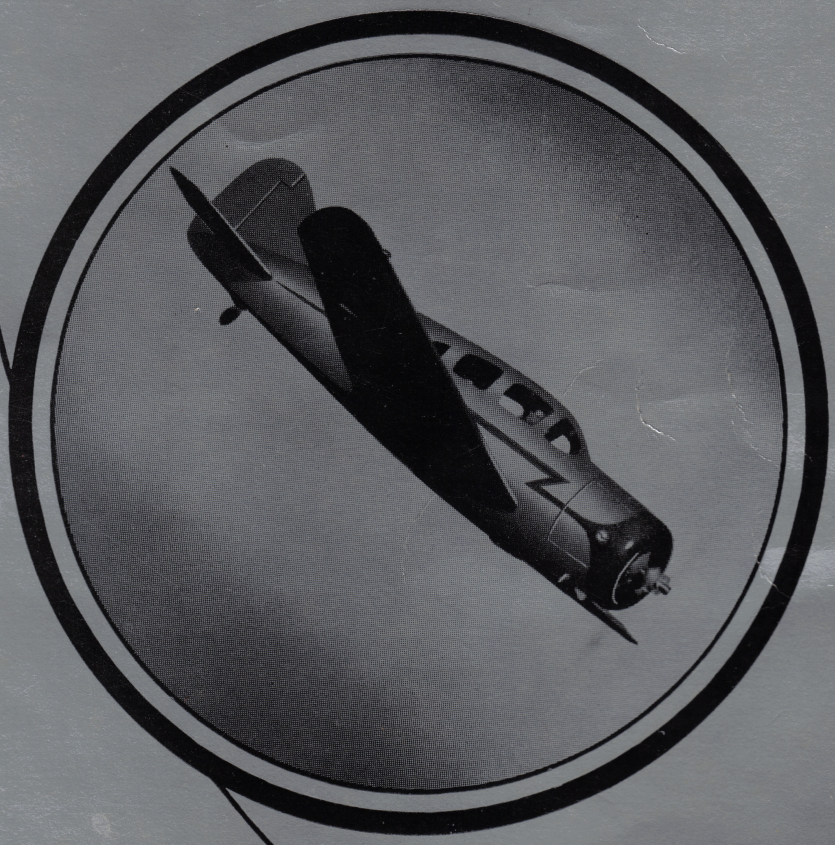
SPARTAN



# Executive

# SPARTAN MODEL 7W EXECUTIVE

FIVE PLACE COMMERCIAL AIRPLANE

A. T. C. NO. 628

SPARTAN AIRCRAFT COMPANY

TULSA, OKLAHOMA

U. S. A.

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# INTRODUCTION

In commercial aviation there has always been an unfilled gap; a field for airplanes that demands transport speed, comfort, all metal construction, reliability, beauty, and the quality that goes with fine things; a field that covers the flying needs of modern business executives.

With a view of filling this gap to the utmost requirements of the type, Spartan offers the Model 7W Executive, a five place, single engined, all metal low wing monoplane of outstanding merit. The Executive is truly an achievement of ruggedness combined with high performance and beautiful appointments.

The Executive is powered with a Pratt & Whitney Wasp Jr. SB Engine. This engine is one of the outstanding developments of Pratt & Whitney Aircraft and has long been recognized by Commercial Aviation as the leader in its field. The small overall diameter of this engine results in a fuselage of small cross section which not only contributes to the superior performance of the airplane, but also gives the pilot exceptionally good vision in the forward hemisphere as well. For many years Pratt & Whitney Engines have been known for their reliability; a trait that creates confidence for both the designer and the pilot.

The luxurious interior of the Executive is fabricated only from the finest materials offered to industry. The most experienced of craftsmen have contributed to making this airplane one of the foremost in interior design.

Probably one of the most outstanding features of the Executive is the basic structural design. It has an internal structure of steel tubing in both fuselage and wings in addition to regular bulkheads, stringers, and external skin. The all metal construction of the Executive insures its ability to withstand severe weather conditions without deterioration. The maintenance expense will be low in consequence. The structural strength is adequate to withstand all the loads incident in maneuvers for this type of airplane, and it meets throughout with the rigid strength requirements set forth by the Bureau of Airworthiness of the United States Department of Commerce.

# FLYING QUALITIES

In the design of the pilot's compartment, particular attention has been given to comfort and convenience. All controls have been located so as to be readily accessible and all instruments placed so they are easily read.

The pilot's vision in the forward hemisphere is practically unobstructed.

The arrangement of the pilot's controls provides for the conventional wheel type aileron control and rudder pedals. Controls are dual, the wheel being the throw-over type which provides for operation from either side, the rudder pedals on the right hand side are the folding type. The controls for the throttle, constant speed propeller, elevator tab, flaps and gasoline valve, are located on the vertical centerline of the airplane in easy reach of both persons in the front seats.

The stability and flying qualities of the Executive are excellent. The airplane can be flown hands off for indefinitely long periods of time. In ordinary maneuvers such as required for this type, the airplane responds rapidly and smoothly to the controls.

The rudder control is light and effective at all normal speeds and remains so down to the stalling point. Aileron control is also light at all normal speeds and actually remains effective after the stalling point has been reached, which is a very desirable feature.

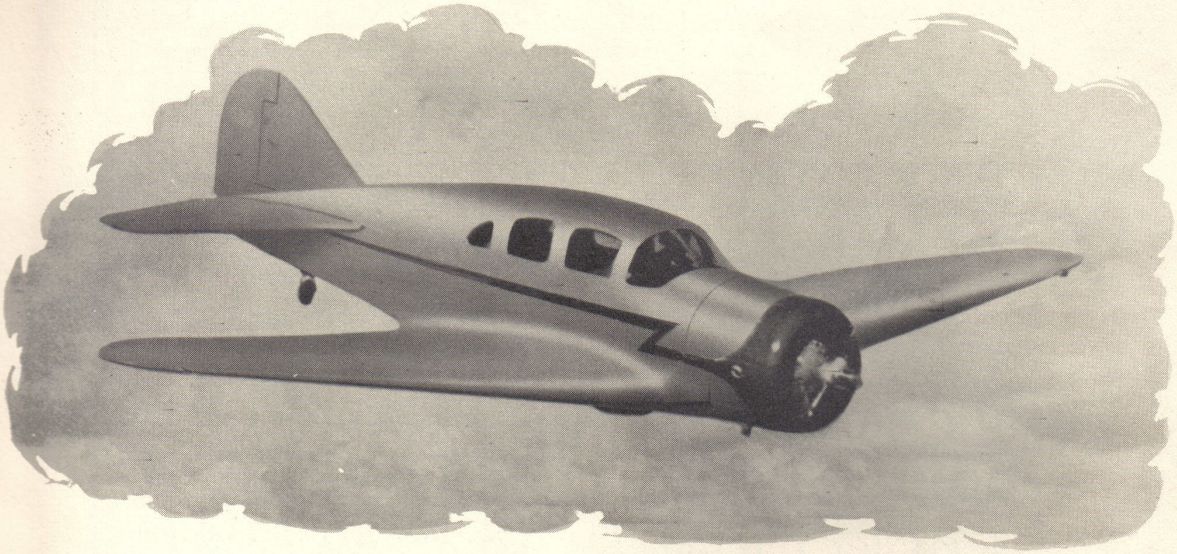
The airplane handles exceptionally well in a glide and in landing. With elevator tabs set for cruising speed, the control forces are normal and there is ample margin of control for effecting a three point landing. The vacuum operated wing and center flaps are effected by merely pushing two levers on the instrument panel. These levers are located side by side, and so arranged that both may be operated by one movement of the hand. Operation of the flaps for landing has no adverse effect on the control of the airplane. The landing gear is retracted and extended by electrical operation, and an emergency auxiliary hand crank is provided. The shock absorbing qualities of the landing gear are such that there is no tendency to bounce on landing.

Due to the efficient brakes and free swivelling tail wheel, the landing run is exceptionally short and the airplane can be maneuvered on the ground, or taxied, with ease. It is possible to make a 180-degree turn in little more than the length of the airplane. In addition to having ample rudder control, the landing gear has exceptionally wide tread, which lends greater safety when landing in a cross wind or on a rough field. The landing gear is sufficiently strong to withstand the most severe landing conditions encountered in service, since it has been designed and

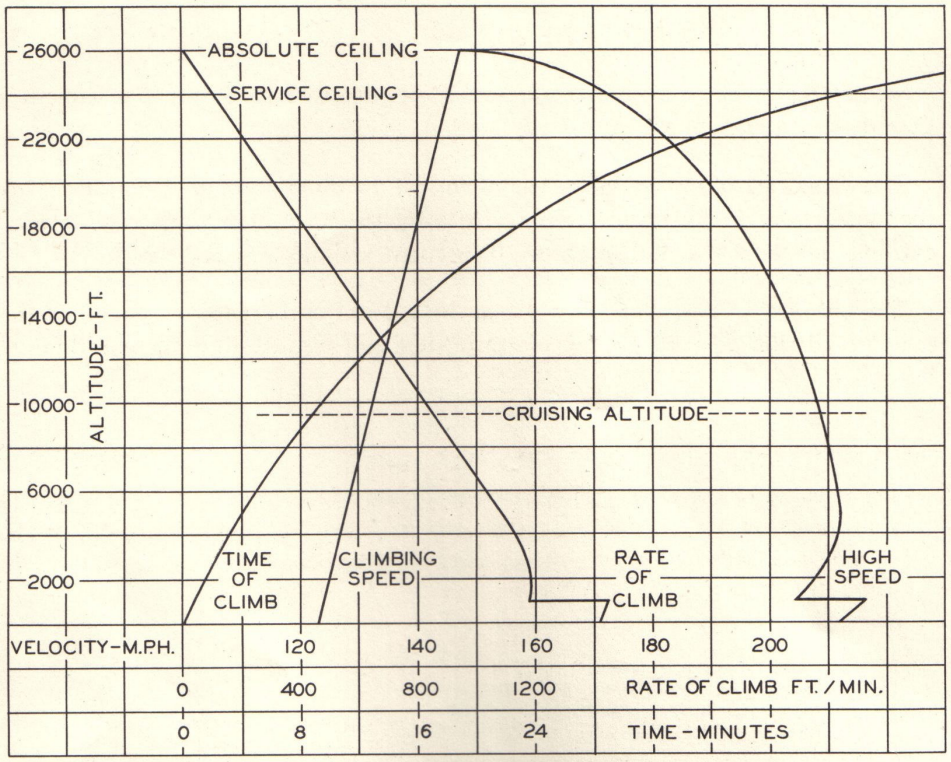
constructed to meet the rigid requirements of the United States Department of Commerce, Bureau of Airworthiness Section.

The Executive has been flight tested for all required loading conditions. Tests conducted through a range of center of gravity travel, from extreme nose heavy to extreme tail heavy condition, proved excellent stability characteristics.

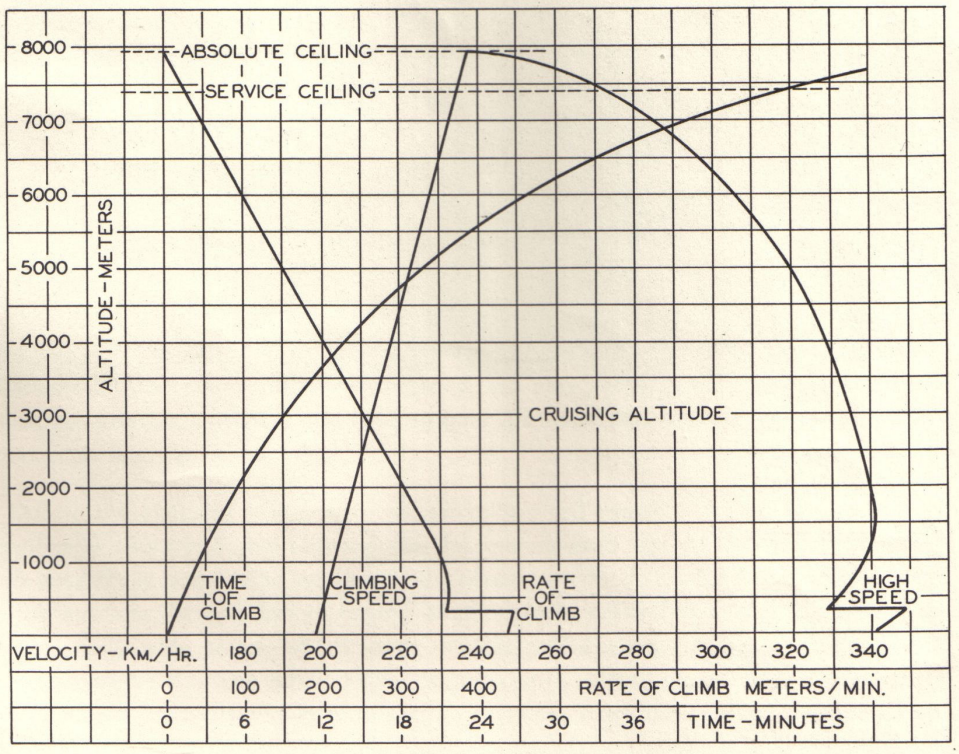
The absence of so-called "tricky" controls, and the presence of great structural strength should impart a feeling of confidence and security to those who fly in the Executive.



# ALTITUDE PERFORMANCE




U.S. STANDARD



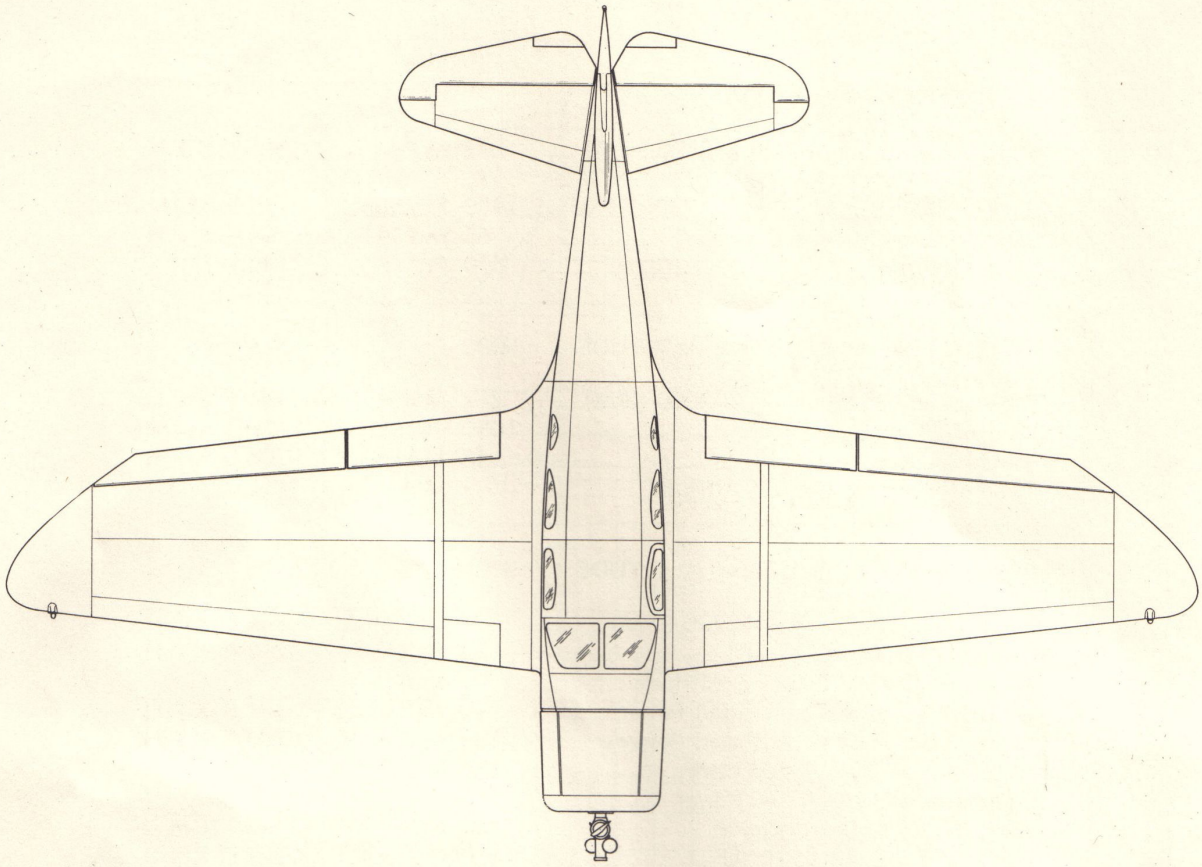

METRIC STANDARD

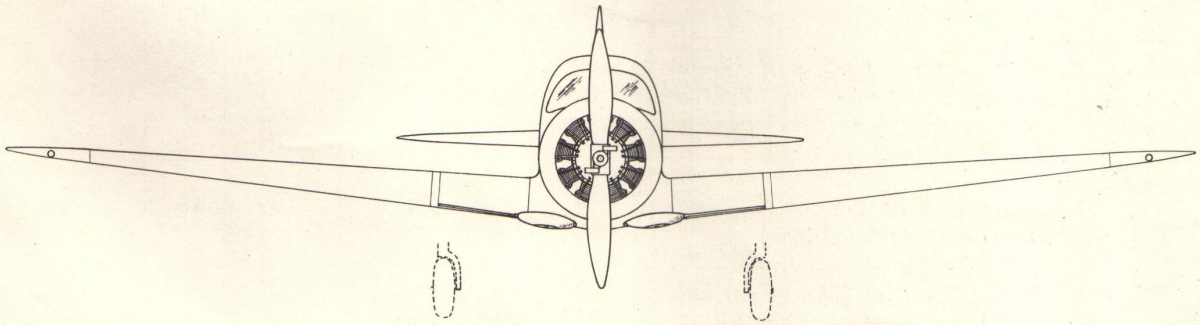
# GUARANTEED PERFORMANCE

| | U. S. Standard | Metric Standard |
|---|---|---|
| **PERFORMANCE AT SEA LEVEL** | | |
| High Speed (33½ In. Hg.—2300 RPM) | 212 M.P.H. | 341.1 K.P.H. |
| Angle of Climb | 7½° | |
| Rate of Climb (36½ In. Hg.—2300 RPM) | 1430 Ft./Min. | 435.9 M./Min. |
| Landing Speed (Flaps Down) | 65 M.P.H. | 104.6 K.P.H. |
| Take Off Run | 600 Ft. | 182.9 M. |
| **PERFORMANCE AT CRITICAL ALTITUDE** | 5000 Ft. | 1524.0 M. |
| High Speed (33½ In. Hg.—2200 RPM) | 212 M.P.H. | 341.1 K.P.H. |
| Rate of Climb | 1080 Ft./Min. | 329.2 M./Min. |
| Climbing Speed | 128 M.P.H. | 206.0 K.P.H. |
| Time of Climb to Critical Altitude | 4 Min. | |
| **PERFORMANCE AT CRUISING ALTITUDE** | 9600 Ft. | 2926.1 M. |
| High Speed (28 In. Hg.—2200 RPM) | 208 M.P.H. | 334.7 K.P.H. |
| Climbing Speed | 132 M.P.H. | 212.4 K.P.H. |
| Time of Climb to Cruising Altitude | 9 Min. | |
| Cruising Speed at 75% Rated Power | 200 M.P.H. | 321.8 K.P.H. |
| Cruising Speed at 65% Rated Power | 190 M.P.H. | 305.7 K.P.H. |
| Endurance at 75% Rated Power | 4½ Hrs. | |
| Endurance at 65% Rated Power | 5½ Hrs. | |
| Range at 75% Rated Power | 900 Miles | 1448.1 Km. |
| Range at 65% Rated Power | 1000 Miles | 1609.0 Km. |
| **SERVICE CEILING** | 24000 Ft. | 7315.2 M. |
| **ABSOLUTE CEILING** | 26000 Ft. | 7924.8 M. |

The above performance figures as determined by the following conditions are guaranteed within 3% for speed and 6% for all other items.

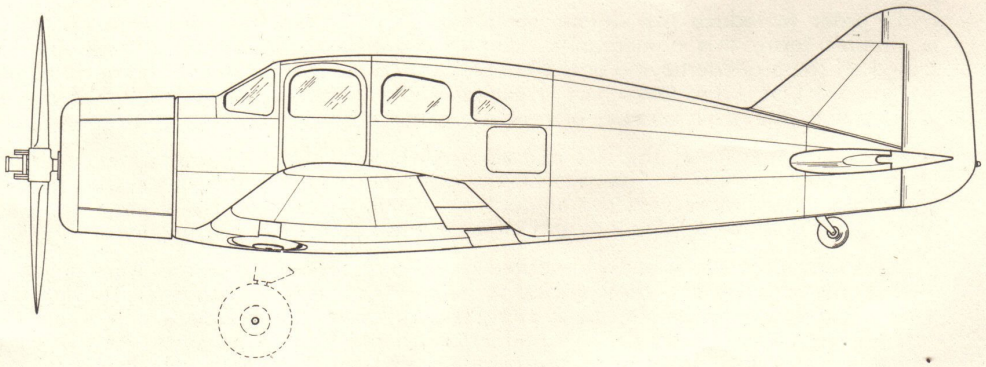
| | | |
|---|---|---|
| Normal Gross Weight | 4400 Lbs. | 1995.8 Kg. |
| Engine, Pratt & Whitney— Model SB—Wasp Jr. | | |
| Rated Power at Critical Altitude (33½ In. Hg.—2200 RPM) | 400 H.P. | |
| Octane Value of Fuel (Normal) | 80 Octane | |
| Octane Value of Fuel (Take Off) | 87 Octane | |
| Maximum Fuel Capacity | 112 Gal. | 432.9 Liters |





## DESIGN CHARACTERISTICS
## SPARTAN MODEL 7W
## "EXECUTIVE"

| | U. S. STANDARD | METRIC STANDARD |
|---|---|---|
| OVERALL SPAN | 39 FT. | 11.89 M. |
| AIRFOIL SECTION AT ROOT (CENTER SECTION) 108" CHORD | N.A.C.A. 2418 | |
| AIRFOIL SECTION AT TIP (THEORETICAL) 54" CHORD | N.A.C.A. 2406 | |
| WING AREA (INCLUDING AILERONS) | 250 SQ.FT. | 23.23 SQ.M. |
| INCIDENCE | 1° 20' | |
| DIHEDRAL (CHORD PLANE) | 5° 30' | |
| MEAN AERODYNAMIC CHORD | 79.3 IN. | 201.4 CM. |
| AILERON AREA | 22.18 SQ.FT. | 2.061 SQ.M. |
| FIN AREA | 9.74 SQ.FT. | .905 SQ.M. |
| RUDDER AREA | 10.02 SQ.FT. | .931 SQ.M. |
| STABILIZER AREA | 21.84 SQ.FT. | 2.029 SQ.M. |
| ELEVATOR AREA | 16.80 SQ.FT. | 1.561 SQ.M. |
| OVERALL HEIGHT (TAIL DOWN) | 8 FT. | 2.44 M. |
| OVERALL LENGTH | 26'-10" | 8.18 M. |
| ENGINE - PRATT & WHITNEY WASP JR. SB. RATED POWER AT 2200 R.P.M. AT 5000 FT. (1524 M.) | 400 HP. | 405.6 CV. |
| PROPELLER DIAMETER | 8'-6" | 2.59 M. |
| WING LOADING | 17.6 LB/SQ.FT. | 85.93 KG/SQ.M. |
| POWER LOADING | 11.0 LB./HP. | 4.91 KG./CV. |
| TREAD OF LANDING GEAR | 10'-3⅞" | 3.145 M. |
| SIZE OF WHEELS (GOODYEAR) | 27 IN. | 686 CM. |



# WEIGHT DISTRIBUTION

The distributions listed below are arranged so as to be inside of the approved center of gravity limits.

| | U. S. Standard | Metric Standard |
|---|---|---|
| Weight Empty (Standard Equipment Only) | 2987 Lbs. | 1355 Kg. |
| Allowable Useful Load | 1413 | 641 |
| Gross Weight | 4400 | 1996 |
| Useful Load Distributions: | | |
| 5 Persons | 850 | 385.6 |
| *Baggage | 100 | 45.4 |
| Fuel—68 U. S. Gallons (257.4 Liters) | 408 | 185.0 |
| Oil—7 U. S. Gallons (26.5 Liters) | 53 | 24.0 |
| | 1411 | 640.0 |
| 4 Persons | 680 | 308.4 |
| Baggage | 100 | 45.4 |
| Fuel—96 U. S. Gallons (372.3 Liters) | 576 | 261.3 |
| Oil—7 U. S. Gallons (26.5 Liters) | 53 | 24.0 |
| | 1409 | 639.1 |
| 3 Persons | 510 | 231.3 |
| Baggage | 100 | 45.4 |
| Fuel—112 U. S. Gallons (424 Liters) | 672 | 304.8 |
| Oil—7 U. S. Gallons (26.5 Liters) | 53 | 24.0 |
| | 1335 | 605.5 |

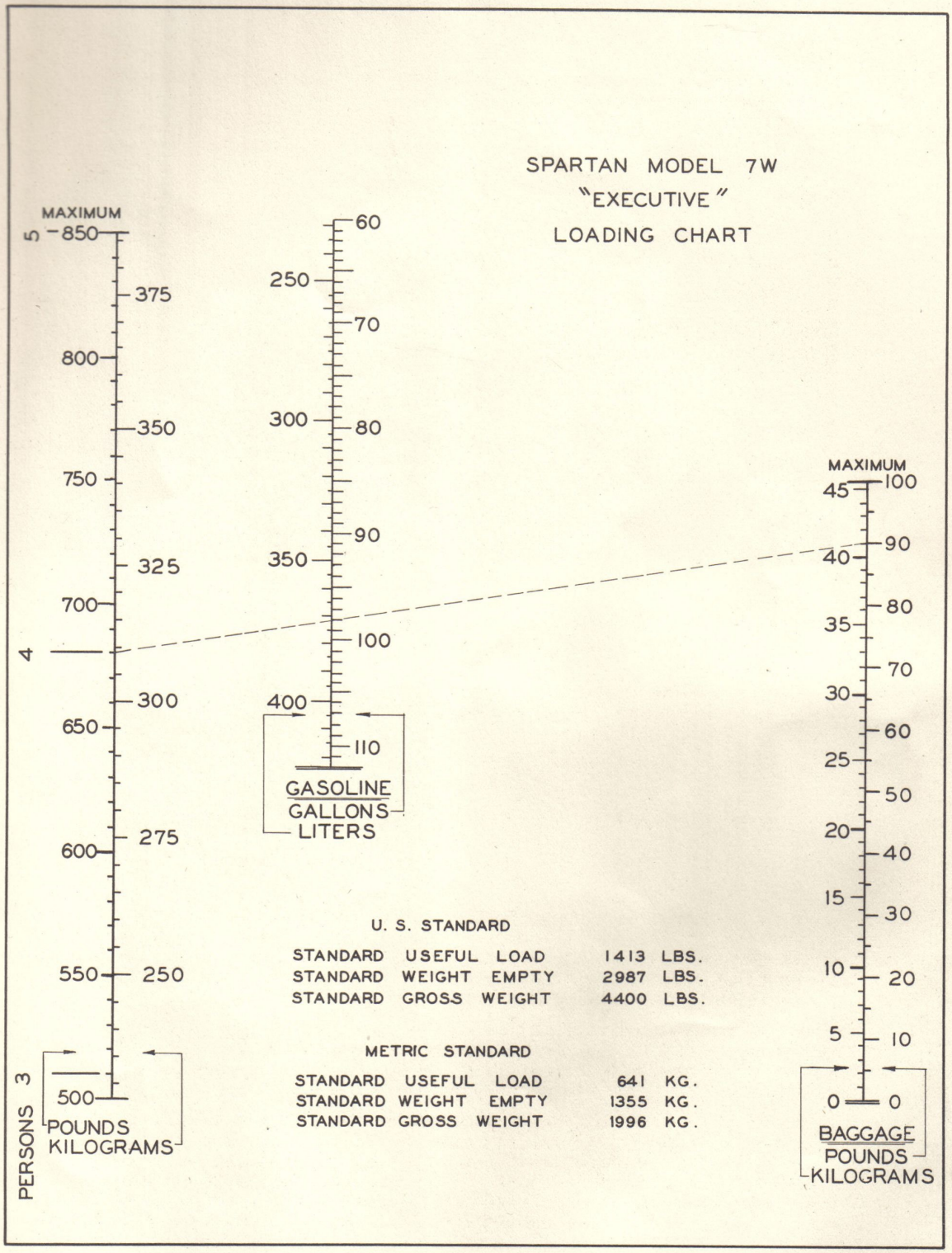
*—The maximum approved baggage limit is 100 Lbs. (45.4 Kg.)

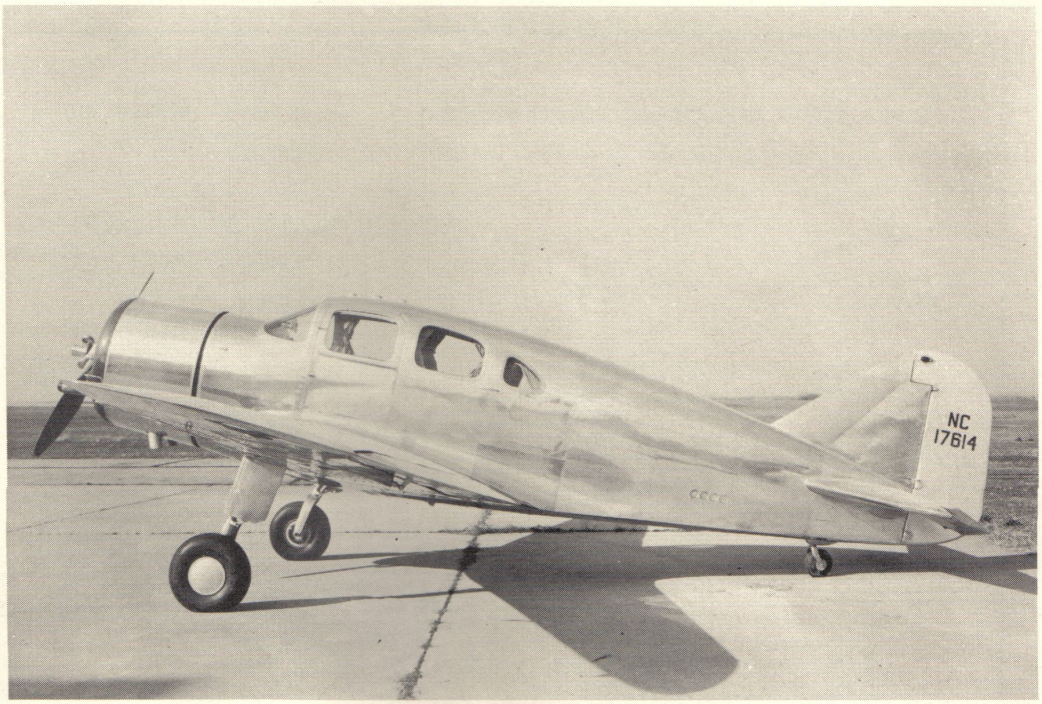
# EXPLANATION OF LOADING CHART
# SPARTAN MODEL 7W EXECUTIVE

In order to reduce the various combinations of distributing the useful loads to a simpler form, this nomographic loading chart has been prepared. The chart is based on the airplane having only the standard equipment as shown in the Standard Equipment List. From this chart it is possible to quickly see how much fuel can be carried with the given number of people and pounds or kilograms of baggage.

The vertical scale at the left is graduated in pounds and kilograms and lists from 3 to 5 people inclusive. The vertical scale in the center is graduated into gallons and liters which represents the amount of fuel to be carried. The vertical scale on the right is graduated in pounds and kilograms and represents the amount of baggage.

A sample problem would be worked as follows: Assume 4 people were going to ride in the airplane and they wished to carry 90 pounds of baggage. To find the amount of fuel permissible, lay a straight-edge from the graduation at 4 on the left hand scale across to the 90 graduation on the right hand scale. At the point where the straight-edge crosses the center scale read 98 gallons, which will be the correct amount of fuel to carry and still stay within the approved center of gravity limits.


SPARTAN MODEL 7W
"EXECUTIVE"
LOADING CHART
MAXIMUM
5
4
3
PERSONS
850
800
750
700
650
600
550
500
375
350
325
300
275
250
POUNDS
KILOGRAMS
60
250
70
300
80
350
90
400
100
110
GASOLINE
GALLONS
LITERS
MAXIMUM
45
40
35
30
25
20
15
10
5
0
100
90
80
70
60
50
40
30
20
10
0
BAGGAGE
POUNDS
KILOGRAMS
U. S. STANDARD
STANDARD USEFUL LOAD 1413 LBS.
STANDARD WEIGHT EMPTY 2987 LBS.
STANDARD GROSS WEIGHT 4400 LBS.
METRIC STANDARD
STANDARD USEFUL LOAD 641 KG.
STANDARD WEIGHT EMPTY 1355 KG.
STANDARD GROSS WEIGHT 1996 KG.


NC
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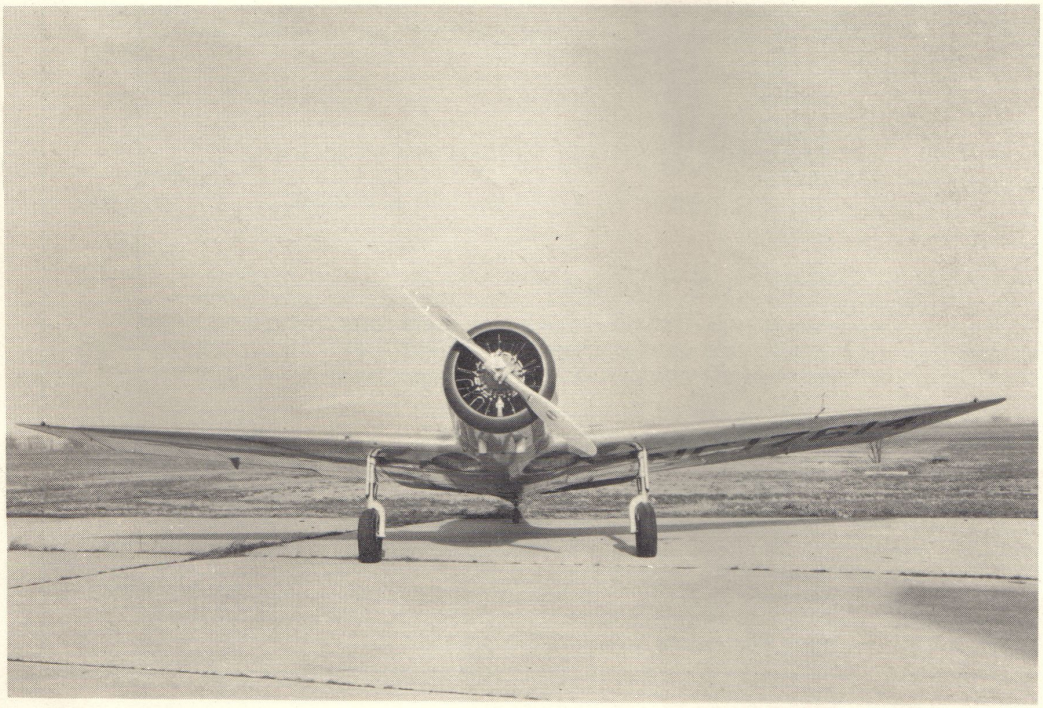
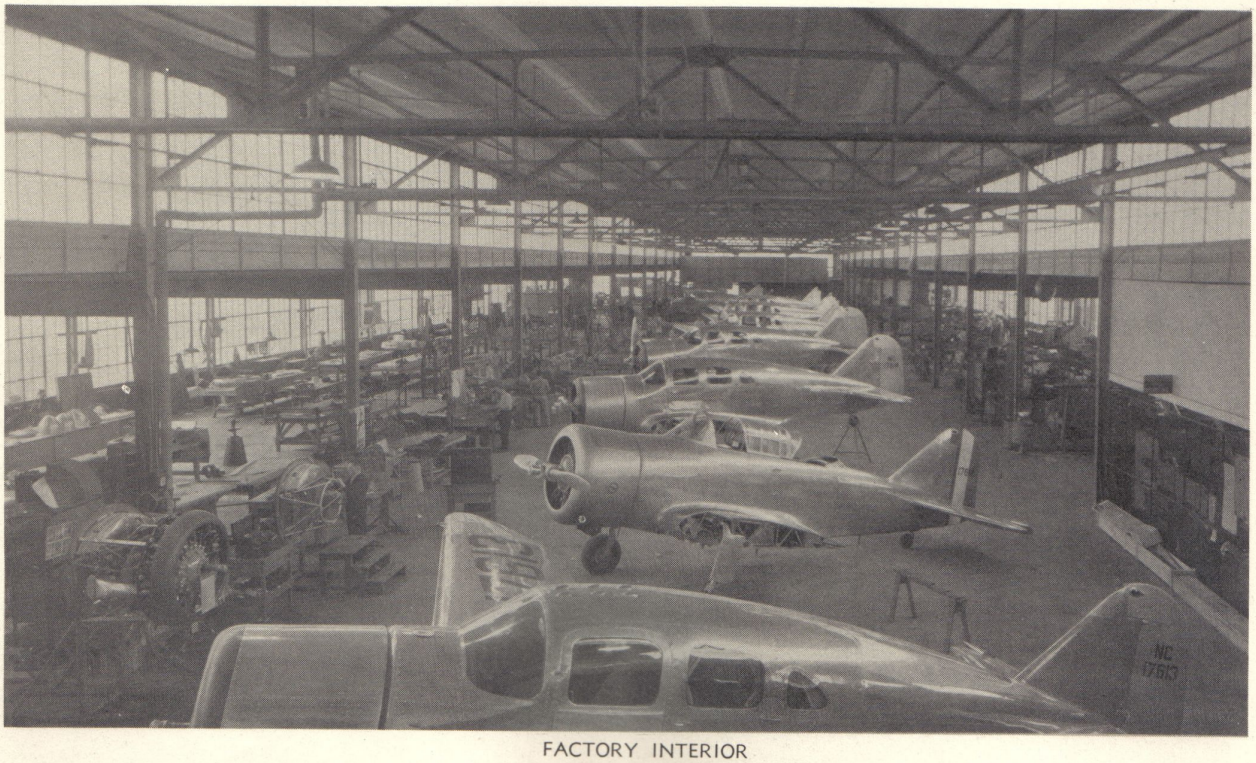




FACTORY INTERIOR

## SPARTAN AIRCRAFT

The Spartan organization was founded in 1927. The manufacturing field of commercial aviation was entered only after a long period of time was spent in developing a design that would meet the market demands of that day. This design was in process long before the general public had begun to recognize aircraft as a commercial factor.

The first production airplane was the well known model C-3. Highly recognized for its excellent flying characteristics and outstanding quality for that period, this three place open biplane soon became the favorite in aviation circles. While most of the similar type airplanes of that day were using war surplus water-cooled engines, Spartans were equipped with the more advanced air-cooled radial type.

The next model to be produced, was a newer version of the C-3, known as the C3-165. This airplane, an improved design heavily endowed by an inheritance of good points from the older model, was soon relaying to the ever-gaining aviation industry the ability of Spartan to build fine aircraft. The C3-225, a similar ship with a more powerful engine was offered at the same time. It, too, enjoyed the popularity of its sistercraft.

Those who flew, then wanted to ride inside a comfortable cabin that had good upholstery and warmth in the winter, protected from the elements that had made travel in open ships so unpleasant. Realizing this trend, Spartan introduced the C4-225, a four place high-wing cabin monoplane. Along with this creation, Spartan produced the C5-300 and C5-301. These were similar in design except they carried five people and had more horsepower.

Two other models produced during the interim were low-wing monoplanes for training purposes. The C2-60 was a light side-by-side ship for primary flights. The C2-120, a larger trainer of the tandem type, was for the more advanced type of flying.

Today Spartan offers the Model 7W Executive, an airplane that carries on the traditions of the Spartans. Already basking in the limelight of better aviation circles, the Executive comes forward to meet the needs of those who demand a finer airplane; namely, the business executive.


## SPARTAN FACTORY

The Spartan Factory, located at Tulsa, Oklahoma, is an up-to-date structure of brick and steel. Comparatively new, it is known as one of the finest airplane manufacturing plants in the Middle West.

It contains all of the facilities necessary for the manufacture of airplanes. The shop is laid out in separate departments. The center aisle is the final assembly line and on either side are located the machine, sheet metal, welding, pattern and upholstery departments. The primary fuselage and wing departments are in the rear, where these larger units start on their way through the final assembly line. The paint room is in a separate building having a connecting passageway to the main factory. The raw material stock room and the finished parts stores are conveniently located for accessibility to the rest of the departments. The inspection department is adjacent to the finished parts stores so that parts can easily be stored right after they have passed final inspection. The inspection department contains such testing equipment as the Rhiele testing machine and the Rockwell hardness tester.

The engineering department occupies the entire second floor in the front part of the building. A competent staff of aeronautical engineers, draftsmen and clerks are maintained. Realizing the important part that engineering plays in aircraft manufacturing, Spartan employs only highly trained men to carry on design and research work.

The main offices, located on the main floor in the front part of the building, are for the general manager, sales manager, shop superintendent, purchasing agent, production control and general accounting.

In general, the Spartan Factory presents a complete picture as a manufacturing unit. It is strategically located, being adjacent to both the Tulsa Municipal Airport and a railroad, which means that finished airplanes can either be flown away or loaded directly for shipment by rail.

# DETAILED DESCRIPTION

**General:**

The Spartan Model 7W Executive Airplane is a five-place, single-engine, low-wing cantilever monoplane. The steel tubing internal structure, and metal skin type of construction, allows ruggedness and clean design. Advanced features such as vacuum controlled wing flaps, retracting landing gear and other modern devices, serve to make the Executive an outstanding airplane of its type.

The airplane normally has capacity for 112 U. S. gallons (424 Liters) of fuel and 7 U. S. gallons (26.5 Liters) of oil. Provision can be made at additional cost, however, for a fuel capacity of 148 U. S. gallons (560 Liters) and an oil capacity of 9 U. S. gallons (34 Liters), which will increase the range of the airplane. Many other items of additional equipment are available and are listed under "Special Equipment."

**Wings:**

The wings are full cantilever, metal skin covered, and attach directly to the wing stub which is an integral part of the fuselage structure. The basic structure of the wing is a triangular steel tubing beam, or spar, consisting of two upper chord members, a lower chord member, cross and diagonal members. All tubing is heat treated to 125,000 pounds per square inch tensile strength. Large, tapered bolts are used at the wing spar attachment to the fuselage wing stub structure. Wing skin is attached to the fuselage wing stub skin by means of machine screws and stop nuts. In addition to the steel tube structure, "J" section stringers, ribs having channel section capstrips, and an external metal skin are used to make up the assembly. The wing tips are attached by machine screws and stop nuts which facilitates removal of the tips for inspection or replacement. Inspection doors are provided at all necessary points.

**Flaps:**

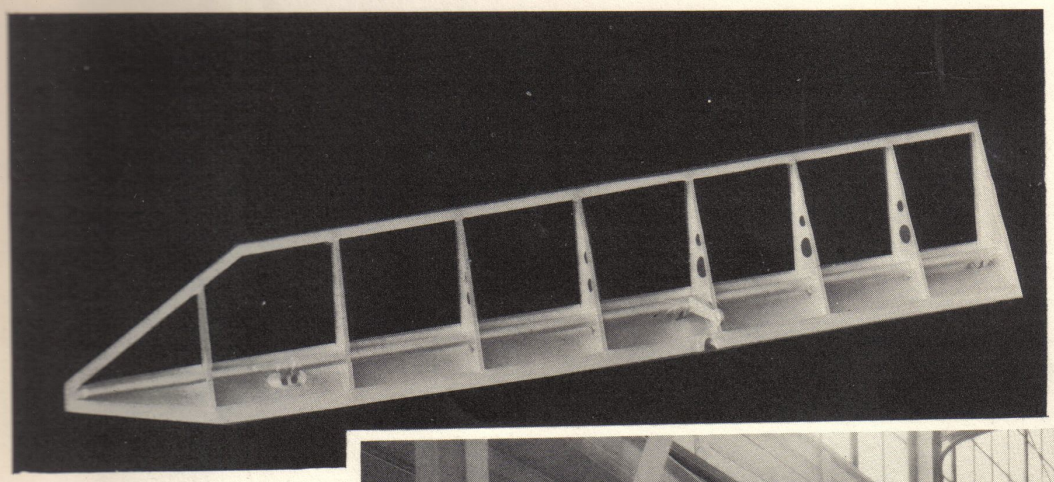
For facilitating the approach to a landing and to reduce the landing speed, vacuum-operated flaps are used. The flaps are built in three units. There are two outboard flaps, extending from the ailerons inboard to the fuselage, and a center flap covering the fuselage portion of the wing. As occasion demands, the flap units can be used individually or together.

**Ailerons:**

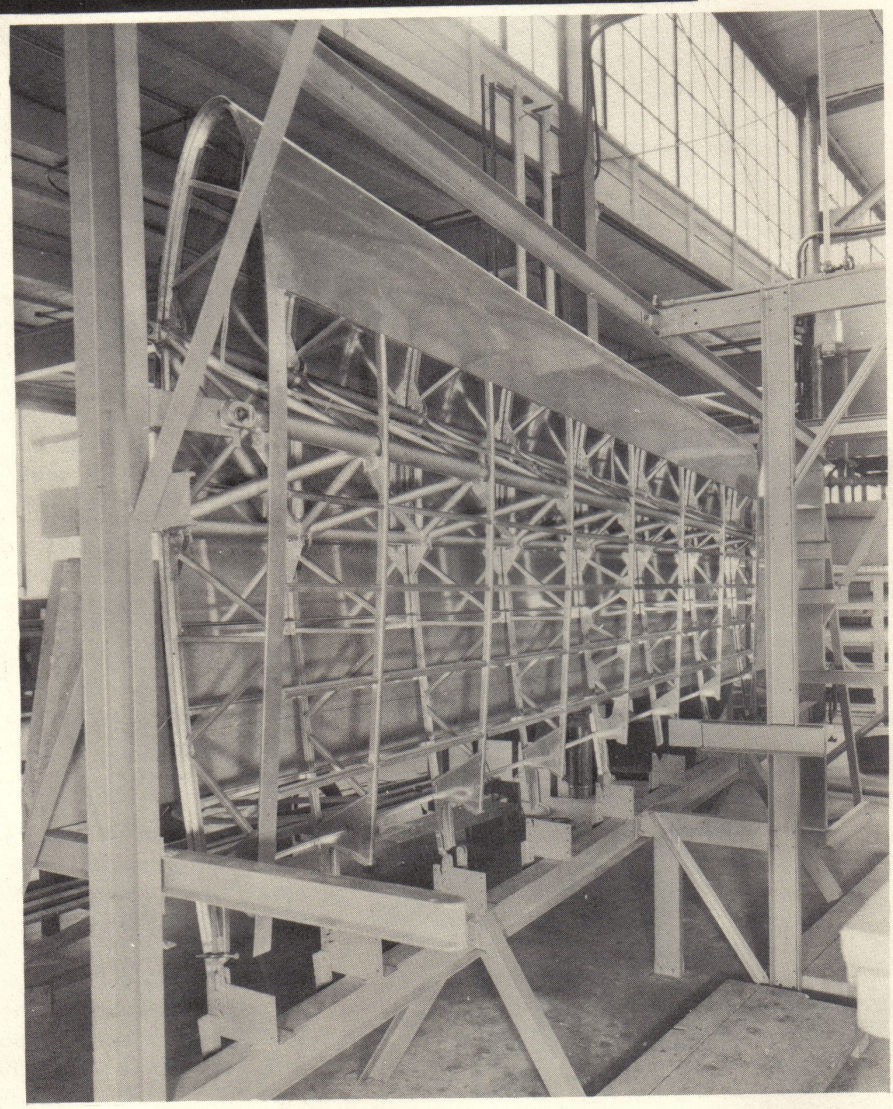
The ailerons are cloth covered. The frame consists of aluminum alloy ribs fabricated to a steel-tube main spar, and an aluminum alloy leading and trailing edge. They are aerodynamically and statically balanced and are controlled by push and pull tubes, actuated from bell cranks inside of the wing.

**Tail Surfaces:**

The fixed tail surfaces, both fin and stabilizer, are full cantilever construction rigidly fixed to the fuselage. The structure is of the multi-cellular, monocoque type fabricated from aluminum alloy. These surfaces are attached to the fuselage by



AILERON
STRUCTURE



WING STRUCTURE

an angle section, the units being securely riveted together. The stabilizer tips are readily removable which facilitates inspection and replacement.

The movable tail surfaces, rudder and elevators, consist of an aluminum alloy frame having a steel-tube spar and covered with fabric similar to the aileron construction. The rudder is dynamically balanced and the elevator is statically balanced. Both surfaces are aerodynamically balanced.

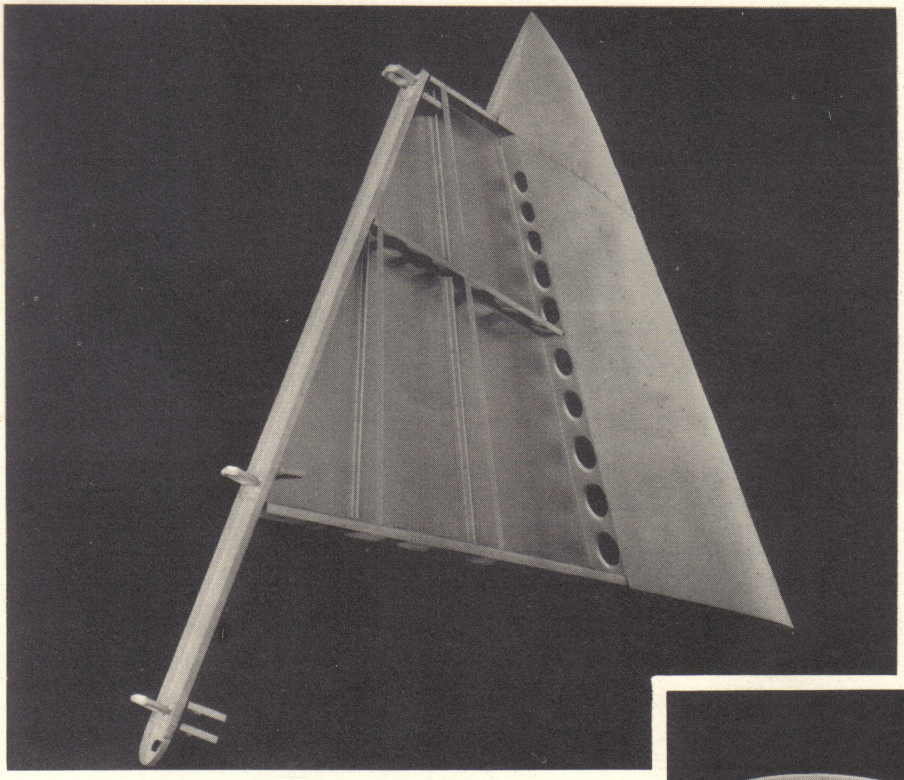
**Fuselage:**

The fuselage structure, like the wing, is composed of a basic steel tubing truss, aluminum alloy bulkheads, stringers and external skin. The steel tubing used in the basic structure is heat treated to 125,000 pounds per square inch tensile strength. To this structure are attached the bulkheads, landing gear chassis, tail wheel, seat supports, controls, engine and other important units of the airplane. The stringers are of the channel type, running lengthwise of the airplane and are continuous through the bulkheads. The bulkheads are mostly of the channel type except at the main cabin section where heavy "H" sections are used. The cabin door is between two of these sections. The wing stub is an integral part of the fuselage. The landing gear wheel wells, which house the wheels in the retracted position, are located on the bottom side of the wing stub. The landing gear shock strut well is also in this section and is arranged so that in the retracted position the shock-strut fairing is flush with the skin surface. Throughout the shell structure, heat-treated aluminum alloy rivets are used together with Alclad aluminum alloy material, which has a protective coating applied before being assembled. Ample inspection doors and electrical junction boxes are provided at all necessary points. Fuel tanks in the fuselage may be taken out through large removable panels provided for this purpose. The firewall is made from stainless steel.

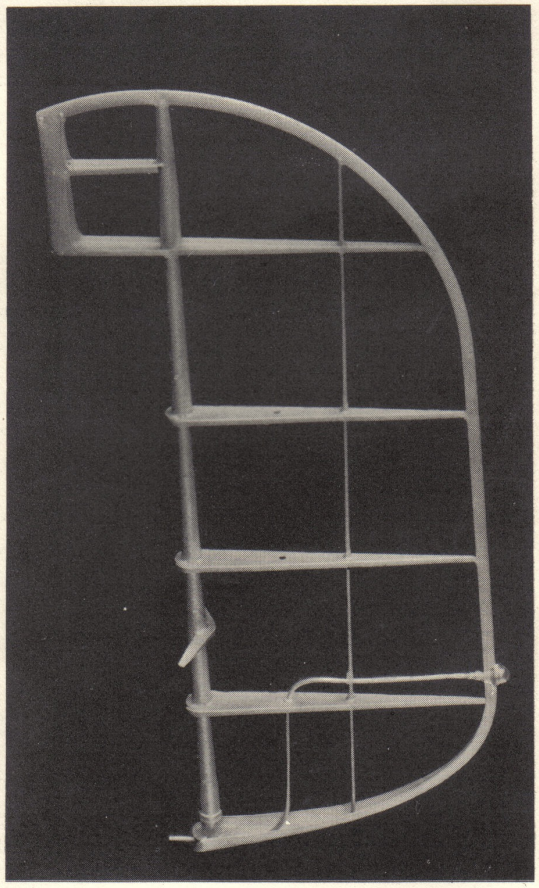
The steel tubing structure is welded together as a unit and then assembled with the shell structure in a master jig thus assuring accurate and permanent alignment of component parts.

**Landing Gear:**

The main landing gear is a completely retractable, mechanically operated, single oleo strut, full cantilever type. The gear is retracted by swinging the wheels and oleo struts inboard into the leading edge of the wing stub. The operating mechanism is of the non-reversable type, the wheels being locked in either the up or down position due to the "past center" feature of the linkage. Side load is taken through the same linkage used for extension and retraction. The power supply for retraction is an Eclipse Y 150 electric motor which operates off of the airplane's 12-volt Exide battery. The control switch is located on the vertical centerline of the instrument panel. To retract the gear, the switch is thrown into the up position and to extend the gear, the switch is thrown into the down position. Limit and indicator switches are located at the main gear boxes and operated by an arm that is connected to the gear shaft. Indicator lights on the instrument panel show the retracted or extended position of both left and right wheels. The two upper red lights are on when the wheels are retracted, the two lower green lights are on when the wheels are extended. An additional amber light in the center of this group is



FIN STRUCTURE



RUDDER STRUCTURE

on while the operating motor is running. A warning horn is provided which goes into operation if the pilot closes the throttle without extending the gear. This device is to warn the pilot in case he should try to come in for a landing and forget to extend the wheels.

The tires used are size 8.50 x 10 and tubes are of the puncture proof type. The wheels are Goodyear 7.50 x 10 which have internal hydraulically operated brakes.

A parking brake is provided at the right hand side of the control column and is easily accessible to either of the persons in the front seats.

The tail wheel unit is attached to the fuselage steel structure. An oleo shock-absorbing strut, which is similar in operation to the main landing gear absorbing strut, is provided. The tire used is a ten-inch streamline. The tail wheel is full swiveling and has a centering spring for alignment during flight.

**Engine Installation:**

Very particular attention has been paid to the installation of the engine, realizing the fact that each integral part must be carefully installed to insure proper functioning throughout the system as a whole.

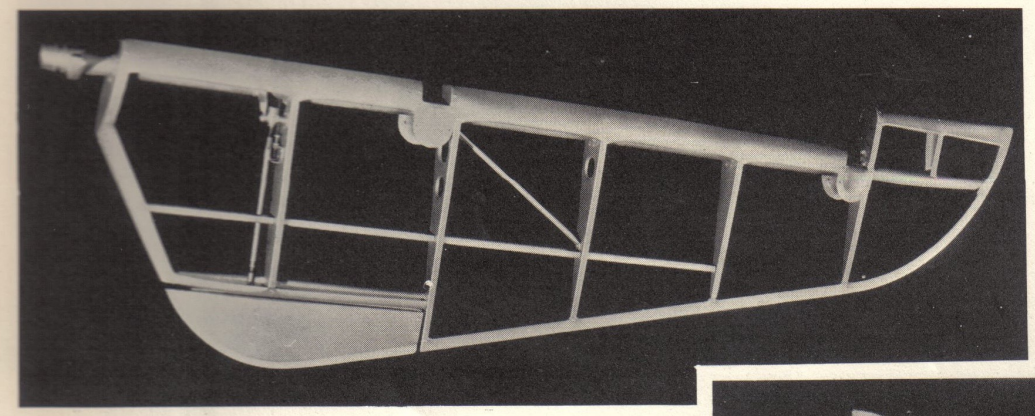
The engine used is a Pratt and Whitney Wasp Jr. SB Model and is regarded as one of the outstanding developments by Pratt and Whitney. This engine is equipped with pressure type cooling baffles, Scintilla magnetos, radio shielding, Stromberg carburetor, Eclipse generator, Eclipse F141 direct cranking electric starter, fuel pump and oil temperature regulator. The engine is the nine cylinder radial, air cooled type and is direct drive. The maximum normal rating is 400 H. P. at 2200 R. P. M. at 5000 feet altitude. The maximum take-off rating is 450 H. P. at 2300 R. P. M. at sea level. The exhaust collector ring is made of stainless steel and has two outlets through the bottom of the engine cowl. Hot air is provided to the carburetor by means of a duct which runs from a shroud that surrounds one side of the exhaust collector. Cold air to the carburetor enters through a duct which extends forward of the engine cooling baffles. Both hot and cold air go through a mixture valve, which is operated manually by the pilot. An air temperature bulb is located inside of the valve to give the temperature of the air entering the carburetor. This arrangement allows the pilot to know immediately of icing conditions that may occur in the carburetor due to a drop in outside air temperature. A Hamilton Standard, constant speed, two bladed, metal propeller is used. A control on the instrument panel, similar to the throttle, operates the pitch adjustment mechanism.

The engine controls consist of the throttle, propeller control, carburetor heat control and mixture control and are operated from the instrument panel. The spark remains in the advanced position and has no control.

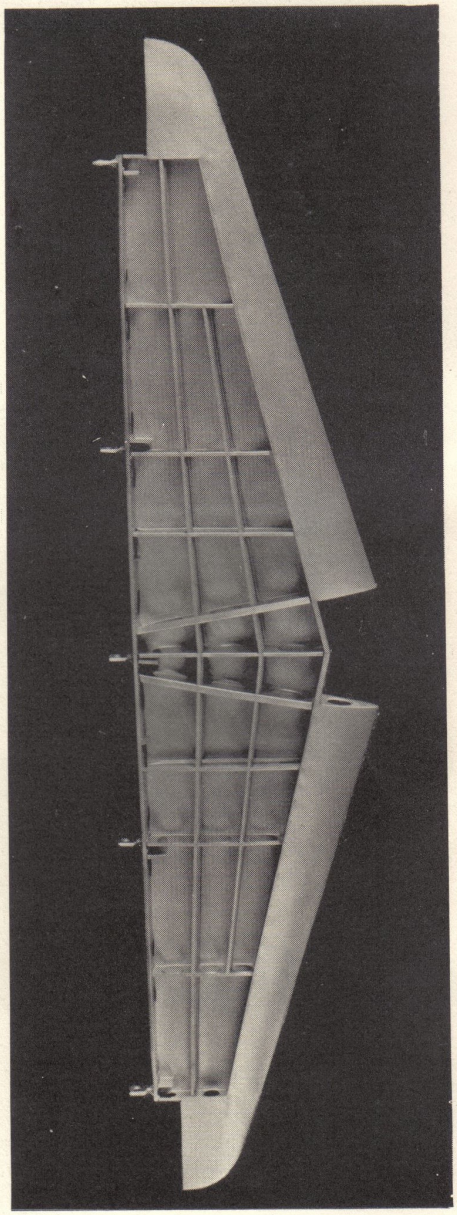
**Fuel System:**

The Executive has an unusually large fuel capacity. The standard installation accommodates 112 U. S. gallons (424 Liters) although the airplane has approval for 148 U. S. gallons (560 Liters) as an optional arrangement.

The reserve and auxiliary fuel tanks are located in the fuselage. The main tanks are located in the wing stubs. The reserve tank holds 24 U. S. gallons (90.86



ELEVATOR STRUCTURE



STABILIZER STRUCTURE

Liters) which meets the requirements of the U. S. Department of Commerce. It is recommended that 87 octane fuel be used in the reserve tank for take off and landing.

The tanks are all constructed of aluminum alloy sheet, welded and riveted together. The electric type of fuel gauge is used which registers the fuel supply on the instrument panel. All filler caps are easily accessible.

An engine driven fuel pump is used to bring the fuel from the tanks to the carburetor. The fuel flows from the tanks to a selector valve which is manually controlled by the pilot. With this control he is able to draw fuel from any of the tanks. The fuel goes from this valve to the unit which contains the hand wobble pump, by-pass valve and strainer. Next, it goes to the engine driven fuel pump and is forced on to the carburetor. The carburetor air valve is provided with a drain tube which carries off any excess fuel that might occur from flooding the carburetor because of over use of the primer. The primer itself is integral with the carburetor and is operated by pulling out the mixture control and then working the throttle in and out. This action pumps raw fuel into the induction chamber of the engine. All piping and fittings are aluminum alloy throughout the entire system.

**Oil System:**

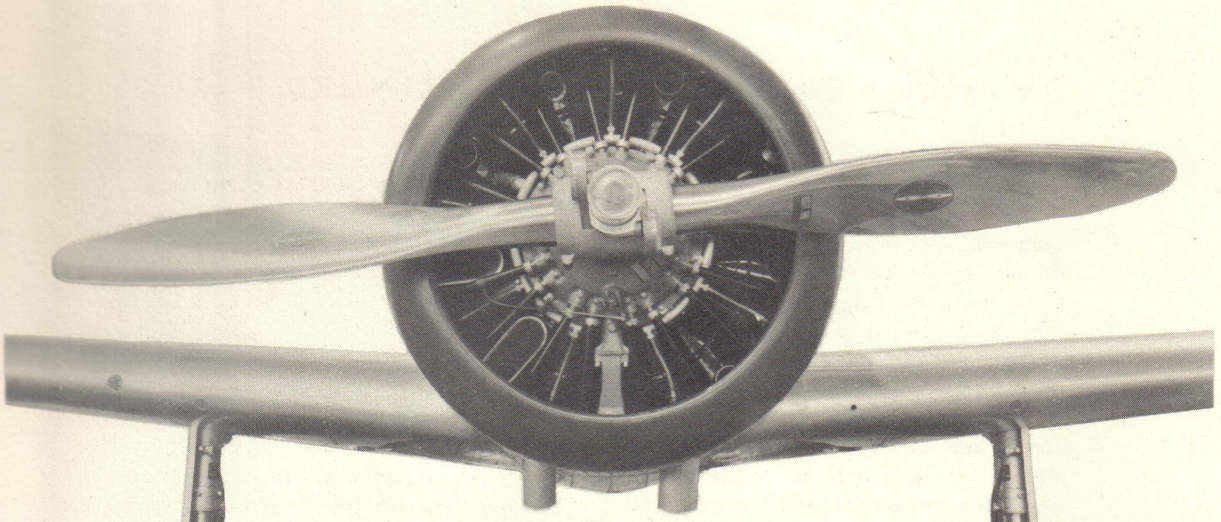
The standard oil tank capacity is 7 U. S. gallons (26.5 Liters). The optional oil tank which is used with the optional fuel capacity of 148 U. S. gallons (560 Liters), holds 9 U. S. gallons (34 Liters) of oil. The oil tank is located in front of the firewall and is attached to the engine mount structure. A Pratt and Whitney oil temperature regulator and a Harrison oil radiator provide for temperature control. The oil temperature control is an automatic device which causes the oil to warm up quickly. The Harrison radiator which cools the oil, is located inside the engine cowl and its air intake is through a duct which extends ahead and through the engine cooling baffles. The oil tank is easily filled from the side of the airplane. Oil lines, fittings and hose liners are aluminum alloy. All oil hose is of the Duprene oil resisting synthetic rubber type.

**Engine Cowling:**

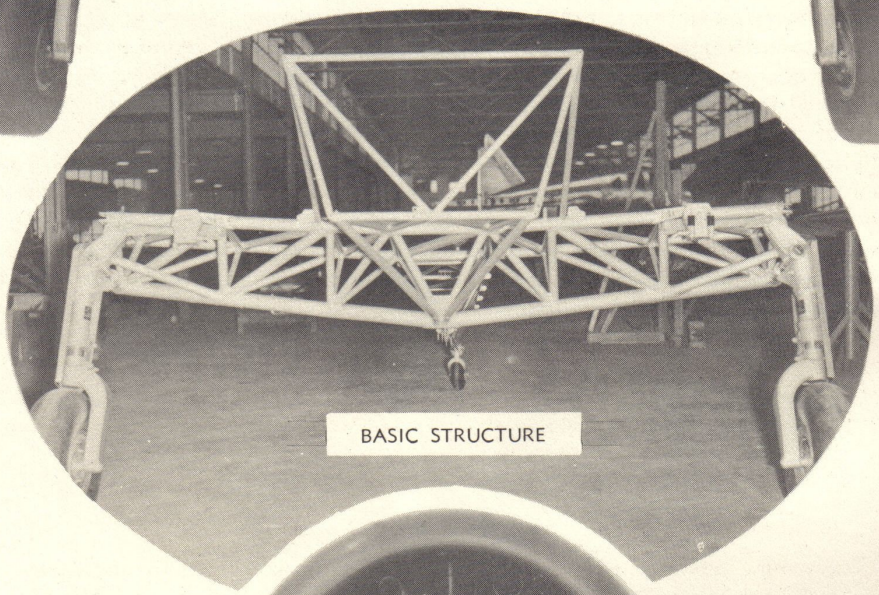
The engine cowl is quite unique in design. The nose ring is in one piece and is so attached to the engine that it is not affected by cylinder expansion. The back edge of the nose ring is far enough forward so as to allow for lubrication of the rocker arms without its removal. The side cowling is divided into four panels all of which are quickly removable by releasing the Dzus fasteners around the edges. There is no inner cowl, therefore, when the side panels are removed the engine is easily accessible. Care has been taken in the design of the engine compartment so that servicing will be as easy as possible.

**Engine Mount:**

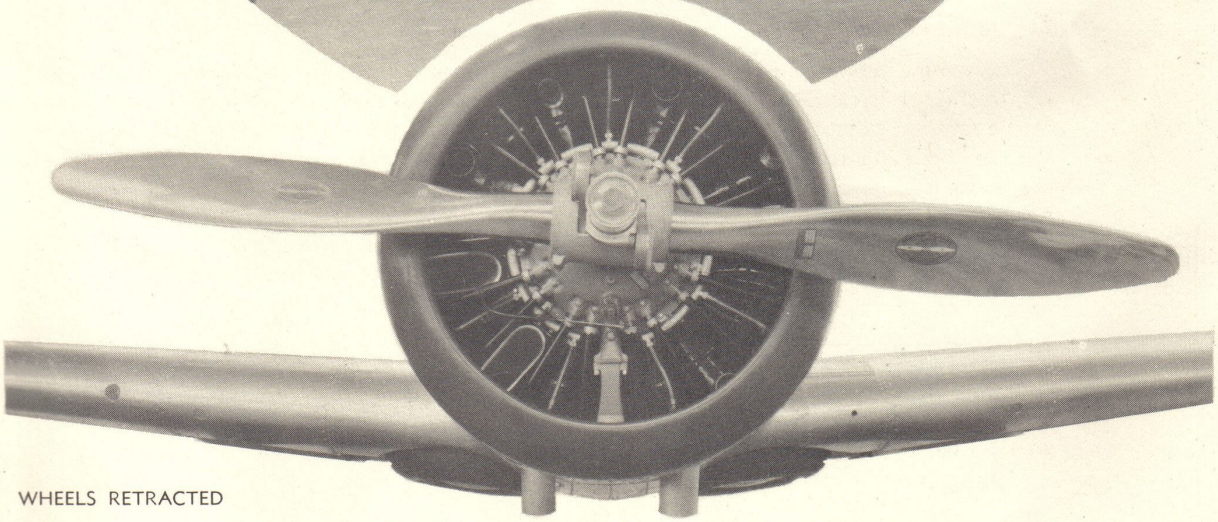
The engine mount structure is chrome-molybdenum steel tubing. The attachment to the engine is made through rubber mountings designed to absorb the torsional fluctuations of the engine.



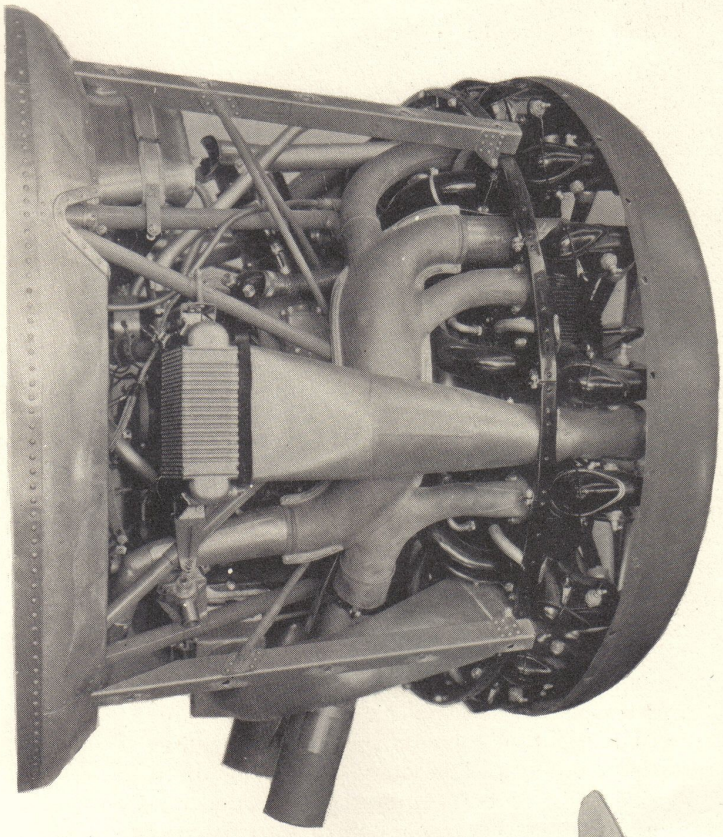
WHEELS EXTENDED



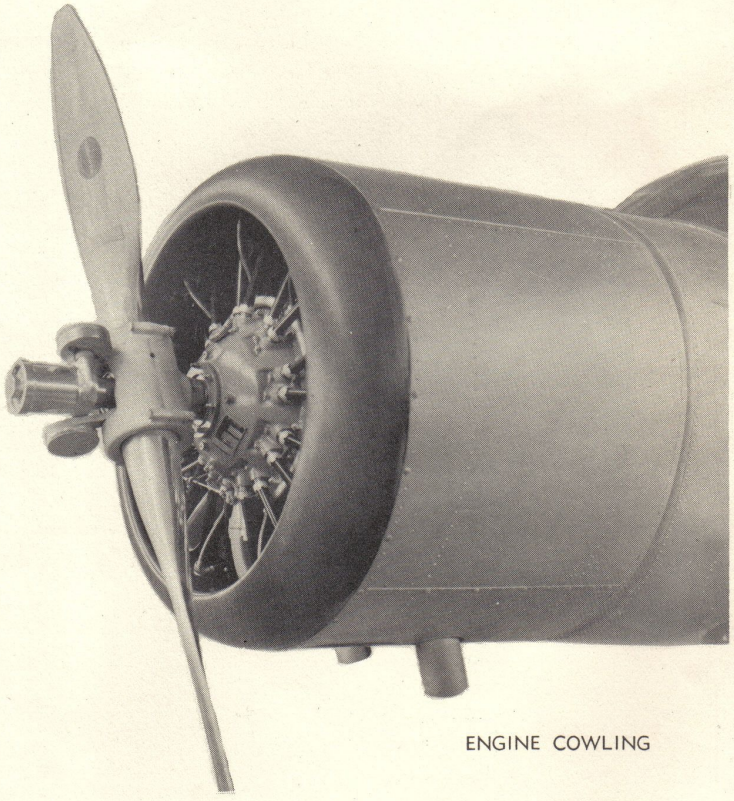
BASIC STRUCTURE



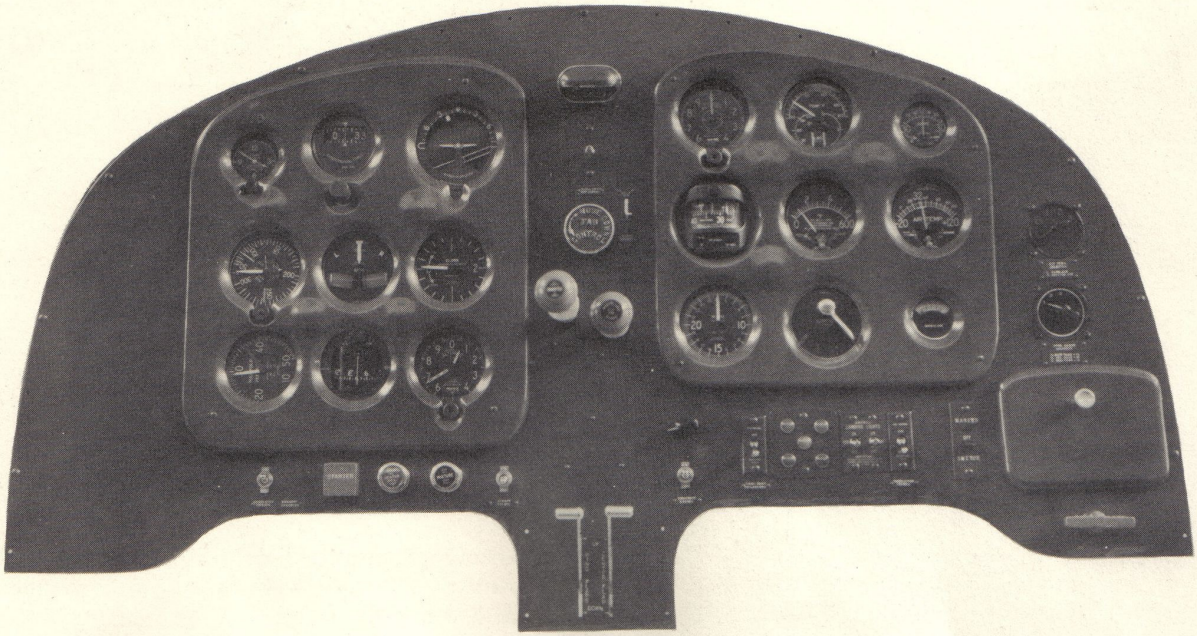
WHEELS RETRACTED



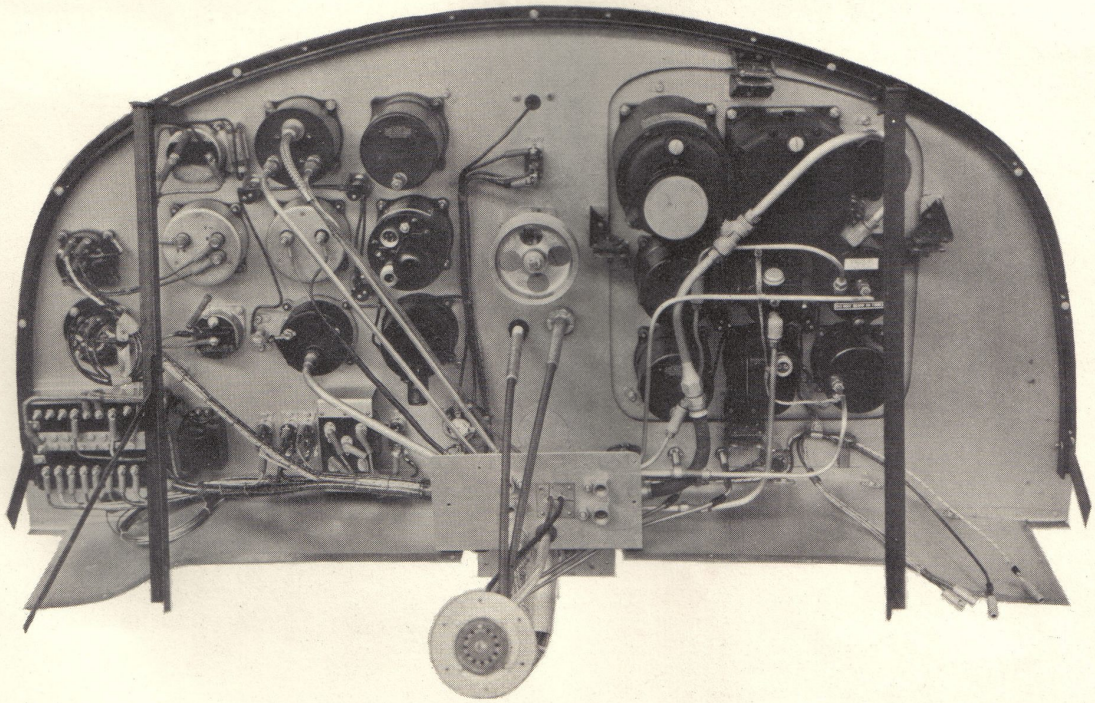
ENGINE INSTALLATION



ENGINE COWLING

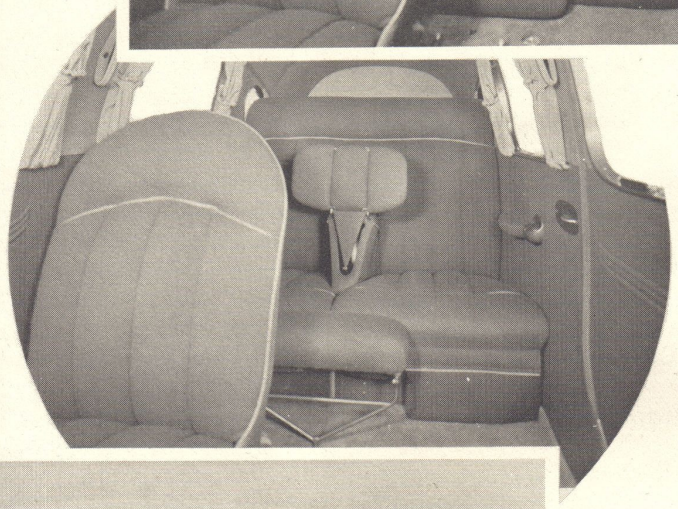


INSTRUMENT PANEL
FRONT VIEW



INSTRUMENT PANEL
REAR VIEW

CABIN INTERIOR
LOOKING AFT



AUXILIARY SEAT
UNFOLDED

CABIN INTERIOR
LOOKING FORWARD

# STANDARD EQUIPMENT

## WING GROUP

1 Navigation Light—Grimes—Red—15 Candlepower
1 Navigation Light—Grimes—Green—15 Candlepower
2 Retractable Landing Lights—Grimes ST-250
1 Pitot Static Tube Assembly

## TAIL GROUP

1 Navigation Light—Grimes—Clear 15 Candlepower
2 Elevator Controllable Tab Assemblies

## SURFACE CONTROLS GROUP

1 Dual Throw-over Control Wheel
1 Instrument Panel Type Tab Control and Indicator
1 Instrument Panel Type Flap Control Unit
1 Set of Folding Rudder Pedals (Right Hand Side)

## LANDING GEAR

2 Main Shock Absorbing Struts—Cleveland XY262S
2 Wheels—Goodyear—10HBM—7:50 x 10
2 Tires—Goodyear—6-Ply Heavy Duty 8:50 x 10
2 Tubes—Goodyear—Puncture Seal
1 Landing Gear Operating Motor—Eclipse Y-150
1 Landing Gear Warning Horn
1 Set of Indicator Lights
1 Auxiliary Operating Hand Crank
1 Tail Wheel Shock Absorbing Strut—Cleveland XY162S
1 Tail Wheel—Hayes—10.5
1 Tire—General Streamline—10.5

## BODY GROUP

5 Seat Belts—Russell—Rusco AE165
1 Set of Cabin Windows—Plexiglas
1 Windshield—Plexiglas
1 Hand Fire Extinguisher—Pyrene C21P (1 Quart)
1 Heating System
1 Ventilating System
1 Set of Flares—International MK-1, 1½ Minute (4 Flares)
1 First Aid Kit
1 Seapak Sound Proofing and Insulation Installation
2 Adjustable Front Seats
1 Combination Folding Seat and Arm Rest Assembly
2 Removable Map Cases
2 Magazine Pockets (Rear of Front Seats)
1 Laidlaw Upholstery Installation
1 Finished Luggage Compartment with Outside Door (Lock Provided)
1 Laidlaw Carpet
1 Set of Ceiling Lights
1 Set of Ash Receivers
1 Built in Rear Seat High Head Rest
2 Foot Rests on Rear of Front Seats
1 Set of Assist Cords
1 Set of Window Drapes and Rods
1 Map Reading Light
1 Complete Cabin Door (Including Hand Crank Operated Window)
1 Fuel Cock Control and Dial
1 Wobble Pump Control Handle
1 Complete Instrument Panel Including:
  1 Floating Sub Panel for Flight Instruments (Lord Rubber Mountings)
  2 Indirect Lighting Covers
  1 Clock—Pioneer 757B—8-Day Elgin
  1 Air Speed—Pioneer AF735B
  1 Manifold Pressure Gauge—Pioneer A791D
  1 Turn and Bank Indicator—Pioneer A385E
  1 Rate of Climb Indicator—Pioneer A1045
  1 Altimeter—Pioneer—Sensitive 1109
  1 Engine Gauge Unit (Oil Pressure, Fuel Pressure and Oil Temperature)—Pioneer P-1
  1 Ammeter—Weston Model 606
  1 Cylinder Temperature Gauge—Weston Model 602

1 Outside Air Temperature Gauge Weston Model 602
1 Tachometer—Pioneer A347C
1 Ignition Switch—Scintilla Type EJ
1 Electric Fuel Gauge
1 Fuel Gauge Selector Switch
1 Compass—Pioneer 941E
1 Carburetor Air Temperature Gauge —Weston Model 606
1 Fuse Compartment
1 Indirect Light Rheostat Control
1 Set of Indirect Lights
1 Direct Light (Center of Panel)
1 Complete Set of Switches

ENGINE GROUP

1 Engine—Pratt & Whitney Wasp Jr. SB (450 H.P. at Take-off)
1 Starter—Eclipse F141 Direct Cranking Electric
1 Generator—Eclipse 25 Amperes
1 Oil Temperature Regulator—Pratt & Whitney
1 Oil Radiator—Harrison
1 Engine Fuel Pump—Romec G-2 RD 3080
1 Fuel Wobble Pump—Romec D-2 RD 1562
1 Exhaust Manifold—Solar 12-385
1 Hot Air Exhaust Shroud—Solar 12-330
1 Hot Air Exhaust Shroud—Solar 11-162
1 Propeller—Hamilton Standard Constant Speed—8'-6" Diameter
Hub—2D30-201
Blades—6095
1 Constant Speed Governor Unit—Pratt & Whitney
1 Exhaust Gas Analyzer—Cambridge
1 Throttle
1 Propeller Control
1 Mixture Control
1 Carburetor Heat Control
1 Pressure Fire Extinguisher—Lux 36-1
1 Fuel Cock—Lunkenheimer G-1 Cork Seated Valve
1 Oil Drain "Y" Valve—Lunkenheimer D-1827-Y
1 Carburetor Air Mixing Valve

ELECTRICAL SYSTEM

1 Battery—Exide 12-Volt 6-TS-13-1 38 Ampere Hour
1 Generator Control Box—Eclipse
1 Solenoid Starter Switch
1 Wiring System using Packard Cable
1 Set of Junction Boxes
1 Radio Bonding Installation
1 Radio Shielding Installation

MISCELLANEOUS

1 Airplane and Engine Log Book
1 Operator's Engine Handbook
1 Operator's Information on Goodyear Hydraulic Brakes and Wheels
1 Eclipse Landing Gear Motor Instruction Book
1 Tool Kit

## SPECIAL EQUIPMENT

Directional Gyro
Artificial Horizon
Radio Receiver
Radio Transmitter
Chair Type Parachutes
Engine Driven Vacuum Pump
Large Size Fuel and Oil Tanks
Shatterproof Glass Windshield
Stabilizer Abrasion Shoes
Directional Gyro with Ballbank
Radio Compass
Vacuum Gauge
Fixed Duel Control Wheels

# MANUFACTURING STANDARDS

Spartan Airplanes are designed and manufactured with the basic thoughts of strength, quality and performance in mind. The name Spartan is exemplified by the ruggedness that is characteristic of all Spartan Airplanes.

The stress Analysis of the Executive is in full accordance with U. S. Department of Air Commerce requirements. Extreme care has been exercised in the analysis of important structural points and static tests were conducted to confirm the results. In many places, additional strength has been built in, thus assuring a more reliable product.

The best of materials are used to fabricate the Executive. Raw materials are purchased from reliable sources. The purchased units, such as engine, landing gear shock struts, fuel valves, etc. come from companies whose products are outstanding in the aircraft industry.

The workmanship on the Executive is of the same superior type that has been the Spartan standard through all the years of manufacturing quality airplanes. Skilled craftsmanship is essential in the manufacture of aircraft products which meet the demands of the Executive type of airplane.

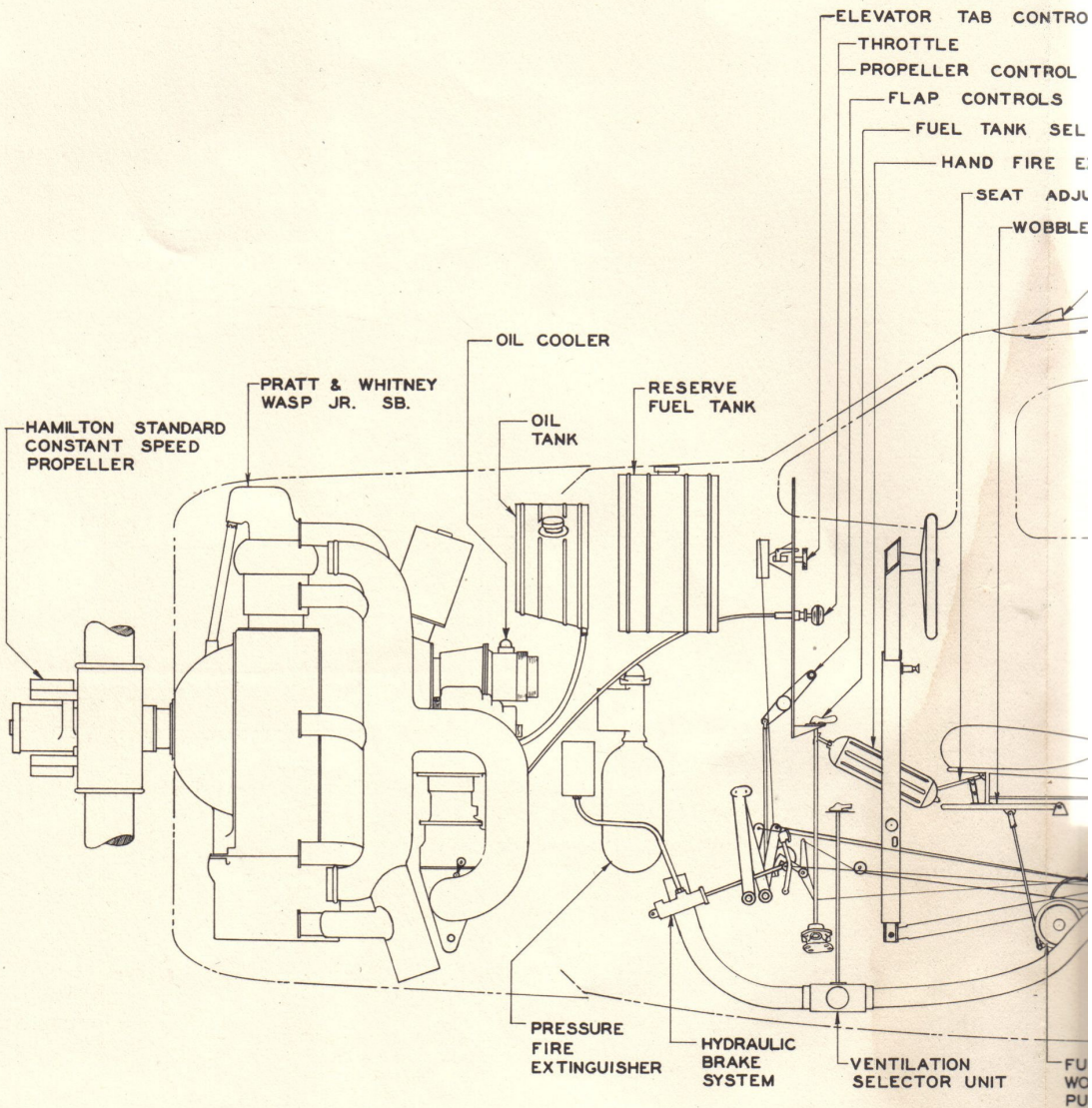
All parts are subjected to the rigid Spartan inspection system. This system completely covers strict supervision, by competent inspectors, of all materials and processes involved in the manufacture of the airplane. A Rhiele testing machine and a Rockwell hardness tester are in constant use to prevent the possibility of using any defective parts. Realizing the responsibility intrusted to the manufacturer, constant surveillance is maintained to insure the quality of the Executive.

# SHIPPING DATA

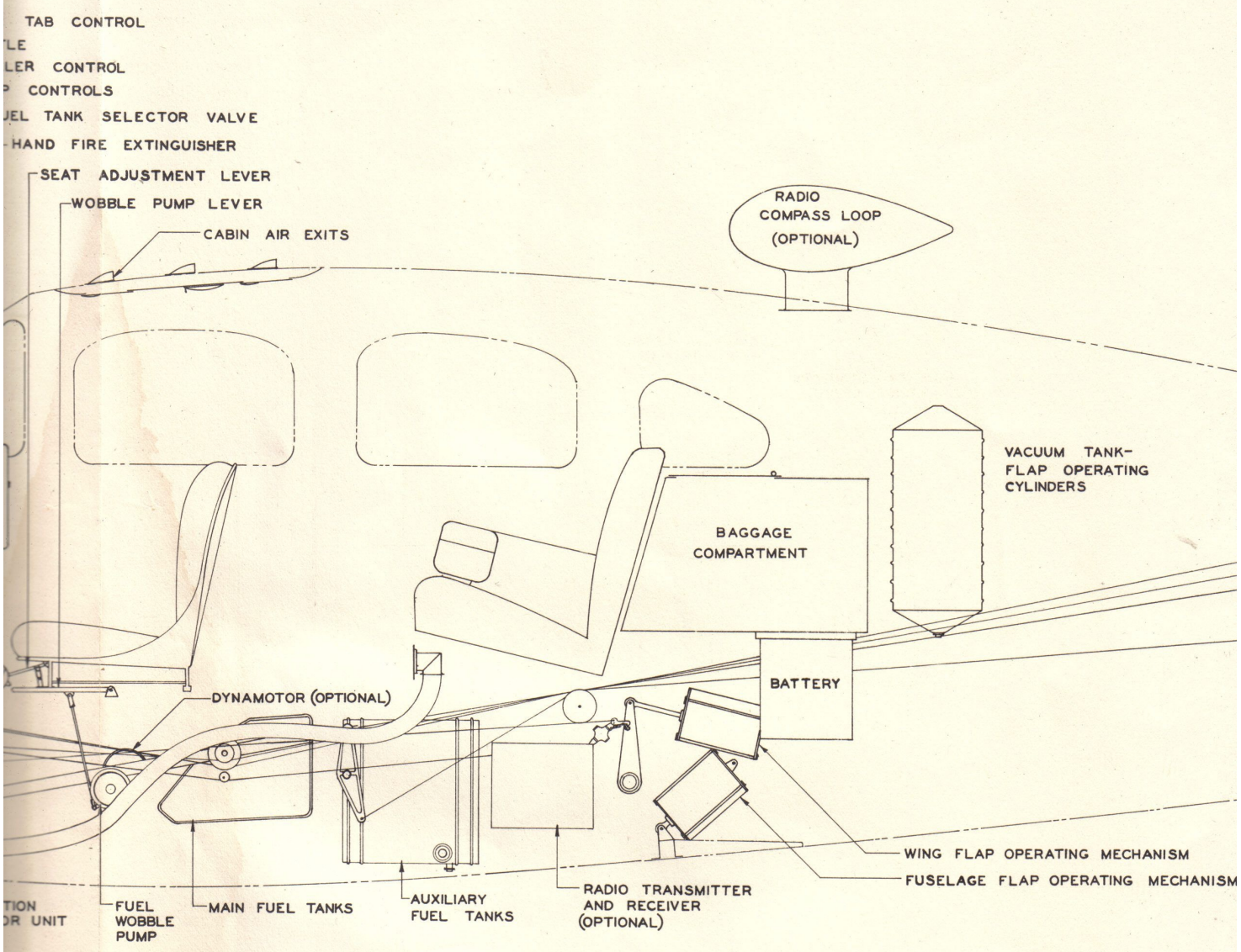
For shipment by boat or rail, the Spartan 7W Executive is shipped complete in one box. The box is constructed to meet the requirements of export shipment.

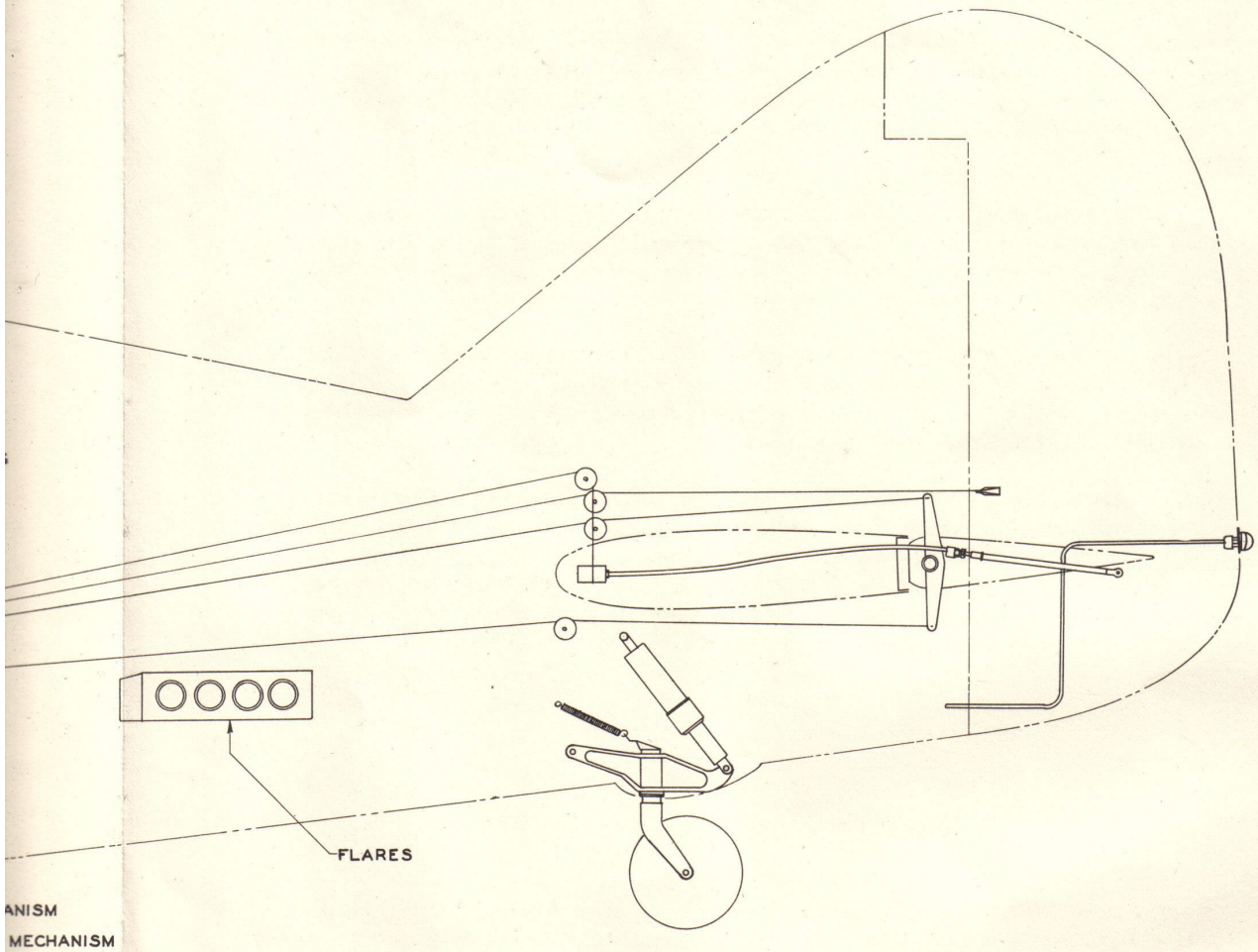
Dimensions and Weights of Shipping Box

| | U. S. Standard | Metric |
|---|---|---|
| Length Overall | 27 feet | 8.23 M |
| Width Overall | 11 ft.—11 in. | 3.67 M |
| Height Overall | 8 feet | 2.44 M |
| Net Weight (Standard Equipment) | 2987 lbs. | 1354.9 Kg. |
| Gross Weight (Standard Equipment) | 10,000 lbs. | 4536 Kg. |
| Cubic Contents | 2079 cu. ft. | 58.88 M |
| Cubic Tons (40 Cubic Feet) | 52 cubic tons | ---------- |


ELEVATOR TAB CONTRO
THROTTLE
PROPELLER CONTROL
FLAP CONTROLS
FUEL TANK SEL
HAND FIRE E
SEAT ADJ
WOBBLE
OIL COOLER
PRATT & WHITNEY
WASP JR. SB.
RESERVE
FUEL TANK
HAMILTON STANDARD
CONSTANT SPEED
PROPELLER
OIL
TANK
PRESSURE
FIRE
EXTINGUISHER
HYDRAULIC
BRAKE
SYSTEM
VENTILATION
SELECTOR UNIT

TAB CONTROL
TLE
LER CONTROL
P CONTROLS
UEL TANK SELECTOR VALVE
HAND FIRE EXTINGUISHER






ANISM
MECHANISM

SPARTAN MODEL 7W

*Executive*

LITHO IN U.S.A.
SCOTT-RICE COMPANY
TULSA

PLASTIC BINDING U. S. PATENT NO. 1,970,285
TULSA PAPER COMPANY
TULSA