

Twin Otter
SERIES 400

Twin Otter Series 400



VIKING
VERSATILITY THAT WORKS

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SERIES 400

In 1965, de Havilland Canada developed the DHC-6 Twin Otter aircraft – a high winged, un-pressurized twin engine turbine powered aircraft with fixed tricycle land gear. Designed as a rugged Short Take Off and Landing (“STOL”) commuter, the Twin Otter was capable of carrying passengers and cargo into remote unimproved locations, including ski and water based operations. The aircraft were sold around the world to customers operating in the harshest environments, including sub-zero Antarctica, the hottest deserts of North Africa, the mountainous regions of the Himalayas, and the open water of the Indian Ocean archipelagos. A testimony to its rugged construction and incredible STOL performance, the Twin Otter became the best-selling 19 passenger aircraft of all time, still unmatched for its dependability and versatility.

The de Havilland Twin Otter experienced a production span of twenty-three years before the line was officially shut down in 1988, after a total of 844 aircraft were delivered. The “Legacy fleet”, as it is now known, has remained in active use since the program end,

carrying out jobs no other aircraft can do; in 2001, the Twin Otter was chosen as the only aircraft capable of performing an emergency evacuation flight of a critical patient from the South Pole under extreme -60 degree conditions.

This ability to reliably operate in any environment with minimal maintenance requirements has kept the legacy fleet at the forefront of niche markets around the world. It is often said that the only thing that can replace a Twin Otter is another Twin Otter, which explains the high demand in the market to keep the nearly 600 remaining legacy aircraft in operation.

In 2005, Viking purchased the Type Certificates for all of the out-of-production de Havilland aircraft (DHC-1 through DHC-7), including the Twin Otter. After an extensive market analysis was conducted, it was determined that an overwhelming demand existed to bring the Twin Otter back into production, thus the Viking Series 400 Twin Otter Production Program was announced in 2007.

The Series 400 Twin Otter picks up where the original de Havilland Series 300 Twin Otter left off, introducing upgraded Pratt & Whitney PT6A-34 engines, fully integrated Honeywell Primus Apex digital avionics suite, use of composite materials, and approximately 800 other modifications incorporated to improve upon the original production model. However, like its predecessor, the Series 400 Twin Otter retains the ability to operate from remote and unimproved airfields due to its robust design, equalized maintenance program, and dependability of the Pratt & Whitney engines.

Available on standard land gear, optional straight or amphibious floats, skis, wheel skis, or intermediate flotation gear (“IFG”), with multiple quick-change interior configurations available, the Series 400 Twin Otter is a versatile aircraft that can be utilized for multiple roles, such as regional commuter, environmental monitoring, parachute operations, cargo and infrastructure support, corporate shuttle, crew carrier, charter operations, and personal private use.

A military variant of the Series 400, the Twin Otter Guardian 400, has also been developed for missionization and varied Government operations. Offered as a versatile airframe that can be customized for unique configuration requirements, the Guardian 400’s low acquisition cost and flexible architecture allows operators to mix and match sensors and interior layouts to meet their specific mission profiles.

To date, Viking has sold Twin Otter Series 400 aircraft to military, commercial, corporate, and private operators in 26 countries around the world. The future promises to be exciting with continued aircraft deliveries, increasing the worldwide fleet of owners and operators who contribute to the ongoing de Havilland legacy every day.

Combining a proven design with modern technology, the new Viking DHC-6 Twin Otter Series 400 will provide owners and operators with “Versatility That Works”.



Product Information

GENERAL INFORMATION:

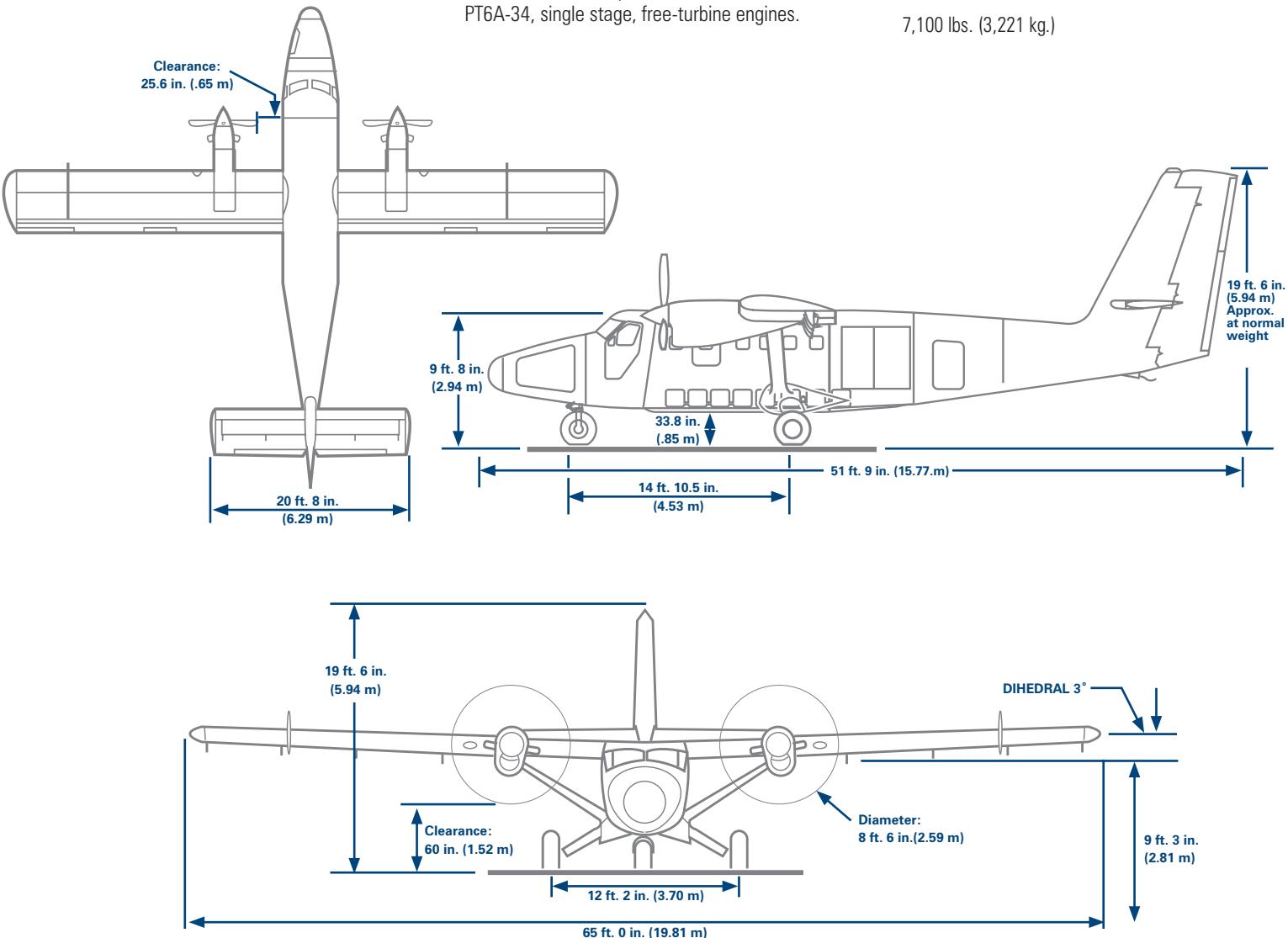
Max. Takeoff Weight: 12,500 lbs. (5,670 kg.)
 Max. Landing Weight: 12,300 lbs. (5,579 kg.)
 Number of Crew: 1 or 2
 Number of Passengers: 19
 Fuel Capacities:
 Total – 378 US Gallons (1,432 litres)
 Optional Long Range – 89 US Gallons (336 litres)

CABIN DIMENSIONS:

Cabin Length: 18 ft. 5 in. (5.61 m)
Cabin Height: 4 ft. 11 in. (1.50 m)
Cabin Width: 5 ft. 9 in. (1.75 m)
Cabin Volume (usable): 384 cu. ft. (10.87 cu. m)
Cabin Doors (left side):
 50 in. X 56 in. (1.27 m x 1.42 m)
Cabin Door (right side):
 30 in. X 45.5 in. (.76 m x 1.16 m)

ENGINES:

Two, Pratt & Whitney Aircraft of Canada Limited, PT6A-34, single stage, free-turbine engines.



AIRFRAME:

Configuration and Construction:
 All metal, non pressurized, high-wing monoplane with fixed tricycle (steerable nose) landing gear.

PROPELLERS:

Two Hartzell HC-B3TN three bladed reversible pitch, constant speed, fully feathering propellers.

BASIC GREEN AIRCRAFT WEIGHT:

7,100 lbs. (3,221 kg.)

PERFORMANCE SUMMARY:

- **STOL Takeoff and Landing Distance**
 Takeoff distance to 50 ft.: 1,200 ft. (366 m)
 Landing distance from 50 ft.: 1,050 ft. (320 m)
- **Maximum Cruise Speeds, TAS**
 Sea Level: 170 kt
 5,000 ft.: 181 kt
 10,000 ft.: 182 kt
- **Enroute Rate of Climb at Sea Level**
 (both engines at max. climb power): 1,600 ft./min
- **Service Ceiling (Rate of climb 100 ft/min)**
 (both engines at max. climb power): 25,000 ft. (7,620 m)
- **Fuel Burn at Economy Cruise**
 146 KTAS at 10,000 ft.: 468.2 lbs/hour (0.311 nm/lb of fuel)
- **Payload Range – at max cruise speed**
 Payload for 100 nautical mile (185 km) range: 4,061 lbs. (1,842 kg.)
 Payload for 400 nautical mile (741 km) range: 3,031 lbs. (1,375 kg.)
- **Maximum Range (Zero Payload)**
 With standard tankage (2,576 lbs. (1,169 kg.) fuel): 799 nm (1,480 km)
 With long range tankage (3,190 lbs. (1,447 kg.) fuel): 989 nm (1,832 km)
- **Maximum Endurance**
 With standard tankage (2,590 lbs. (1,175 kg.) fuel): 6.94 hrs.
 With long range tankage (3,190 lbs. (1,447 kg.) fuel): 8.76 hrs.

SHORT TAKE OFF AND LANDING ("STOL") PERFORMANCE

DIRECT OPERATING COSTS PER FLIGHT HOUR:

Fuel Cost ¹	\$517.24
Airframe and Propeller Maintenance ²	\$139.58
Engine Restoration Cost ³	\$180.50
TOTAL DIRECT OPERATING COST	\$837.32

DIRECT OPERATING COST ASSUMPTIONS AND SOURCES:

1. Fuel

Fuel cost is based on an average ground speed of 165kts and typical sector fuel burn of 575lb per hour at a fuel cost of \$6 per US Gallon. For a higher ground speed of 175kts, a typical sector fuel burn of 640lbs should be used.

2. Airframe and Propeller Maintenance

Airframe and propeller maintenance cost assumes an annual utilization of 1200 flight hours (FH) and a cycle to FH ratio of 2. It is based on a combination of labor costs and parts costs as follows:

Labor: Based on the aircraft maintenance schedule, labor cost assumes a preventative maintenance Man Hour (MH) per flight hour ratio of 0.948, plus a 10% allowance for corrective maintenance MH. Assuming a labor rate of \$87/MH, this equates to a total of \$90.72 per flight hour.

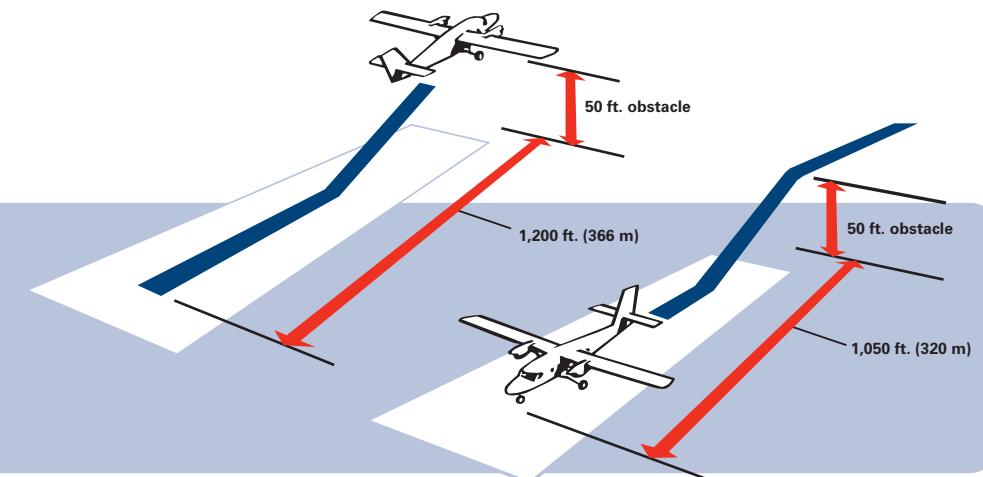
Parts: Preventative maintenance parts of \$18.86 per flight hour (based on the aircraft maintenance schedule) and corrective maintenance parts of \$30.00 per flight hour (based on Conklin and De Decker estimates), for a total of \$48.86 per flight hour.

3. Engine Restoration

This covers engine overhaul and component life costs based on Viking Air estimates of typical overhaul costs and current overhaul, HSI and component life limits.

Additional Variable Cost Allowances (provided by Conklin & DeDecker - highly dependent on country/use):

Landing and Parking.....	\$13.87
Crew.....	\$70.24
Supplies and Catering.....	\$51.06



Standard Equipment



AIRFRAME

- Airstair Door
- Cargo Door
- 19 Seat Commuter Interior
- Rear Baggage Compartment
- Forward Baggage Compartment
- Corrosion Prevention Primer



POWER PLANT

- PT6A-34 Engines
- Hartzell Three Blade Propeller

ENGINE FIRE DETECTION

- Fire Detecting
- Fire Extinguishing

VENTILATION

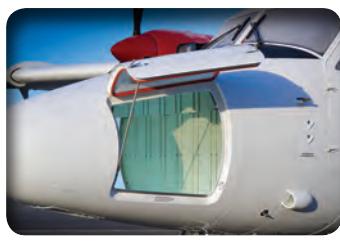
- Heating System
- Temperature Control System
- Cabin Gasper Vents
- Passenger Gasper Vents

ELECTRICAL

- 28 Volt DC
- Main Battery
- External Power
- No AC Electrical

GROUND HANDLING

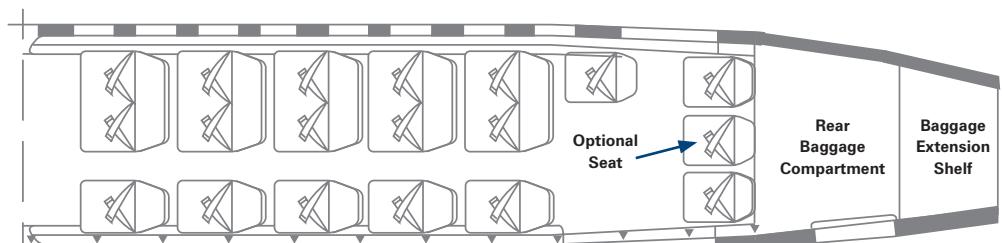
- Towing Provisions
- Jacking Provisions
- Hoisting Provisions
- Tie-Down Provisions
- Leveling Provisions



PNEUMATIC SYSTEM

- Bleed Air System
- Low Pressure Pneumatic System

STANDARD 19 SEAT CONFIGURATION



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Photos from top to bottom: Rear access combination airstair and cargo door. Retractable roof access steps for ease of maintenance. Nose baggage compartment with avionics bay covers in place.

Optional Equipment

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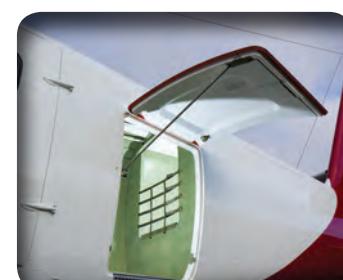
OPTIONAL AVIONICS

- 256 word per second FDR
- Second ADF receiver
- Second Radar Altimeter
- Third VHF
- Third VOR/ILS
- TCAS II (upgrade from TCAS 1)
- Electronic Checklists
- Display of Jeppesen Terminal Charts
- HF Radio
- Convenience Outlets in Passenger Cabin
- Third Crewmember (Loadmaster or Cabin Attendant) Intercom Station
- Passenger Intercom Stations



FUTURE OPTIONS

- 3 Axis Autopilot
- AOA Indicator
- Honeywell RAAS (Runway Awareness and Advisory System)
- Coupled LNAV and VNAV
- LPV Approach Capability
- Honeywell Smart View (Synthetic Vision)
- Remote Video Input to Multifunction Display



ELECTRICAL

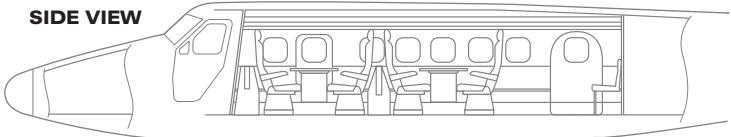
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Optional Interiors

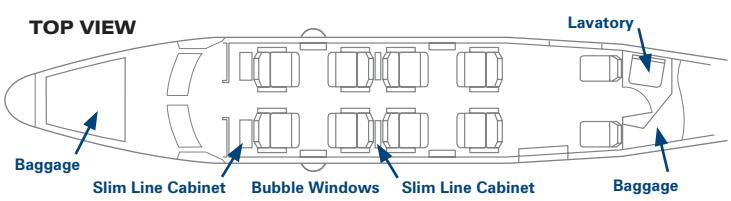
The Twin Otter Series 400 features multiple interior configurations that are easily interchangeable with optional 3rd seat rail installation.

VIP CONFIGURATION

- Double VIP Club
- Slim Line Cabinets
- 2 Standard Seats
- Aft Lavatory

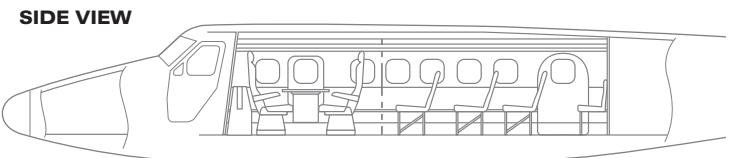


SIDE VIEW

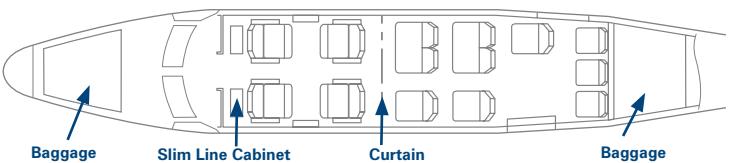


CORPORATE SHUTTLE CONFIGURATION

- Single VIP Club
- Slim Line Cabinets
- 10 Standard Seats



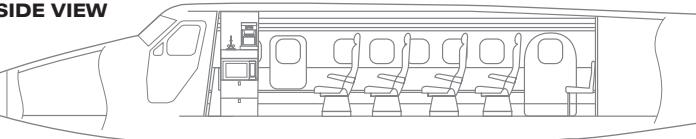
SIDE VIEW



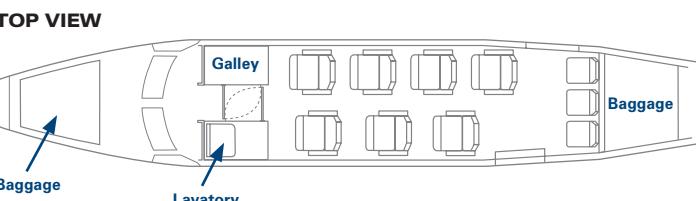
VERSATILITY THAT WORKS

EXECUTIVE CONFIGURATION

- 7 Forward Facing VIP Seats
- 3 Standard Seats
- Galley
- Forward Lavatory

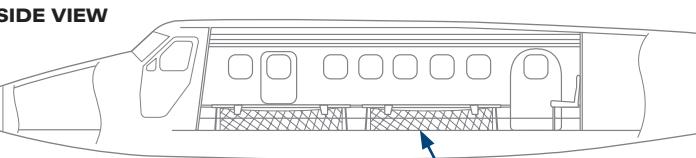


SIDE VIEW

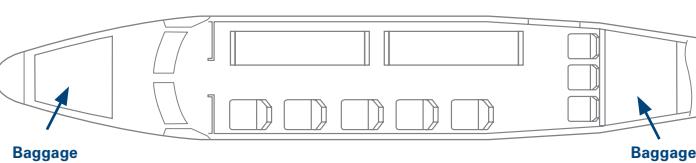


MEDICAL EVACUATION CONFIGURATION

- 1 or 2 Single Stretchers
- 8 Standard Seats



SIDE VIEW



Photos clockwise from top left: 1. Optional combination VIP club / standard passenger seating with leather upgrade and stow away bi-fold table. 2. Optional club seating with height adjustable arm and head rests. 3. Standard 19-passenger interior. 4. Optional rear lavatory installation. 5. Optional executive interior with forward club and side bench seating. 6. Standard single passenger seat with full height back and lower luggage bar. 7. Standard rear mounted seats fully extended, and 8. Folded up for stowage. 9. Optional slimline cabinet with double drawers or insulated compartment.

Twin Otter

SERIES 400

Reach Any Destination...

The Twin Otter is renowned for its ability to perform in a multitude of environments, providing operators with versatility in a single platform. When equipped with seaplane or amphibious floats, the Twin Otter can reach remote waterfront destinations while still exhibiting STOL (Short Take Off & Landing) capabilities. The unique design of the retractable landing gear in the amphibious floats allows the Twin Otter flexibility from both land and water based operations in a single flight plan.

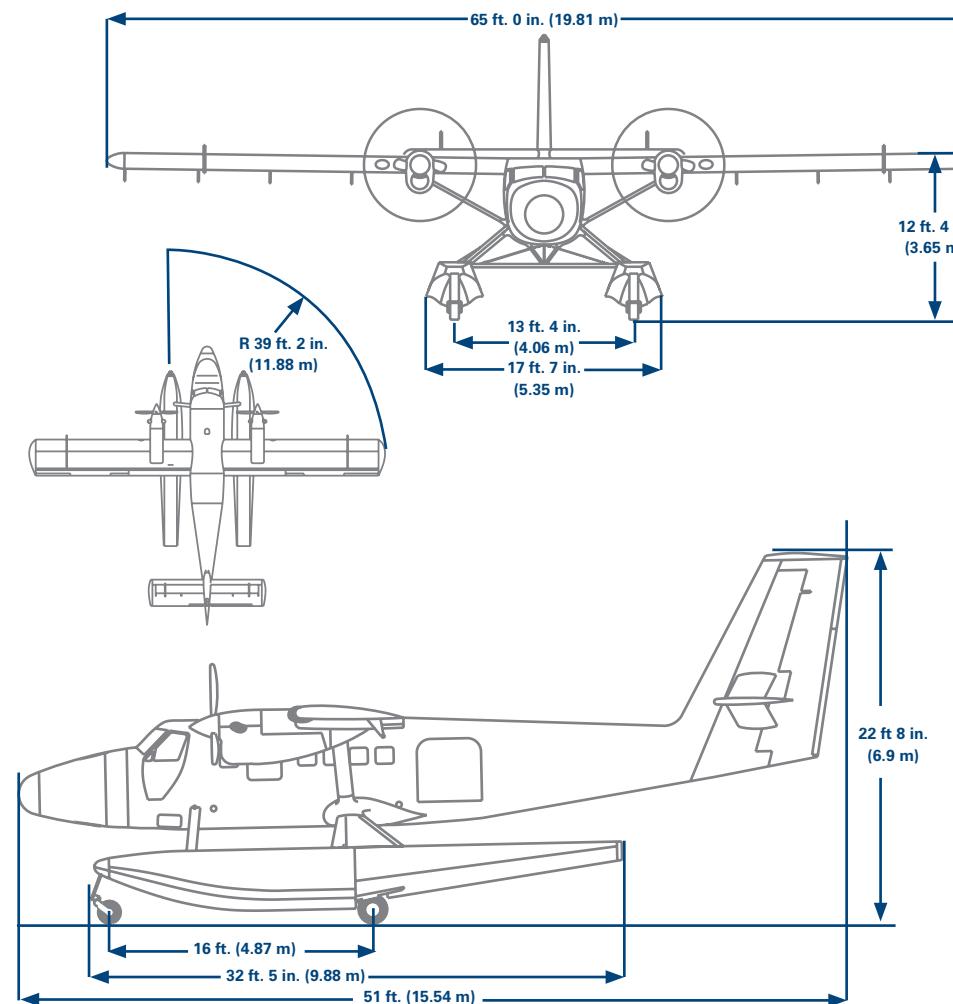


Wipline 13000 floats feature fluted hull design with deadrise bottoms and extra buoyancy to provide superior handling in high seas and wind, while the flat wide top decks and built-in steps make boarding safe for crew and passengers. To further improve safety, the floats are designed and installed so an emergency no-flap landing is not only possible but uneventful.

The Twin Otter configured with Wipline floats has been proven worldwide, from the lakes and coastline of the Canadian north to the open water conditions of the Maldives archipelago, and is the aircraft of choice for operations requiring water access.

Float Operations

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WEIGHT

- **Amphibian System Total Weight:** 2,141 lbs. / 971 kg.
- **Amphibian Exchange Weight:** 1,490 lbs. / 676 kg.
- **Seaplane System Total Weight:** 1,452 lbs. / 659 kg.
- **Seaplane Exchange Weight:** 849 lbs. / 385 kg.
- **Gross Weight:** 12,500 lbs. / 5,670 kg.

FLOAT DIMENSIONS

- **Length:** 32'5" / 9.88 m
- **Height – hull:** 3'9" / 1.14 m
- **Width – hull:** 4'3" / 1.3 m
- **Float Locker capacity (each):** 50 lbs. / 22.7 kg.

DISPLACEMENT ON FRESH WATER

- **Amphibious (100%):** 12,442 lbs. / 5,644 kg.
- **Amphibious (80%):** 13,824 lbs. / 6,270 kg.
- **Seaplane (100%):** 12,844 lbs. / 5,826 kg.
- **Seaplane (80%):** 14,271 lbs. / 6,473 kg.

PERFORMANCE

- **Engine PT6A-34**
- **Take off run (land):** 1,333 ft. / 406 m
- **Take off over 50 ft obstacle (land):** 1,843 ft. / 562 m
- **Take off run (water):** 1,227 ft. / 374 m
- **Take off over 50 ft obstacle (water):** 1,965 ft. / 599 m
- **Rate of climb (per min):** 1,400 ft. / 427 m

NOTE: Data is approximate only and may vary depending on aircraft configuration selected and loading conditions, and subject to change without notice.



On Target For Any Mission...

The Guardian 400 is the cost effective solution for 21st century surveillance, search & rescue, and critical infrastructure support due to its low acquisition and operating costs, flexible architecture, and ability to be configured with a variety of sensors and interior layouts to suit the operator's specific mission profiles.

A medium-range platform based on the Twin Otter Series 400 aircraft, the Guardian 400 can be outfitted with an electro-optical and infrared imaging

turret, 360 degree digital colour radar system, extended range internal patrol tank, four crew observation stations, air operable cargo door, search light, galley, and lavatory.

Designed for extreme operating environments, the Guardian 400 can be equipped with wheels, skis, or floats with a gross weight increase to 14,000lbs*, allowing for additional fuel and extended range for operational sorties over ten hours in duration.



Guardian 400

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GENERAL INFORMATION:

Max. Takeoff Weight: 14,000 lb (6350 kg.)*
Number of Crew: 1 or 2, cockpit and 4 observer stations
Fuel Capacities: Belly Tanks – 378 US Gallons (1,432 litres)
 Tip Tanks – 89 US Gallons (336 litres)
 Internal Patrol Tank – 185 US Gallons (700 litres)

BASIC GREEN AIRCRAFT WEIGHT:

7,100 lbs. (3,221 kg.)

AIRFRAME:

Configuration and Construction: All metal, non pressurized, high-wing monoplane with a fixed tricycle (steerable nose) landing gear.

CABIN DIMENSIONS:

Cabin Length: 18 ft. 5 in. (5.61 m)
Cabin Height: 4 ft. 11 in. (1.50 m)
Cabin Width (at floor): 4 ft. 4 in. (1.32 m)
Cabin Volume (usable): 384 cu. ft. (10.87 cu. m.)
Cabin Doors (left side): 50 in. X 56 in. (1.27 m x 1.42 m)
Cabin Door (right side): 30 in. X 45.5 in. (.76 m x 1.16 m)

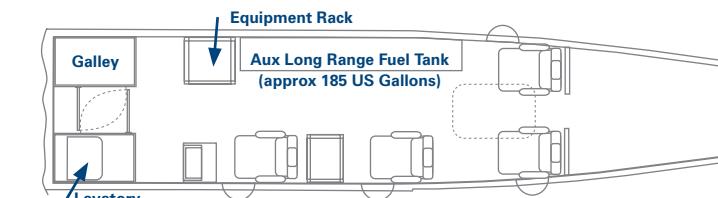
ENGINES:

Two, Pratt & Whitney Aircraft of Canada Limited PT6A-34 single stage, free-turbine engines.

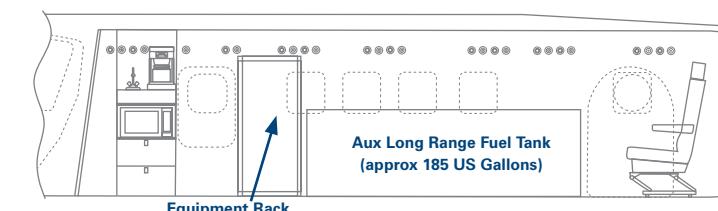
PROPELLERS:

Two, Hartzell, HC-B3TN, three bladed reversible pitch, constant speed, fully feathering propellers.

INTERNAL LAYOUT



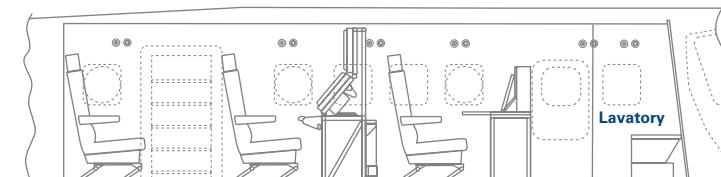
RIGHT SIDE INTERNAL VIEW



PERFORMANCE SUMMARY:

- STOL Takeoff and Landing Distance**
Takeoff distance to 50 ft.: 1200 ft. (366 m)
Landing distance from 50 ft.: 1050 ft. (320 m)
- Maximum Cruise Speeds, TAS**
Sea Level: 170 kt | 5000 ft.: 181 kt | 10,000 ft.: 182 kt
- Enroute Rate of Climb at Sea Level**
(both engines at max. climb power): 1600 ft./min
- Service Ceiling (Rate of climb 100 ft/min)**
(both engines at max. climb power): 25,000 ft. (7,620 m)
- Fuel Burn at Economy Cruise**
146 KTAS at 10000 ft.: 468.2 lbs/hour (0.311 nm/lb of fuel)
- Payload Range (at max. cruise speed operating under 14000 lbs restricted category):**
Payload for 100 nautical mile (185 km) range: 5,561 lbs. (2,522 kg.)
Payload for 400 nautical mile (741 km) range: 4,531 lbs. (2,055 kg.)
- Maximum Range (Zero Payload)**
With standard tankage (2,576 lbs. (1,169 kg.) fuel): 799 nm (1,480 km)
With long range tip tanks (3,190 lbs. (1,447 kg.) fuel): 980 nm (1,832 km)
With internal patrol tank (4,451 lbs. (2,019 kg.) fuel): 1,380 nm (2,556 km)
- Maximum Endurance**
With standard tankage (2,590 lbs. (1,175 kg.) fuel): 6.94 hrs.
With long range tip tanks (3,190 lbs. (1,447 kg.) fuel): 8.76 hrs.
With internal patrol tank (4,451 lbs. (2,019 kg.) fuel): 12.58 hrs.

LEFT SIDE INTERNAL VIEW



MISSIONIZATION OPTIONS:

Internal Fuel Patrol Tanks	Air Operable Bi-Fold Door
EO / IR Sensor / FLIR / MX15	Parachute Interior
250 Amp Generator	NVG Compatible Flight Deck
Tactical Radios	Search Light
Search Radar	SLAR
Air Operable See-Through Roll Up Cargo Door	

NOTE: All data is preliminary and subject to change without notice. Dimensions are approximate only and may vary depending on aircraft configuration selected and loading conditions. *12,500lbs is the Transport Canada maximum take off weight (MTOW) - 14,000lbs MTOW restricted category for military/government operations with local airworthiness approval). This configuration is used by the Canadian & US Military, and several other countries.



In Operation Around the World

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