



## *TECHNICAL DESCRIPTION*



## *MD 600N HELICOPTER*

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*MISSION PROVEN, CHALLENGE READY*

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# **TECHNICAL DESCRIPTION**

## **MD 600N HELICOPTER**

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## **1. FOREWORD**

This document presents basic technical description of the eight-place MD Helicopters, Inc. (MDHI) MD 600N helicopter built in Mesa, Arizona, USA. It is designed to provide high-level technical information of the helicopter, advantages / features, and configurations. For more detailed information, an MD 600N Product Specification is available by contacting one of the Sales Team Members listed below.

The MD 600N turbine engine helicopter provides a variety of mission applications ranging from geophysical surveys to air medical services and police surveillance. The 808-shp Rolls-Royce Model 250-C47M turbine-engine-powered MD 600N includes a fully articulated six-blade main rotor system for excellent control and maneuverability, and an advanced NOTAR<sup>®</sup> anti-torque system for reduced pilot workload and external noise levels..

The MD 600N is certified for single pilot operation under visual flight rules / visual meteorological conditions.

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## 2. KEY ADVANTAGES AND FEATURES

The MDHI MD 600N is a single turbine engine, rotary-wing aircraft. It has a cruising speed of 134 knots (248 kph / 154 mph), with a useful internal load at maximum gross weight is 2,000 pounds (907 kg). Hover out of ground effect is 6,000 feet (1,829 m) and hover in ground effect is 11,100 feet (3,383 m). The rate of climb at maximum gross weight is 1,350 feet (6.9 m/sec). The maximum operating altitude is 20,000 feet (6,097 m) with a -40 to +52C (-40 to 126F) operating temperature range. Sloped landings of up to 10-degrees are possible due to the articulated main rotor and the design of the landing gear. The MD 600N employs an advanced NOTAR<sup>®</sup> anti-torque system which reduces pilot workload, external noise levels, and significantly improves safety in confined areas due to no spinning tail rotor.

### ***THE MD 600N Advantages / Features***

<i>Airframe</i>	
<ul style="list-style-type: none"> <li>• Simple system design</li> <li>• Mature, field-proven systems and components</li> <li>• Separate cockpit and cabin</li> <li>• Eight-place seating capability</li> <li>• Speed, agility, and load-capable</li> <li>• Certified to 14 CFR Part 27; VFR</li> <li>• Approved / certified in over 50 countries worldwide</li> </ul>	<ul style="list-style-type: none"> <li>• External power receptacle</li> <li>• Integrated landing gear dampers</li> <li>• Fully articulated main rotor blades</li> <li>• Main rotor system removal independent from main rotor transmission</li> <li>• Main rotor transmission removal independent from main rotor system</li> <li>• Proven record of high dependability</li> <li>• High availability</li> </ul>
<i>Integrated Safety Features</i>	
<ul style="list-style-type: none"> <li>• No tail rotor (NOTAR<sup>®</sup>) anti-torque system eliminates the spinning tail rotor, tail rotor gearbox, and tail rotor drive shaft</li> <li>• Designed for operator ease</li> <li>• Main rotor static mast / base designed to be fail-safe to 100-percent design load</li> <li>• Three-dimensional truss-type structure with integral roll bar</li> <li>• Energy-absorbing airframe with occupant seat crush boxes for 20g shock resistance</li> <li>• Extended, energy-attenuating landing gear</li> <li>• Dual, crash-resistant elastomeric fuel cells mounted between crash-resistant keel beams and bulkheads below the cabin floor</li> </ul>	<ul style="list-style-type: none"> <li>• Main rotor transmission and NOTAR<sup>®</sup> fan drive shafts incorporate anti-flail devices if a flexible joint failure were to occur</li> <li>• Tail boom end-mounted tail skid</li> <li>• Shoulder / seat belts attached to primary structure</li> <li>• Engine mounted low and at the rear</li> <li>• Fuel filter automatic bypass if filter becomes restricted</li> <li>• Crew-seat four-point restraints</li> <li>• Passenger seats provided with three-point restraints</li> <li>• Caution / warning annunciators / audible warning tones</li> </ul>



**THE MD 600N Advantages / Features**

<b>Supportability Features</b>	
<ul style="list-style-type: none"> <li>• Designed for ease of maintenance and supportability</li> <li>• Modular system design</li> <li>• Designed for reparability</li> <li>• Low direct operating costs</li> <li>• Maximum use of line replaceable units:               <ul style="list-style-type: none"> <li>○ Engine</li> <li>○ Avionics / communication</li> <li>○ Flight controls</li> <li>○ Main rotor blades</li> <li>○ Main rotor drive shaft</li> <li>○ Main rotor transmission</li> <li>○ NOTAR<sup>®</sup> fan</li> <li>○ Main rotor transmission drive shaft</li> <li>○ Main rotor mast</li> <li>○ Landing gear</li> <li>○ Canopies</li> <li>○ Doors</li> <li>○ Door handles</li> <li>○ Door windows</li> <li>○ Seat restraints</li> <li>○ Tail boom</li> <li>○ Oil-cooler / blower</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Maximum use of line replaceable units (Contd.):               <ul style="list-style-type: none"> <li>○ Empennage</li> <li>○ Tail boom skid</li> </ul> </li> <li>• Built-in Maintenance aids:               <ul style="list-style-type: none"> <li>○ Engine fuel and oil filter impending bypass indicators</li> <li>○ Engine oil chip detector</li> <li>○ Main rotor transmission oil chip detector</li> <li>○ Integrated engine compressor wash system</li> <li>○ Engine oil filler cap / dipstick</li> <li>○ Main rotor transmission filler cap</li> <li>○ Engine and main rotor transmission, oil level sight gage</li> <li>○ Footsteps located on each side for upper deck access without ground support equipment</li> <li>○ Landing gear ground handling wheel quick attach feature</li> <li>○ Main rotor and NOTAR<sup>®</sup> fan balance monitoring system</li> </ul> </li> </ul>
<b>Human Systems Integration Features</b>	
<ul style="list-style-type: none"> <li>• Unobstructed forward 160-degree vertical and 220-degree horizontal cockpit field of view</li> <li>• Cockpit designed to accommodate 25<sup>th</sup> to 95<sup>th</sup> percentile male / female flight crew</li> </ul>	<ul style="list-style-type: none"> <li>• Integrated cockpit and cabin entry steps</li> <li>• Integrated visual / audible warning indication for flight critical functions</li> </ul>
<b>Engine</b>	
<ul style="list-style-type: none"> <li>• Fuel efficient, field-proven, turboshaft engine</li> </ul>	<ul style="list-style-type: none"> <li>• Externally accessible water wash system</li> </ul>
<b>Monitoring Instrumentation</b>	
<ul style="list-style-type: none"> <li>• Caution / warning annunciator panel located at the top of the instrument panel</li> </ul>	<ul style="list-style-type: none"> <li>• Digital upgrade pending</li> </ul>
<b>Environmental Impact</b>	
<ul style="list-style-type: none"> <li>• Low noise profile with NOTAR<sup>®</sup> anti-torque system</li> </ul>	



### **3. CERTIFICATION**

The MDHI MD 600N is a commercial FAA Type Certified aircraft under Code of Federal Regulations (CFR) Title 14, Part 27. The MD 600N was initially certified on May 1997. The MD 600N is certified to 14 CFR Part 36, Appendix J (Noise) through Amendment 36-21, effective on the date of the type certification. The MD 600N is also a European Aerospace Safety Administration (EASA) Type Certified helicopter.

Production, type, and supplemental type certificates are maintained by MDHI.

A standard airworthiness certificate (FAA form 8100-2), displayed in the aircraft, is the FAA official authorization allowing for the operation of type-certificated aircraft. The airworthiness certificate is displayed in the aircraft and remains valid as long as the aircraft meets the approved type design, is in a condition for safe operation, and maintenance, preventive maintenance, and alterations are performed in accordance with CFR Title 14, Part 21.



The FAA designation for this model is 600N, and the International Civil Aviation Organization (ICAO) Type Designation is MD60. MD Helicopters, Inc. commercial designation is MD 600N.



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## 4. DIMENSIONS, WEIGHT, AND MISSION CONFIGURATION

### 4.1 External Dimensions

The MD 600N external dimensions are provided in the following table and shown in the figure below.

**MD 600N External Dimensions**

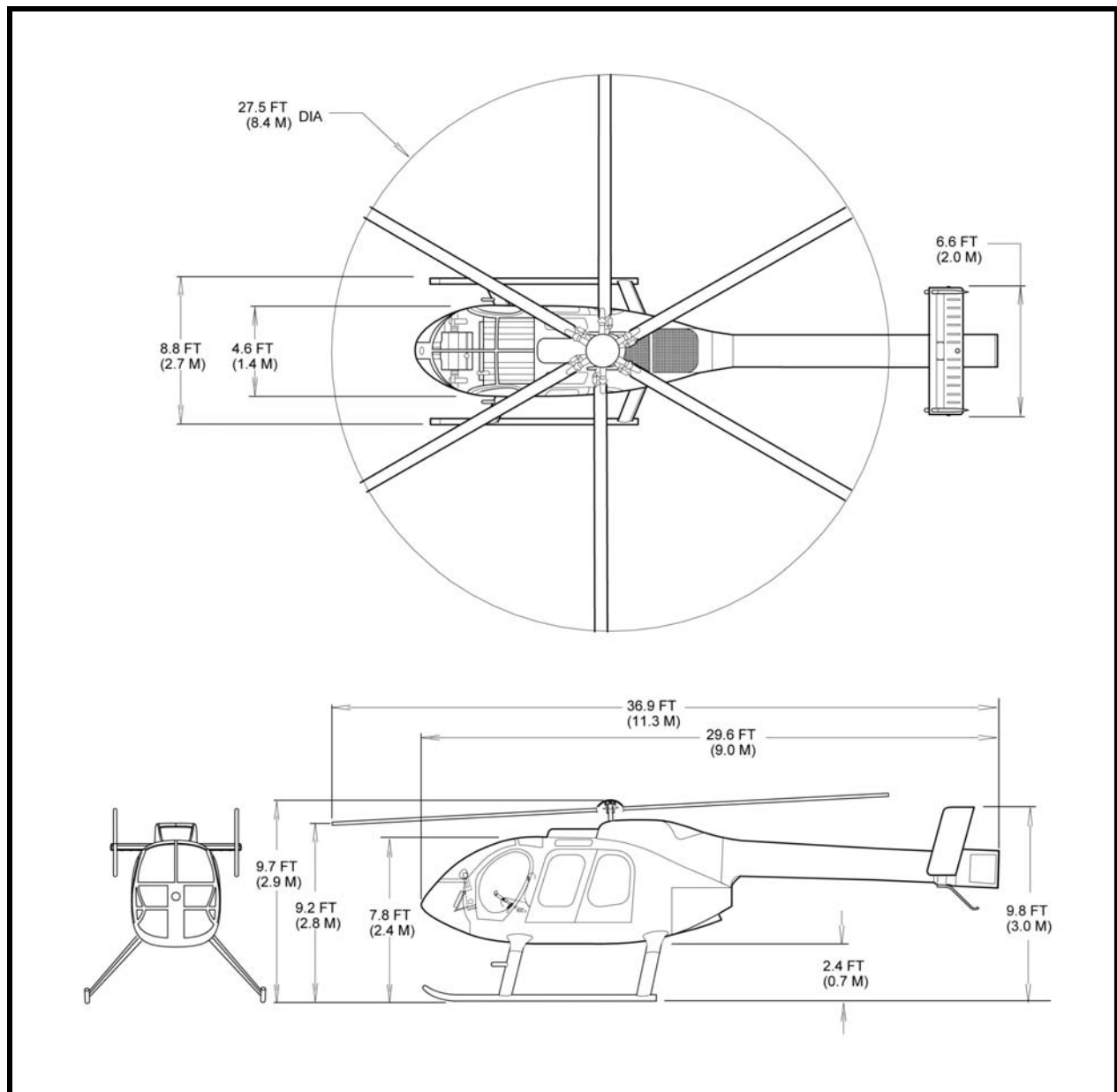
Parameter	Dimension, ft (m)
Fuselage Width	4.60 (1.40)
Fuselage Length	29.60 (9.00)
Horizontal Stabilizer Width	6.60 (2.00)
Landing Skid Width	8.80 (2.70)
Ground to Rotor Height	9.20 (2.80)
Ground to Fuselage Bottom Height	2.40 (0.70)
Main Rotor Diameter	27.50 (8.40)

### 4.2 Internal Dimensions

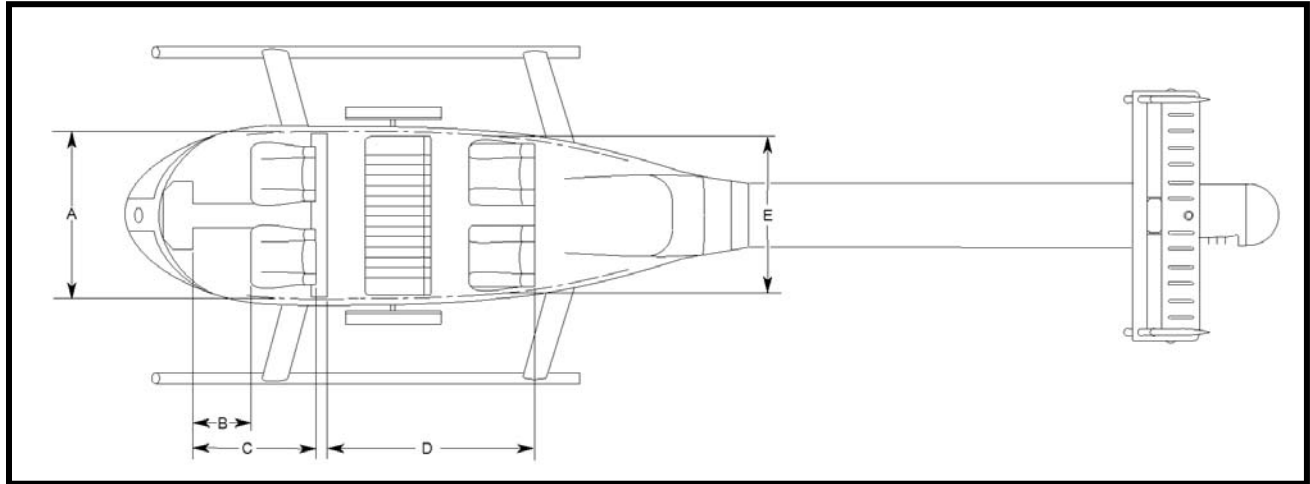
The MD 600N interior dimensions are provided in the following table and shown in the second figure below.

**MD 600N Internal Dimensions**

Parameter	Second Figure Reference Location	Dimension, in. (cm)
Crew Compartment Width	A	49.00 (124.50)
Crew Seat to Instrument Panel	B	18.50 (47.00)
Crew Compartment Depth	C	37.50 (95.30)
Passenger Compartment Depth	D	72.00 (182.90)
Passenger Compartment Width	D	48.00 (121.90)



**MD 600N External Dimensions**



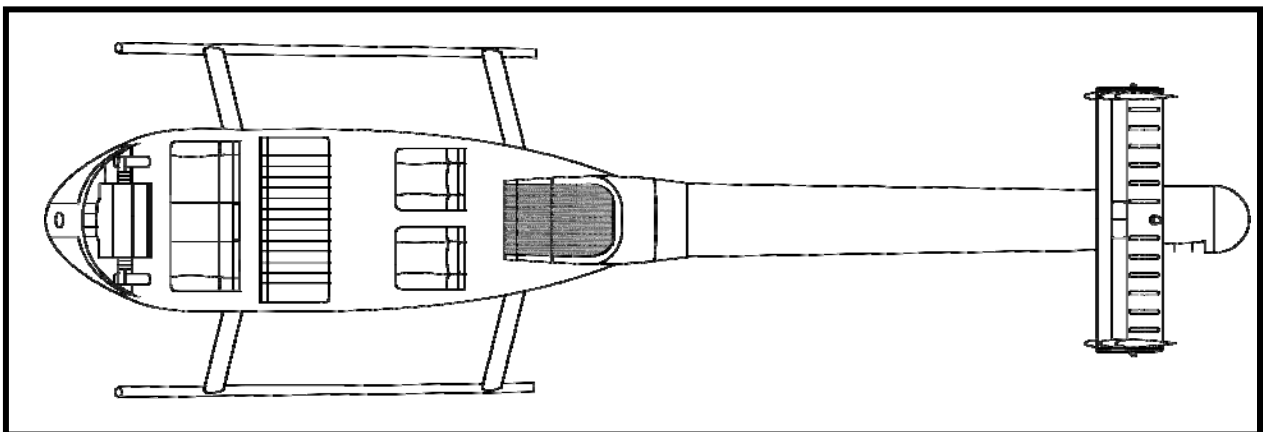
**MD 600N Internal Dimension Locations**

### 4.3 Weight

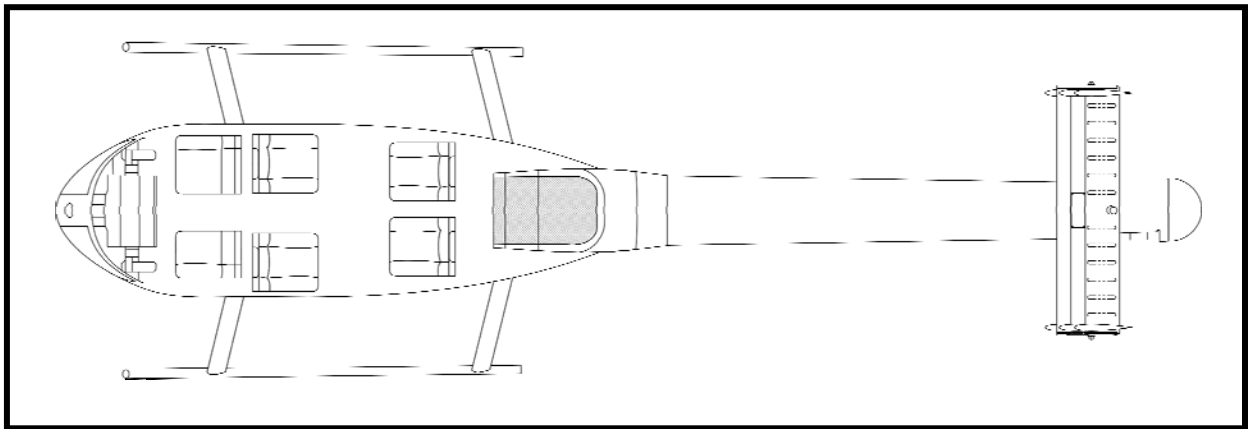
Using the Rolls-Royce Model 25-C47M turboshaft engine, the MD 600N nominal empty weight is 2,100 pounds (962 kg) for the standard configuration, and 2,036 pounds (923 kg) for the industrial configuration.

### 4.4 Configurations

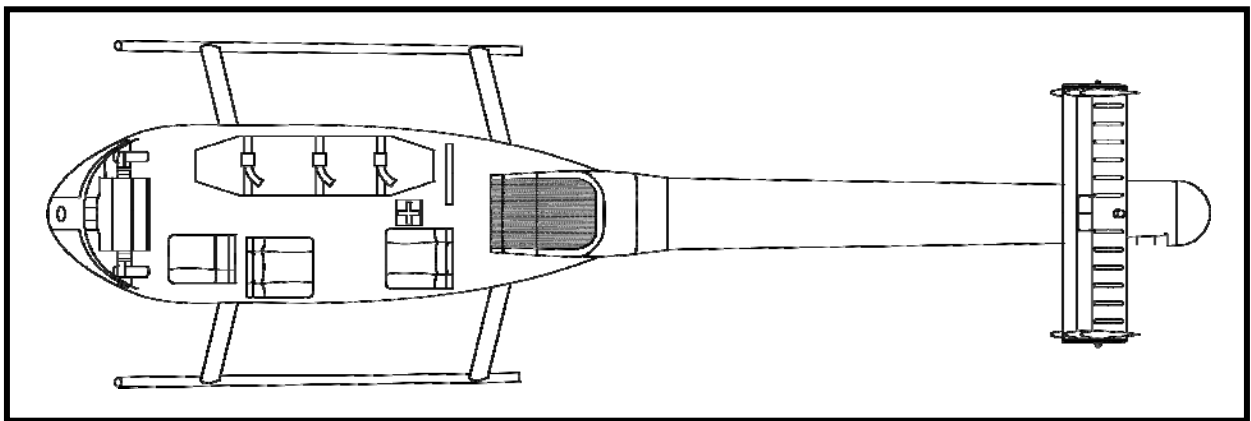
The MD 600N can be configured for a variety of different configurations. Configuration examples are shown in the following figures.



**MD 600N Standard Configuration**



***MD 600N Corporate Configuration***



***MD 600N Air Medical Services Configuration***





## 5. MD 600N SINGLE-ENGINE HELICOPTER

The MD 600N is a single turbine engine, rotary-wing aircraft. It has a fully articulated six-blade main rotor, and uses the NOTAR® anti-torque system. The MD 600N is certified for single-pilot operation under visual flight rules / visual meteorological conditions.

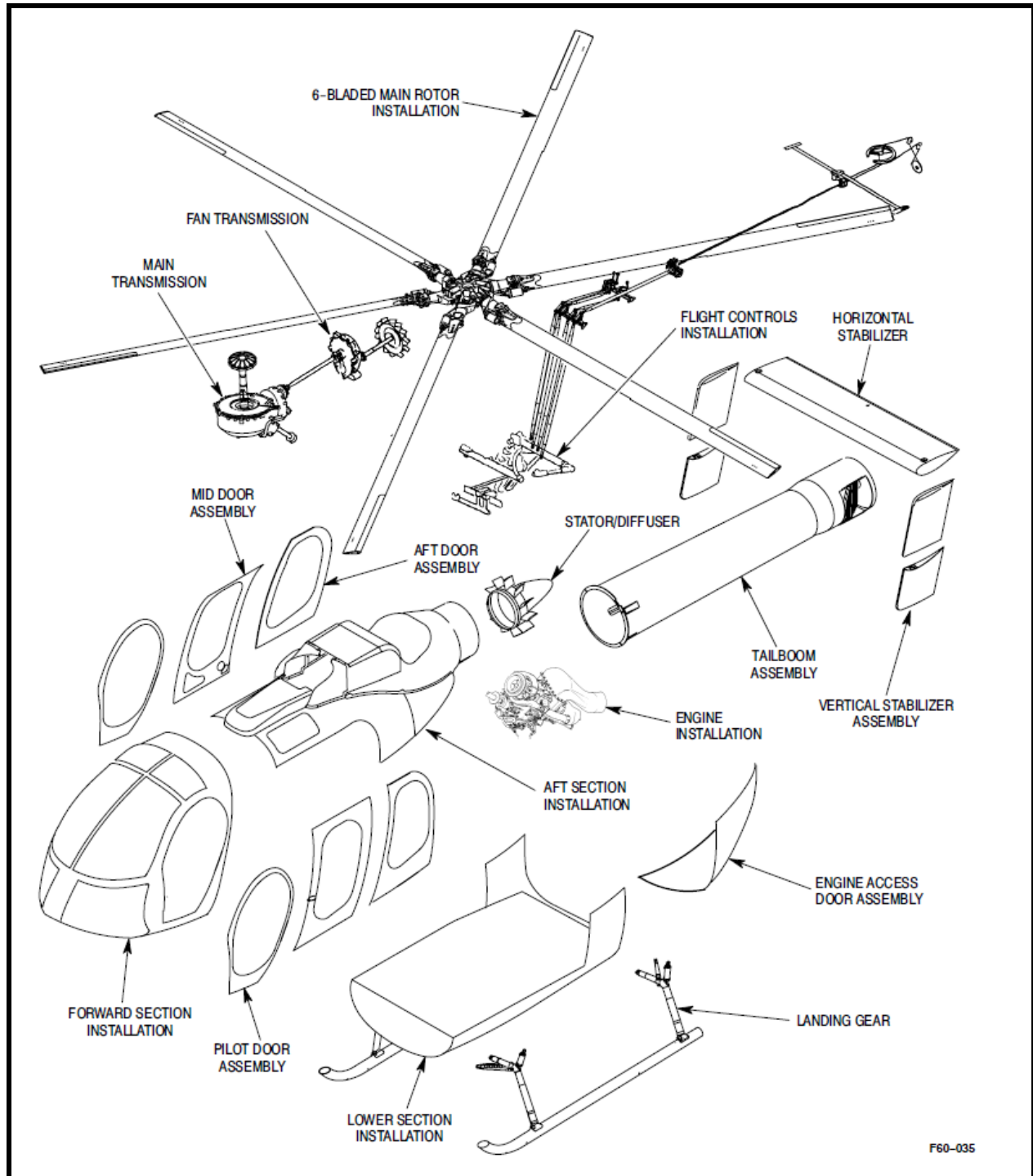
### 5.1 System Description

MD Helicopters, Inc. MD 600N is an eight-place, single turbine-engine, multi-purpose helicopter. The fuselage is constructed primarily of aluminum alloy while the NOTAR® anti-torque system components are primarily carbon epoxy composite structure. Power from the 808 shaft horsepower (shp) Rolls-Royce Model 250-C47M turboshaft engine is transmitted through the engine drive shaft to the main rotor transmission, and from the main rotor transmission through a drive shaft to the NOTAR® system fan. The NOTAR® system fan produces a low-pressure, high-volume airflow to pressurize the composite tail boom. Pressurized air is expelled through two slots which run the length of the tail boom on the right side, causing a boundary-layer control that results in the tail boom acting as a wing, flying in the downwash of the rotor system, and producing up to 60-percent of the anti-torque required in a hover. The balance of the direction control is accomplished by a rotating direct jet thruster on the end of the tail boom. A one-way clutch between the engine and main rotor transmission permits main-rotor freewheeling of the rotor system during autorotation. The rotor is supported by a hollow static mast mounted to the primary structure that absorbs all of the flight loads, allowing the transmission to provide only torque.

The airframe consists of faired sections that provide clean aerodynamic lines. This contributes to good handling qualities, low vibration levels, and high-speed flight capability. The airframe structure is designed to be energy-absorbing while maintaining rotor hub integrity. A rigid, three-dimensional truss-type structure increases crew and passenger safety by means of its roll-over structure design.

The MD 600N incorporates an empennage consisting of a composite horizontal and vertical stabilizer assembly located at the end of tail boom just forward of the jet thruster. A tail skid is mounted to the bottom, end, of the tail boom. The horizontal portion of the stabilizer is mounted with an elastomeric isolator that minimizes vibration transfer to the airframe due to wake turbulence. The vertical endplates are mounted to the horizontal stabilizer at each end, and are controlled using the yaw stability augmentation system (YSAS).

A diagram, of the major system components of the MD 600N is shown on the following page.



**MD 600N Major System Components**



## 5.2 Standard Equipment

The MD 600N is configured with standard equipment that is included in the basic aircraft procurement.

### MD 600N Standard Equipment

<b>Airframe</b>	
<ul style="list-style-type: none"> <li>Extended landing gear</li> <li>Rapid door removal hinges (cockpit and cabin)</li> <li>Tinted canopy windows</li> <li>Tinted door windows</li> <li>Dual center-opening, double doors – aft cabin</li> <li>Keyed locks</li> <li>Fuselage mounting points</li> <li>Carbide skid shoes</li> <li>One-color exterior paint</li> </ul>	<ul style="list-style-type: none"> <li>85-amp starter-generator</li> <li>Rain gutter</li> <li>Jacking fittings</li> <li>Passenger steps</li> <li>Anti-collision lights (2)</li> <li>Landing light, nose mounted</li> <li>Position lights (2)</li> <li>External power receptacle</li> <li>115 gallon (435 liter) fuel system</li> <li>NOTAR<sup>®</sup> anti-torque system</li> </ul>
<b>Interior - Cockpit</b>	
<ul style="list-style-type: none"> <li>Left hand rotor brake</li> <li>Dual left-hand command flight controls</li> <li>Heater defogger system</li> <li>Crew seats with four-point harness restraint</li> <li>Vinyl and fabric cushions</li> <li>Vinyl interior trim panels</li> <li>Crew compartment floor carpet</li> </ul>	<ul style="list-style-type: none"> <li>Map case</li> <li>Fire extinguisher</li> <li>First aid kit</li> <li>Battery-heavy duty Marathon 17-ampere-hour</li> <li>Fresh air ventilation system</li> <li>Cockpit utility light</li> <li>Instrument lighting</li> </ul>
<b>Interior - Cabin</b>	
<ul style="list-style-type: none"> <li>Passenger seats with three-point harness restraint</li> <li>Cabin compartment floor carpet</li> <li>Vinyl and fabric cushions</li> <li>Vinyl interior trim panels</li> </ul>	<ul style="list-style-type: none"> <li>Reversible aft cabin bench seat</li> <li>Cabin 28-volt utility outlet</li> <li>Cabin convenience light</li> <li>Cabin soundproofing</li> <li>Cargo tie down fittings</li> </ul>
<b>Engine</b>	
<ul style="list-style-type: none"> <li>Rolls-Royce Model 250-C47M engine, 808 shp (603 kW)</li> <li>Automatic engine re-ignition</li> <li>Engine wash kit</li> </ul>	<ul style="list-style-type: none"> <li>Engine compartment fire detection system</li> <li>Engine anti-ice</li> <li>Facet oil filter</li> </ul>
<b>Rotor and Controls</b>	
<ul style="list-style-type: none"> <li>Yaw stabilization augmentation system (YSAS)</li> </ul>	



**MD 600N Standard Equipment**

<b>Monitoring Instrumentation</b>	
<ul style="list-style-type: none"> <li>• Dual tachometer, NR and N2</li> <li>• Engine oil pressure indicator</li> <li>• Engine torque meter</li> <li>• N1 tachometer</li> <li>• Fuel quantity indicator</li> <li>• Engine oil temperature indicator</li> <li>• Digital chronometer</li> <li>• Airspeed indicator</li> <li>• Barometric altimeter</li> <li>• DC ammeter</li> <li>• Outside air temperature indicator</li> <li>• Magnetic compass</li> <li>• Turbine outlet temperature indicator</li> <li>• Battery over temperature warning light</li> </ul>	<ul style="list-style-type: none"> <li>• Engine chip detector warning light</li> <li>• Engine out warning light</li> <li>• Fuel filter obstruction warning light</li> <li>• Fuel low warning light</li> <li>• Generator out warning light</li> <li>• Low rotor rpm warning light</li> <li>• Main transmission chip detector warning light</li> <li>• Main transmission oil pressure warning light</li> <li>• Main transmission oil temperature warning light</li> <li>• FADEC and ECU caution lights</li> </ul>
<b>Miscellaneous</b>	
<ul style="list-style-type: none"> <li>• Engine, airframe, and battery log books</li> <li>• Rotorcraft flight manual</li> <li>• System/subsystem maintenance manuals and illustrated parts catalogs</li> <li>• Engine exhaust cover</li> <li>• Engine inlet cover</li> </ul>	<ul style="list-style-type: none"> <li>• Pitot tube cover</li> <li>• Fan inlet cover</li> <li>• Main rotor blade tie-downs</li> <li>• Ground handling wheels</li> <li>• NOTAR<sup>®</sup> inlet, thruster, and tail boom cover</li> </ul>

**5.3 MD 600N Optional Equipment**

Optional equipment for the MD 600N is available for additional cost, and is literally non-exhaustive.

**MD 600N Optional Equipment**

<b>Airframe</b>	
<ul style="list-style-type: none"> <li>• Heated pitot tube</li> <li>• Paravion cockpit door openers</li> <li>• Comfort windows</li> <li>• Dual side mount (forward looking infrared sensor &amp; searchlight)</li> <li>• Searchlight</li> <li>• Moveable landing / searchlight</li> <li>• Landing light pulse system</li> <li>• Video turret side mount</li> </ul>	<ul style="list-style-type: none"> <li>• Skid mirror</li> <li>• Two-/three-color standard exterior paint</li> <li>• Sealed lead-acid battery</li> <li>• Cargo hook with hard mount</li> <li>• Cargo hook provisions</li> <li>• On-board cargo hook weighing system</li> <li>• Emergency water floats</li> <li>• High visibility main rotor blades</li> </ul>



**MD 600N Optional Equipment**

<ul style="list-style-type: none"> <li>• Airframe fuel filter</li> <li>• Generator cooling kit</li> <li>• Engine bay door quick release hinges</li> <li>• Exterior crew handles</li> <li>• Air conditioning R-134 w/ forward evaporator</li> <li>• Tyler platform</li> </ul>	<ul style="list-style-type: none"> <li>• Night vision goggle compatible lighting</li> <li>• Wire strike protection kit</li> <li>• Twenty-one gallon (79 liter) auxiliary tank</li> <li>• Thirty-three gallon (125 liter) auxiliary tank</li> </ul>
<b>Interior - Cockpit</b>	
<ul style="list-style-type: none"> <li>• Leather covered interior panels</li> <li>• Leather covered seats</li> <li>• Black mesh seats</li> <li>• 28-volt receptacle</li> <li>• Pilot/copilot gooseneck lights</li> <li>• Right-hand command pilot</li> <li>• Flat panel monitor mounts</li> </ul>	<ul style="list-style-type: none"> <li>• Pilot Mason grip</li> <li>• Right-hand command pilot</li> <li>• Instrument panel face plate modification</li> <li>• Slant panel pedestal</li> <li>• Night vision goggle compatible lighting</li> <li>• Flat black painted interior</li> </ul>
<b>Interior - Cabin</b>	
<ul style="list-style-type: none"> <li>• Leather covered interior panels</li> <li>• Leather covered seats</li> </ul>	<ul style="list-style-type: none"> <li>• Black mesh seats</li> </ul>
<b>Monitoring Instrumentation</b>	
<ul style="list-style-type: none"> <li>• Diamond J turbine outlet temperature indicator</li> <li>• Avionics cooling fan</li> <li>• Blind encoder</li> <li>• Encoding altimeter 3-inch</li> <li>• Instantaneous vertical speed indicator</li> <li>• TRA 3000 radar altimeter w/indicator</li> <li>• Attitude gyro indicator, 3-inch</li> <li>• Directional gyro - panel mounted</li> <li>• Compass system (KCS55A)</li> <li>• Radio magnetic indicator (K1229-00)</li> <li>• Turn and bank indicator, 2-inch</li> <li>• Turn and bank indicator, 3-inch</li> <li>• Copilot intercom switch</li> <li>• Garmin G500 system</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency locator transmitter</li> <li>• Various NAV / COM / GPS equipment</li> <li>• Various transponders</li> <li>• Various displays, radios, transceivers, and data links</li> <li>• Various audio panels, intercoms, CD player, AM / FM radios</li> <li>• Cyclic remote frequency switch</li> <li>• Hand held radio provisions to include AA-34 universal</li> <li>• Communication headsets External PA / siren system</li> <li>• Forward looking infrared sensor</li> <li>• Aero Computers mapping system</li> <li>• Avionics master switch</li> </ul>

## 5.4 Fuselage

The MD 600N fuselage is a teardrop-shaped, aerodynamically efficient structure that incorporates a NOTAR<sup>®</sup> circulation control tail boom and an empennage consisting of horizontal and vertical stabilizers. The fuselage is a semi-monocoque construction, manufactured primarily of aluminum alloy. It consists of a rigid, three-dimensional, truss-type structure with an integral roll-bar design for increased occupant safety. The airframe structure is designed to be energy absorbing and fails progressively in the event of impact. Occupant seat crush boxes are incorporated into the design and provide 20g shock resistance. The composite tail boom incorporates the NOTAR<sup>®</sup> circulation control and is the mount for the empennage and rotating direct-jet thruster at the end of the tail boom.

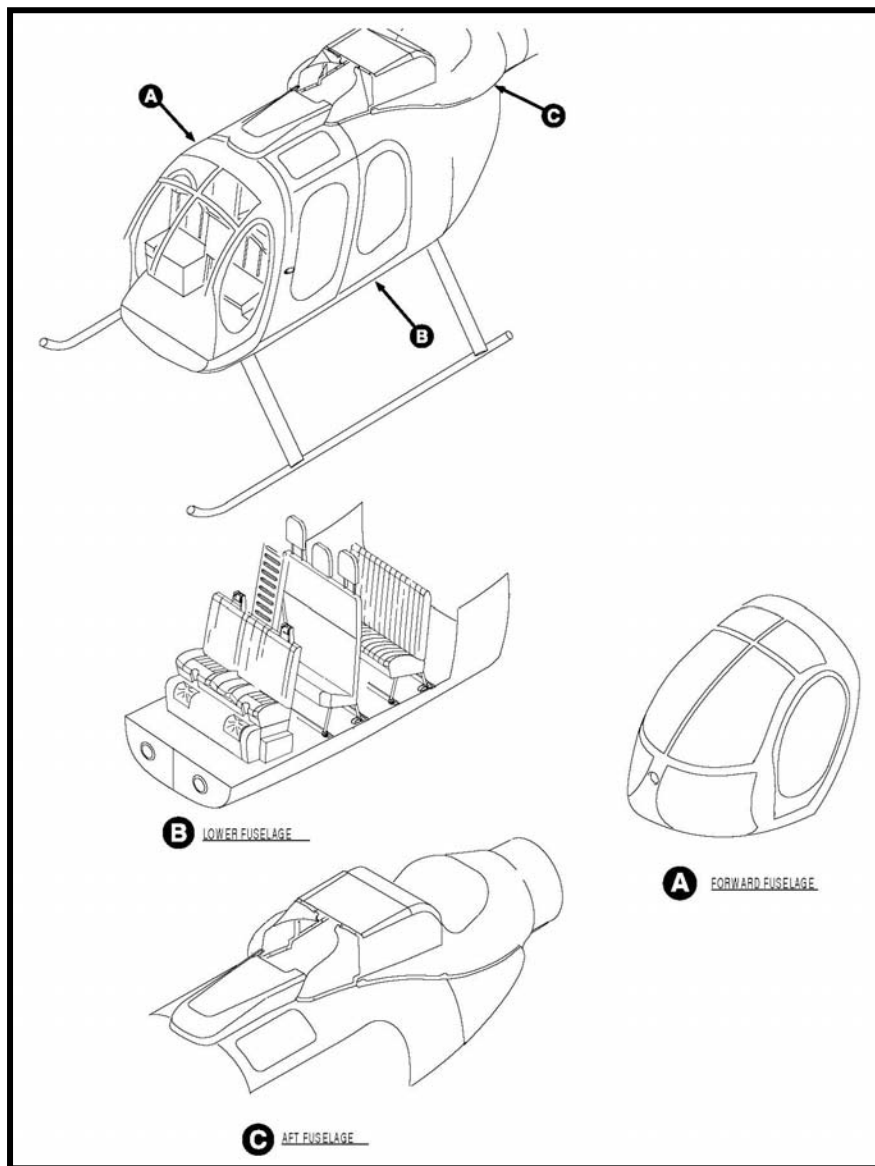
The MD 600N was created by adapting a mid-section extension into a MD 500-series fuselage. This mid-section extension provides additional, comfortable seating for an additional three people or with all seats removed, 6 feet (1.83 m) of cabin-floor cargo space. Cabin doors (see figure below) are center opening for entry ease.



**MD 600N Fuselage Structure**

The fuselage structure is divided into three main sections as shown in the figure below:

- **Forward section** – comprised of a pilot compartment and, directly aft separated by a bulkhead, a passenger/cargo compartment. The pilot compartment is equipped with seats for the pilot and either one or two passengers. The passenger / cargo compartment, located in the center of the aircraft, contains provisions for installation of a bench or individual folding-type seats for up to five passengers. The lower fuselage structure beneath the pilot / passenger floor contains compartment space for the aircraft battery and provision for small cargo storage or installation of avionics equipment.



**MD 600N Main Fuselage Assembly Sections**

- **Aft section** – includes the structure for the tail boom attachment, NOTAR<sup>®</sup> system fan, and engine compartment. The tail boom is also a monocoque structure manufactured of aluminum alloy, and is the supporting attachment structure for the direct-jet thruster, horizontal stabilizer, and vertical stabilizers.
- **Lower section** – divided by the center beam and provides the housing for the two fuel cells. Provisions for the attachment of a cargo hook are located on the bottom of the fuselage in line with the center beam.



## 5.5 Exterior

The MD 600N exterior can be painted a single-color of the customer choice from available colors. An additional two, three, or more colors can be painted on the exterior for an additional cost. The exterior provides mounting locations for external antennas of customer-purchased avionics / communication equipment, external lighting, main rotor static mast, landing gear, and tail boom.

## 5.6 External Lighting

The MD 600N external lighting (shown below) consists of a:

- Rear position light assembly
- Rear anti-collision strobe light assembly
- Lower anti-collision strobe light assembly
- Left-hand red position light assembly
- Right-hand green position light assembly
- Landing hover light.

Standard cockpit lighting includes cockpit lights for the pilot. A passenger compartment convenience light is optional.

## 5.7 Interior

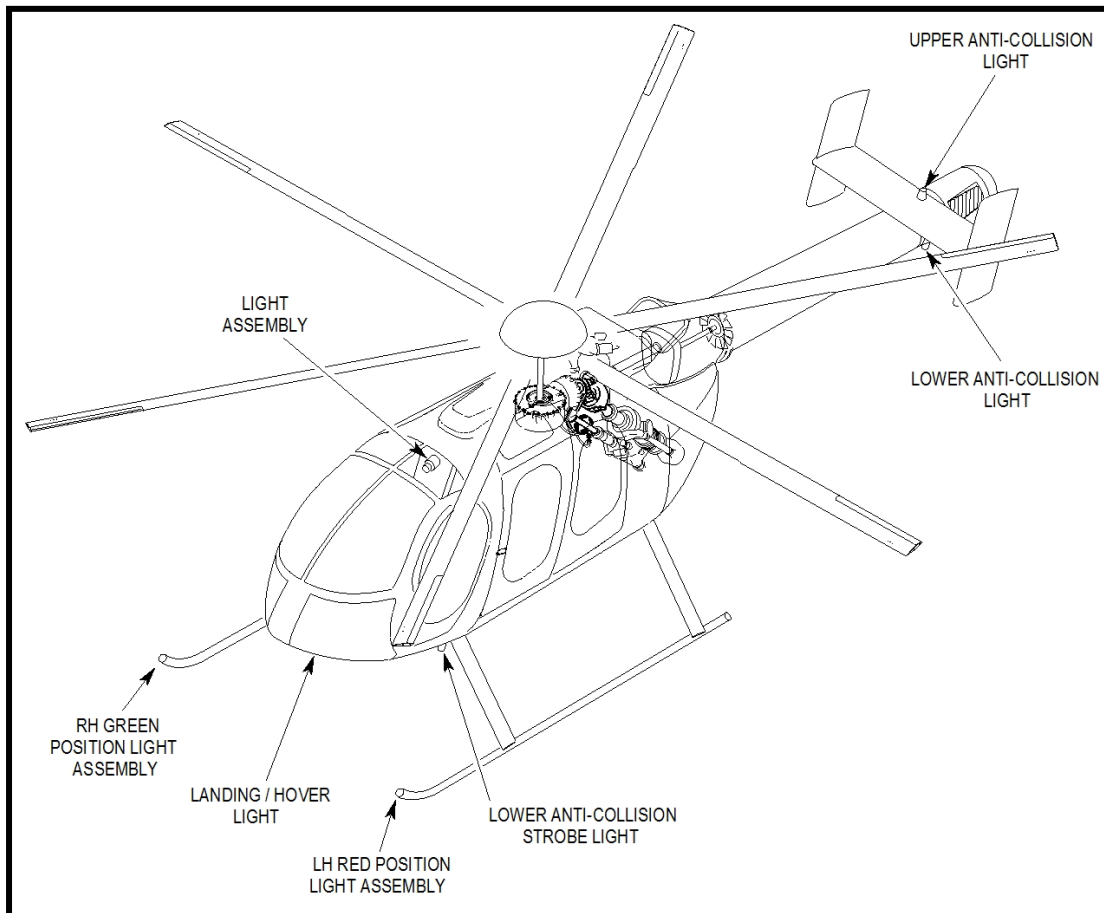
The interior of the MD 600N is comprised of the cockpit area, cabin compartment, and engine compartment. The MD 600N is provided in the utility version.

### 5.7.1 Cockpit

The cockpit has accommodations for the pilot and / or copilot. The minimum crew is one pilot in the command position. The instrument panel is located in the forward portion of the cockpit, and the T-shaped instrument panel provides space for a full complement of avionics equipment. The instrument panel layout allows for easy scanning of flight instruments.







**MD 600N Internal and External Lighting Locations**

The cockpit is ergonomically designed to facilitate single-pilot operation in the right-hand or left-hand command configuration. All controls are within easy pilot reach. In addition, the anti-torque control pedals are adjustable for up to 4 inches fore and aft to accommodate 25-percentile to 95-percentile male / female pilots. Seats are constructed of padded upholstered material and are attached to the forward bulkhead. Directly aft of the crew station, a bulkhead behind the forward compartment separates the cockpit and passenger / cargo compartment.

### 5.7.2 Cabin Compartment

The passenger / cargo compartment provides space for passengers, cargo, or multi-mission equipment. With the seats removed, the aft cabin provides 1.83 meters (6 feet) of flat floor space. Five passengers can be seated in the aft cabin in a variety of seating configurations. Seats are constructed of padded upholstered material and are attached to the rear bulkhead. However, if the cabin mid-bench assembly is reversed, the seat belts are attached to the seat structure. Optional aluminum tube frame and black mesh seats are also available. An intermediary step is provided between the landing gear and passenger compartment for passenger ingress/egress assistance.



### 5.7.3 Engine Compartment

The engine compartment provides an enclosed mounting platform for the turboshaft engine and can be easily accessed behind two clam-shell type doors contoured to the shape of the fuselage. The engine compartment can be easily accessed without GSE or special equipment.

## 5.8 Systems

### 5.8.1 Fuel System

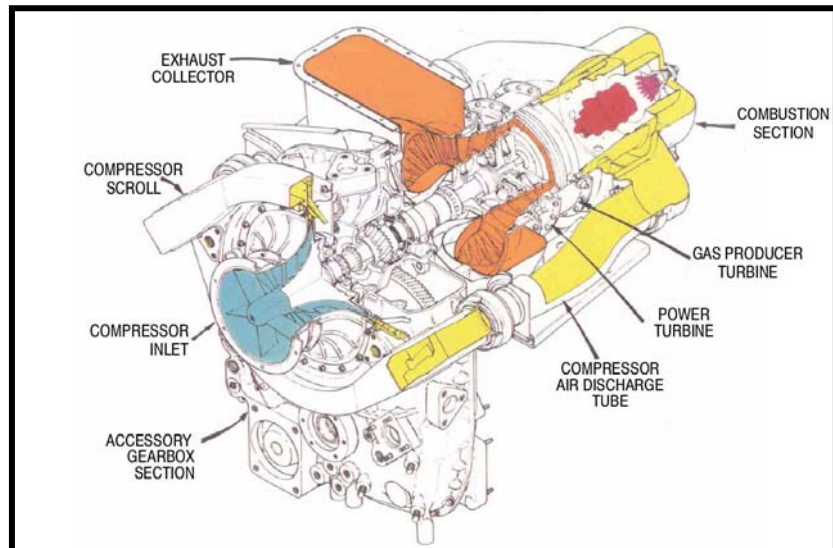
The MD600N fuel system consists of two interconnected bladder cells with a total capacity of 116.2 gallons (790 pounds) located in bays below the passenger / cargo compartment floor of the lower section. The fuel system does not require boost fuel pumps, and is designed to FAR Part 27 criteria for crash resistance. Puncture-resistant bladders and frangible, breakaway connections are incorporated to prevent fuel spillage in the event of a hard landing.

An engine suction-type fuel pump is used for fuel transfer to the engine. The suction pump increases system safety by eliminating pressurized fuel lines. An ejector-type scavenge pump in the forward tank area transfers fuel to the aft fuel pick-up area. All common turbine fuels are approved for use in the Model 250-C47M engine.

## 5.8.2 Propulsion System

The engine used in the MD 600N is the Rolls-Royce Model 250-C47M gas turbine engine. The Model 250-C47M produces 808 shp, derated to 600 shp for takeoff, and 530 shp at maximum continuous operation. Derating the engine extends its service life and reduces maintenance while offering increased performance at higher-density altitudes.

The Model 250-C47M engine is equipped with a full authority digital engine control (FADEC) unit. This system greatly enhances engine control and provides several features and benefits that reduce pilot workload, improve flight safety, and decrease maintenance requirements. A separate hydro-pneumatic fuel control system is provided for manual backup.



**Typical Rolls-Royce Model 250 Turboshaft Engine Cross Section**

## 5.8.3 Engine Controls

Engine power management and speed control is accomplished by the FADEC. Electrical power for engine start is provided by the battery bus, through the throttle control to the start relay, FADEC, ignition unit, and igniters. The start relay also provides power from the battery bus to the starter/generator. Engine control is accomplished by fuel control actuation using the throttle twist grip located at the end of the collective stick. The throttle twist grip has three positions: cutoff, idle, and full open. Moving the throttle twist grip from cutoff to idle provides automatic fuel metering for engine starting, acceleration, and idle stabilization. Moving the throttle twist grip to full open during operation increases the gas producer speed and allows the power turbine governor speed control. The collective stick throttle twist grip movement friction is adjustable. The collective stick throttle twist grip can also be locked when the operational gas producer turbine speed is attained. If a FADEC failure should occur, engine control reverts to manual back-up operation using the hydro-mechanical fuel control.

## 5.8.4 Fire Detection System

An engine fire detection system, consisting of a detector cable looped around the inboard structure of the engine bay. The engine fire detection system consists of a pressure switch connected to a small diameter tube that is filled with helium gas and a core material that contains trapped hydrogen. The fire detection system provides a means of detecting high temperature conditions and provides fire/overheat visual warning (red warning indicator) to the cockpit and a

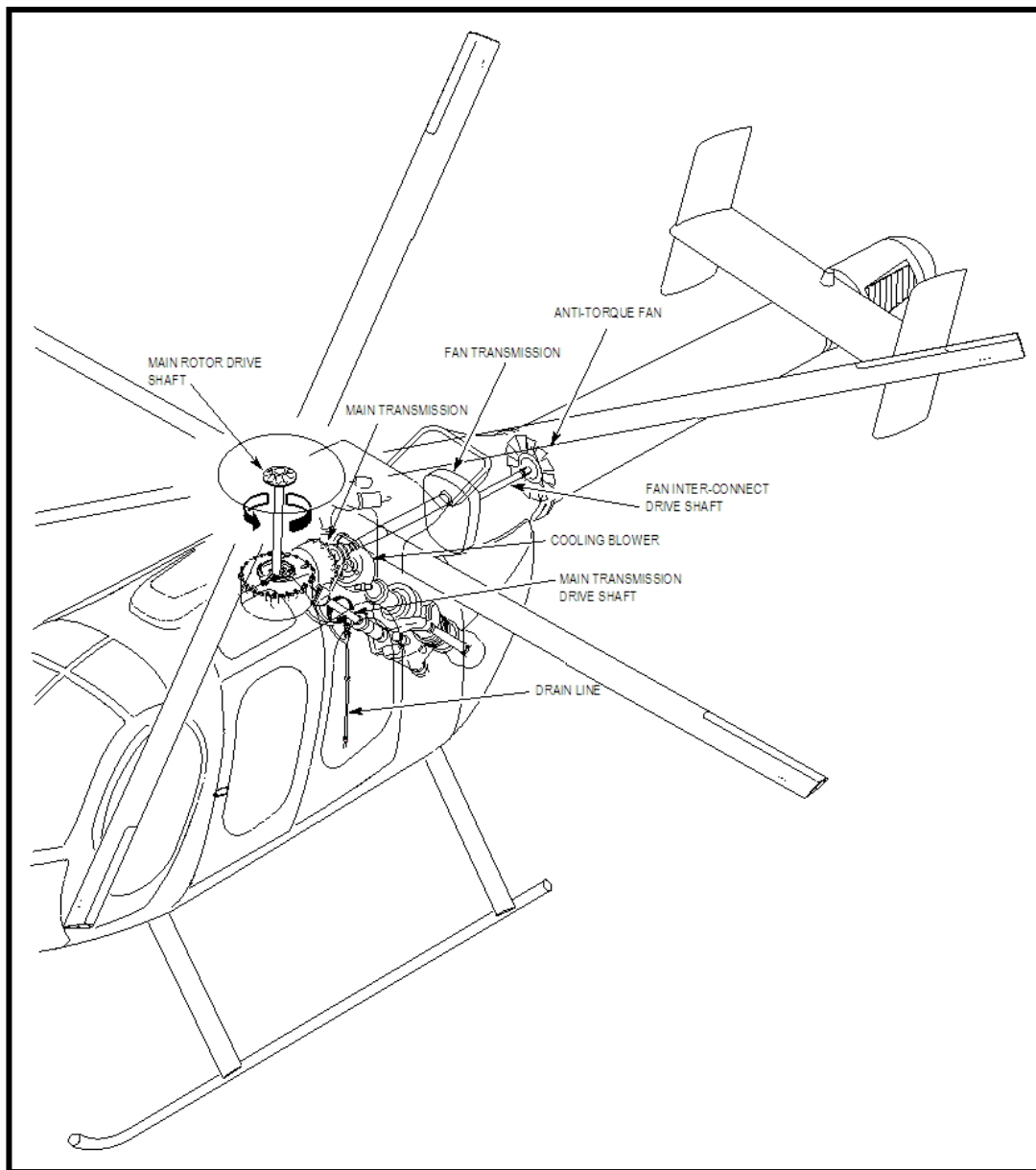


vocal warning into the communication system. The fire detection system incorporates built-in test feature for tube integrity and provides failure detection indication to the cockpit.

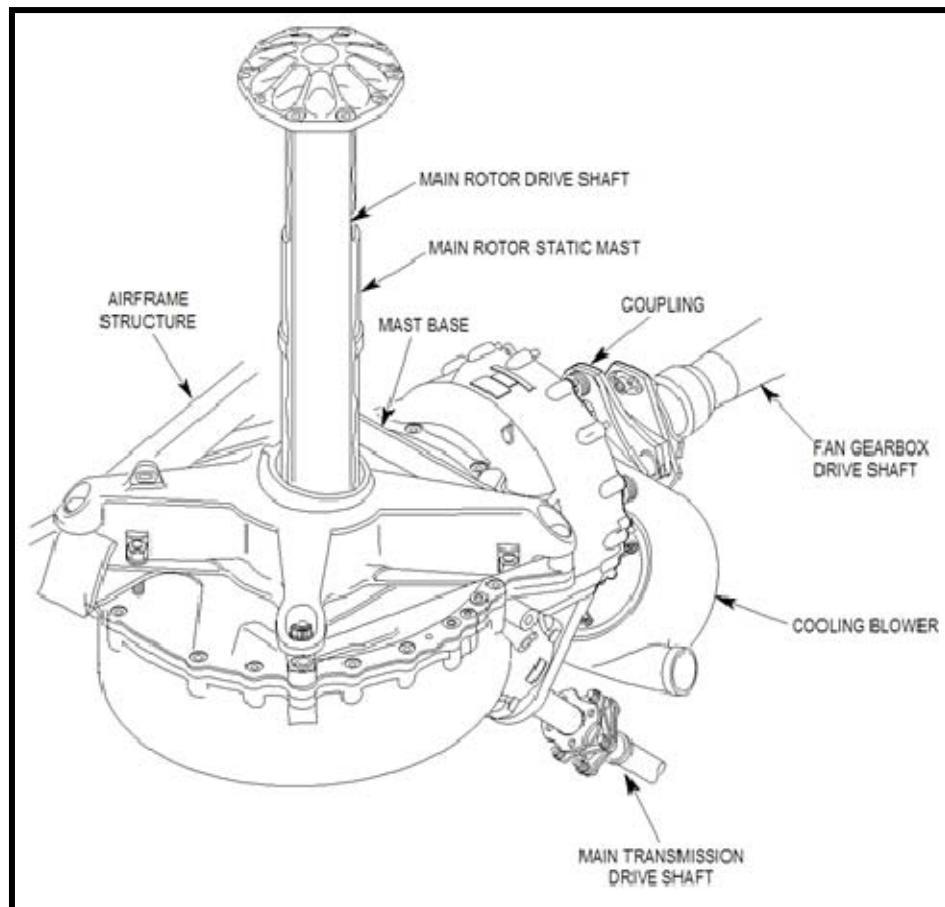
### 5.8.5 Drive System

The MD 600N drive system (shown in the figures below) consists of an:

- Main rotor static mast/base – Non-rotating and rigidly mounted to the mast support structure. It provides support for the main rotor, main rotor transmission, and main rotor transmission drive shaft
- Main rotor driveshaft – Transmits torque to the main rotor. Lifting loads are prevented from being imposed on the main transmission, eliminating thrust loading of transmission parts
- Main rotor transmission – Mounted to the basic airframe structure above the passenger / cargo compartment, the main rotor transmission is lubricated by a self-contained air-cooled lubrication system
- Overrunning clutch – The overrunning clutch transmits power from the engine to the main rotor transmission drive shaft
- Main rotor transmission drive shaft – Connects to the main rotor transmission input shaft
- Oil cooler – The oil coolers are two section coolers with an upper and lower part. The upper part is used to cool the transmission lubricating oil and the lower part is used to cool the engine lubricating oil.
- Oil-cooler / blower – Belt driven off the main drive shaft, it draws cooling air from the air inlet fairing to supply ambient air to the engine and transmission oil coolers and to the engine compartment
- NOTAR<sup>®</sup> fan transmission drive shaft – Transmits torque from the main rotor transmission to the NOTAR<sup>®</sup> fan transmission
- NOTAR<sup>®</sup> fan transmission – The NOTAR<sup>®</sup> fan transmission steps-up main transmission output speed for power transmission to the NOTAR<sup>®</sup> fan
- NOTAR<sup>®</sup> fan interconnect drive shaft – Connects the NOTAR<sup>®</sup> fan transmission to the NOTAR<sup>®</sup> fan
- NOTAR<sup>®</sup> fan – An enclosed variable pitch composite blade fan produces a low-pressure, high-volume airflow to pressurize the composite tail boom for anti-torque control.



### MD 600N In-Situ Drive System



**MD 600N Main Transmission Drive System.**

### 5.8.6 Rotor System

The static mast-hub support system, unique to MDHI products, uses a static mast, rigidly attached to the fuselage. All dynamic loads are transmitted through the mast, rather than through the transmission. A separate, inner drive shaft transmits engine torque to the main rotor hub. This feature offers improved flight control integrity and helps retain rotor system components in the event of a main rotor blade strike. Additionally, this approach allows for the design of a main transmission that is lighter in weight, and can be removed without disturbing the hub or control system.

The MD 600N features a six-blade, fully articulated main rotor assembly. Rotor blades, pitch housings, and links are secured to the hub by laminated steel strap sets. These sets are used in lieu of typical thrust bearing stacks to contain blade centrifugal loading and allow feathering. The strap sets provide additional functionality:

- The strap set configuration (which is secured firmly to the hub) allows the centrifugal load exerted by one blade to be countered by the force exerted by the opposite two blades, resulting in very light centrifugal loads exerted on the hub.



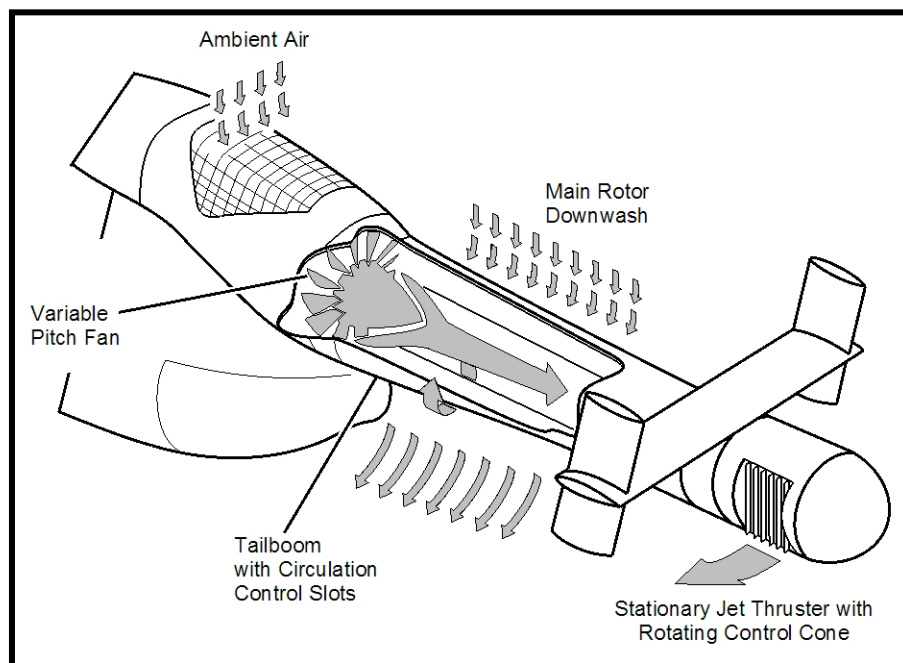
- The V-legs of the strap set rotate as driving members to turn the main rotor blades.
- The strap sets are configured to allow feathering and flapping of the blades.

Main rotor blades are retained to the main rotor hub using captive cam-handle-type blade retention bolts.

### 5.8.7 NOTAR® Anti-Torque System

The NOTAR® system used in the MD 600N (shown below) is derived from an already-proven system used in the MD 520N helicopter. Total NOTAR® fleet time for all MD helicopters exceeds 750,000 hours.

The NOTAR® anti-torque system provides safe, quiet, responsive, foreign object damage resistant directional control. The enclosed variable-pitch composite-blade fan produces a low pressure, high volume airflow to pressurize the composite tail boom. Air is expelled through two slots which run the length of the tail boom on the right side, causing a boundary-layer control that result in the tail boom acting as a wing, flying in the downwash of the rotor system, and producing up to 60-percent of the anti-torque required in a hover. The balance of the direction control is accomplished by a rotating direct jet thruster on the end of the tail boom.



### MD 600N NOTAR® Anti-Torque System

The NOTAR® system eliminates the mechanical disadvantages of a tail rotor, including long drive shafts, hanger bearings, and gearboxes. It reduces the overall helicopter vibrations, resulting in lowered pilot fatigue and increased passenger comfort. Total NOTAR® fleet time for all MD helicopters exceeds 750,000 hours.



Due to the design of the NOTAR<sup>®</sup> system which eliminates the spinning tail rotor, potential incidents caused by an exposed tail rotor are eliminated. The NOTAR<sup>®</sup> system not only has proven safety margin, it also provides up to a 50-percent reduction in noise over competitor helicopters.

### **5.8.8 Flight Control System**

Cyclic, collective, and adjustable pedal controls are provided in the pilot / copilot positions. The cyclic and collective control sticks incorporate friction devices as a method for the pilot to vary movement friction and the amount of effort required to move the control sticks. The cyclic stick lateral and longitudinal movement friction is adjustable. The collective stick vertical movement friction and the throttle twist grip movement friction are adjustable. The collective stick throttle twist grip can also be locked when the operational gas producer turbine speed is attained. The dual flight controls can be easily removed to provide room for passengers or cargo. The dual flight control system can be easily removed to provide room for passengers or cargo.

### **5.8.9 Yaw Stability Augmentation System**

The MD 600N incorporates a yaw stability augmentation system (YSAS). The YSAS is installed to the right vertical stabilizer of the empennage, and significantly reduces pilot workload throughout the flight envelope, especially in gusty / turbulent weather conditions.

Yaw rate data drives the right-side vertical stabilizer, which corrects out-of-trim flight. Pilot inputs during maneuvers and level flight is significantly reduced. The left-side vertical stabilizer is not connected to the YSAS.

### **5.8.10 Electrical System**

The MD 520N electrical system is a direct current (dc) system with electrical power supplied by a 24-volt nickel-cadmium battery and a 28-volt, 85-amp engine-driven generator. The electrical system incorporates a generic electrical wire harness that is shielded to minimize electro-magnetic interference (EMI). Forward and aft line relay contacts protect main power bus and feeder wires. Over-voltage diodes protect circuits from excessive ground power voltages. An external power receptacle is available for ground power.

### **5.8.11 Environmental Control System**

Cabin environmental control is accomplished by an integral heating and defogging system and an external-air circulation system. The heating and defogging system requires no additional equipment and uses oil cooler blower supplied unheated air and turboshaft engine compressor supplied heated air.

Cabin ventilation with ambient external air is available using instrument panel mounted mechanical controls to operate a moveable vane. In addition, adjustable window-mounted





ventilators are installed in each door window to provide in-flight, outside forced air into the cabin or provide vent-air exhaust.

An air conditioning system is an available option.

### 5.8.12 Monitoring Instrumentation

Typical MD 600N monitoring instrumentation provided as standard equipment includes:

- Dual engine tachometer (NR and N2)
- Engine oil pressure
- Engine oil temperature
- Engine torque meter
- Engine N1 tachometer
- Engine turbine outlet temperature
- Fuel quantity
- Airspeed
- Barometric altimeter
- Magnetic compass
- Outside air temperature
- Direct current ammeter
- Fuel quantity
- Digital chronometer
- Annunciator panel caution / warning lights
  - Engine chip detector light
  - Engine-out warning
  - Fuel filter warning
  - Fuel low warning
  - Generator-out warning
  - Battery over-temperature warning
  - Low rotor revolutions per minute (rpm) warning
  - Main rotor transmission chip detector warning
  - Main rotor transmission oil pressure warning
  - Main rotor transmission oil temperature warning.

### 5.8.13 Caution / Warning Annunciators

Caution and warning annunciators (indicators) are located at the top of the instrument panel above the flight instruments. A caution indication will be displayed by a yellow indicator illumination. A warning indication will be displayed by a red indicator illumination.

Additionally, a voice warning will sound for an engine out, fire, low-rotor-speed, FADEC manual, fuel flow fixed (FADEC fail), and power (torque exceedance) with the corresponding warning indicator illumination. These voice warnings are announced twice each time a warning condition exists.



#### **5.8.14 Avionics / Communications**

The MD 600N is provided with a standard avionics suite. Optional purchaser configured avionics, communications, instrumentation, etc., may be added at additional expense. To accommodate additional avionics / communication equipment, an optional slant console panel installation is available.

#### **5.8.15 Next-Generation Electronic Flight Instrument System**

The MD 500-series helicopters will incorporate a modernized instrumentation/avionics cockpit consisting of a Garmin G500 suite that includes a multi-function and primary flight displays (MFD, PFD) and an engine indicating and crew alerting system (EICAS). The EICAS will replace the caution and warning annunciators. The next-generation electronic flight instrumentation system will work with additional equipment such as a GTN650 GPS/NAV/COM and automatic dependent surveillance-broadcast (ADS-B) to provide next-generation air transportation system compatibility.



## 6. PERFORMANCE SPECIFICATIONS

Performance specifications for the MD 600N helicopter with the Rolls-Royce Model 250-C47M turboshaft engine are provided below.

### 6.1 MD 600N – Rolls-Royce Model 250-C47M Turboshaft Engine

Using the Rolls-Royce Model 250-C47M turboshaft engine, the MD 600N has a nominal empty weight of 2,100 pounds (962 kg) for the standard configuration, and 2,036 pounds (923 kg) for the industrial configuration. Ratings are for the MD 600N with a Rolls-Royce Model 250-C47M turboshaft engine rated at 808 shp (603 kW), derated to takeoff power – 600 shp (447 kW), and maximum continuous power – 530 shp (395 kW).

**MD 600N Performance Specifications**

Parameter	Condition	Imperial 3100 lb	Metric 1406 kg	Imperial 3600 lb	Metric 1633 kg	Imperial 4100 lb	Metric 1860 kg
Empty Weight (Configuration), lb (kg)	Standard	--	--	--	--	2,100	(952)
	Industrial	--	--	--	--	2,036	(923)
Maximum Cruise Speed, kt (mph) [km/hr]	Sea Level ISA	144 (166)	[267]	139 (160)	[257]	134 (154)	[248]
	5000 ft (1524 m)	148 (170)	[274]	143 (165)	[265]	134 (154)	[248]
Maximum Permitted Speed, kt (mph) [km/hr]	V <sub>NE</sub> at Sea Level	152 (175)	[282]	152 (175)	[282]	1135 (155)	[250]
Maximum Range, nm (mi) [km]	Sea Level ISA	347 (399)	[643]	357 (411)	[661]	341 (392)	[632]
	5000 ft (1524 m)	423 (487)	[783]	401 (461)	[743]	380 (437)	[703]
Maximum Endurance, hr	Sea Level ISA	3.9	3.9	3.8	3.8	3.6	3.6
	5000 ft (1524 m)	4.4	4.4	4.1	4.1	3.9	3.9
Maximum Rate of Climb, (TOP) fpm (m/sec)	Sea Level Standard ISA	2,100	(10.7)	1,700	(8.6)	1,350	(6.9)
	ISA +20C	1,900	(9.7)	1,500	(7.6)	1,150	(5.8)
Maximum Operating Altitude, ft (m)	Density Altitude	20,000	(6,096)	20,000	(6,096)	20,000	(6,096)
Service Ceiling, ft (m)	ISA @ 30.5	20,000+	(6,096+)	20,000+	(6,096)	13,500	(4,115)



### MD 600N Performance Specifications

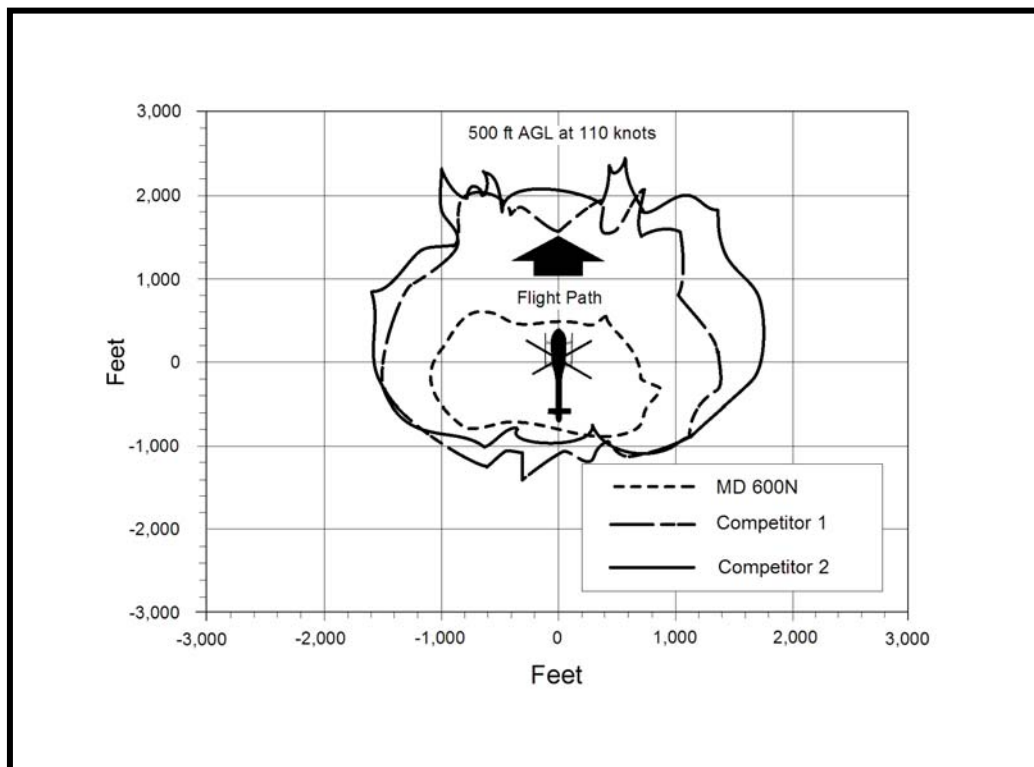
Parameter	Condition	Imperial 3100 lb	Metric 1406 kg	Imperial 3600 lb	Metric 1633 kg	Imperial 4100 lb	Metric 1860 kg
	m/min						
Hover-in-Ground Effect, (HIGE), ft (m)	Standard Day	14,500+	(4,420+)	14,500+	(4,420+)	11,100+	(3,383)
	ISA +20C	12,200+	(3,719+)	11,600	(3,536)	7,000	(2,134)
Hover-Out-of-Ground Effect (HOGE), ft (m)	Standard Day	14,500+	(4,420+)	11,700	(3,566)	6,000	(1,829)
	ISA +20C	12,200+	(3,719+)	8,000	(2,438)	3,200	(975)
Maximum Gross Weight, lb (kg)	Normal Category	--	--	--	--	4,100	(1,860)
	External Load	--	--	--	--	4,500	(2,041)
Useful Load, lb (kg)	Normal	--	--	--	--	2,000	(907)
External Load, lb (kg)		--	--	--	--	2,400	(1,089)
Cargo Hook Structural Rating, lb (kg)		--	--	--	--	3,000	(1,360)
Fuel Capacity, 116 gallons (432 liters)	Usable	--	--	--	--	790	(358)

## 6.2 Environmental Impact

The MD 600N has a measured 79.0 decibel noise signature during a 500-foot above ground level fly-over. The estimated day / night average sound level (DNL) contour of the MD 600N compared to two competitors is shown on the following page. The full-page figure (page 34) provides a comparison of 500-foot overflight effective, perceived noise levels (EPNLs) of competitor single-engine aircraft using European Aviation Safety Agency (EASA) data. This figure shows the MD 500E with four-blade tail rotor, MD 520N, and MD 600N helicopters provide the lowest EPNLs of light single-engine helicopters.

## 6.3 Safety

The MD 600N has inherent safety features. The fuselage incorporates a rigid, three-dimensional truss type structure, with an integral roll-bar design for increased occupant safety. The airframe structure is designed to be energy absorbing and fails progressively in the event of impact. The fuel cells are separated well away from the outer skin, enclosed by two deep keel beams. Shoulder and seat belts are attached to the aircraft structure rather than to the seat. The pilot and cabin doors function both as primary and emergency exits.



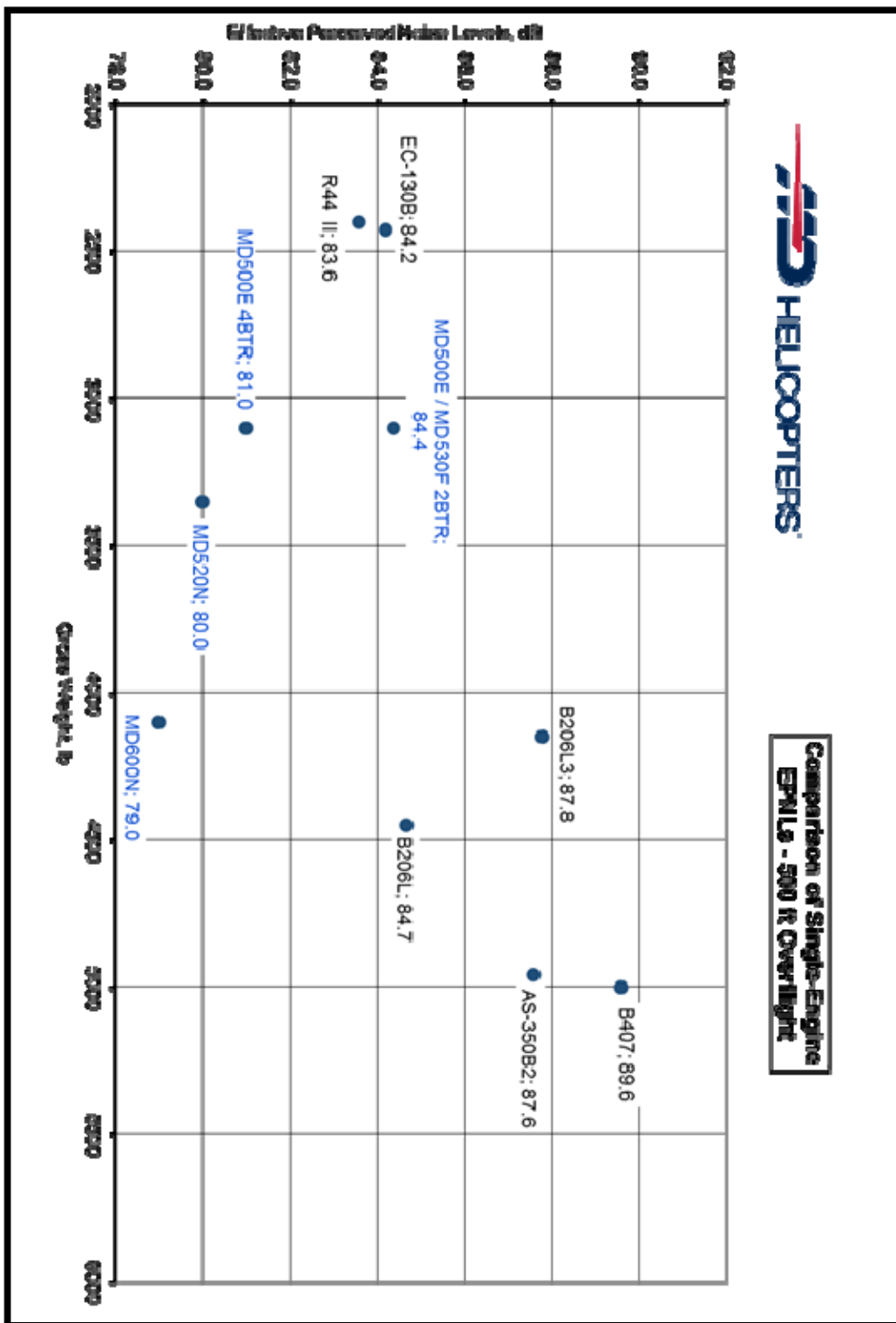
### MD 600N Estimated Noise Contour

Occupant seat crush boxes are incorporated into the design and provide 20g shock resistance. The seat crush boxes were originally designed to meet Civil Aviation Regulation, Part 6 (CAR6) requirements and have been validated under Title 14 Code of Federal Regulation (CFR), Chapter 1, Part 27, Subpart C, Section 27.562 for the MD 600N air vehicle. Seat crush boxes for the MD 600N are the same as used in the MD 500-series.

Incorporation of the NOTAR<sup>®</sup> system eliminates the typical spinning tail rotor and reduces the opportunity for tail rotor strikes, increases ground-personnel safety, and provides for improved landing zone safety.

Additional safety features include:

- Static mast, hub, and transmission are mounted on titanium struts preventing direct contact between transmission and upper deck, reducing vibration, and increasing passenger safety
- Fuel cells, located under the cabin floor, are protected during an impact event due to the closely spaced fuselage frames and by the center beam
- Unobstructed pilot visibility for situational awareness



**The MD 600N Helicopter has the Lowest 500-Foot Overflight Effective Perceived Noise Levels of Comparable Light Single-Engine Helicopters**



- Crash resistant fuel system
- Integral crewmember seats with energy absorbing structure
- Low and to-the-rear engine mounting
- Energy absorbing landing gear
- Main rotor height of 9.0 feet

The NOTAR<sup>®</sup> system improves safety:

- Elimination of tail rotor strikes
- No dramatic enter of gravity shift with loss of conventional tail-rotor gearbox
- Reduced pilot workload; pilot can concentrate on piloting
- Less sensitive to wind direction
- Enhanced safety in confined areas
- No drive shafts, hangar bearings, or 90-degree gearboxes
- Significant foreign object damage tolerance
- Flyable with fan drive loss.

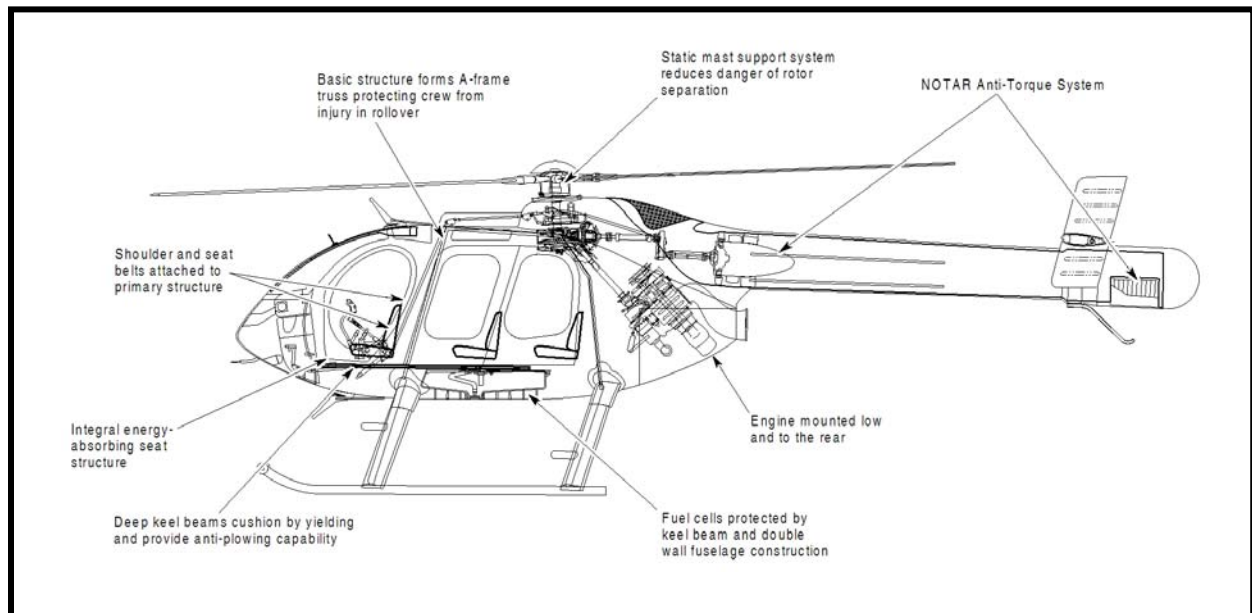
#### 6.4 Crashworthiness

The MD 500 series and MD 600N aircraft are derivatives of the OH-6A observation helicopter used extensively by the U.S. Army during the Vietnam conflict, in which nearly 1500 OH-6A aircraft were operated. The OH-6A earned a reputation for being the most survivable helicopter in the world due to the inherent design features shown in the figure below.

Tests on the landing gear and fuselage sections verified the crashworthiness capability of the MD 500 series and MD 600N helicopters. Testing indicates that the helicopters will provide occupant protection for approximately 95-percent of all civil accidents, and that the landing gear and airframe fuselage is capable of absorbing vertical descents up to 26.3 feet per second with only moderate crewmember injury.

#### 6.5 Human Systems Interface

The MD 600N incorporates anthropometric design features that are compatible with 25<sup>th</sup> and 95<sup>th</sup> percentile male or female crewmembers. Sizing parameters for the 25<sup>th</sup> and 95<sup>th</sup> percentile male and female are provided in the table below. The canopy design meets human engineering design requirements for windows, canopies, and windshield, as shown in the figures that follow.

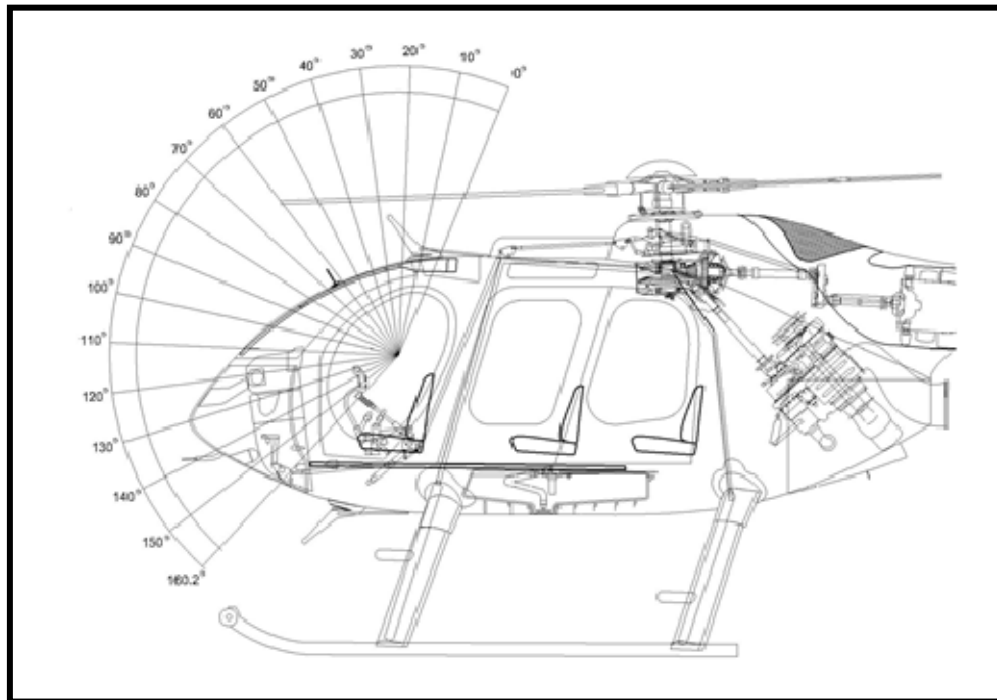


**MD 600N Crashworthy Design Features**

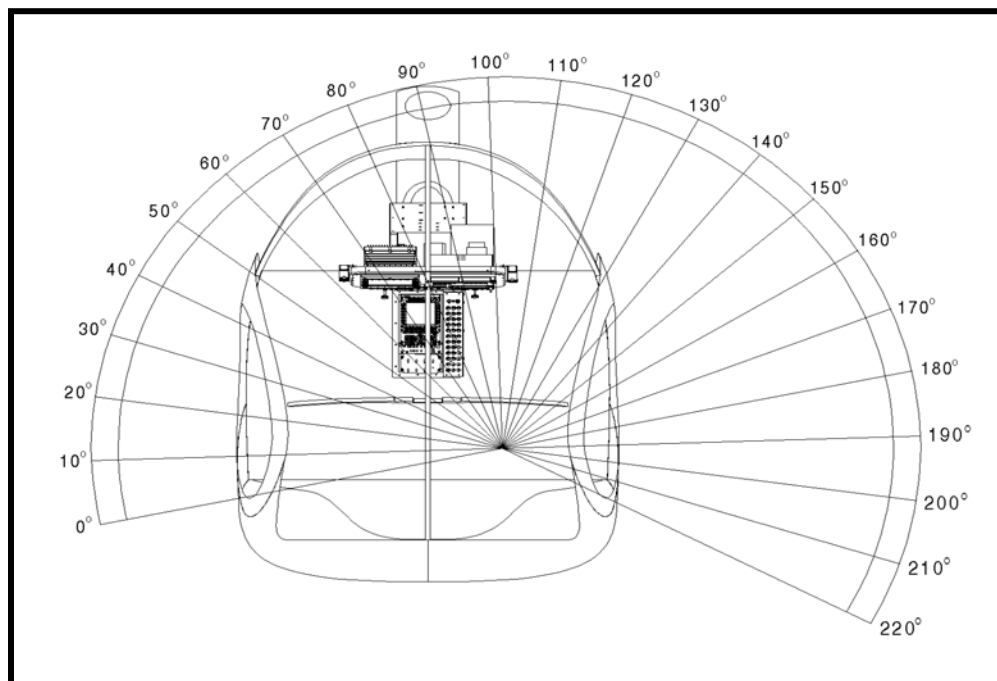
**Anthropometric Sizing Parameters**

<b>Parameter</b>	<b>25<sup>th</sup> Percentile Female</b>	<b>95<sup>th</sup> Percentile Female</b>	<b>25<sup>th</sup> Percentile Male</b>	<b>95<sup>th</sup> Percentile Male</b>
Weight, lb (kg)	119.3 (54.1)	164.5 (74.6)	142.6 (64.7)	201.8 (91.5)
Height, in. (cm)	62.4 (158.5)	68.5 (174.0)	67.0 (170.1)	73.9 (187.7)
Elbow – Hand Grip Reach, in. (cm)	12.5 (31.7)	14.1 (35.8)	13.7 (34.8)	15.4 (39.1)
Thumb Tip Reach, in. (cm)	27.9 (70.8)	31.4 (79.7)	30.4 (77.2)	34.2 (86.9)
Functional Leg Reach Length, in. (cm)	39.2 (99.6)	43.2 (109.7)	43.5 (110.6)	46.0 (116.8)





**The MD 600N Provides a 160-Degree Vertical Unobstructed View for the Pilot and Copilot**



**The MD 600N Provides a 220-Degree Horizontal Unobstructed View for the Pilot and Copilot (View is Top-Down)**



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## **7. MAINTENANCE AND SERVICING**

The MD 600N helicopter was designed for ease of supportability and low-cost operation. Helicopter systems and components are easily accessed and can be maintained at the lowest maintenance level possible. The helicopter was designed for a high level and ease of replacement of line replaceable units (LRUs). The helicopter can be maintained at the line- / shop-maintenance level using common hand tools, as well as easy to understand technical publications. The MD 600N helicopter spare parts are readily available, and most parts have a corresponding U.S. Department of Defense National Stock Number (NSN).

### **7.1 Maintenance**

The MD 600N design provides for the maximum maintenance support at the lowest maintenance level. The MD 600N can be maintained using a combination of line- and shop-maintenance support. Components such as engine, avionics, interior components, air-conditioning, etc., are considered LRUs. Line replaceable units (and any sub-component shop replaceable units) can be removed and replaced easily and modularly, as necessary, and at the lowest maintenance level allowed.

Typical for small- to mid-sized helicopter systems are fixed time-between-overhaul (TBO) intervals for the engine, transmission, main rotor, and flight controls. Within these items are also life-limited components that must be monitored and replaced at the end of life hours. When required, components requiring further maintenance action can be removed and forwarded to the appropriate-level shop.

The MD 600N helicopter airframe uses an on-condition maintenance concept, which allows scheduled inspections / checks. To be compliant with commercial regulatory requirements, an MD 600N continued airworthiness inspection program was developed by MDHI. This program provides for schedule inspections, and also includes life-limited component replacement. The maintenance and inspection intervals are provided in the Handbook of Maintenance Instruction. Airframe-related inspection intervals occur every:

- 100 hours
- 300 hours
- 600 hours
- 1200 hours
- Yearly
- Special time-phase inspections.

The engine also has life-limited components, a fixed TBO, and inspection intervals. The MD 600N life-limited parts, overhaul intervals, and inspection intervals are listed in the table below.



**MD 600N Life-Limited Parts, Overhaul, and Inspection Intervals**

Component	Life Limit, hr	Overhaul Interval, hr	Inspection Interval, hr
<b>MAIN ROTOR</b>			
Blade Assembly	3,200		100
Blade Attachment Folding Pin	7,600		
Hub Assembly		2,700	
Upper Thrust Bearing Cup	600		
Upper Thrust Bearing Cone	600		
Lower Thrust Bearing Cup	5,400		300/2700❶
Lower Thrust Bearing Cone	5,400		300/2700❶
Hub Retention Strap Assembly	2,770		100
Lead-Lag Hub Bolt	5,400		300
Lead-Lag Hub Link Assembly	11,080		
Lead-Lag Damper			600/300❷
Swashplate		2,700	100
Drive Shaft	14,000		
Mast Assembly	3,500		
<b>DRIVE SHAFTS, COUPLINGS, AND CLUTCHES</b>			
Main Rotor Transmission Drive Shaft			100
Main Rotor Transmission		3,000	
Overrunning Clutch Assembly		1,800❸	100/300❸
Fan Drive Shaft	1,200		100
Oil Cooler Blower Bearing		1,200	
Oil Cooler Blower Belt		1,200	
<b>ANTI-TORQUE SYSTEM</b>			
Fan Blade Assembly	12,500		
Fan Hub	7,500		100
Tension-Torsion Strap	2,500		
Fan Support Shaft	4,000		
Fan Support Bearing	2,400		1,200❶
Pitch Plate Assembly	7,500		
Pitch Plate Bearing	2,400		1,200❶
Rotating Cone Assembly	10,000		
<b>TAIL BOOM</b>			
Attach Bolts	300		
Tail Boom Assembly	6,000		
Empennage Fittings			100
Horizontal Stabilizer Torque Tube	3,000		
Horizontal Stabilizer Assembly	10,000		100



**MD 600N Life-Limited Parts, Overhaul, and Inspection Intervals**

Component	Life Limit, hr	Overhaul Interval, hr	Inspection Interval, hr
Vertical Stabilizer Assembly			100
<b>CONTROLS</b>			
Cyclic Stick Trim Switch		1,000	
Cyclic Stick Socket	1,000		8 <sup>④</sup>
Cyclic Tube Assembly	1,200		8 <sup>④</sup>
Collective Stick Housing	450		
Collective Pitch Control Tube	400		
Collective Pitch (Pilot) Tube Assembly	600		
Collective Pitch (Co-Pilot) Tube	1,800		
Collective Pitch Housing	450		
Collective Pitch (Co-Pilot) Tube Assembly	1,000		
YSAS			300
<b>AIRFRAME</b>			
Landing Gear Brace	5,900		
Landing Gear Strut	696		
Landing Gear Foot	3,900		
<b>ENGINE</b>			
Compressor Module		4,000	
Turbine Module		2,000	
Starter/Generator		1,200	
<b>NOTES:</b>			
Detailed maintenance / inspection information is provided in the Handbook of Maintenance Instruction, Rotorcraft Flight Manual, and Supplier Technical Publications (i.e., Rolls-Royce).			
① Bearing grease re-pack task.			
② With cargo hook operation			
③ Every 8 hours after initial 100 hour inspection			
Value represents hours/cycles.			
④ Hot section inspection.			

**7.2 Servicing**

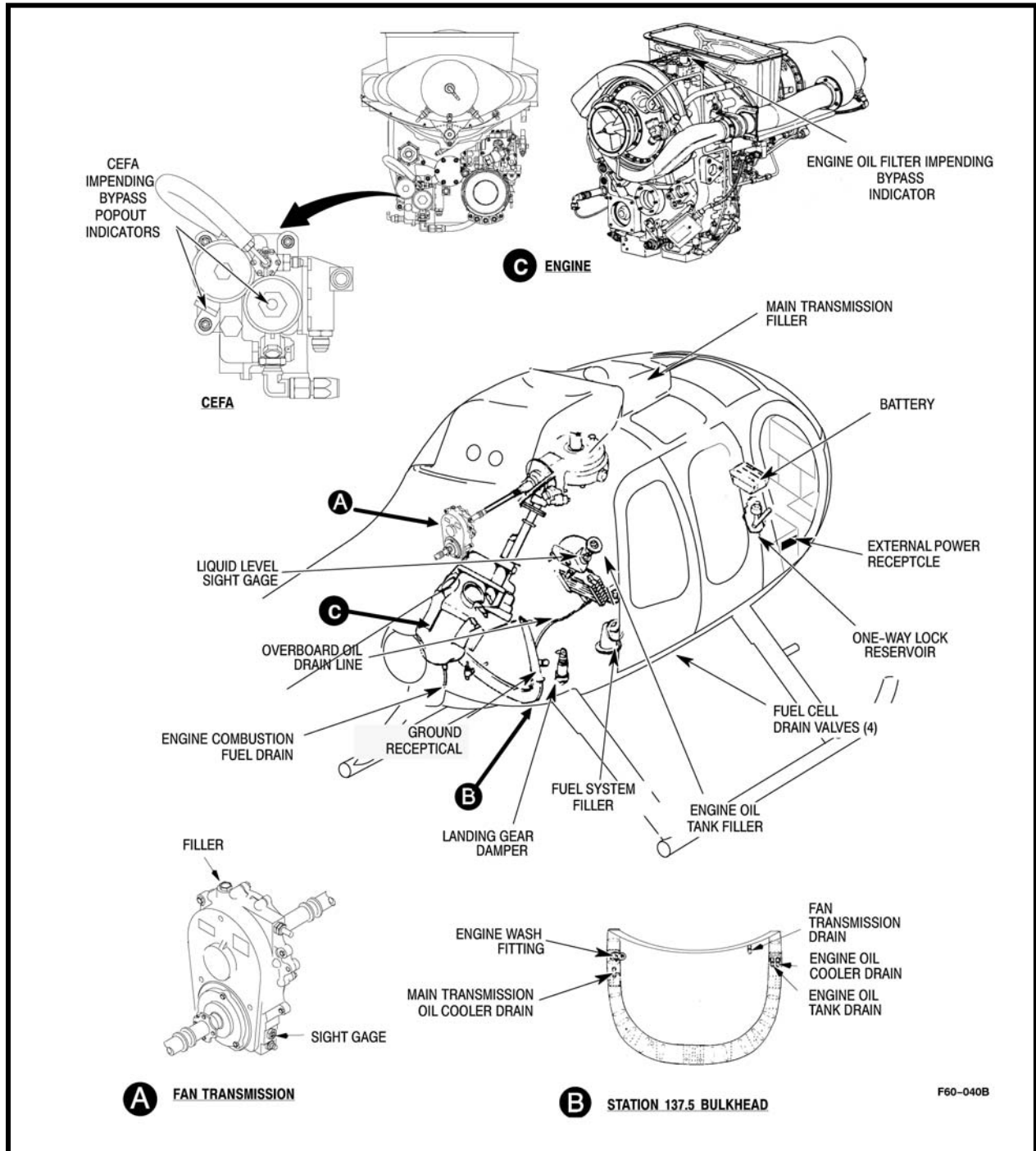
The MD 600N was designed for ease of maintenance, incorporating built-in features that eliminate support equipment and aid servicing. These features include:

- Spring loaded doors that provide engine and main rotor head access (refer to figure below)
- Quick access panels
- Integrated diagnostics
- Integrated engine water wash systems



***The MD 600N has Built-in Steps to Provide Access to the Main Rotor Head  
without External Ground Support Equipment***

The MD 600N helicopter has been designed for servicing and operation using common, commercially-available compounds. Servicing locations are shown in the figure below, and will be performed in accordance with the corresponding equipment maintenance manuals. Servicing intervals are detailed in the MD 600N Handbook of Maintenance Instructions. Capacities and compounds used to service the MD 600N are listed in the table following the figure.



### MD 600N Servicing Location Points



**MD 600N Fluid Capacities and Specifications**

Component	Compound	Capacity	Specification	Notes
Engine	Lubricant	3.0 quarts (2.84 liters)	MIL-PRF-7808G / MIL-PRF-23699C	① ②
Overrunning Clutch	Lubricant	3.64 ounces (108 cc)	Mobil AGL	①
Main rotor Transmission	Lubricant	14.0 pints (6.62 liters)	Mobil AGL	①
Aft Transmission	Lubricant	0.5 pint (0.23 liter)	Mobil AGL	
One-Way Lock	Lubricant	0.67 ounce (20 cc)	MIL-PRF-5606 / MIL-PRF-6083	
Battery	Distilled Water	As Required	MS36300	
Fuel Cell	Fuel	64.0 gallons (242 liters) 416 pounds	ASTM-D-1655, Jet A ASTM-D-1655, Jet A-1 ASTM-D-1655, Jet B ASTM-D-1655, JP-1 ASTM-D-1655, RP-3 ASTM-D-6615, Jet B MIL-DTL-5624, JP-4 MIL-DTL-5624, JP-5 MIL-DTL-83133, JP-8	③ ④
<p><b>NOTES:</b></p> <p>① Refer to Rolls-Royce Operation and Maintenance Manual for approved oils.</p> <p>② Oil specification type mandated by ambient temperature. Refer to Rolls-Royce Operation and Maintenance Manual</p> <p>③ Refer to Rolls-Royce Operation and Maintenance Manual for complete fuel specifications.</p> <p>④ At 40F and below, fuel must contain anti-icing additives per MIL-I-27686. Refer to Rolls Royce Operation and Maintenance Manual</p>				

**7.3 Hourly Cost**

The MD 520N helicopter was designed for ease of supportability and low-cost operation. Current, estimated direct operating cost per operating hour data for the MD 520N, shown in the following table, is based on “current-year” 2014 U.S. dollars.





**MD 600N Estimated Direct Cost Per Hour Using Model 250-C47M Turboshaft Engine is Based on Current-Year (2021) U.S. Dollars**

Activity	Cost, U.S. Dollars (\$)	Total
<b>Rolls-Royce Model 250-C47M Engine</b>		
<b>Fuel and Maintenance<sup>①</sup></b>		
Fuel at \$4.26 per gallon at approximately 41 gallons per hour	\$174.66	
Lubricants at 3-percent of fuel	\$5.24	
		<b>\$179.90</b>
<b>Airframe Maintenance and Spares<sup>②</sup></b>		
<u>Maintenance Labor Costs:</u>		
Scheduled (0.4 man-hour per flight hour) at \$106.00 per hour	\$42.40	
Unscheduled (0.26 man-hour per flight hour) at \$106.00 per hour	\$27.56	
		<b>\$69.96</b>
<u>Spares Cost:</u>		
Scheduled (Inspection) Parts: Used during Periodic Inspection (e.g., filters, seals, o-rings, etc.)	\$5.78	
On-Condition / Unscheduled Part	\$23.89	
Reserves: Component Overhaul (Time Between Overhaul)	\$79.97	
Reserves: Limited-Life Parts	\$88.88	
		<b>\$198.52</b>
<b>Engine<sup>③</sup></b>		
Scheduled Maintenance Labor and Parts	\$3.00	
Reserve for Engine Overhaul, Spares, and Accessories	\$142.43	
		<b>\$145.43</b>
<b>TOTAL DIRECT OPERATING COST<sup>④</sup></b>		<b>\$593.81</b>
<p><b>①</b> Fuel cost and labor rate is based on U.S. average cost while operating under the following conditions:            Gross Weight: 10-percent less than maximum certified            Speed: Maximum range speed, 117 kias.            Altitude: 1,000 feet (304 m) on a standard day.</p> <p><b>②</b> Overhaul costs are based on participation in factory exchange program.</p> <p><b>③</b> Engine fleet maintenance costs provided by Rolls-Royce Engine Company.</p> <p><b>④</b> Indirect costs such as insurance, hangar, salary, etc., are not included.</p> <p>Actual costs will vary, depending on local operating conditions, pricing, and supplier practices.</p>		



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## 8. PRODUCT SUPPORT

MD Helicopters, Inc. is dedicated to a successful fielding, training, warranty support, and customer support of MDHI aircraft. MD Helicopters, Inc. has worldwide service centers and field service representatives available for localized support.

### 8.1 Training

The MDHI commercial training center offers cost-effective, factory-designed transition-flight and maintenance-crew training courses for MDHI-manufactured helicopters. This training, conducted by senior instructors with extensive product experience, provides customers / students with the detailed knowledge of MDHI products that will increase safety, reduce insurance costs, and result in more efficient operation of the aircraft. Training is conducted at the MDHI facility in Mesa, Arizona. Training using customer aircraft can also be arranged provided insurance, meeting MDHI requirements, is available.

#### 8.1.1 Pilot Training

Transition flight, maintenance test, and recurrent pilot training are available from MDHI. Flight transition pilot training for one pilot is included as part of each MDHI helicopter purchase.

#### 8.1.2 Transition Flight Training

The transition flight training course is designed to familiarize a rated helicopter pilot with operation of the MDHI aircraft. The transition flight training course is a five-day course that introduces the student to all the associated company publications, as well as detailed explanations of all aircraft systems and daily / preflight procedures. The ground school requires 16 to 20 hours to complete, including examination and examination review. The student is expected to pass the examination, demonstrating basic knowledge of the aircraft. The transition flight training syllabus includes six hours of instructor time and is provided in four flight lessons:

- Normal operations
- Advanced operations (maximum gross weight flight)
- Maintenance and systems operations
- Emergency / malfunction procedures.

#### 8.1.3 Recurrent Flight Training

Additional, optional, recurrent pilot training is available for existing MD 600N pilots. Recurrent pilot training provides a pilot review of MD 600N helicopter systems and operations, and uses flight review, proficiency checks, or other checks to review rules, maneuvers, and procedures to demonstrate existing pilot skills. Training is conducted over a three-day period and consists of ground school and two to three hours of flight time. Ground school training includes a review and discussion of airworthiness directives and notices, helicopter systems, pilot flight manual review, preflight inspection, followed by an open-book examination.



### 8.1.4 Maintenance Training

The airframe maintenance course familiarizes a licensed aircraft and powerplant mechanic with the maintenance and inspection of aircraft major systems. Training adheres to original equipment manufacturer standards and includes an overview of supporting maintenance documentation, service bulletins, service letters, and maintenance logbook. All training materials required to conduct maintainer training (i.e., instructional materials, handouts, presentations, training guides / aids, tests / exercises) are returned to each trainee. Hands-on training using MDHI- or customer-furnished equipment will be provided as necessary to supplement the classroom instruction. Training instruction and technical information are conducted in the English language. Course syllabus includes:

- Airframe
- Flight control system
- Environmental control system
- Power train
- Rotor system.

Maintainer training for one maintainer is provided as part of the helicopter purchase.

## 8.2 Warranty

The MD 600N commercial helicopters are covered by a commercial warranty which is administered by MDHI Mesa, Arizona. Supplier products (e.g., turboshaft engine, avionics, etc.) are separately warranted through the product supplier.

The MDHI Commercial Warranty is a materials and workmanship type warranty that begins upon customer helicopter / spare parts acceptance / delivery. The customer will perform prompt repair or replacement of helicopter specific discrepant hardware. For warranty claims pertaining to aftermarket spare parts and components, the customer, at their option (with prior approval), either:

- Returns the non-conforming or defective part or component for credit or refund; or
- Requests correction or replacement of the affected part or component. Associated shipping costs shall be shared by the customer and the vendor.

### 8.2.1 Warranty Claims

All warranty claims begin with completion of an MDHI service and operations report (SOR) document. The completed SOR document is submitted to MDHI field services for technical accuracy and completeness review and to determine if additional action is needed. When the review is completed, the SOR is forwarded to the MDHI warranty / repair department for determination of warranty claim status. The circumstances of the failure, aircraft and component time, date of submittal and nature of the claim, and other factors, are evaluated in accordance with the current published MDHI warranty. The limited commercial warranty (CSP-A-2) and SOR forms can be accessed through the MDHI website.



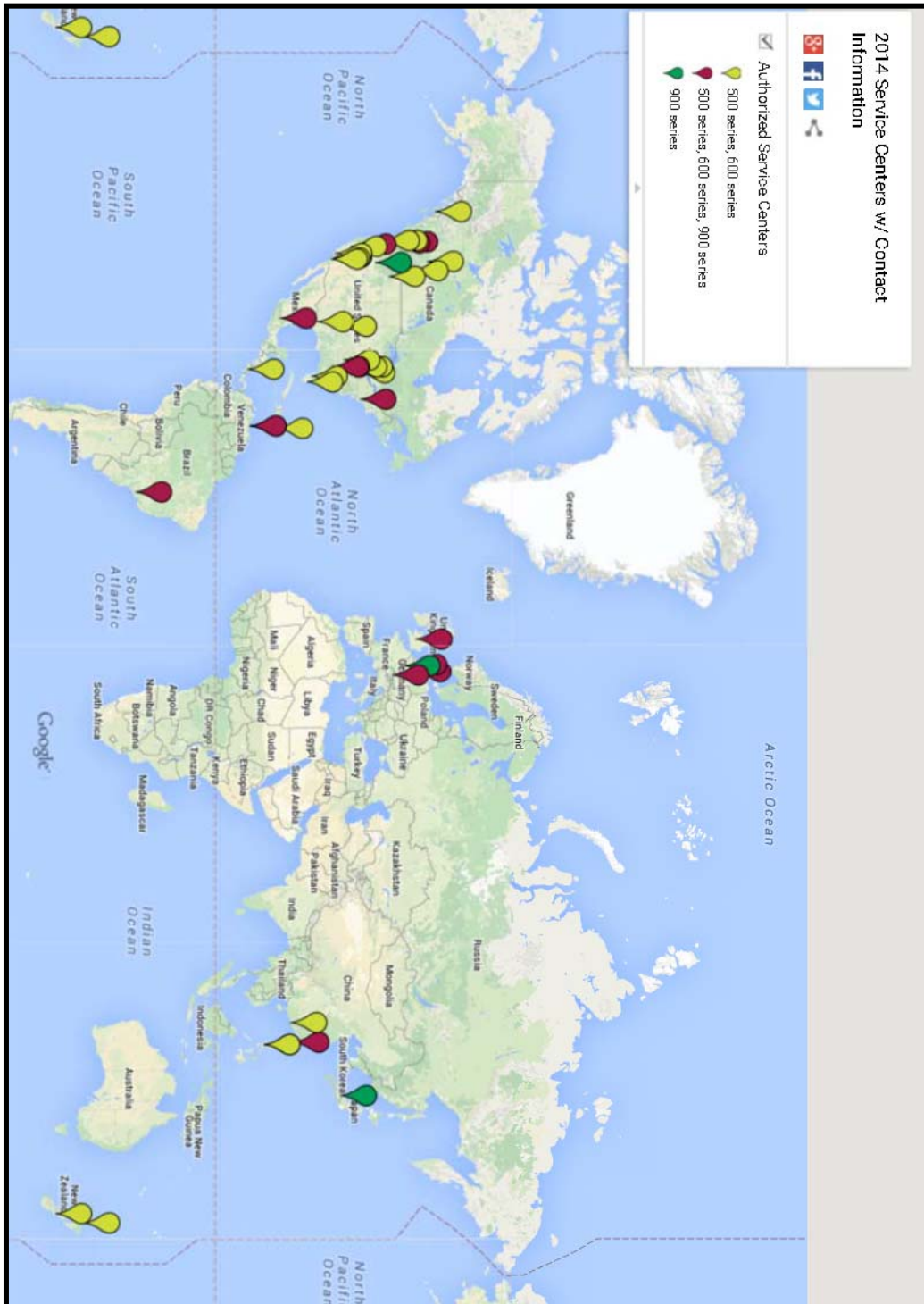
### **8.3 Service Centers**

MD Helicopters, Inc. has approved service centers located worldwide. The figure below shows MDHI worldwide approved service centers locations. Detailed service center information is provided on the MD Helicopters website.

### **8.4 Field Service**

Dedicated Field Service Representatives are available to support fielded MDHI products. Field Service Representatives are available for the following locations:

- Asia / India / Australia / New Zealand
- Eastern North America
- Middle East / Africa
- Mexico /Central America / South America
- Russia / Commonwealth of Independent States
- Western North America.



**MD Helicopters, Inc. Worldwide Service Center Locations**