

ing autorotation and engine shutdown. The main drive shaft connects to the main rotor transmission input shaft. The engine oil cooler blower is belt driven off the main drive shaft. The oil cooler blower draws cooling air from the air inlet fairing to supply ambient air to the engine and transmission oil coolers and to the engine compartment.

The main rotor transmission is mounted on the basic airframe structure above the passenger/cargo compartment. The transmission is lubricated by its own air cooled lubrication system.

The main rotor static mast is non-rotating and is rigidly mounted to the mast support structure. The rotor hub is supported by the rotor mast.

Torque is transmitted independently to the rotor through the main rotor drive shaft. Lifting loads are prevented from being imposed onto the main transmission eliminating thrust loading of transmission parts.

The tail rotor transmission is mounted on the aft end of the tailboom and has a self-contained lubricant system. The tail rotor is mounted on the output shaft of the transmission and consists of two variable-pitch blades.

Main rotor system:

The helicopter utilizes a five bladed, fully articulated main rotor assembly with unique features. While contemporary helicopters use torsion tension straps in lieu of thrust bearing stacks to contain blade centrifugal loading and allow feathering, the MDHS strap pack arrangement goes three steps further. First, the strap configuration (while secured firmly to the hub) actually allows the centrifugal load exerted by one blade to be countered by the force exerted by the opposite two blades. Thus, very light centrifugal loads are sensed by the hub. Second, the V-legs of the strap pack rotate as driving members to turn the blades. Finally the straps are configured to allow feathering and flapping of the blades. The main rotor blades are secured to the hub with quick release lever type pins.

Flight controls:

Cyclic, collective, and adjustable pedal controls are provided at the left crew position (right position, military only). Adjustable friction devices, which may be varied to suit the individual pilot, are incorporated in the cyclic, collective and throttle controls. In addition, electrical cyclic trim actuators allow flight loads to be trimmed out. Since stick control forces are low, a hydraulic boost system is unnecessary. An optional dual control system may be easily removed to provide room for passengers or cargo.

3-12. ABNORMAL VIBRATIONS

Indications: Sudden, unusual or excessive vibrations occurring during flight.

Conditions: The onset of unusual or excessive vibrations in the helicopter may be an indication of problems in the rotor or drive train systems.

Procedures:

- LAND AS SOON AS POSSIBLE.
- No further flights should be attempted until the cause of the vibration has been identified and corrected.

3-13. FUEL SYSTEM MALFUNCTIONS

FUEL FILTER

Indications: Yellow  indicator ON.

Conditions: A predetermined pressure differential across the filter has been reached and an impending bypass condition exists.

Procedures:

- Turn on start pump.
- Continue flight.



If any unusual engine indications or conditions occur, land as soon as possible.

- Service the fuel filter prior to the next flight. (Ref. the HMI and the Rolls-Royce Engine Operation and Maintenance Manual).

NOTE: Following the completion of the flight in progress, additional flight is prohibited until the fuel filter has been serviced.

SECTION IV NORMAL PROCEDURES

4-1. PREFLIGHT REQUIREMENTS

NOTE: The checks described in this Section apply to the standard configuration MD 500D and do not include certain optional equipment items. Preflight checks for optional equipment items may be found in Section IX of this manual. If your helicopter is equipped with STC'd items, refer to the STC holder's flight manual supplement.

“CHECK” means to observe the helicopter and note any obvious damage. Damage is defined as any condition that is not normal or not within limits. Examples of conditions to look for are: inoperable equipment, excessive leakage, discoloration caused by heat, loose attachment, dents, cracks, punctures, abrasion, chafing, galling, nicks, scratches, delamination and evidence of corrosion. These are the most common types of damage, however, checks should not be limited to these items.

Further checks shall be performed before the next flight if discrepancies are noted to determine if the aircraft is airworthy. Flight is prohibited when unrepaired damage exists which makes the aircraft unairworthy.

Have a thorough understanding of operating limitations. (Ref. Section II).

Service helicopter as required. (Ref. Section VII and CSP-HMI-2).

Determine that helicopter loading is within limits. (Ref. Sections II and VI).

Check helicopter performance data. (Ref. Sections V, VIII and IX).



Be sure to include a review of the appropriate flight manual supplemental data for type of optional equipment installed (including STC items) as a regular part of preflight planning.

Perform Pilot's Daily Preflight Check prior to the first flight of the day.

Perform Pilot's Preflight Check prior to subsequent flights that same day.

Brief passengers on relevant operational procedures and associated hazards (Ref. Sec. I, Pilot's Briefing).

- | | |
|---|--------------|
| • M/R transmission oil filter bypass indicator (if installed) | CHECK |
| • Fuel level; cap security | CHECK |
| • Engine oil level; cap security | CHECK |

NOTE: Oil level should be checked within 15 minutes after shutdown.

- | | |
|---|---|
| • Overhead canopy for condition and cleanliness | CHECK |
| • Main rotor hub, pitch control rods, blade dampers, swashplate and mast | CHECK |
| • Lead-lag links; ensure bushings are flush with top and bottom surfaces of each link | CHECK |
| • Lead-lag link attach nuts for cracks | CHECK |
| • Main rotor blades for chordwise cracks on the underside of the blade skin and doubler. If existing, the cracks will be at the leading and trailing edges of the root fitting in the area of the two most outboard bolts or outermost end of lower root fitting. | CHECK |
| • Oil cooler air inlet | NO OBSTRUCTIONS |
| • Engine air inlet/plenum chamber | NO OBSTRUCTIONS
OR FOREIGN
OBJECTS |



When the helicopter has been parked outside during falling or blowing snow, remove accumulated ice and snow from engine inlet area and all helicopter exterior surfaces. Also open plenum chamber access door and visually determine that the inlet screen or particle separator (if installed) has not become clogged with ice and snow.

- | | |
|--------------------------------|------------------------|
| • Static port | NO OBSTRUCTIONS |
| • All inspections doors/panels | SECURED |

PREFLIGHT CHECKS

Perform these checks prior to subsequent flights of the same day.

- Fluid levels **CHECK**
- Engine compartment - fluid leaks and
bypass indicators **CHECK**
- Air inlet screens/particle separator **CHECK**
- Fuel cap, access doors and panels **CHECK**
- Main rotor blades **CHECK**
- Tailboom and empennage **CHECK**
- Tail rotor rotor blades **CHECK**
- Cargo and loose equipment **CHECK**
- Crew and cabin doors **CHECK**