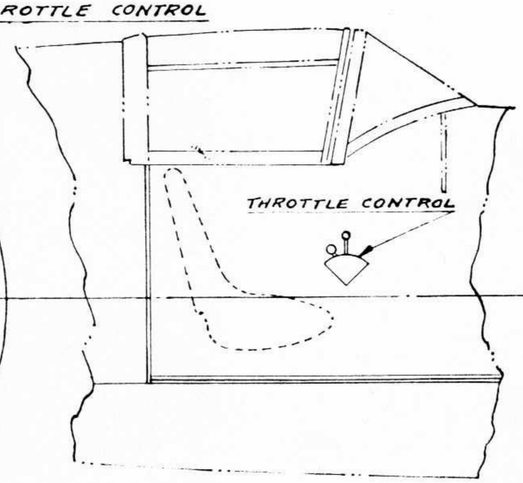


TYPICAL MILITARY INSTRUMENT PANEL
FIG. #12



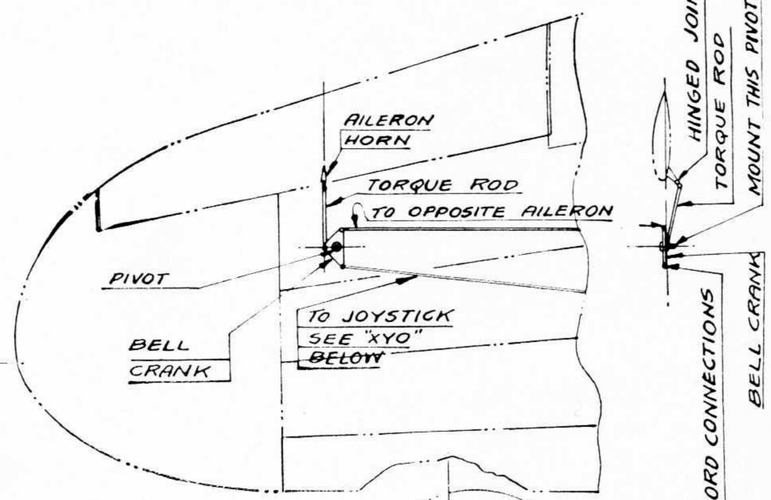
REAR VIEW of CABIN
FIG. #13

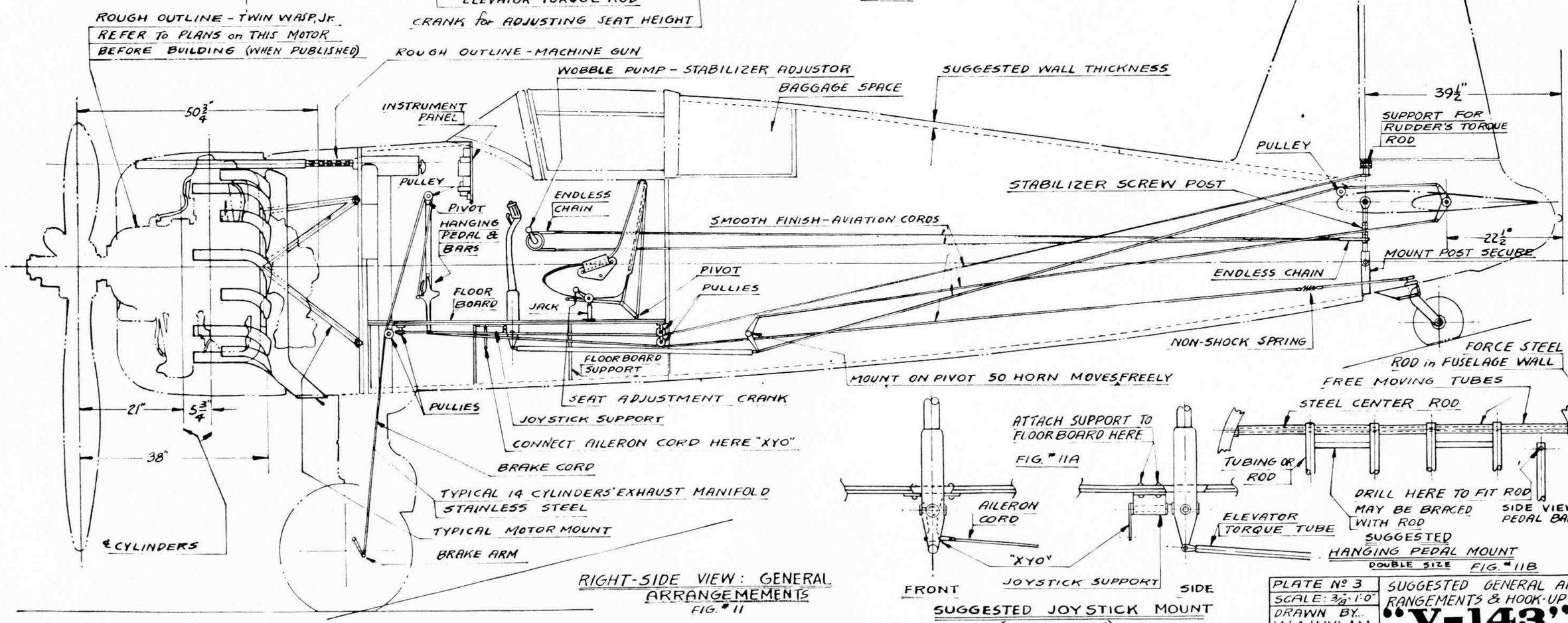




LEFT-SIDE VIEW-THROTTLE
FIG. #14

SUGGESTED AILERON CONTROLS
FIG. #15





RIGHT-SIDE VIEW: GENERAL ARRANGEMENTS
FIG. #11

SUGGESTED JOYSTICK MOUNT
(DOUBLE SIZE)

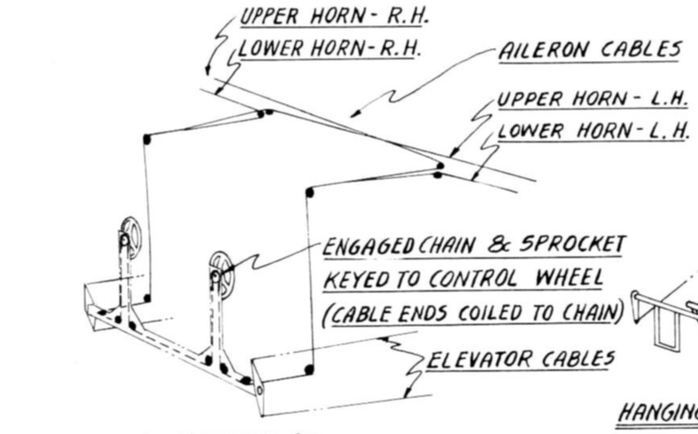
PLATE Nº 3	SUGGESTED GENERAL ARRANGEMENTS & HOOK-UP
SCALE: 3/8" : 1'-0"	"V-143"
DRAWN BY... W. A. WYLAM	

LOCKHEED VEGA 5C-

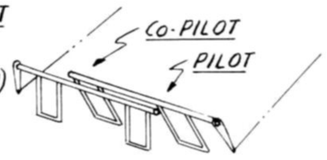


-500 Hp P&W Wasp

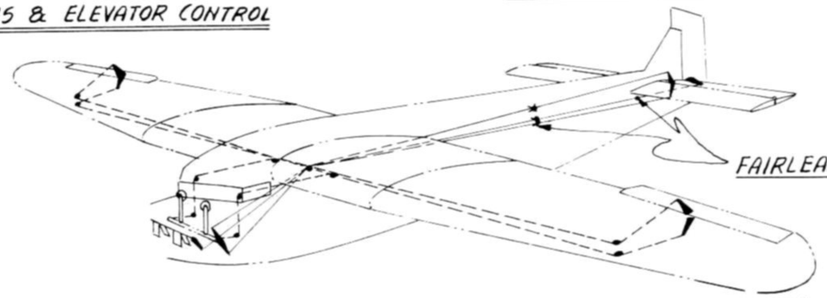




AILERONS & ELEVATOR CONTROL

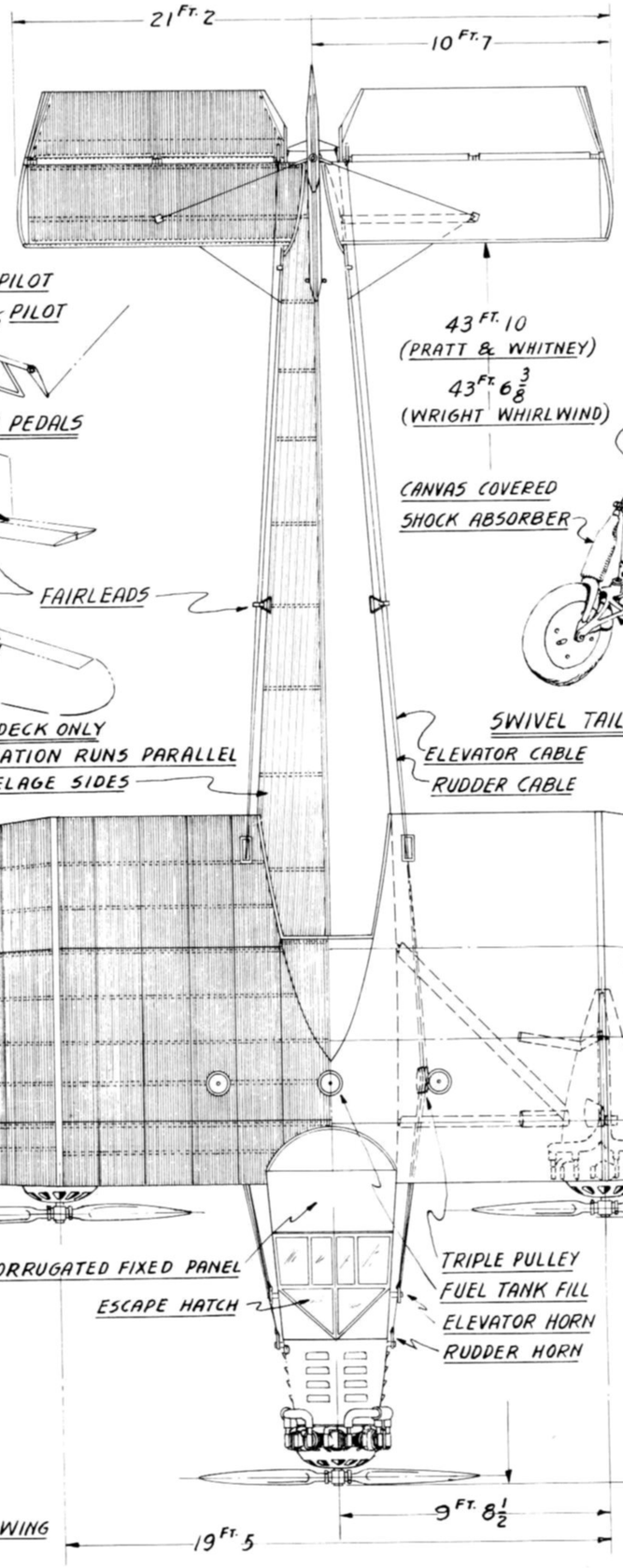


HANGING RUDDER PEDALS



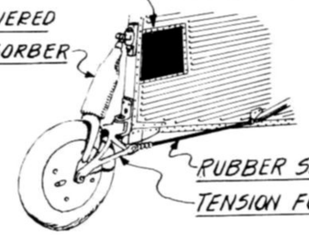
ON TOP DECK ONLY
CORRUGATION RUNS PARALLEL
TO FUSELAGE SIDES

TYPICAL SURFACE CONTROL HOOK-UP

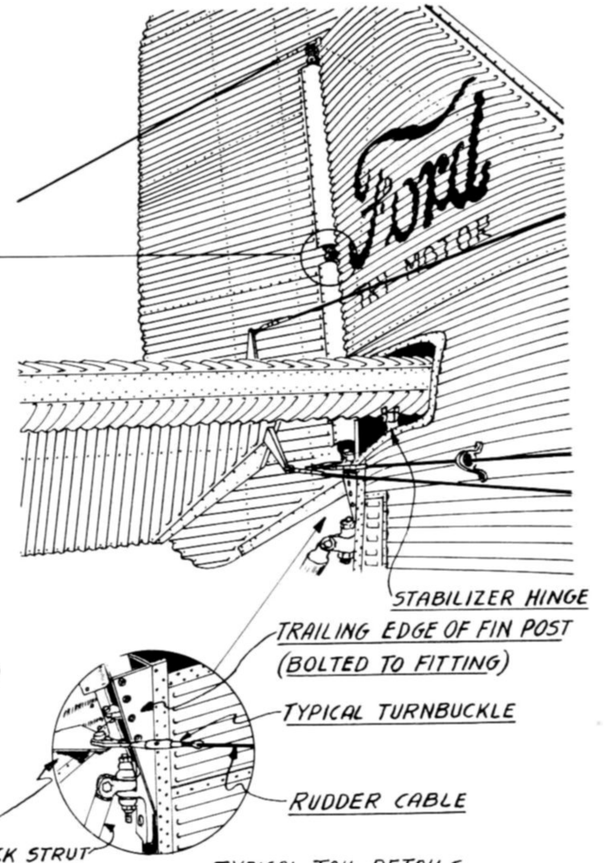




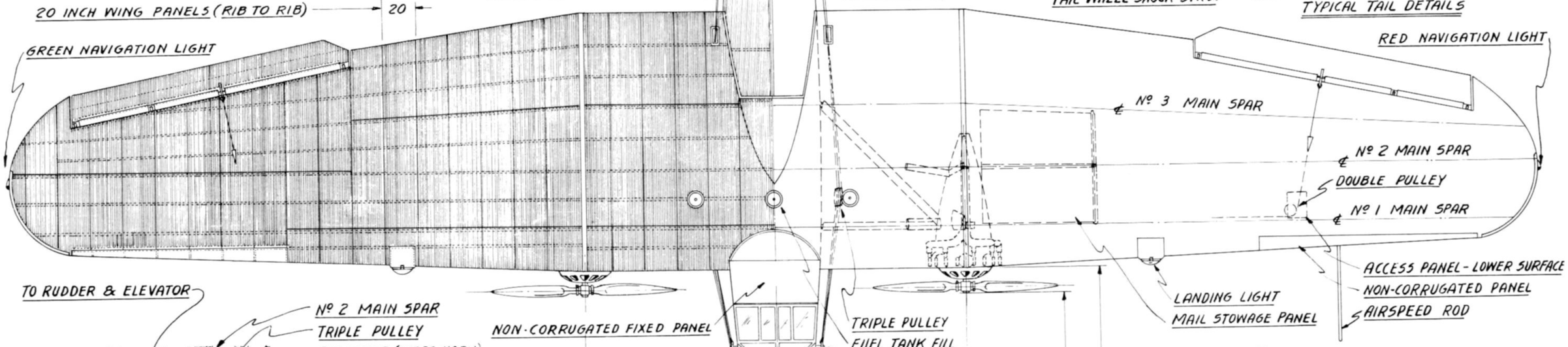
TYPICAL HINGE DETAIL

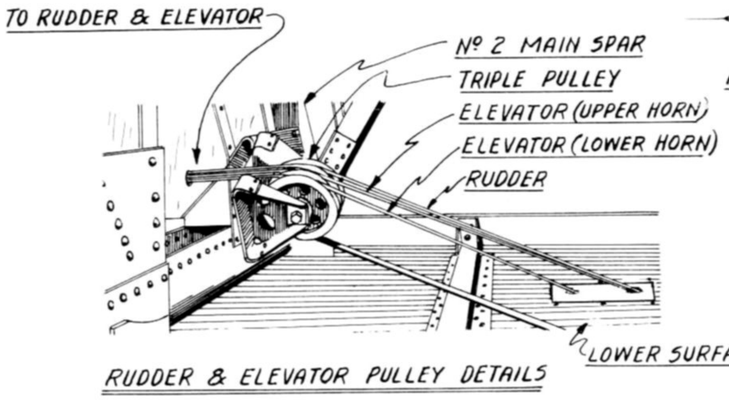


SWIVEL TAIL WHEEL DETAIL



TYPICAL TAIL DETAILS





RUDDER & ELEVATOR PULLEY DETAILS

Note:
SCALE IN MAGAZINE (ALL FORD'S) 1/8" = 1 FT 0
SCALE OF ORIGINAL DRAWINGS 1/4" = 1 FT 0

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.	
SCALE: See Note	PLAN VIEW & DETAILS
TYPE: Transport	Ford
DRAWN BY.... WILLIAM A. WYLAM	TRI-MOTOR MODEL "5-AT-C"
BUILT 1926-'31 BY FORD MOTOR COMPANY	

50 FT. 3 5/8

PRATT & WHITNEY WASP 410 H.P. ENGINES SHOWN
OPTIONAL ENGINES - TWO WRIGHT WHIRLWIND 220 H.P. WING ENGINES & WASP 410 H.P. CENTER ENGINE - LENGTH = 50 FT 3 5/8
STANDARD ENGINES - THREE WRIGHT WHIRLWINDS 220 H.P. - LENGTH = 49 FT 10

WHITE NAVIGATION LIGHT
FIXED WINDOW PANEL
SLIDING PANEL
RETRACTABLE MAIL STOWAGE PANEL
FIXED WINDOW PANELS - STANDARD
20 O.D. × 4 1/2 WIDE PNEUMATIC TIRE
180° SWIVEL ARC
1 1/2 SHOCK TRAVEL
OIL FILL
CORRUGATED PANELS ON EARLY SERIES WERE BULKHEAD WIDTHS. LATER SERIES HAD CONTINEOUS CORRUGATED PANELS AS SHOWN IN RIGHT SIDE VIEW BELOW

LEFT SIDE VIEW

7 FT. 5

GROUND LINE AT ROLLING RADIUS

13 1/2°

12 FT. 8 1/2

℄ No 1 MAIN SPAR & SHOCKSTRUTS

BOTTOM VIEW

RUBBER SHOCKCORD
TAILWHEEL DOLLY POST
PARACHUTE FLARES OUTLET (OPTIONAL)
FOOT STIRRUP
OPTIONAL LOUVERS
ACCESS PANELS
CABANE FITTINGS

ADJUSTABLE SLIDING COOLING LOUVERS
SLIDING GLASS PANELS - STANDARD
SLIDING PANELS - OPTIONAL
LANDING GEAR FITTINGS

MAIL STOWAGE PANEL (OPTIONAL ON LATER SERIES)

LATER SERIES ONLY:
CLERESTORY FIXED WINDOWS WERE CLEAR OR GREEN TINTED AS SHOWN. LOWER PORTION WERE SLIDING PANELS

CABIN HEATER (OPTIONAL)

RIGHT SIDE VIEW

3 FUEL TANKS - 126 GALS EACH
ESCAPE HATCH
OIL FILL
HAND INERTIA STARTG. CRANK CONNECTION

BRAKE LEVER POSITIONS
LEFT WHEEL
NEUTRAL
RIGHT WHEEL
BOTH WHEELS

HATCH RELEASE
COMPASS
AIRSPEED
BANK & TURN
CLIMB
LIGHT
TACHOM. (CENTER ENGINE)
OIL TEMP. (CENTER ENG.)
OIL PRESS. (CENTER ENG.)
THROTTLE
IGNITION
BOOST. MAG. PLUG
EMERG. IGNIT. CUT-OFF
CARB. MIX. CONTROL
BRAKE LEVER
RUDDER PEDALS
PILOT SEATS

RHEOSTAT
ALTIMETER
PRIMER
LIGHT
CLOCK

VIEW "Z"

BARE METAL EXCEPT FOR BLACK LEATHER SEATS & GREEN LINOLEUM

MAHOGANY STAINED PLYWOOD PANELLING OR GREEN UPHOLSTERED WALLS & CEILING
GREEN LINOLEUM FLOORING; ALUMINUM TRIM
LIGHT GREEN WICKER CHAIRS

A AIRSPEED
B ALTIMETER
C
D
E ROLLER SHADE
READING LIGHT
BAGGAGE RACK

Z A B C D E

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.	
SCALE: See Plan VI.	SIDE VIEW & CABIN VIEWS
TYPE: Transport	Ford
DRAWN BY.... WILLIAM A. WYLAM	TRI-MOTOR MODEL "5-AT-C"
BUILT 1926-'31 BY FORD MOTOR COMPANY	

NOTE:
BRAKE TENSION TUBE WERE OF FIXED LENGTH - BRAKE BEAM SWIVELS ON BALL JOINT; AXLE STRUT SWINGS UP OR DOWN ON BRAKE BEAM; SHOCKS WERE ABSORBED BY RUBBER DISCS.

NOTE: MODEL "5-AT-D" NACA COWLINGS WERE ONLY ON WING ENGINES. ONLY CENTER ENGINE HAD THREE-BLADED PROPELLER. LAST SERIES HAD OLEO SHOCK STRUTS

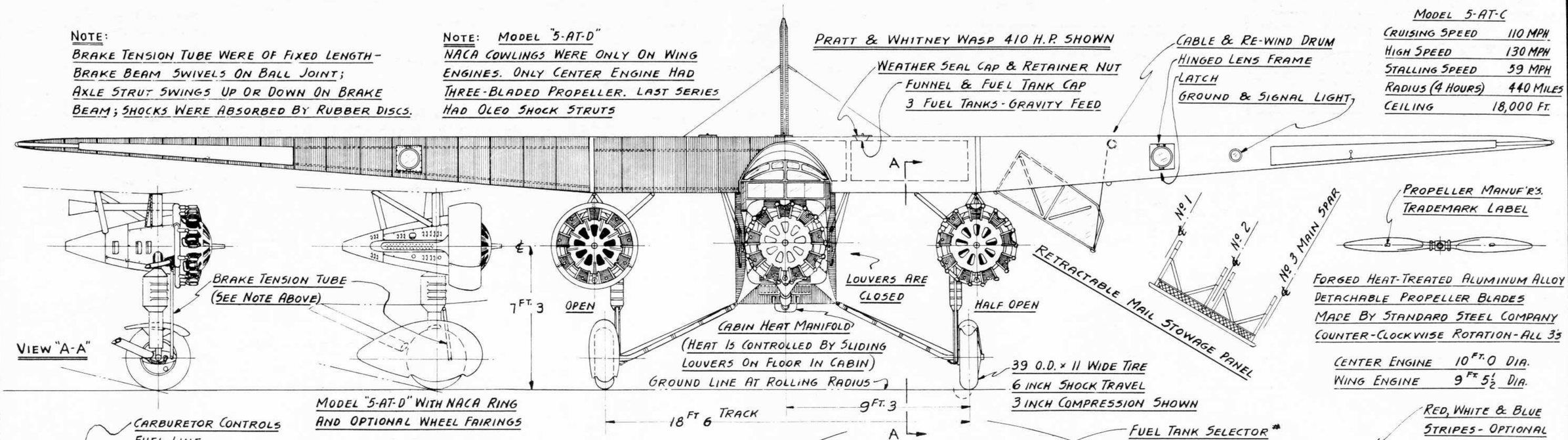
PRATT & WHITNEY WASP 410 H.P. SHOWN

WEATHER SEAL CAP & RETAINER NUT
FUNNEL & FUEL TANK CAP
3 FUEL TANKS - GRAVITY FEED

CABLE & RE-WIND DRUM
HINGED LENS FRAME
LATCH
GROUND & SIGNAL LIGHT

MODEL 5-AT-C

CRUISING SPEED	110 MPH
HIGH SPEED	130 MPH
STALLING SPEED	59 MPH
RADIUS (4 HOURS)	440 MILES
CEILING	18,000 FT.



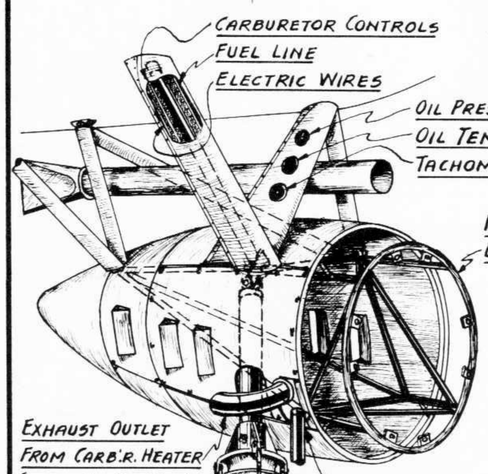
MODEL "5-AT-D" WITH NACA RING AND OPTIONAL WHEEL FAIRINGS

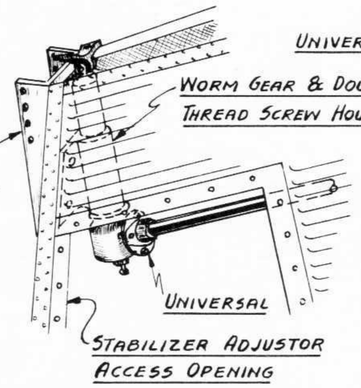
PROPELLER MANUF'R'S. TRADEMARK LABEL

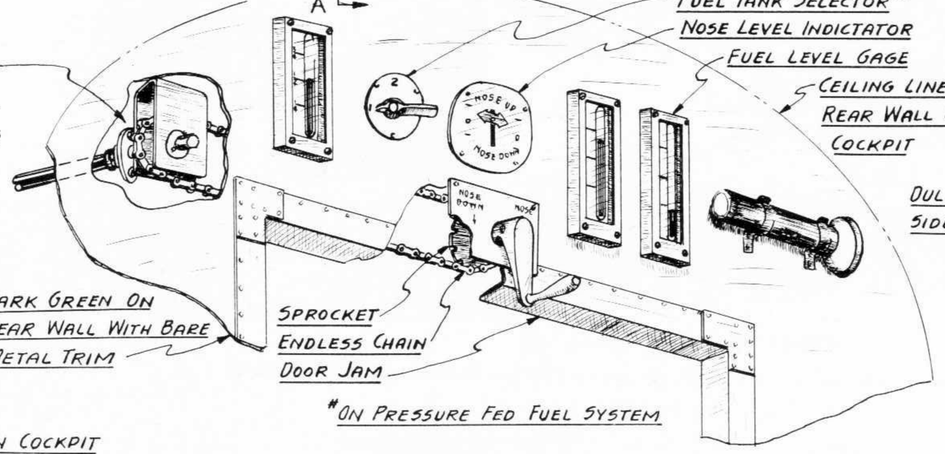
FORGED HEAT-TREATED ALUMINUM ALLOY DETACHABLE PROPELLER BLADES MADE BY STANDARD STEEL COMPANY COUNTER-CLOCKWISE ROTATION - ALL 3's

CENTER ENGINE 10 FT. 0 DIA.
WING ENGINE 9 FT. 5½ DIA.

RED, WHITE & BLUE STRIPES - OPTIONAL





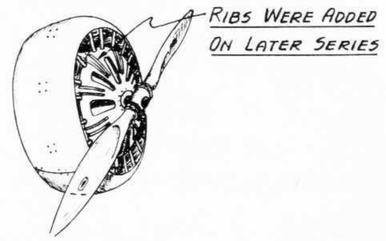


*ON PRESSURE FED FUEL SYSTEM

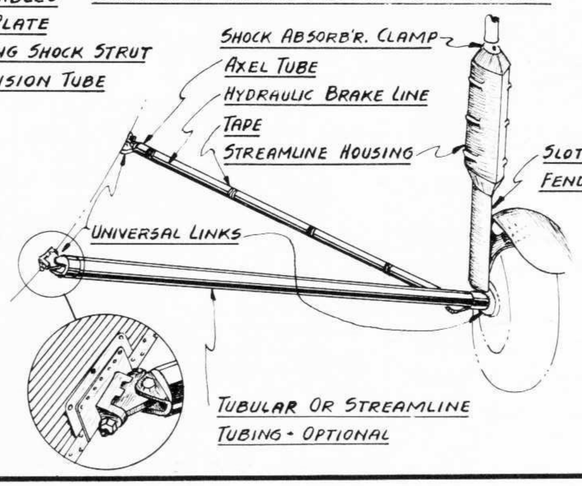
DULL BLACK ON REAR SIDE OF BLADES

THREE-BLADED ON CENTER ENGINE (MODEL 5-AT-D; 5 AT-E)

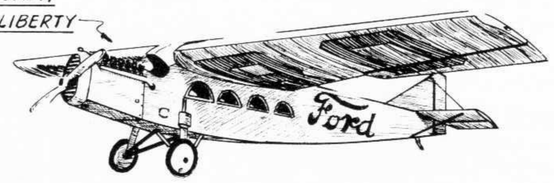
RIBS WERE ADDED ON LATER SERIES



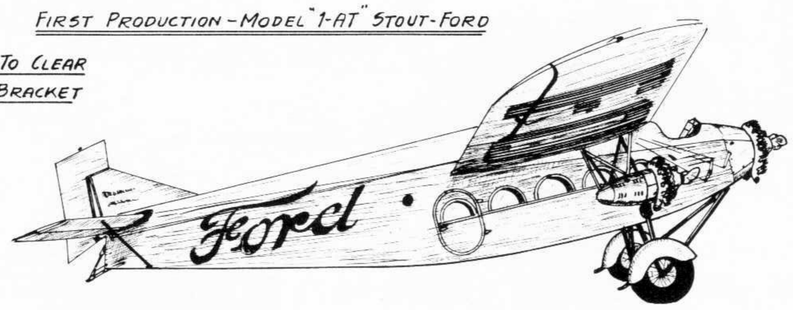
UPPER REBOUND PLATE WAS SWEATED TO UPPER STRUT TUBE; LOWER REBOUND PLATE WAS SWEATED TO LOWER STRUT TUBE; LOWER TUBE SLIDES UP & DOWN INSIDE OF UPPER STRUT. STREAMLINE HOUSING WAS FIXED TO UPPER STRUT



OPEN COCKPIT
400 H.P. LIBERTY



FIRST PRODUCTION - MODEL "1-AT" STOUT-FORD



FIRST TRI-MOTOR - MODEL "2-AT" - THREE WRIGHT "J-3" 200 H.P.

THANKS TO THE FOLLOWING:
WILLIAM B. STOUT, THE DESIGNER
M. G. BEARD, PETER M. BOWERS, JOHN A. COLLINGS, WILLIAM CHAFFEE, WILLIAM SWIFT, RAY GRAHAM, PAUL MARCHAL, JR., E. GLENN SIBLEY, AND THE LATE MAJOR R. W. SCHROEDER.
W. A. Wylam

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.	
SCALE: See Plan V.	FRONT VIEW & DETAILS
TYPE: TRANSPORT	Ford
DRAWN BY.... WILLIAM A. WYLAM	TRI-MOTOR MODEL "5-AT-C"
BUILT 1926-'31 BY FORD MOTOR COMPANY	

SCALE 1/4" = 1'

STA.	UPPER	LOWER	STA.	UPPER	LOWER	STA.	UPPER
0.	6.20	6.20	10.	16.85	1.00	50.	17.40
1.25	10.10	4.00	15.	18.65	.5	60.	14.80
2.5	11.75	3.10	20.	19.61	.21	70.	11.70
5.0	13.95	2.10	30.	20.10	.10	80.	8.20
7.5	15.60	1.50	40.	19.80	.0	90.	4.35

5 10 20 30 40 50 60 70 80 90 100 %

20% CHORD

10% CHORD

GÖTTINGEN # 386

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.	
SCALE: See Plan Vi.	DIMENSIONAL LAYOUT
TYPE: Transport	Ford
DRAWN BY.... WILLIAM A. WYLAM	TRI-MOTOR MODEL "5-AT-C"
BUILT/926-31/ BY FORD MOTOR COMPANY	

41'-0 SPAN - VEGA
20'-6
SECTION @ W
HINGE
TIP RIB'S AIRFOILS WERE DEVELOPED FROM IMAGINARY CLARK Y-9.47 AIRFOIL AT OUTER EDGE
4 SPACES @ 2'-1 = 8'-4
4 SPACES @ 2'-2 3/4 = 8'-11
3 SPACES
48 GALS FUEL TANK PER WING PANEL
SLIDING HATCH
CENTERLINES OF MAIN & AUX. SPARS; MAIN & NOSE RIBS. THE LINES WERE ROWS OF BRASS TACKS ON WOODEN MODELS OR ROWS OF RIVETS ON METAL MODELS. THE WOODEN MODELS HAD THIN PLYWOOD PANELS NAILED IN PLACE WITH ENTIRE EXTERIOR SURFACE BEING COVERED WITH FINE LINEN FOR A BETTER FINISH
TRANSPARENT PANEL
BALANCE CABLE (TO OPPOSITE AILERON)
CONTROL CABLE (TO STICK)
PARALLEL TO GROUND LINE
RED - LEFT PANEL
GREEN - RIGHT PANEL
STRAIGHT FROM X TO Z
OPTIONAL-RETRACTIBLE LANDING LIGHT
OPTIONAL-FLUSH-TYPE LANDING LIGHT
CONTROL CABLE (TO STICK)
19'-6
STANDARD VEGA OUTER PANEL
TYPICAL AILERON (MINOR CHANGES WERE ON VARIOUS SERIES)
8'-9 1/2
2'-3 1/2
TYPICAL COLOR BORDER (USUALLY BACKGROUND COLOR)
WING ERECTION LUG
MAIN SPAR
FUEL TANK FILL
MAIN SPAR
VC-2053
BLACK OR WHITE - LOWER SURFACE - LEFT PANEL
UPPER SURFACE - RIGHT PANEL
43'-0 SPAN - AIR EXPRESS MODEL
21'-6
MAX. WIDTH @ 30%
RUDDER HORN
TYPICAL SECTION THRU VERT. STAB.
MAX. WIDTH @ 30%
ELEVATOR HORN
TYPICAL SECTION THRU HORIZ. STAB.

0° INCIDENCE
2°3 1/2 VEGA
℄ AIRPLANE
DOTTED LINES INDICATE SPARS & RIBS
HORIZONTAL TAIL SECTIONS
ELEVATOR HORN
6" SQUARES THRU-OUT
"A" TAIL ASSEM.
"B" TAIL ASSEM.
"C" TAIL ASSEM.

CLARK Y-9.47 AT TIP (CHORD = 5'-2 15/16)

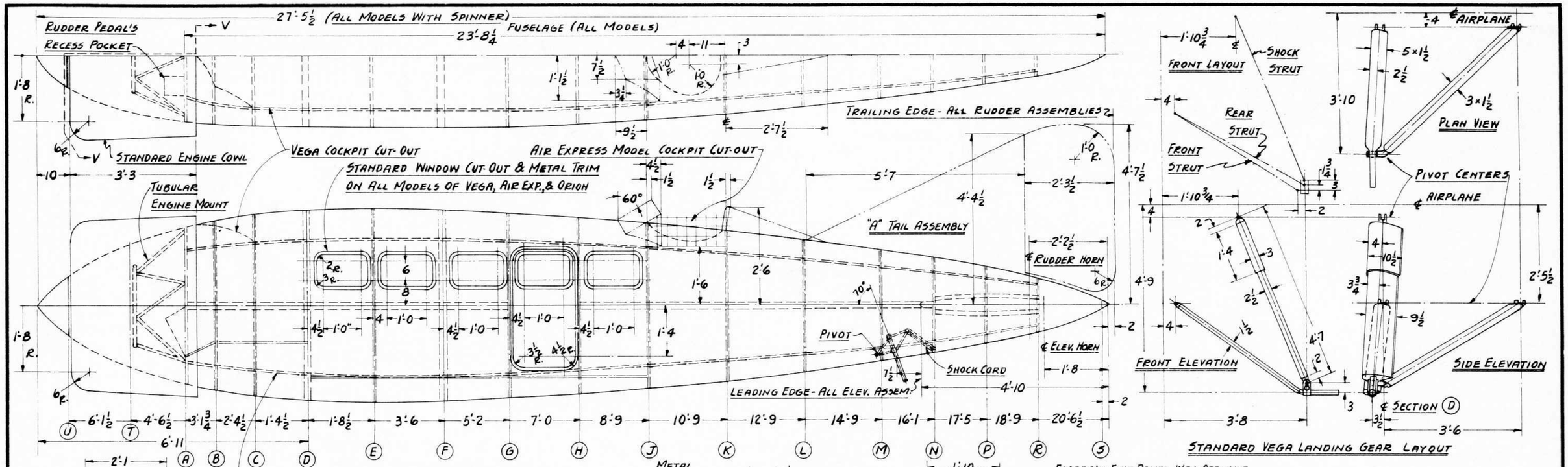
STA.	UPPER	LOWER	STA.	UPPER	LOWER	STA.	UPPER
0	2.83	2.83	10	7.76	0.34	50	8.50
1.25	4.41	1.56	15	8.64	.12	60	7.40
2.50	5.26	1.19	20	9.18	.03	70	5.95
5.0	6.39	0.75	30	9.47	0	80	4.22
7.5	7.16	0.51	40	9.22	0	90	2.26
						95	1.21
						100	.09

0° INCIDENCE
AIR EXP. MOD.
℄ AIRPLANE
VERTICAL TAIL SECTIONS
RUDDER HORN
"C" TAIL ASSEM.
"C" TAIL ASSEM.
"A" TAIL ASSEM.
"B" TAIL ASSEM.
"B" TAIL ASSEM.
"C" TAIL ASSEM.

CLARK Y-18 AT ROOT (CHORD = 8'-6")

STA.	UPPER	LOWER	STA.	UPPER
5.0	12.16	1.46	50	16.18
7.5	13.62	.97	60	14.08
10	14.78	.65	70	11.31
15	16.43	.23	80	8.02
20	17.50	.05	90	4.31
30	18.0	0	95	2.96
40	17.54	0	100	.18

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
SCALE: 1/4" = 1'-0"
PAGE 1 of 4
DRAWN BY... WILLIAM A. WYLAM
WING & TAIL LAYOUTS
LOCKHEED TRANSPORT
VEGA
BUILT 1926-'32 BY LOCKHEED AIRCRAFT COMPANY



NOTES:

All Dimensions Shown Are To Nearest Quarter Inch And Were Scaled Off Of Factory Blueprints. Due To Shrinkage Of Blueprints, Corrections Must Be Made On The Enlarged Layouts To Blend Out The Curvatures.

All Lockheed Wooden & Metal Vega, Air Express, Sirius, Altair And Orion Had The Same Fuselage Shell - Only Changes Were The Cut-Outs For Windows, Doors, Cockpits And Wing. Metal Models Had Four Additional Longerons For Attachment Of Metal Panels. Panels Were Riveted To Longerons & Formers.

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.

SCALE: ¼" = 1'-0"	FUSELAGE & LANDING GEAR LAYOUT
PAGE: 2 of 4	LOCKHEED TRANSPORT
DRAWN BY... WILLIAM A. WYLAM	VEGA

BUILT 1926-'32 BY LOCKHEED AIRCRAFT COMPANY

SLIDING HATCH
FIXED WINDSHIELD
REMOVABLE PANEL
AILERON WIRE
WING ERECTION LUG
46 GALS FUEL TANK
VENTURI
AIRPLANE ℄
4 ℄
2'-5½
6'-0
1'-10¾
6
FLYING POSITION
8'-3½ TREAD
4'-1¾
GROUND LINE @ ROLLING RADIUS

9'-0" DIA. STANDARD STEEL PROPELLER ON ALL MODELS

SPINNER
AILERON WIRE
EXTERNAL COLLECTOR RING
46 GALS FUEL TANK
CABANE FAIRING
PILOT'S WINDSHIELD
ENGINE COWLING
L.G. FAIRING
BLACK - EXHAUST
PLAIN - INTAKE
AIRPLANE ℄
2'-7
6'-0
5'-10
10 — 10
L.G. FAIRINGS
OPTIONAL - ALL MODELS
LOW PRESSURE TIRE
AND WHEEL PANTS
A
4'-1¾
4'-4½"

ALL VEGA MODELS WITH SPINNER

27'-7½
5'-5
6 — 1'-2½ ℄ CYLINDERS
ALL MODELS 9'-0
REMOVABLE BONNET
COWL PANELS HAD 3
TO 6 ROWS OF LOUVERS
WING ERECTION LUG
FUEL TANK FILL

FIRST PRODUCTION VEGA (5 PLACE) WITH P. & W. WASP
WRIGHT WHIRLWIND - 52 WERE BUILT FROM 1926 TO 1929.
MODEL SHOWN WITH POPULAR "B" TAIL ASSEMBLY AND
WASP 420 H.P. VEGA #1 WAS "GOLDEN EAGLE"; Nº 2
WAS WILKIN'S "STARLIGHT"; Nº 3 WAS "TARHEEL"; Nº 4
WAS "YANKEE DOODLE"; AND SO ON - ALL RECORD MAKERS

ORIGINAL TRADEMARK
"VEGA"
LOCK ⊙ HEED AIRCRAFT
LOS ANGELES
NR 3009
4'-8

yankee doodle
keep it up,—

LEATHER RIDING STRIPS
BAGGAGE AREA
FLOOR BOARD
RIVETS
CANVAS COVERED SOCKET
"B" TAIL ASSEMBLY
ADJUST. STABILIZER
+3°-5° RANGE
7'-0"

BAYONET EXHAUST SHOWN;
OPTIONAL WAS INTERNAL OR
EXTERNAL COLLECTOR RING
30 O.D. × 5 WIDE
TIRE & TUBE
27 O.D. × 11 WIDE
TIRE & TUBE
13°
AFTER 1931, SPINNER, ENGINE
COWLINGS AND BONNET COWL PANELS
WERE REMOVED FOR WEIGHT REDUCTION
OPTIONAL LOW PRESSURE TIRE & PANT ON SAME AXLE CENTER

VENTURI
EMERGENCY EXIT
METAL FAIRING PANELS
METAL TRIM
SLIDING WINDOW PANELS
DOUBLE REAR SEAT
HEADREST - OPTIONAL
14'-0"

SECOND PRODUCTION VEGA (5 PLACE) CALLED "AIR EXPRESS MODEL"
DESIGNED FOR AIR MAIL WORK FOR WESTERN AIR EXPRESS.
27 WERE BUILT FROM 1927 TO 1930. FIRST 3 HAD "A"
TAIL ASSEMBLY; 20 HAD "B" TAIL & 4 HAD "C" TAIL.

5'-5
6 — 1'-2½
NACA FULL COWLING
WAS ADDED AFTER 1928
INTERNAL COLLECTOR RING
7 PLACE MODEL
HAD EXTRA WINDOWS
METAL CAPPING
LOCKHEED
NC 6022
FIXED FIN
TAIL DOLLY HOOK
METAL TAIL CONE
WHITE NAVIGATION TAIL LIGHT
STANDARD TAIL SKID
TELESCOPING
FOOT STEP
FLOORBOARD
BAGGAGE AREA
AIR EXPRESS MODEL WAS
SAME AS VEGA EXCEPT
FOR PARASOL WING, CABIN
ARRANGEMENT, AND REAR
COCKPIT. PANTS AND COWL'G.
WERE ADDED AFTER 1928.
PIVOT PIN
BRAKE LINE
INNER VIEW SHOWN
STEP PLATE
PULL WIRE & EYES
VIEW "A-A" OF PANT & FAIRINGS

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.
SCALE: ¼" = 1'-0"
PAGE 3 OF 4
DRAWN BY... WILLIAM A. WYLAM
GENERAL ARRANGEMENT
LOCKHEED TRANSPORT
VEGA
BUILT 1926-31 BY LOCKHEED AIRCRAFT COMPANY

COLOR SCHEME & DECORATIVE TRIMS WERE AT OPTION OF BUYER. MOST POPULAR COLORS WERE: WHITE WITH RED, BLUE, OR GREEN TRIM; RED, GREEN, OR BLUE WITH WHITE OR CREAM TRIM. CONTRASTING COLOR WAS USED FOR PIN STRIPING AS A SPECIAL ORDER; I.E., WHITE WITH RED TRIM HAD BLACK PIN STRIPES ON THE EDGES OF THE RED TRIM.

ALL VEGA MODELS WITHOUT SPINNER

27'-6

5'-3½

4½ 1'-2½

℄ CYLINDERS

EXTERNAL EXHAUST COLLECTOR RING WAS STANDARD AFTER 1930

SLIDING WINDSHIELD (VENTILATION)

WING ANCHOR

SLIDING WINDOW PANELS

METAL ACCESS PANEL

THIRD PRODUCTION VEGA (7 PLACE) WITH P.&W. WASP OR WRIGHT WHIRLWIND – 63 WERE BUILT FROM 1930-TO 1932. MODEL SHOWN WITH "C+" TAIL ASSEMBLY, 500 H.P. WASP AND TAIL WHEEL – TAIL SKID & COWLING WAS STANDARD MODEL WAS ALL WOOD OR ALL METAL (METAL VEGA). METAL VEGA HAD SAME RIVET PATTERN AS SHOWN ON SPEED VEGA BELOW. "WINNIE MAE" WAS A MODIFIED VERSION.

RECTANGULAR OR SQUARE REAR WINDOW

DETROIT AIRCRAFT LOCKHEED

NC 9023

GOODYEAR

6'-0

2'-0

9'-0 ALL MODELS

WING & TAIL WERE USUALLY SAME COLOR AS TRIM.

COWL SEPERATES ALONG VERTICAL CENTER OF FUSELAGE AIRPLANE ℄

2'-6

6'-0

10

SINGLE OR DOUBLE FAIRING (OPTIONAL) (FOR DOUBLE SEE PAGE 3)

GROUND LINE @ ROLLING RADIUS

6

4'-1¾

18 MPH WAS GAINED BY COWL'G.

6 MPH WAS GAINED BY PANTS

AFTER 1931 PANTS WERE REMOVED FOR WEIGHT REDUCTION AND SERVICE TROUBLES.

13°

FORGED STEEL FORK SHOWN

9½ O.D. × 4 WIDE

4'-10

SEAPLANE FAIRING

LEVEL GAGE

WARNING LIGHT

TANK SWITCH

THROTTLE

STAB. ADJ. OR OIL COOL'R. ADJ.

PILOT'S BACK PAD WAS FIXED TO CABIN DOOR

HEAVILY PADDED PIGSKIN (TAN COLOR) CABIN UPHOLSTERED WALLS & CEILING LEATHER COVERED SEATS (BROWN)

DOME LIGHT

BAGGAGE RACK

PADDED FORMERS

ASSIST STRAPS

ASH TRAY

REMOV. DOUBLE SEAT

TO RUDDER

TO ELEVATOR

SEAT IN FOLDED POSITION

VIEWS AT COCKPIT PARTITION

RETRACT. LANDING LIGHT CRANK

TANK SWITCH & GAGE - BOTH SIDES

TYPICAL CROSS SECTION

COCKPIT DOOR

FOLDING TYPE SEATS FOR ACCESS

TOWARD TAIL

TOWARD NOSE

VIEW TOWARD TAIL

13 12 11 10 4 5 6 7 9

14 3 1 2 8

15 16

1. COMPASS
2. AIRSPEED
3. ALTIMETER
4. BANK & TURN
5. LIGHT
6. THROTTLE
7. TACHOMETER
8. IGNITION
9. PRIMER
10. ENGINE TEMP. (OIL)
11. MANIFOLD PRESS.
12. VELOCITY INDICATOR
13. MASTER SWITCH
14. ELECTRIC SWITCHES
15. STABILIZER ADJUSTOR
16. OIL COOLER DAMPER ADJ.

"B" TAIL ASSEMBLY

FOURTH PRODUCTION VEGA (3-5 PLACE) CALLED "SPEED VEGA" WITH SUPERCHARGED WASP, METAL SURFACES, MODIFIED UNDERCARRIAGE & SPECIAL FAIRINGS – 8 WERE BUILT FROM 1931 TO 1932. FINISH WAS POLISHED METAL WITH DECORATIVE TRIM.

DETROIT AIRCRAFT LOCKHEED

NC 8725

4'-8

WEDELL-WILLIAMS Air Service, Inc.

1'-6½

4'-10

6'-0

1'-2

3½

10½

BRACE WIRE AT AXLE CENTER

8'-3½

4'-1¾

A A

VIEW "A-A"

15°

ALL CENTERS OF STRUTS & WIRES MEET AT ℄ AXLE & ℄ PANTS AS SHOWN. NO DATA CAN BE OBTAINED AS TO OPERATIONS OF SHOCK ABSORBERS.

SPECIAL RACING EXHAUST STACKS WERE SINGLE PIPES CHAMFERED 45° OR 30° AT TRAILING EDGE. AIR EXPRESS WERE STRAIGHT ALL AROUND; VEGA WERE CURVED AS SHOWN.

℄ AIRPLANE

THANKS:
R. G. LOCKRIDGE, WILLIAM WINTER, HOWARD LEVY, LEO MINOR, PAUL MARCHAL, JR. AND OTHERS.

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.	
SCALE: ¼=1'-0"	GENERAL ARRANGEMENT
PAGE: 4 of 4	LOCKHEED TRANSPORT
DRAWN BY... WILLIAM A. WYLAM	VEGA
BUILT 1930-32 BY LOCKHEED AIRCRAFT COMPANY	

SIRIUS	PLACE	HOR. TAIL	VERT. TAIL	OWNER
Nº 1	ONE	"D"	"D" EXP.	BROMLEY
Nº 2	ONE	"D"	"A" EXP.	BROMLEY
Nº 3	TWO	"D"	MOD. "C"	LINDBERGH

SIRIUS Nº 4 TO 8 HAD MOD. "C" VERT. TAIL WITH "D" HORIZONTAL TAIL.

"SIRIUS EXPRESS" - SINGLE COCKPIT WITH 4-6 SEATS - CABIN SAME AS "ORION"

"SIRIUS CARGO" - SINGLE COCKPIT WITH CARGO COMPARTMENT

FUEL FILL - SIRIUS ONLY

BLACK - WALKWAY

OPTIONAL - SPINNER & ENGINE COWL - SEE VEGA PLANS FOR DETAIL & LAYOUT

9'-0 DIA.

6'-0

METAL PANELED "VEE" STRUT

CANTILEVERED BRACED EXHAUST

GROUND LINE @ ROLLING RADIUS

6

OPTIONAL: LOW OR HIGH PRESSURE TIRES WITH OR WITHOUT STANDARD WHEEL FAIRINGS.

FLYING POSITION

27'-7½

5'-5

LEADING EDGE WITH SPINNER

6 - 1'-2½ ¢ CYLINDERS

ENTIRE SURFACE OF WOODEN VERSION WAS COVERED WITH FINE LINEN FOR FINISH

SINGLE OR DOUBLE PLACE OPEN COCKPIT ON EARLY SIRIUS - (SINGLE PLACE WAS IN SAME LOCATION AS REAR COCKPIT).

5'-9¾

BAGGAGE DOOR

OIL FILL

CANTILEVERED OR BRACED EXHAUST

LINDBERGH'S SIRIUS WAS SHINEY BLACK WITH BRIGHT RED TAIL & TRIM

13°

CABIN VENT CLOSED

MODIFIED "C" VERTICAL STABILIZER ASSEM.

DETROIT AIRCRAFT LOCKHEED

NR-211

6'-0

SHARP EDGE

TAIL DOLLY HOOK

"D" HORIZON. STABILZER

FIRST PRODUCTION LOW-WING CALLED "SIRIUS" - 15 WERE BUILT FROM 1929 TO 1932. ENGINE WAS 450-500 P. & W. WASP OR WRIGHT CYCLONE. TAILSKID & COWLING WAS STANDARD; WHEEL FAIRINGS & SLIDING HATCH WERE OPTIONAL. ALL WOOD OR ALL METAL AS SHOWN BELOW. ABOVE AIRPLANE IS SHOWN AS ORIGINALLY DELIVERED TO COL. CHARLES A. LINDBERGH. COCKPITS WERE LATER MODIFIED AS SHOWN ON THE SIRIUS SEAPLANE DRAWINGS.

SIRIUS Nº 9 TO 15 HAD "D" TAIL ASSEMBLY AND SLIDING HATCH AS SHOWN AT RIGHT

SPINNER, ENGINE COWLS & BONNET PANELS WERE ONLY ON EARLY SIRIUS SERIALS.

SIRIUS Nº 16 & 17 WAS FITTED WITH RETRACTABLE LANDING GEAR AND WAS RE-NAMED "ALTAIR". ALTAIR Nº 3 TO 8 HAD RE-DESIGNED DECK (AFT OF REAR COCKPIT) AND VERTICAL TAIL FAIRING WITH "E" RUDDER.

RE-DESIGNED ENGINE COWL

ALL FUSELAGES HAD SAME OUTLINE & CROSS SECTIONS AS SHOWN ON VEGA PLANS.

9'-0 DIA.

1'-9 REF.

6'-3½ REF.

RETRACTING ARC

6'-0

6

BEFORE RETRACTION

GROUND LINE @ ROLLING RADIUS

FRONT VIEW OF ALTAIR & ORION WERE SIMILAR EXCEPT FOR WINDSHIELD

OPTIONAL: STANDARD STEEL ADJ. PROP. OR CONSTANT SPEED PROPELLER

RE-DESIGNED DECK & FAIRINGS

"D" RUDDER

"E" RUDDER

5'-3½

FUEL FILL

PLAIN DOOR OR WINDOW

RE-DESIGNED COCKPIT & HATCHS

RE-DESIGNED DECK & VERT. TAIL FAIRING PANEL

DETROIT AIRCRAFT LOCKHEED

NR-923

5'-8½

The New Yorker

TRANSPARENT PANELS

BRACED EXHAUST, OR OUTLET AS SHOWN ON THE ORION DRAWINGS

FOOT STEP

CABIN VENT

FLAP PANEL - ALTAIR ONLY

TAIL SKID - STANDARD FIXED OR RETRACTABLE

9½ O.D. × 4 TIRE

ALTAIR 3 TO 8 HAD MOD. FAIR. - SEE ORION

27'-10

SECOND PRODUCTION LOW-WING CALLED "ALTAIR" - 8 WERE BUILT FROM 1930 TO 1932. FIRST TWO "ALTAIRS" WERE RE-WORKED SIRIUS Nº 16 & 17; LAST SIX SERIALS HAD RE-DESIGNED DECK & "E" RUDDER (SHOWN DOTTED). ALL WOOD OR ALL METAL WITH ONE, TWO OR FOUR PLACE (DOUBLE SEAT IN BAGGAGE SPACE). ALTAIR WAS CUSTOM BUILT AND DIFFERS BY VARIOUS OPTIONAL EQUIPMENTS. ALTAIR Nº 1 WAS U.S. ARMY "C-23"; Nº 2 WAS JOHN MEAR'S "NEW YORKER", Nº 4 WAS "LADY SOUTHERN CROSS" Nº 7 WAS BERNARD MCFADDEN'S.

ALTAIR NR-923 WAS PAINTED SEA GREEN WITH WHITE TRIM & RED PIN STRIPES ON TRIM COLOR.

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.	
SCALE: ¼" = 1'-0"	GENERAL ARRANGEMENT SIRIUS AND ALTAIR
PAGE: 1 of 4	LOCKHEED
DRAWN BY... WILLIAM A. WYLAM	
BUILT 1929-'32 BY LOCKHEED AIRCRAFT COMPANY	

ON WOODEN MODELS, ENTIRE SURFACE WAS COVERED WITH FINE LINEN FOR BETTER FINISH. ON METAL MODELS, BUTTON HEAD RIVETS WERE USED.

METAL SHOWN

42'-10 SPAN - SIRIUS & ALTAIR (2° DIHEDRAL)

21'-5 HALF SPAN

42'-9¼ SPAN - LATE ALTAIR & ORION (3° DIHEDRAL)

21'-4⅝ HALF SPAN

8'-6 CHORD @ STA. 1'-11

8'-6 CHORD @ STA. 1'-11

8'-3⅜

LATE ALTAIR OR ORION

WALKWAY

RETRACTING SCREW

8'-9½

TYPICAL AILERON

OPTIONAL

FLAP PANEL - ALTAIR & ORION

UNIVERSAL JOINT

RETRACTING STRUT

RADIUS STRUT CAVITY

FIXED LENGTH - RADIUS STRUT

UNIVERSAL JOINT

RETRACTING ARCH

UNIVER. JOINT

ALL LOW-WING MODELS HAD SAME WING PANELS AS VEGA; SAME CONSTRUCTION, SAME AIRFOIL SECTIONS, AND WERE ALL WOOD OR ALL METAL - SEE VEGA PLANS FOR LAYOUT DETAILS.

0° INCIDENCE - ALL MODELS

SIRIUS AND EARLY ALTAIR ROOT FAIRING SHOWN - FOR ORION ROOT FAIRING - SEE FUSELAGE LAYOUT PAGE

WING ERECTION LUGS (ON BOTH PANELS AND ON ALL MODELS)

FUEL FILL

55 GALS TANK

WHEEL WELL

DIHEDRAL ANGLE IS SLOPE OF TOP SURFACE TO HORIZON

19'-6 MODIFIED VEGA PANEL

MEDIAN LINES - SEE VEGA PLANS

℄ AIRPLANE

AEROL SHOCK ABSORBER UNIT

ANCHOR RING

OPTIONAL LAND. LIGHT (SEE VEGA FOR OTHERS)

RADIUS STRUT PANEL IS SLANTED IN LANDING POSITION DUED TO SKEW ACTION OF GEAR

RETRACT. SCREW

RETRACT. STRUT

+3° DIHEDRAL

+2° DIHEDRAL

SCHEMATIC VIEW OF ORIGINAL MECHANICAL RETRACTION AS USED ON ALTAIR; LATER WAS CHANGED TO HYDRAULIC LIFT

HINGED FLAP PANELS

33 O.D. × 11 WIDE TIRE

GROUND LINE BEFORE RETRACTION

SLIDING CLAMP BAR

HINGED PANEL

TRANSPARENT PANELS

30" O.D. × 5" W. TIRE OR 27" O.D. × 11 WIDE TIRE

FUSELAGE TRAILING EDGE

RUDDER TRAILING EDGE

SIRIUS PANEL

15'-0 SPAN

7'-6"

15'-9 SPAN

7'-10½

"E" HORIZ. STABILIZER

"D" OR "E" VERT. STABILIZER

"D" HORIZ. STABILIZER

MOD. "C" VERT. STABILIZER

STANDARD HIGH PRESS. WHEEL FAIRING SHOWN - OPTIONAL WAS LOW PRESS. WHEEL FAIRING

LEADING EDGE OF WING SAME CROSS SECTION AS VEGA

LEADING FAIRING PANEL (ON LOWER SURFACE OF WING)

℄ WHEEL

℄ MAIN SPAR

WHEEL FAIRINGS WERE REMOVED ON SEVERAL SIRIUS SERIALS

METAL COVERED

FAIRING PANEL

SIRIUS LANDING GEAR

FOLDED POSITION

ALTAIR & ORION LANDING GEAR

RETRACTING STRUT

BRAKE CABLE

RADIUS STRUT & PANEL

TUBULAR SUPER-STRUCTURE

MAIN SHOCK STRUT

MAIN COVER PANEL

TYPICAL DETAILS OF RETRACTABLE LANDING GEAR

THANKS:
R. G. LOCKRIDGE, WILLIAM WINTER, HOWARD LEVY, ROBERT L. TAYLOR, PAUL MARCHAL, JR., LEONARD WIECZOREX, LLOYD JARMAN AND OTHERS.

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.

SCALE: ¼ = 1'-0"

PAGE: 2 of 4

DRAWN BY... WILLIAM A. WYLAM

WINGS & LANDING GEAR
SIRIUS, ALTAIR & ORION
LOCKHEED

BUILT 1931-32 BY LOCKHEED AIRCRAFT COMPANY

TYPICAL INSTRU. PANEL & FLIGHT CONTROLS

SLIDING GLASS WINDSHIELD

HEADREST BACKPAD

1:1½ R.

3:3

SHELF "A"

8 R.

Ⓒ PARITION PANEL "B" Ⓓ

9'-0" CONSTANT SPEED PROP. SHOWN

1:1½ R.

3:3

3:2

8 R.

Ⓔ PARITION PANEL "B" Ⓕ

SHORT NOSE ORION CUT-OUT

8 R. 5

8½

1:1½ R.

3:0

1:0 R.

7½ R. 5

8

1:1½ R.

2:9

1:2 R.

Ⓖ Ⓗ

7 R. 5

6½

2:5½

6½ R. 5

6

2:1

10 5½ R.

2:4¼

Ⓙ Ⓚ Ⓛ

BLACK

SHELF PANEL "A"

CABIN & BAGGAGE DOOR ON RIGHT OR LEFT SIDE WITH EMER. EXIT DOOR OPPOSITE DOOR

BAGGAGE AREA

4½

10

LEADING EDGE-STAND. ADJ. PROP. (SEE PAGE TWO)

SLIDING HATCH

DOME LIGHT

CEILING

NORTH WIND

PANEL "B"

5'-6

1'-6

SPAR

MAIN SPARS PASS THRU CABIN AS SHOWN ABOVE

CABIN WAS FINISHED IN SAME ORDER AS SHOWN ON PAGE FOUR OF VEGA PLANS

6'-1 REF. VEGA SHORT NOSE & ALTAIR

3'-3

8½ 8½

6 R.

2:1

1:8

1:0 R.

5½ R.

6½

1:1½

1:0½

1:0

7¼

2½ R.

10½

2¾

6 R.

6½ 5½ 3

6

7

6

5½

3

1:8

2:1

1:8

6 R.

1:0 R.

1:0

10 R.

3

7 R.

1:0

10

10 R.

3

7 R.

1:0

1:7½

1:0

11

3:4

6'-7½

LONG NOSE ORION

SPAR

SEE WING LAYOUT

10

5'-5¼

3:8

3:10½

1:5

1:10¼

1:5¼

1:6

1

3:3

2½

1

2

1½

2½

1:7¼

1:9½

2:11½

2:1¼

1:10½

1:4¾

2

1:9½

1:9½

2:0

1

½

1

REF. LINES

2:2

1:9½

2

1

2

1

2½

1:6½

2:7½

2:3

1:10½

1:9½

3:0 DIA.

1:10½

1:11¼

1:10½

2:4¼

4¼

6

8¼

11½

11¼

1:6½

2 R.

6½

3:1¼ REF.

Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓙ Ⓚ Ⓛ

SHARP TRAILING EDGE

FLAT AREA

NC-12225 WAS SOLID WHITE WITH RED TRIM & BLACK PIN STRIPING ON TRIM

28'-10 OVERALL - CONSTANT SPEED PROPELLER

28'-5½ OVERALL - STAND. ADJ. PROPELLER

MODIFIED "E" RUDDER SHOWN

"E" RUDDER (DOTTED)

FUEL FILL(?)

"D" OR "E" VERTICAL FIN

LAST PRODUCTION LOW-WING CALLED "ORION" BUILT FROM 1931 TO 1934. FIRST SERIES WERE 3-5 PLACE (SHORT NOSE); BALANCE WERE 7 PLACE (SHOWN BELOW) WITH 500 H.P. P. & W. WASP OR WRIGHT CYCLONE. ALL WOOD OR ALL METAL.

ALL LETTERS & Nº - GOLD WITH BLACK TRIM

DETROIT AIRCRAFT LOCKHEED

NC-12225

2:1 R.

5'-8½

2'-1½

VARNEY AIR SERVICE, LTD.

SPEED LANES

FIXED OR RETRACTABLE 12" O.D. × 5" WIDE TIRE

EARLY ORIONS HAD ROOT FAIRING AS SHOWN ON SIRIUS WING PANEL

"D" HORIZ. STAB. WAS ON EARLY ORIONS. LATE ALTAIR & ORION HAD "E" HOR. STAB. AS SHOWN

REF: PAGE TWO OF VEGA PLANS

4'-9

20'-6½

"E" RUDDER

MOD. "E" RUDDER

6'-1

2:11

2:7

4

MODIFIED "C" VERT. STAB.

"D" VERTICAL STABILIZER

"E" VERTICAL STABILIZER

REARWARD SLIDING HATCH

FIXED CENTER HATCH

FORWARD SLIDING HATCH

1:10 R.

3

2:1 R.

10 R.

2:3 R.

1:9½ R.

3:4 R.

6½

1:5

2:3

6'-0

5'-8½

6 R.

5 R.

1:8½

¼

3:3

11½

3

9½

6 R.

3 R.

8

½

6

5

2½

6 R.

3 R.

3:10 R.

1½ R.

5½

9

8

2

6

FOR FUSELAGE LAYOUT, CROSS SECTIONS & WINDOW CUT-OUTS, SEE NOVEMBER 1955'S MODEL AIRPLANE NEWS. THE SAME FUSELAGE SHELL WAS USED THRU-OUT.

SHORT NOSE ORION HAD STANDARD FUSELAGE; COWL WAS CUT (IN PLAN VIEW) TO CLEAR WINDSHIELD. LONG NOSE ORION HAD 6½" EXTENSION ADDED TO STANDARD FUSELAGE AS SHOWN.

NR12222 (SHELL OIL ORION) IS THE ONLY ORION LEFT AND IT IS A SHORT NOSE MODEL. ORION (7 PLACE) WERE BUILT IN LARGE NUMBERS FOR AIRLINES AND PRIVATE OWNERS.

AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.	
SCALE: 1/4" = 1'-0	GENERAL ARRANGEMENT ORION & ALTAIR SECTIONS
PAGE 3 of 4	LOCKHEED
DRAWN BY... WILLIAM A. WYLAM	
BUILT 1931-34 BY LOCKHEED AIRCRAFT COMPANY	

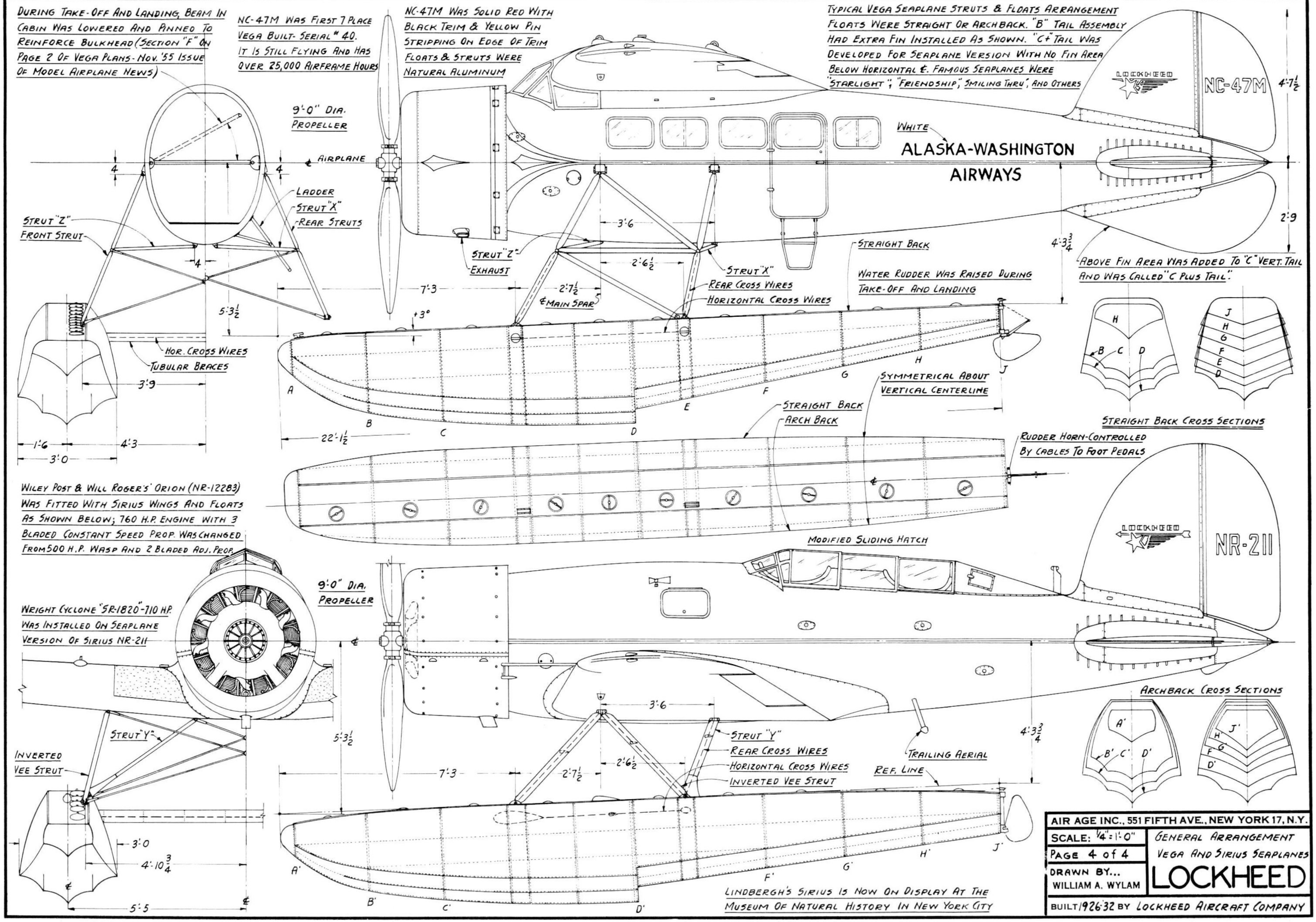
During Take-Off And Landing, Beam In Cabin Was Lowered And Panned To Reinforce Bulkhead (Section "F" On Page 2 Of Vega Plans - Nov. '55 Issue Of Model Airplane News)

NC-47M Was First 7 Place Vega Built - Serial # 40. It Is Still Flying And Has Over 25,000 Airframe Hours

NC-47M Was Solid Red With Black Trim & Yellow Pin Stripping On Edge Of Trim Floats & Struts Were Natural Aluminum

Typical Vega Seaplane Struts & Floats Arrangement

Floats Were Straight Or Arch Back. "B" Tail Assembly Had Extra Fin Installed As Shown. "C+" Tail Was Developed For Seaplane Version With No Fin Area Below Horizontal ℄. Famous Seaplanes Were "Starlight", "Friendship", Smiling Thru", And Others

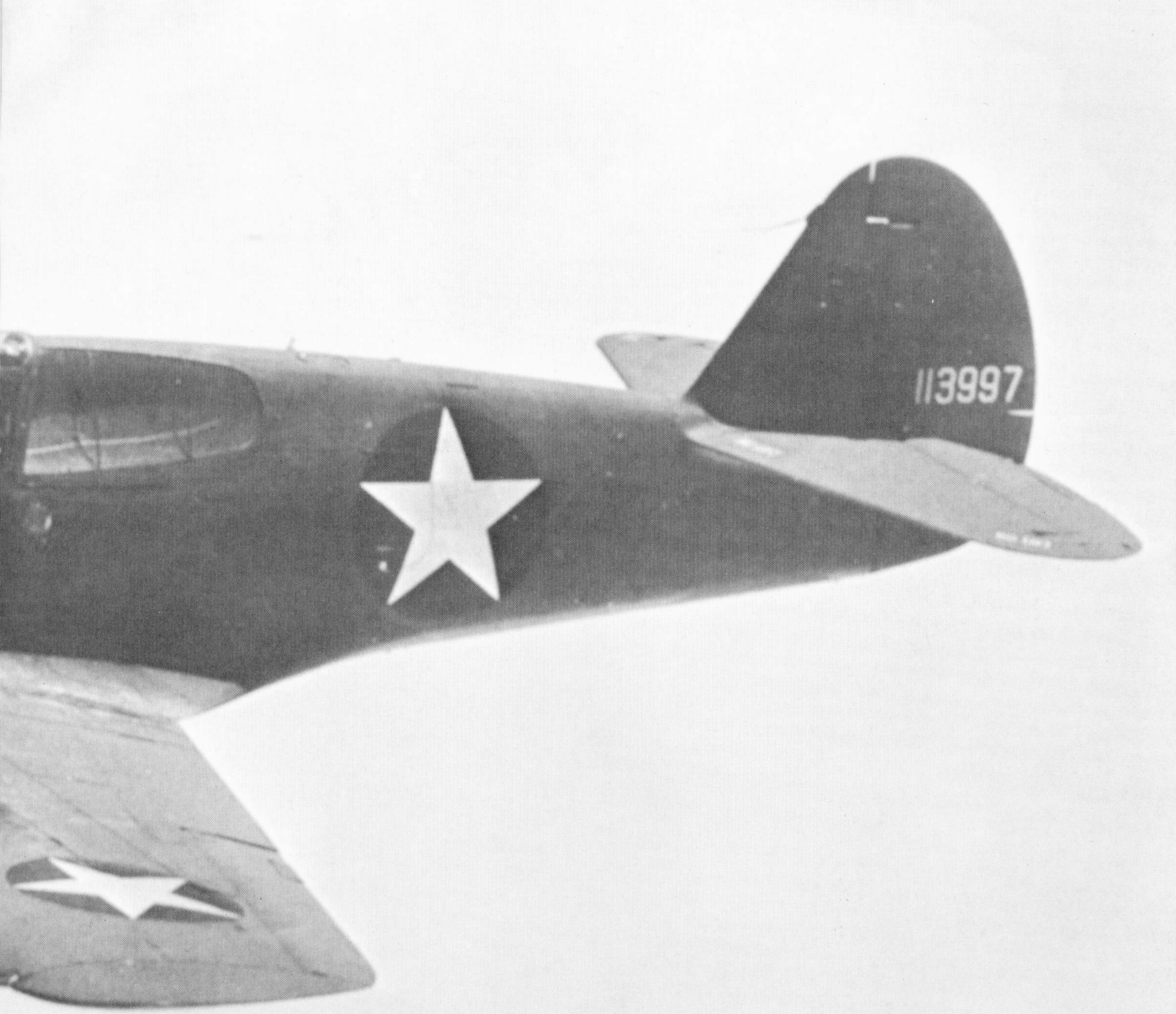


Lindbergh's Sirius Is Now On Display At The Museum Of Natural History In New York City

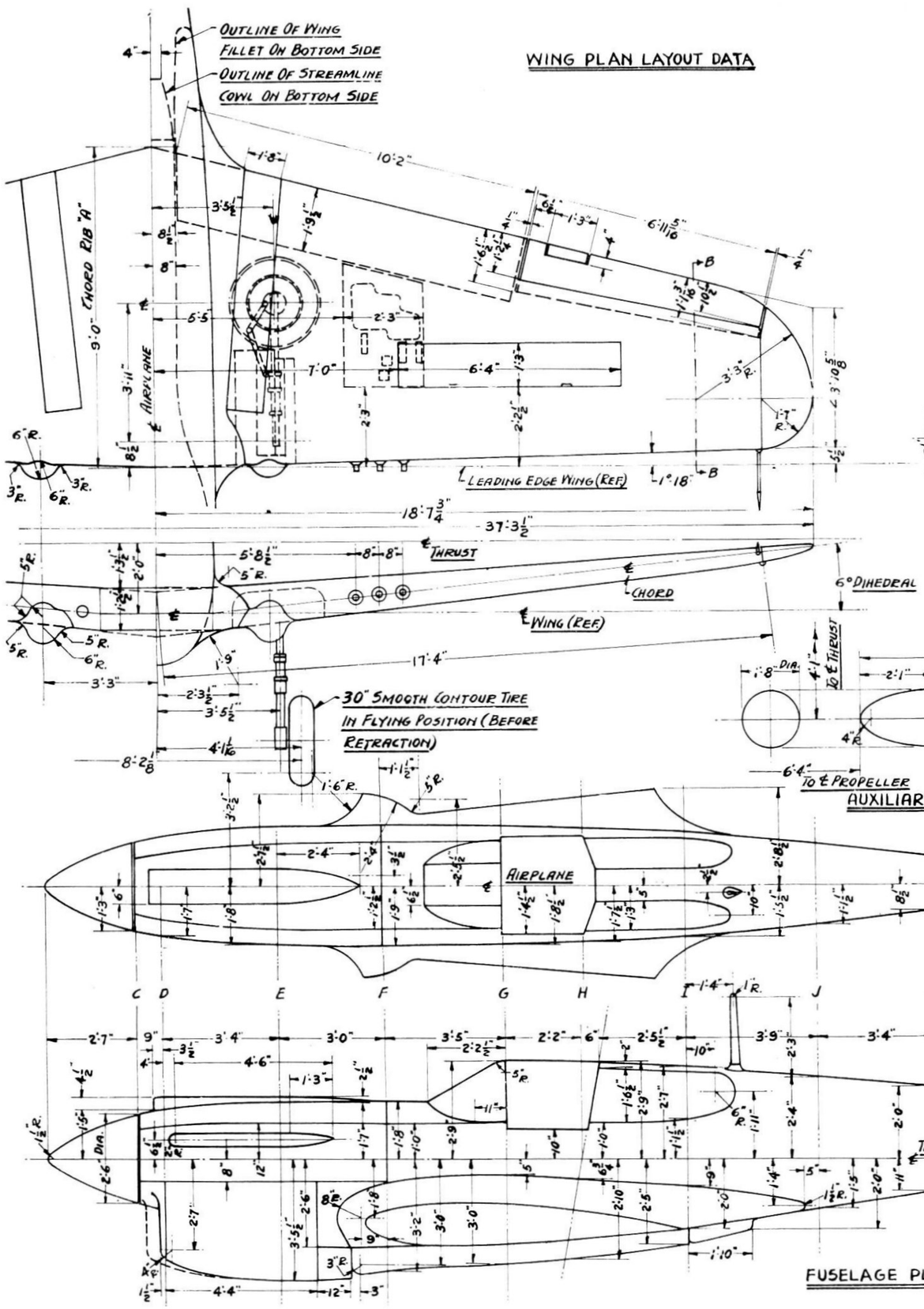
AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.	
SCALE: ¼" = 1'-0"	General Arrangement Vega And Sirius Seaplanes
PAGE 4 of 4	
DRAWN BY... WILLIAM A. WYLAM	LOCKHEED
BUILT 1926-32 BY LOCKHEED AIRCRAFT COMPANY	

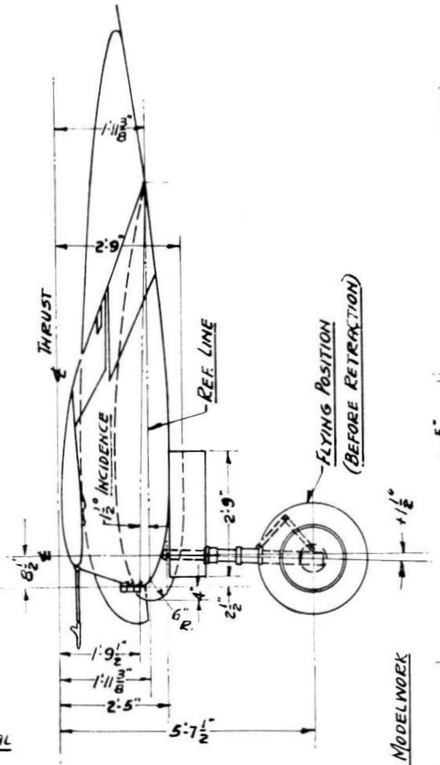
CURTISS P-40F WARHAWK

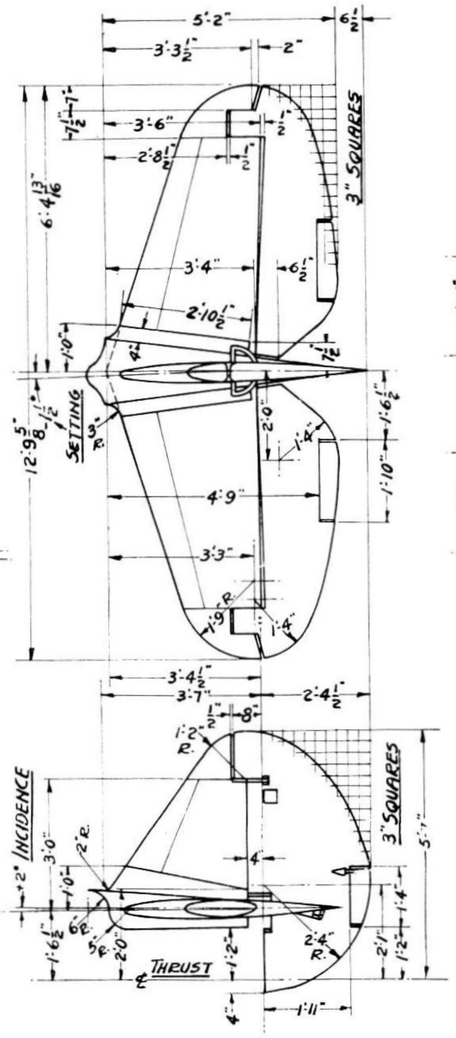
Rolls-Royce Merlin



WING PLAN LAYOUT DATA

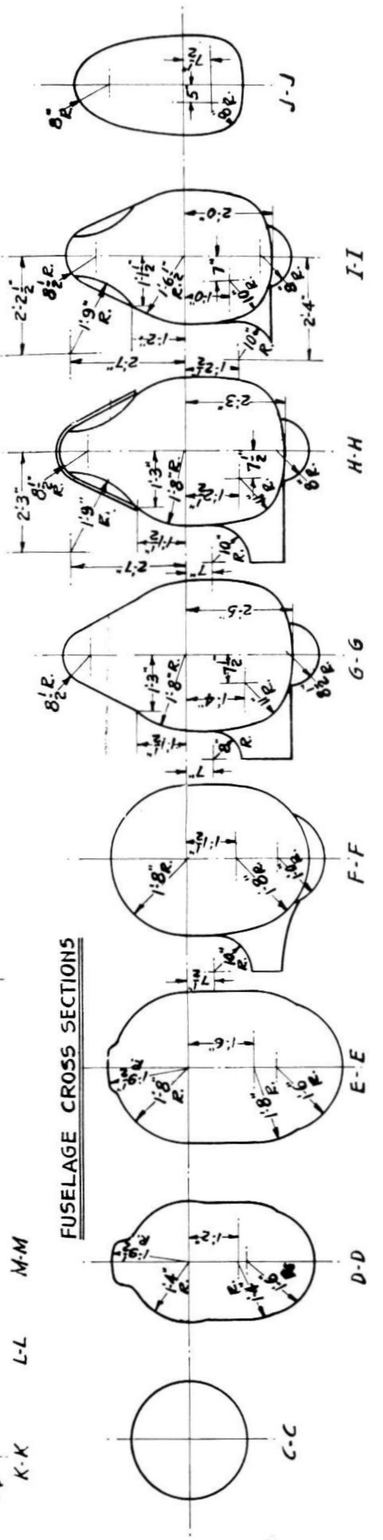


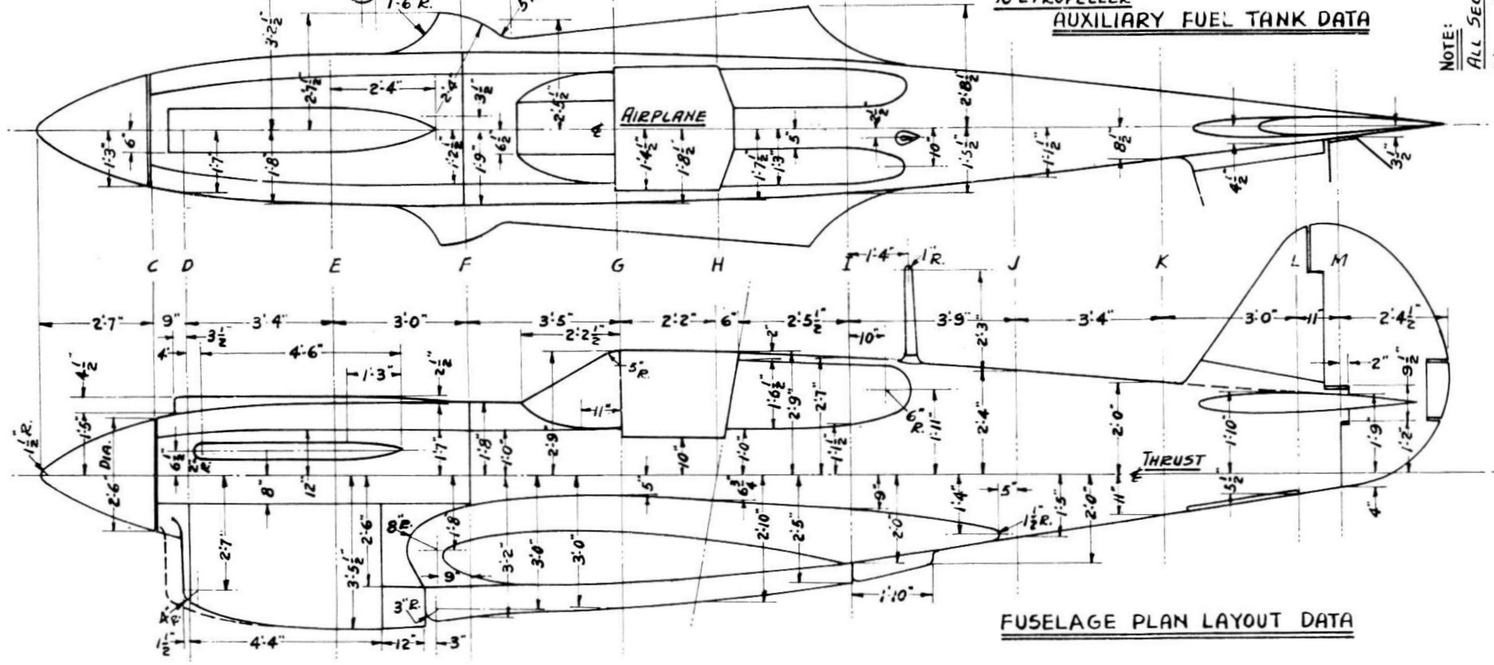




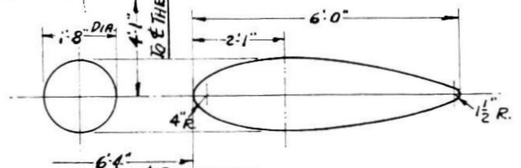
NOTE: ALL SECONDARY DIMENIONS WERE SCALED FROM FACTORY DRAWINGS & ARE ACCURATE FOR MODELWORK

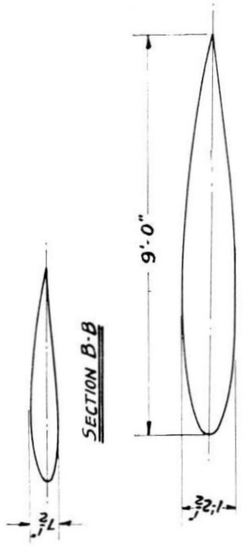
VERTICAL & HORIZONTAL TAIL PLAN LAYOUT DATA

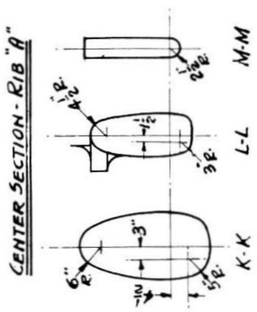




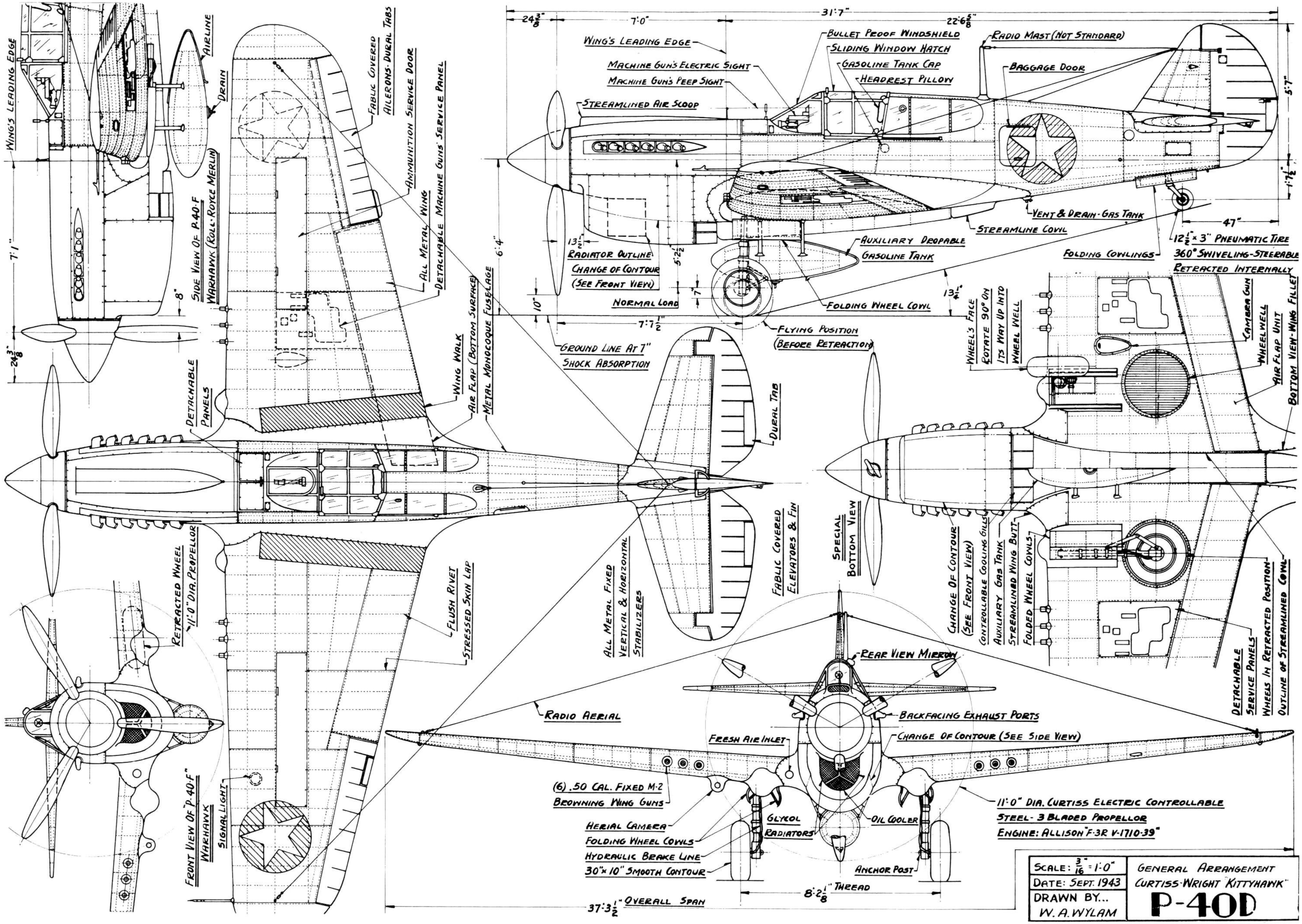
AUXILIARY FUEL TANK DATA







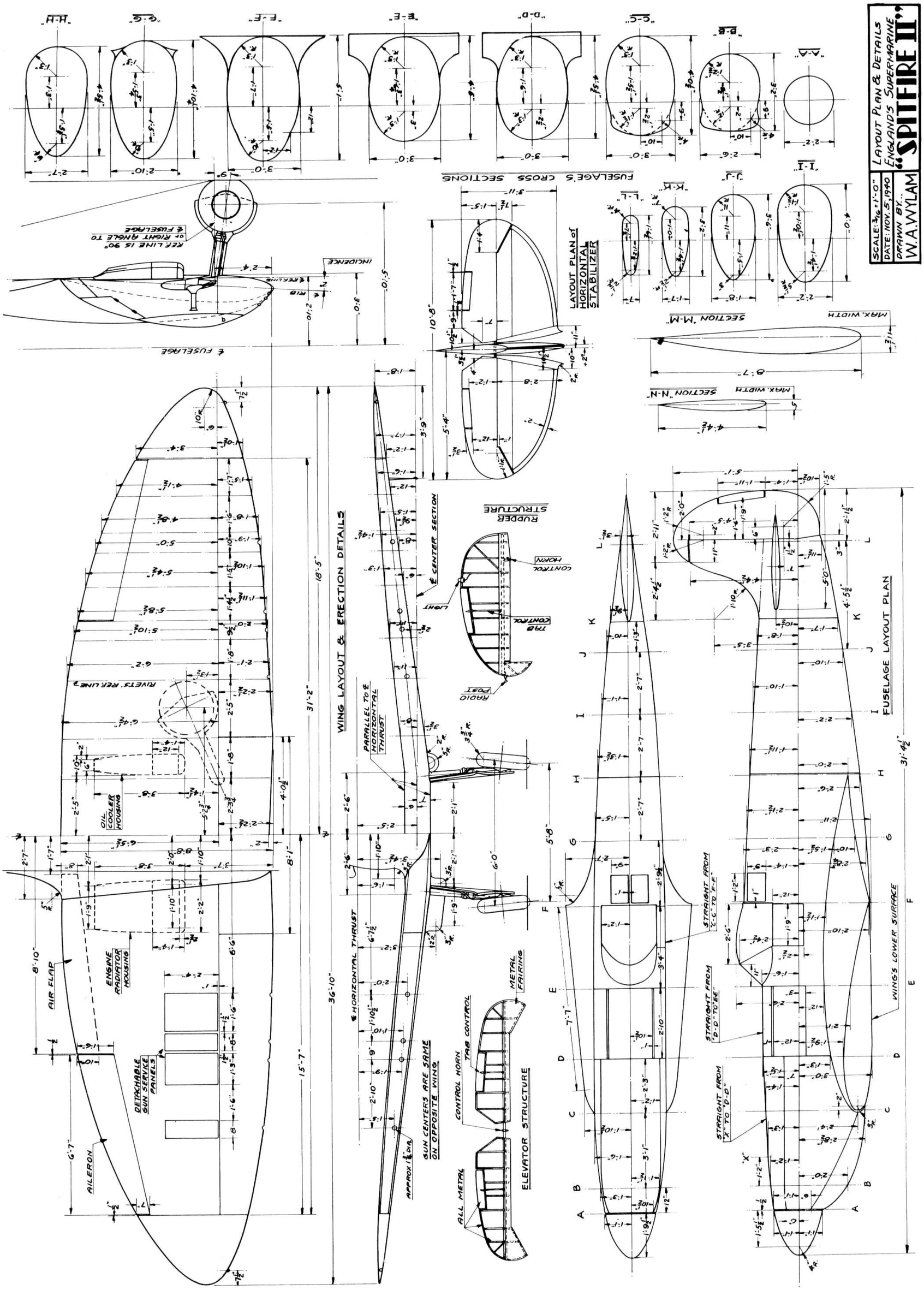
SCALE: 3/16" = 1'-0"	GENERAL LAYOUT DATA
DATE: SEPT. 1943	CURTISS-WRIGHT KITTYHAWK
DRAWN BY... W. A. WYLAM	**P-40D**

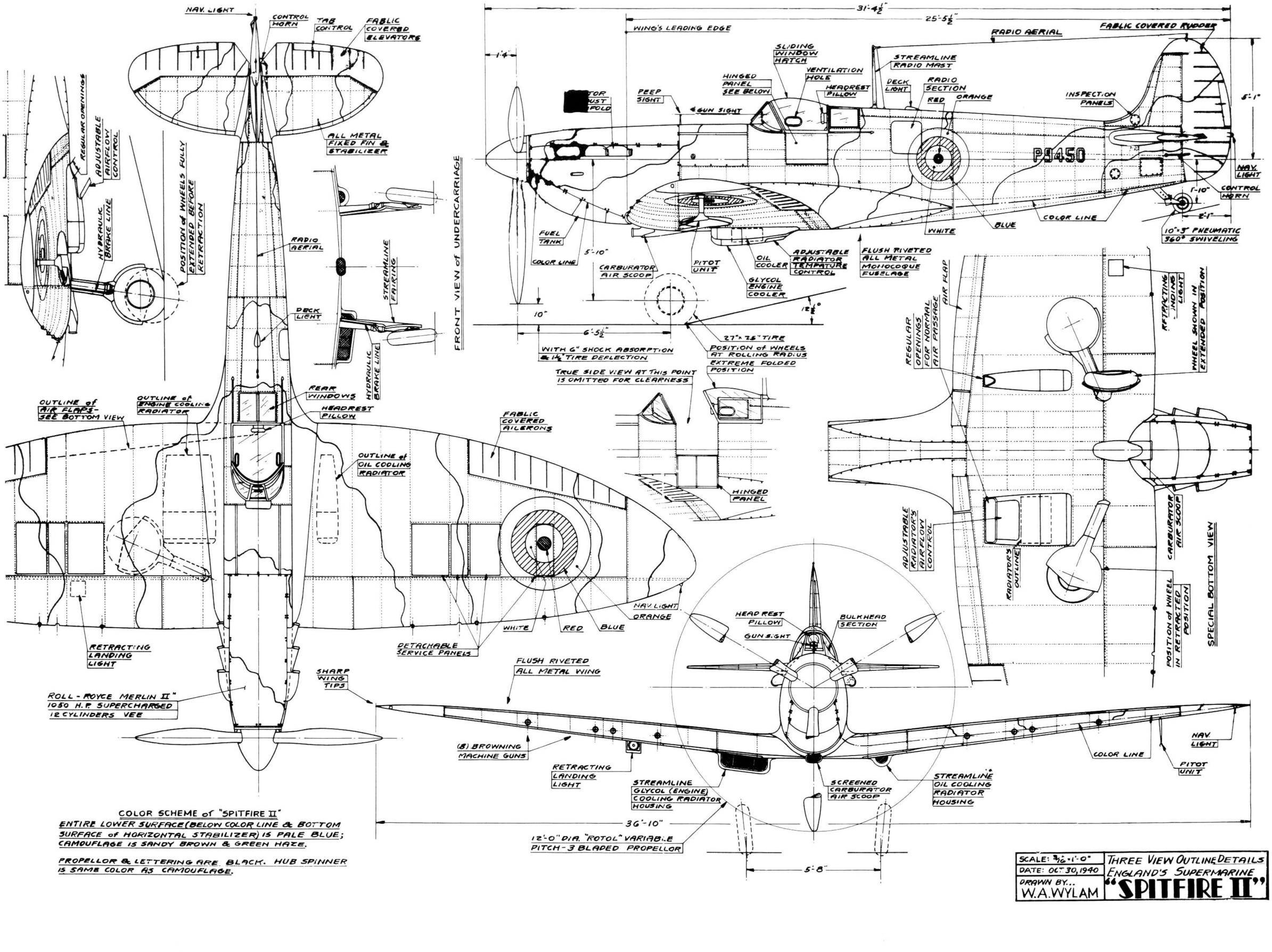

SIDE VIEW OF P-40-F WARHAWK (ROLL-ROYCE MERLIN)
WING'S LEADING EDGE
AIRLINE
DRAIN
FABLIC COVERED AILERONS-DURAL TABS
AMMUNITION SERVICE DOOR
ALL METAL WING
DETACHABLE MACHINE GUNS SERVICE PANEL
WING WALK
AIR FLAP (BOTTOM SURFACE)
METAL MONOCOQUE FUSELAGE
DETACHABLE PANELS
7'1"
8"
24 3/8"
31'7"
7'0"
22'6 5/8"
WING'S LEADING EDGE
BULLET PROOF WINDSHIELD
SLIDING WINDOW HATCH
GASOLINE TANK CAP
HEADREST PILLOW
RADIO MAST (NOT STANDARD)
MACHINE GUN'S ELECTRIC SIGHT
MACHINE GUN'S PEEP SIGHT
STREAMLINED AIR SCOOP
BAGGAGE DOOR
5'7"
1'7 1/2"
VENT & DRAIN-GAS TANK
STREAMLINE COWL
47"
12 1/2" x 3" PNEUMATIC TIRE
360° SWIVELING-STEERABLE
RETRACTED INTERNALLY
13 1/2"
RADIATOR OUTLINE
CHANGE OF CONTOUR
(SEE FRONT VIEW)
5'2 1/2"
6'4"
AUXILIARY DROPABLE
GASOLINE TANK
FOLDING COWLINGS
NORMAL LOAD
7"
10"
7'7 1/2"
FOLDING WHEEL COWL
13 1/4"
FLYING POSITION
(BEFORE RETRACTION)
GROUND LINE AT 7"
SHOCK ABSORPTION
WHEEL'S FACE
ROTATE 90° ON
ITS WAY UP INTO
WHEEL WELL
CAMERA GUN
WHEELWELL
AIR FLAP UNIT
BOTTOM VIEW-WING FILLET
DURAL TAB
SPECIAL
BOTTOM VIEW
FABLIC COVERED
ELEVATORS & FIN
ALL METAL FIXED
VERTICAL & HORIZONTAL
STABILIZERS
CHANGE OF CONTOUR
(SEE FRONT VIEW)
CONTROLLABLE COOLING GILLS
AUXILIARY GAS TANK
STREAMLINED WING BUTT
FOLDED WHEEL COWLS
DETACHABLE
SERVICE PANELS
WHEELS IN RETRACTED POSITION
OUTLINE OF STREAMLINED COWL
RETRACTED WHEEL
11'0" DIA. PROPELLOR
FLUSH RIVET
STRESSED SKIN LAP
FRONT VIEW OF "P-40-F"
WARHAWK
SIGNAL LIGHT
REAR VIEW MIRROR
RADIO AERIAL
BACKFACING EXHAUST PORTS
FRESH AIR INLET
CHANGE OF CONTOUR (SEE SIDE VIEW)
(6) .50 CAL. FIXED M-2
BROWNING WING GUNS
11'0" DIA. CURTISS ELECTRIC CONTROLLABLE
STEEL-3 BLADED PROPELLOR
ENGINE: ALLISON F-3R V-1710-39"
HERIAL CAMERA
FOLDING WHEEL COWLS
HYDRAULIC BRAKE LINE
30"x 10" SMOOTH CONTOUR
GLYCOL
RADIATORS
OIL COOLER
ANCHOR POST
8'2 1/8" THREAD
37'3 1/2" OVERALL SPAN
SCALE: 3/16" = 1'0"
DATE: SEPT. 1943
DRAWN BY... W. A. WYLAM
GENERAL ARRANGEMENT
CURTISS-WRIGHT "KITTYHAWK"
P-40D

"SPITFIRE II"

LAYOUT PLAN & DETAILS
ENGLAND'S SUPERMARINE

SCALE: 3/16" = 1'-0"
DATE: NOV. 5, 1940
DRAWN BY... W.A. WYLAM



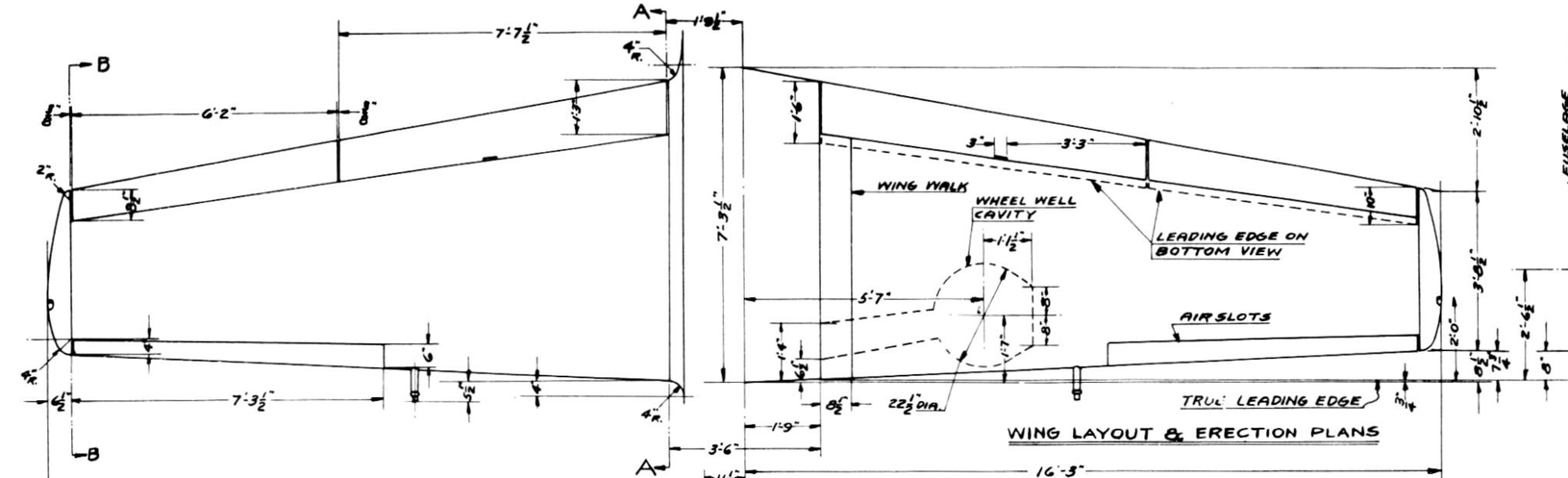


COLOR SCHEME of "SPITFIRE II"

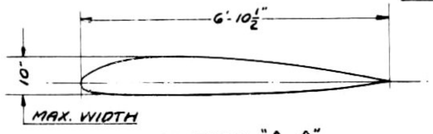
ENTIRE LOWER SURFACE (BELOW COLOR LINE & BOTTOM SURFACE of HORIZONTAL STABILIZER) IS PALE BLUE; CAMOUFLAGE IS SANDY BROWN & GREEN HAZE.

PROPELLOR & LETTERING ARE BLACK. HUB SPINNER IS SAME COLOR AS CAMOUFLAGE.

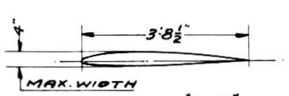
SCALE: 3/16"-1'-0"	THREE VIEW OUTLINE DETAILS
DATE: OCT 30, 1940	ENGLAND'S SUPERMARINE
DRAWN BY... W.A.WYLAM	"SPITFIRE II"



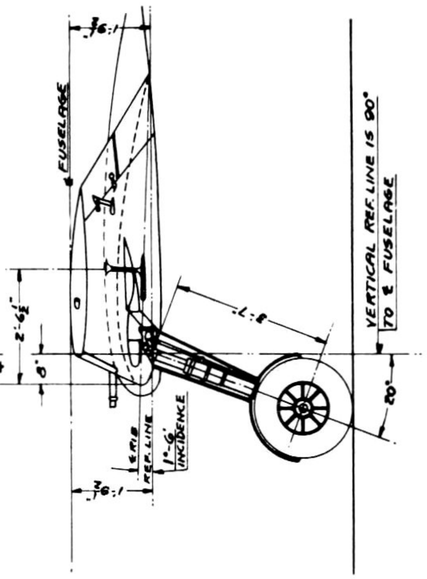
WING LAYOUT & ERECTION PLANS

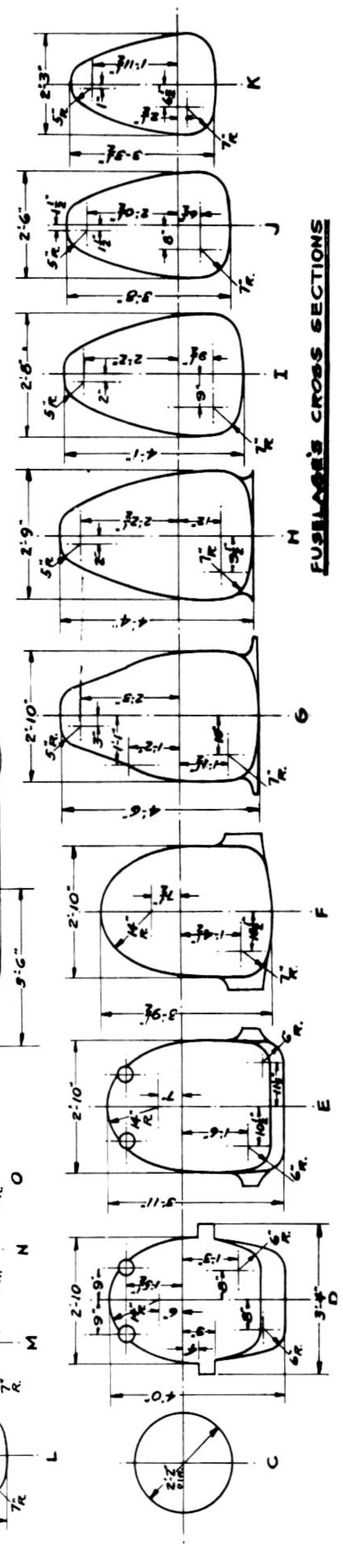


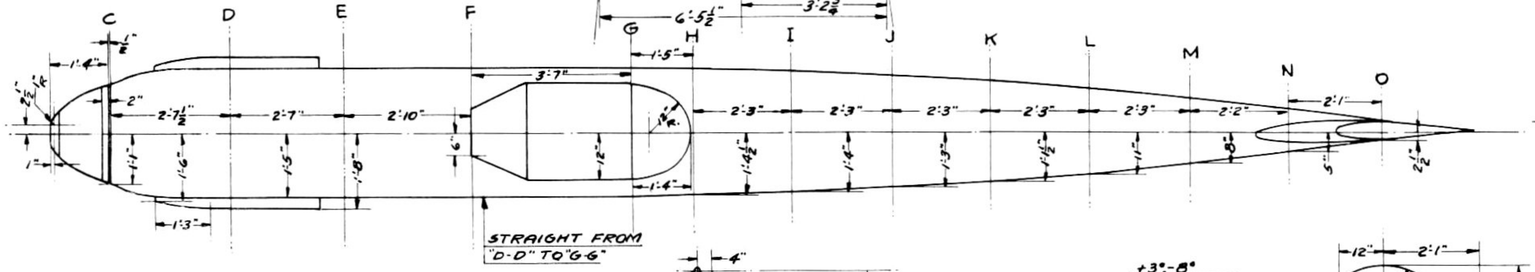
SECTION "A-A"

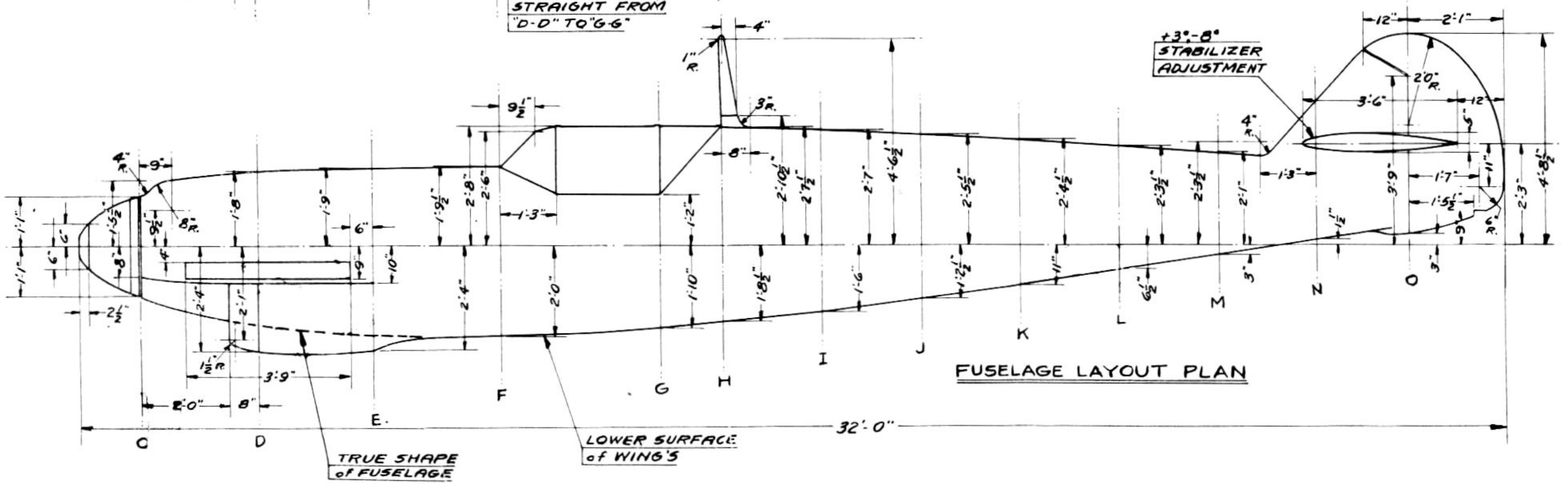


SECTION "B-B"

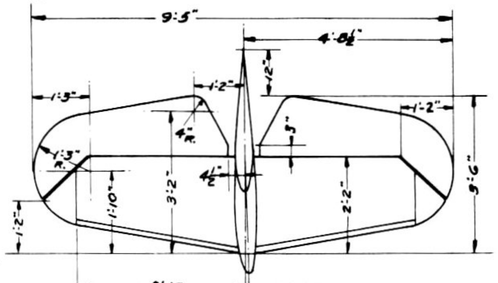






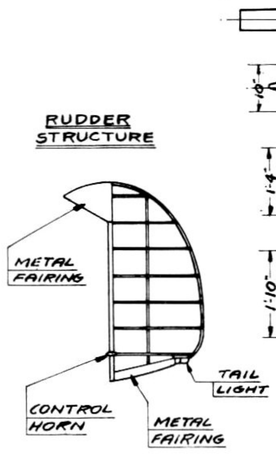


FUSELAGE LAYOUT PLAN



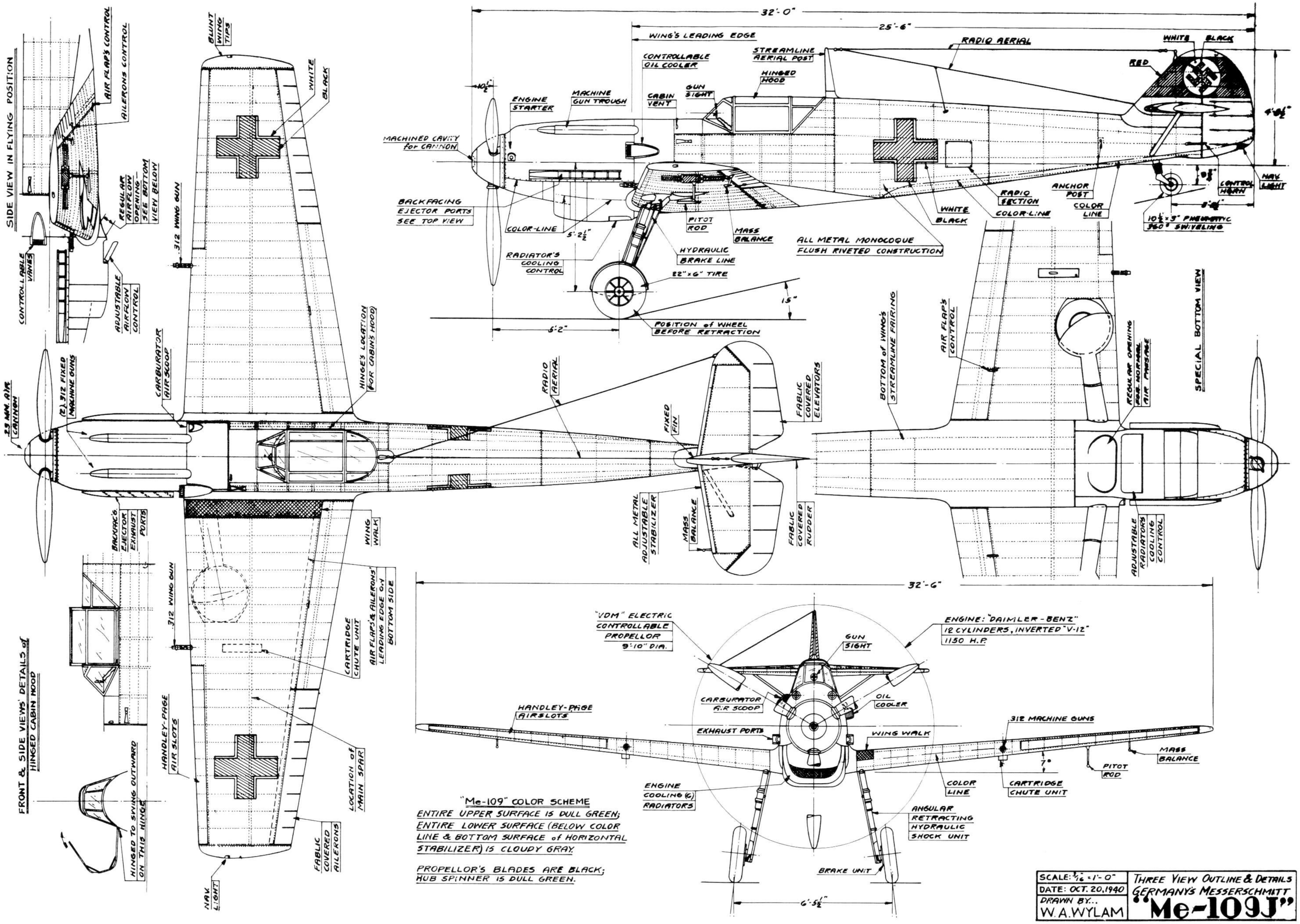
ELEVATOR STRUCTURE

HORIZONTAL STABILIZER'S LAYOUT PLAN



RUDDER STRUCTURE

SCALE: 3/16"=1'-0"	LAYOUT PLANS & DETAILS
DATE: OCT. 28, 1940	GERMANY'S MESSERSCHMITT
DRAWN BY... W.A.WYLAM	"Me-109J"



"Me-109" COLOR SCHEME

ENTIRE UPPER SURFACE IS DULL GREEN; ENTIRE LOWER SURFACE (BELOW COLOR LINE & BOTTOM SURFACE of HORIZONTAL STABILIZER) IS CLOUDY GRAY.

PROPELLOR'S BLADES ARE BLACK; HUB SPINNER IS DULL GREEN.

SCALE: 3/16 = 1'-0"	THREE VIEW OUTLINE & DETAILS GERMANY'S MESSERSCHMITT "Me-109J"
DATE: OCT. 20, 1940	
DRAWN BY... W.A.WYLAM	

AIR BOMBS

SCALE: 1/16" TO AN INCH

DRAWN WITH PERMISSION FROM U.S. ARMY VIA WAR DEPARTMENT.

DRAWN BY.. W.A.WYLAM

