

США



208 M. P. H.



187 M. P. H.



166 M. P. H.

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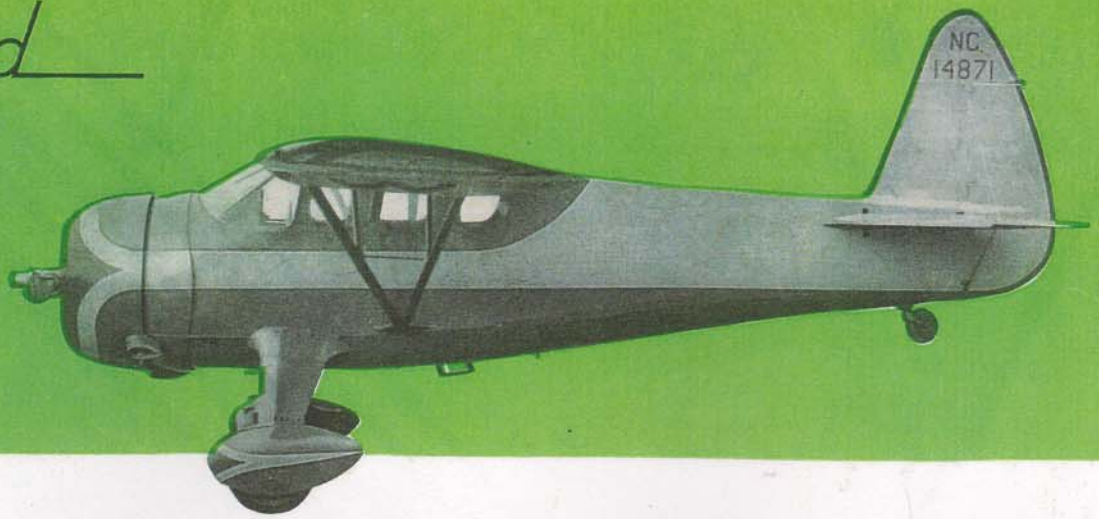
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Howard

DGA

11



PERFORMANCE

Cruising speed at 9600 ft.	208 M.P.H.
Rate of Climb	2200 F.P.M.
Service Ceiling	26,000 Ft.
Range	850 Miles

WEIGHTS

Pilot	170 Lbs.
Three Passengers	510 Lbs.
Fuel (97) Gallons	582 Lbs.
Oil (8) Gallons	60 Lbs.
Baggage and Extras	278 Lbs.
Useful Load	1650 Lbs.
Empty Weight	2450 Lbs.
Gross Weight	4100 Lbs.

SPECIFICATIONS * * * HOWARD DGA-11 * * * 1938

ENGINE AND ACCESSORIES—The HOWARD DGA-11 is powered by a Pratt & Whitney Wasp Jr. 450 H.P. engine. It uses 80 Octane fuel. Standard equipment includes Eclipse Direct Drive Electric Starter, Eclipse 15-ampere Generator shielded and control box with ammeter, Romec Engine Fuel Pump, Hand Emergency Pump with fuel strainer and integral relief and by-pass, Booster Coils, complete set Breeze Engine Radio Shielding, Howard Oil Radiator, Imperial Aircraft Primer, Cuno Oil Filter, A.S. Gas Selector Valve and a 12-volt Exide 13-plate, 38 ampere hour battery. The engine mount is attached to the fuselage with Lord shock absorber mounts to reduce vibration and noise. Accessibility of all accessories has been considered of primary importance.

PROPELLER—The DGA-11 is equipped with a Hamilton Controllable Pitch Propeller.

STRUCTURE—The fuselage is of all welded chrome molybdenum steel tube structure with soundproofed metal covering from the firewall to the back of the rear seats and fabric covering to the tail surfaces. The tail surfaces are fabric covered with fairings and fillets of metal and so installed that ease of adjustment and access to the tail group and tail wheel is readily accomplished. The wings are of solid spruce spars with truss type spruce ribs and are externally braced. The wings are entirely covered with plywood as are the ailerons and flaps, and in turn covered with fabric for finish, thus eliminating the necessity for re-covering during the entire life of the plane. The entire structure is bonded for the future installation of radio and a built-in antenna (rain, snow and ice proof) is provided.

LANDING GEAR, WHEELS AND BRAKES—The landing gear is of the springdraulic type with a shorter strut to improve visibility as well as conform to a much cleaner and more efficient design. The tail wheel is full swiveling and incorporates a springdraulic type oleo allowing the wheel to move forward and back when taxiing over rough ground. The landing gear tires are 8.50 x 10 semi-low pressure. The tail wheel has a 10½ inch streamline tail wheel tire. The brakes are the hydraulic toe operated type used by most of the airlines and adopted as standard by the Army and Navy. A hand parking brake together with a steerable tail wheel are installed as standard equipment. Wheel pants are standard equipment.

FLAPS—High lift trailing edge type of flaps are incorporated. The flaps are operated by the manual adjustment of an automatic flap lift regulating device. The function of the automatic control is that of converting the flap into a lifting device rather than a drag device. For example, when gusts are encountered or throttle is added, the regulator allows the flaps to instantaneously reduce their angle, thereby keeping the lift constant.

FUEL AND OIL TANKS—The gasoline supply is carried beneath the floor of the cabin in a sixty (60) gallon tank and a thirty-seven (37) gallon tank. An additional thirty (30) gallon tank may be added, bringing the total available supply to one hundred and twenty-seven (127) gallons. A positive flow of gas is assured by use of the engine driven fuel pump and auxiliary hand wobble pump. Wing heaviness is eliminated, a cleaner landing gear is made possible, and a lower center of gravity position results from this type of installation.

EXTERIOR—The DGA-11 may be painted any one of three standard colors in the Howard Color Chart conforming to standard design. All surfaces are polished.

CABIN FURNISHINGS—The cabin upholstery, furnishings and accessories are of the finest possible consistent with light weight and practicability. Thorough soundproofing has reduced the noise level to a minimum. Seats are upholstered in the finest of genuine leather in a choice of several colors. The sidewalls and ceiling are lined with Laidlaw broadcloth in contrasting shades. Instrument panel, window molding, and interior paint is done in a contrasting color. A convenient glove compartment above and in back of the rear seat is provided for small or miscellaneous articles.

INSTRUMENTS—The instruments consist of high grade precision instruments including: Rate of Climb, Bank and Turn, Airspeed and Pitot Tube, Oil Temperature Indicator, Oil Pressure Indicator, Kollsman 65-L Compass, Tachometer, Kollsman Sensitive Altimeter, Head Temperature Indicator, Manifold Pressure Gauge, Fuel Pressure Indicator, Fuel Level Indicator, Stabilizer Indicator, electrically controlled, and an Ammeter. The instruments are arranged in accordance with airline standards and all flight instruments are shock mounted and are indirectly lighted.

SEATING CAPACITY—The two pilot seats are adjustable fore and aft as well as vertically. The rear seat is of the hammock type. Arm rests are provided for the convenience of the rear seat passengers. Exceptional leg room is provided between front and rear seats for maximum comfort on the longest journey.

BAGGAGE—A separate compartment aft of the rear seat is provided for large baggage with ample space allowance for 120 pounds. Under the baggage compartment is sufficient room for future installation of radio equipment.

VENTILATION AND HEATING—Fresh clean air is brought in from the wings into the cabin and expelled through a floor ventilator providing fume free air at all times. For winter operation a positive controlled flow of warm air is provided through the cabin heater.

MISCELLANEOUS EQUIPMENT—Navigation lights, engine tool kit, engine and airplane log books, Grimes retractable landing lights and other items of equipment are included at no extra cost.

PRICE F. A. F. CHICAGO \$ 17,685.00 COMPLETE

Howard

DGA 8



PERFORMANCE

Cruising speed	187 M.P.H.
Rate of Climb	1800 F.P.M.
Service Ceiling	20,000 Ft.
Range (97) Gallons	1085 Miles

* Gross weight may be increased to 4100 Lbs. for seaplane usage.

WEIGHTS

Pilot	170 Lbs.
Three Passengers	510 Lbs.
Fuel (97) Gallons	582 Lbs.
Oil (8) Gallons	60 Lbs.
Baggage & Extras	128 Lbs.
Useful Load	1500 Lbs.
Empty Weight	2300 Lbs.
Gross Weight*	3800 Lbs.

SPECIFICATIONS * * * HOWARD DGA-8 * * * 1938

ENGINE AND ACCESSORIES—The HOWARD DGA-8 is powered by a Wright Whirlwind R760-E2 320 H.P. Radial Aircooled Engine. It uses 80 Octane fuel. Standard equipment includes Eclipse Direct Drive Electric Starter, Eclipse Generator (15 amperes) shielded and control box with ammeter, Romec Engine Fuel Pump, Hand Emergency Pump with fuel strainer and integral relief and by-pass, Booster Coils, complete set Breeze Engine Radio Shielding, Howard Oil Radiator, Imperial Aircraft Primer, Cuno Oil Filter, A.S. Gas Selector Valve and a 12-volt Exide 13-plate 38 ampere hour battery. The engine mount is attached to the fuselage with Lord shock absorber mounts to reduce vibration and noise. Accessibility of all accessories has been considered of primary importance.

PROPELLER—The DGA-8 is equipped with a Hamilton Controllable Pitch Propeller.

STRUCTURE—The fuselage is of all welded chrome molybdenum steel tube structure with soundproofed metal covering from the firewall to the back of the rear seats and fabric covering to the tail surfaces. The tail surfaces are fabric covered with fairings and fillets of metal and so installed that ease of adjustment and access to the tail group and tail wheel is readily accomplished. The wings are of solid spruce spars with truss type spruce ribs and are externally braced. The wings are entirely covered with plywood as are the ailerons and flaps, and in turn covered with fabric for finish, thus eliminating the necessity for re-covering during the entire life of the plane. The entire structure is bonded for the future installation of radio and a built-in antenna (rain, snow and ice proof) is provided.

LANDING GEAR, WHEELS AND BRAKES—The landing gear is of the springdrdraulic type with a shorter strut to improve visibility as well as conform to a much cleaner and more efficient design. The tail wheel is full swiveling and incorporates a springdrdraulic type oleo allowing the wheel to move forward and back when taxiing over rough ground. The landing gear tires are 7.50 x 10 semi-low pressure. The tail wheel has a 10½ inch streamline tail wheel tire. The brakes are the hydraulic toe operated type used by most of the airlines and adopted as standard by the Army and Navy. A hand parking brake together with a steerable tail wheel are installed as standard equipment. Wheel pants are standard equipment.

FLAPS—High lift trailing edge type of flaps are incorporated. The flaps are operated by the manual adjustment of an automatic flap lift regulating device. The function of the automatic control is that of converting the flap into a lifting device rather than a drag device. For example, when gusts are encountered or throttle is added, the regulator allows the flaps to instantaneously reduce their angle, thereby keeping the lift constant.

FUEL AND OIL TANKS—The gasoline supply is carried beneath the floor of the cabin in a sixty (60) gallon and a thirty-seven (37) gallon tank. An additional thirty (30) gallon tank may be added, bringing the total available supply to one hundred and twenty-seven (127) gallons. A positive flow of gas is assured by use of the engine driven fuel pump and auxiliary hand wobble pump. Wing heaviness is eliminated, a cleaner landing gear is made possible, and a lower center of gravity position results from this type of installation.

EXTERIOR—The DGA-8 may be painted any one of three standard colors in the Howard Color Chart conforming to standard design. All surfaces are polished.

CABIN FURNISHINGS—The cabin upholstery, furnishings and accessories are of the finest possible consistent with light weight and practicability. Thorough soundproofing has reduced the noise level to a minimum. Seats are upholstered in the finest of genuine leather in a choice of several colors. The sidewalls and ceiling are lined with Laidlaw broadcloth in contrasting shades. Instrument panel, window moulding, and interior paint is done in a contrasting color. A convenient glove compartment above and in back of the rear seat is provided for small or miscellaneous articles.

INSTRUMENTS—The instruments consist of high grade precision instruments including: Rate of Climb, Bank and Turn, Airspeed and Pitot Tube, Oil Temperature Indicator, Oil Pressure Indicator, Kollsman 65-L Compass, Tachometer, Kollsman Sensitive Altimeter, Head Temperature Indicator, Manifold Pressure Gauge, Fuel Pressure Indicator, Fuel Level Indicator, Stabilizer Indicator, electrically controlled, and an Ammeter. The instruments are arranged in accordance with airline standards and all flight instruments are shock mounted and are indirectly lighted.

SEATING CAPACITY—The two pilot seats are adjustable fore and aft as well as vertically. The rear seat is of the hammock type. Arm rests are provided for the convenience of the rear seat passengers. Exceptional leg room is provided between front and rear seats for maximum comfort on the longest journey.

BAGGAGE—A separate compartment aft of the rear seat is provided for large baggage with ample space allowance for 120 pounds. Under the baggage compartment is sufficient room for future installation of radio equipment.

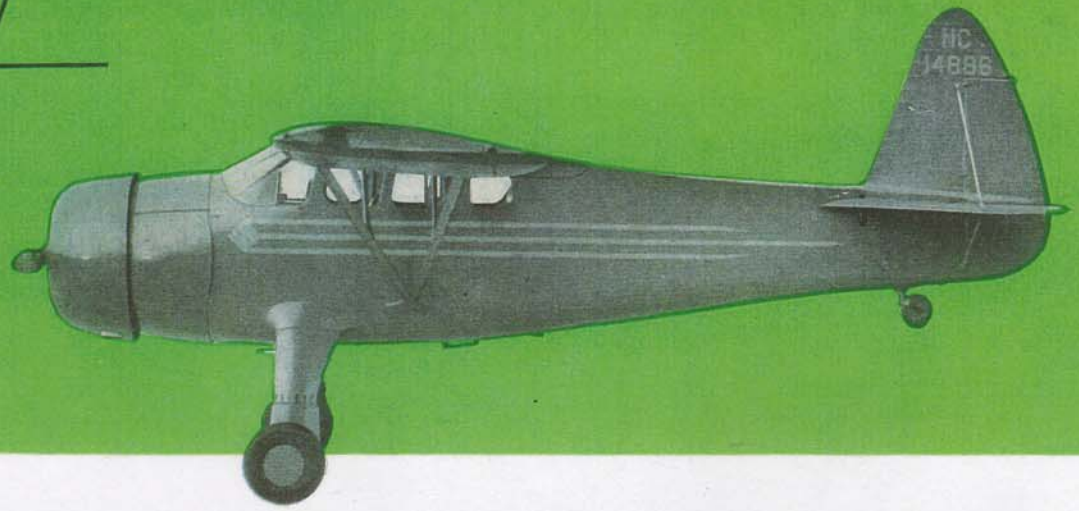
VENTILATION AND HEATING—Fresh clean air is brought in from the wings into the cabin and expelled through a floor ventilator providing fume free air at all times. For winter operation a positive controlled flow of warm air is provided through the cabin heater.

MISCELLANEOUS EQUIPMENT—Navigation lights, engine tool kit, engine and airplane log books, Grimes retractable landing lights and other items of equipment are included at no extra cost.

PRICE F. A. F. CHICAGO \$ 14,850.00 COMPLETE

Howard

DGA 9



PERFORMANCE

Cruising speed	166 M.P.H.
Rate of Climb	1200 F.P.M.
Service Ceiling	18,000 Ft.
Range (60) Gallons	630 Miles

* Gross weight may be increased to 3800 Lbs. when using a Hamilton propeller.
 * Gross weight may be increased to 4100 Lbs. for seaplane usage.

WEIGHTS

Pilot	170 Lbs.
Three Passengers	510 Lbs.
Fuel (60) Gallons	360 Lbs.
Oil (7) Gallons	53 Lbs.
Baggage & Extras	357 Lbs.
Useful Load	1450 Lbs.
Empty Weight	2150 Lbs.
Gross Weight*	3600 Lbs.

SPECIFICATIONS * * * HOWARD DGA-9 * * * 1938

ENGINE AND ACCESSORIES—The HOWARD DGA-9 is powered by a Jacobs L-5 battery ignition 285 H.P. engine. It uses 73 Octane fuel. Standard equipment includes Stromberg carburetor, Eclipse direct drive electric starter, Eclipse 15 ampere motor driven generator and control box with ammeter, Romec engine driven fuel pump, together with a Romec emergency hand wobble pump incorporating a strainer, by-pass and relief valve, a 12-volt Exide 13 plate storage battery, and an oil filter. The engine motor mount is attached to the fuselage with Lord shock absorber mount to reduce vibration and noise. Accessibility of all accessories has been considered of primary importance in the design.

PROPELLER—The DGA-9 is equipped standard with a fixed pitch Curtiss Reed metal propeller. A Hamilton controllable pitch propeller may be installed at a slight additional cost.

STRUCTURE—The fuselage is of all welded chrome molybdenum steel tube structure with soundproofed metal covering from the firewall to the back of the rear seats and fabric covering to the tail surfaces. The tail surfaces are fabric covered with fairings and fillets of metal and so installed that ease of adjustment and access to the tail group and tail wheel is readily accomplished. The wings are of solid spruce spars with truss type spruce ribs and are externally braced. The wings are entirely covered with plywood as are the ailerons and flaps, and in turn covered with fabric for finish, thus eliminating the necessity for re-covering during the entire life of the plane. The entire structure is bonded for the future installation of radio and a built-in antenna (rain, snow and ice proof) is provided.

LANDING GEAR, WHEELS AND BRAKES—The landing gear is of the springdrdraulic type with a shorter strut to improve visibility as well as conform to a much cleaner and more efficient design. The tail wheel is full swiveling and incorporates a springdrdraulic type oleo allowing the wheel to move forward and back when taxiing over rough ground. The landing gear tires are 7.50 x 10 semi-low pressure. The tail wheel has a 10½ inch streamline tail wheel tire. The brakes are the hydraulic toe operated type used by most of the airlines and adopted as standard by the Army and Navy. A hand parking brake together with a tail wheel lock are installed as standard equipment. Cuffs are standard equipment though wheel pants may be installed at a slight increase in cost.

FLAPS—High lift trailing edge type of flaps are incorporated. The flaps are operated by the manual adjustment of an automatic flap lift regulating device. The function of the automatic control is that of converting the flap into a lifting device rather than a drag device. For example, when gusts are encountered or throttle is added, the regulator allows the flaps to instantaneously reduce their angle, thereby keeping the lift constant.

FUEL AND OIL TANKS—The gasoline supply is carried beneath the floor of the cabin in a sixty gallon tank. Two additional tanks may be added if required, bringing the total available supply to 127 gallons. A positive flow of gas is assured by use of the engine driven fuel pump and auxiliary hand wobble pump. Wing heaviness is eliminated, a cleaner landing gear is made possible, and a lower center of gravity position results from this type of installation.

EXTERIOR—The DGA-9 may be painted any one of three standard colors in the Howard Color Chart conforming to standard design. All surfaces are polished.

CABIN FURNISHINGS—The cabin upholstery, furnishings and accessories are of the finest possible consistent with light weight and practicability. Thorough soundproofing has reduced the noise level to a minimum. Seats are upholstered in the finest of genuine leather in a choice of several colors. The sidewalls and ceiling are lined with Laidlaw broadcloth in contrasting shades. Instrument panel, window molding, and interior paint is done in a contrasting color. A convenient glove compartment above and in back of the rear seat is provided for small or miscellaneous articles.

INSTRUMENTS—The instruments consist of high grade precision instruments including: Rate of Climb, Bank and Turn, Airspeed and Pitot Tube, Oil Temperature Indicator, Oil Pressure Indicator, Compass, Tachometer, Altimeter, Manifold Pressure Gauge, Fuel Pressure Indicator, Fuel Level Indicator, Stabilizer Indicator, electrically controlled, and an Ammeter. The instruments are arranged in accordance with airline standards and all flight instruments are shock mounted and are indirectly lighted.

SEATING CAPACITY—The two pilot seats are adjustable fore and aft as well as vertically. The rear seat is of the hammock type. Arm rests are provided for the convenience of the rear seat passengers. Exceptional leg room is provided between front and rear seats for maximum comfort on the longest journey.

BAGGAGE—A separate compartment aft of the rear seat is provided for large baggage with ample space allowance for 120 pounds. Under the baggage compartment is sufficient room for future installation of radio equipment.

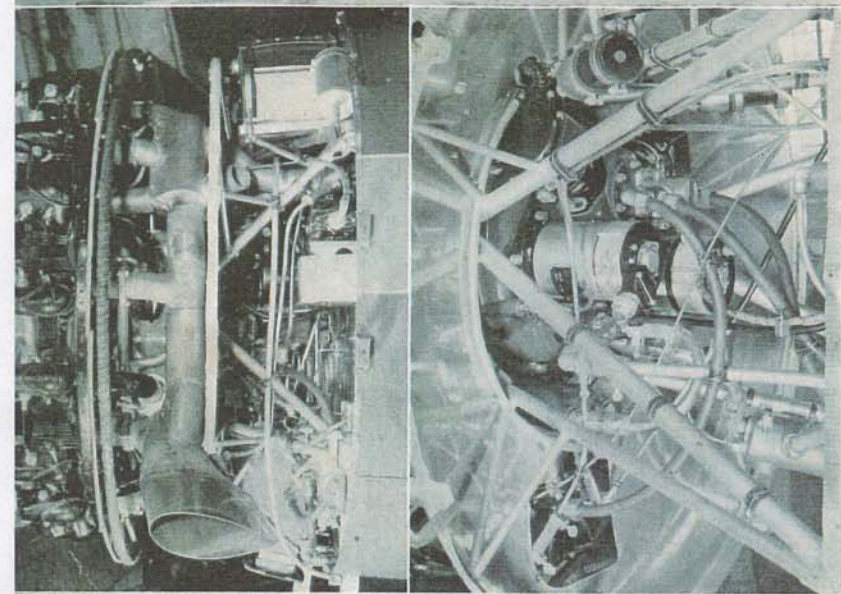
VENTILATION AND HEATING—Fresh clean air is brought in from the wings into the cabin and expelled through a floor ventilator providing fume free air at all times. For winter operation a positive controlled flow of warm air is provided through the cabin heater.

MISCELLANEOUS EQUIPMENT—Navigation lights, engine tool kit, engine and airplane log books, and other items of equipment are included at no extra cost.

PRICE F. A. F. CHICAGO \$ 9 . 8 8 0 . 0 0 COMPLETE



Installation of fuel tanks in the fuselage eliminates the necessity of climbing over the plane while servicing.



These views of the motor installation show clearly the provision for accessory inspection and adjustment.



The Howard is ideally suited to float installation. High wing construction and low center of gravity provide excellent stability, and the Howard ability to carry great loads at high speeds makes it one of the finest seaplanes available.





HOWARD FEATURES

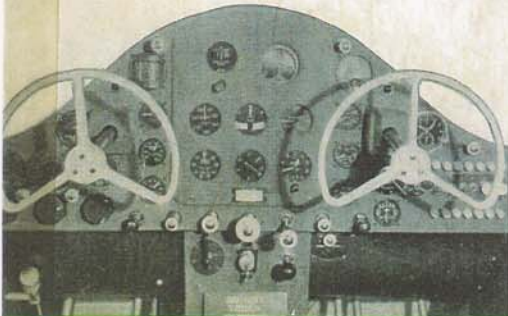
1 Structurally the Howard is designed with safety factors much in excess of those required by law.

2 Manually operated flaps, incorporating a constant lift regulator, allow smooth approaches and landings to be made under extreme gust conditions.


3 Extraordinarily high wing loading made possible by the use of these flaps assures an almost unbelievable smoothness even in rough air at high speeds.

4 The ultimate in aerodynamic efficiency permits cruising speeds greater than the swiftest airline transports without resorting to the complications of retracting gears, the use of excessive power, or the sacrifice of structural strength.

5 Airline completeness in equipment, quality of engine, instruments, accessories, built-in stamina, and luxurious appointments complete the airplane for the man who demands airline security and performance without having to adhere to established routes and schedules.



A typical instrument panel installation on a Howard DGA-8 showing the ample space provided for additional flight instruments. All radio and electrical circuit fuses are instantly available to the pilot in flight.



The cabin of the Howard plane was designed for maximum comfort on long trips. This view of the cabin indicates the foresight of the designers in providing roominess even when equipped with four parachute seats.

Howard

A I R C R A F T C O R P .

Factory and General Offices * 5301 W. 65th St.

C H I C A G O , I L L I N O I S

