

DEPARTMENT OF TRANSPORT
MASTER MINIMUM EQUIPMENT LIST

MINISTÈRE DES TRANSPORTS
LISTE PRINCIPALE D'ÉQUIPEMENT MINIMAL

**TRANSPORT CANADA
MASTER MINIMUM EQUIPMENT LIST (MMEL)
BELL 206 AND 407 SERIES HELICOPTERS**

REVISION: 3

16 October, 2013


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Chief, Flight Test,
Aircraft Certification,
For Minister of Transport

Date: 16 October 2013

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REVISION RECORD / REASON

Rev	Description	Date	By	Checked	Approved
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ACRONYM LIST

AD	Airworthiness Directive
ADF	Automatic Direction Finder
ADS-B	Automatic Dependent Surveillance-Broadcast
AHRS	Attitude Heading Reference System
ATA	Air Transport Association
CAR	Canadian Aviation Regulation
DME	Distance Measuring Equipment
ECU	Environmental Control Unit
ELT	Emergency Locator Transmitter
EMS	Emergency Medical System
EVS	Enhanced Vision System
FADEC/ECU	Full Authority Digital Engine Control / Electronic Control Unit
FLIR	Forward Looking Infra Red
GPS	Global Positioning System
HF	High Frequency
ICS	Inter Communication System
IFR	Instrument Flight Rules
ILS	Instrument Landing System
MEL	Minimum Equipment List
MMEL	Master Minimum Equipment List
OAT	Outside Air Temperature
RFM	Rotorcraft Flight Manual
RMI	Radio Magnetic Indicator
SAS	Stability Augmentation System
SD	Secure Digital
TAS	Traffic Avoidance System
TCAD	Traffic Collision Alert Device
TCAS	Traffic Collision Alert System
TRACS	Tail Rotor Authority Control System
UCT	Universal Coordinated Time
UHF	Ultra High Frequency
VFR	Visual Flight Rules
VHF-FM	Very High Frequency – Frequency Modulation
VMC	Visual Meteorological Conditions
VOR	VHF Omni directional Range
XFR	Transfer

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**Transport Canada
Master Minimum Equipment List
Bell 206 and 407 series**

Preamble

All equipment installed on an aircraft in compliance with the Airworthiness Standards and the Operating Rules must be operative. However, CAR 605.07, permits the publication of a Master Minimum Equipment List (MMEL) where compliance with certain equipment requirements is not necessary under all operating conditions. Experience has shown that with the various levels of redundancy designed into aircraft, operation of every system or installed component may not be necessary when the remaining operative equipment can provide the required level of safety. A Master Minimum Equipment List (MMEL) is developed by Transport Canada, with participation by the aviation industry, to improve aircraft utilization and thereby provide more convenient and economic air transportation for the public. The approved MMEL includes those items of equipment related to airworthiness and operating regulations and other items of equipment Transport Canada finds may be inoperative and yet maintain the required level of safety by applying appropriate conditions and limitations; it does not contain obviously required items such as rotors and transmissions. The MMEL is the basis for development of individual operator MELs which take into consideration the operator's particular aircraft equipment configuration and operational conditions. Operator MELs, for administrative control, may include items not contained in the MMEL; however, relief for administrative control items must be approved. An operator's MEL may differ in format from the MMEL, but cannot be less restrictive than the MMEL. The individual operator's MEL, when approved, permits operation of the aircraft with inoperative equipment.

Equipment not required by the operation being conducted and equipment in excess of the requirements are included in the MEL with appropriate conditions and limitations. The MEL must not deviate from the Rotorcraft Flight Manual Limitations, Emergency Procedures or with Airworthiness Directives. It is important to remember that all equipment related to the airworthiness and operating regulations of the aircraft not listed on the MMEL must be operative.

Suitable conditions and limitations in the form of placards, maintenance procedures, crew operating procedures and other restrictions as necessary are specified in the MEL to ensure that the required level of safety is maintained.

The MEL is intended to permit operation with inoperative items of equipment for a period of time until repairs can be accomplished. It is important that repairs be accomplished at the earliest opportunity. In order to maintain the required level of safety and reliability the MMEL establishes limitations on the duration of and conditions for operation with inoperative equipment. When an item of equipment is discovered to be inoperative, it is reported by making an entry in the Aircraft Maintenance Record/ Journey Logbook. The item is then either repaired or deferred as per the MEL. Alternatively, the aircraft must be in compliance with CAR sections 605.08 (2) or 605.09 (2) which specify the requirements for operating an aircraft subject to the conditions of a flight permit and the subordinate position of a MEL with regard to an Airworthiness Directive (AD) for the same Item.. MEL conditions and limitations do not relieve the operator from determining that the aircraft is in a safe condition for operation with items of equipment inoperative. [See CAR 605.08 (1)]

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Operators are responsible for exercising the necessary operational control to ensure that the required level of safety is maintained. When operating with multiple inoperative items, the interrelationships between those items and the effect on aircraft operation and crew workload must be considered.

Operators are to establish a controlled and sound repair program including the parts, personnel, facilities, procedures, and schedules to ensure timely repair.

WHEN USING THE MEL, COMPLIANCE WITH THE STATED INTENT OF THE PREAMBLE, DEFINITIONS, AND THE CONDITIONS AND LIMITATIONS SPECIFIED IN THE MEL IS REQUIRED.

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DEFINITIONS AND EXPLANATORY NOTES

1. System Definition.

System numbers are based on the Air Transport Association (ATA) Specification Number 100 and items are numbered sequentially

- a) “System & Sequence NO Item” (Column 1) means the equipment, system, component, or function listed in the “Item” column.
- b) “Number Installed” (Column 2) is the number (quantity) of items normally installed in the aircraft. This number represents the aircraft configuration considered in developing this MMEL. Should the number be a variable (e.g., passenger cabin items) a number is not required.

NOTE: Where the MMEL shows a variable number installed, the MEL must reflect the actual number installed or an alternate means of configuration control must be approved by Transport Canada.

- c) “Number Required for Dispatch” (Column 3) is the minimum number (quantity) of items required for operation provided the conditions specified in Column 4 are met.

NOTE: Where the MMEL shows a variable number required for dispatch, the MEL must reflect the actual number required for dispatch or an alternate approved means of configuration control approved by Transport Canada.

- d) “Remarks or Exceptions” (Column 4) includes a statement either prohibiting or permitting operation with a specific number of items inoperative, (conditions and limitations) for such operation, and appropriate notes.
- e) References given in Column 4 are to bring attention to certain interrelationships between the subject item and other MMEL items or AFM material. These references are intended to assist with compliance but do not relieve the operator of responsibility for determining such other interrelationships, as stated in the preamble.
- f) A vertical bar (change bar) in the margin indicates a change, addition or deletion in the adjacent text for the current revision of that page only. The change bar is dropped at the next revision of that page.
- g) A revision (change) bar adjacent to an item or page number indicates that the item or page was renumbered only and that no technical content change was made in the text.

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2. “Rotorcraft Flight Manual” (RFM) is the document required for type certification and is certified by Transport Canada. The certified RFM for the specific aircraft is listed on the applicable Type Certificate Data Sheet.
3. “As required by regulation” means that the listed item is subject to certain provisions (restrictive or permissive) expressed in the Canadian Aviation Regulations, the Airworthiness Manual or other operating rules. The number of items required by such a rule must be operative. Items installed that are in excess of the requirements may be permitted by the operator’s MEL to be inoperative if not otherwise required by the MMEL.
4. Each inoperative item must be placarded to inform and remind the crewmembers and maintenance personnel of the equipment condition.

NOTE: To the extent practical, placards should be located adjacent to the control or indicator for the item affected; however, unless otherwise specified, placard wording and location will be determined by the operator.

5. “-“ Symbol in Column 2 and / or Column 3 indicates a variable number (quantity) of the item installed.

NOTE: Where the MMEL shows a variable number installed, the MEL must reflect the actual number installed or an alternate means of configuration control approved by Transport Canada.

6. “Deleted” in the remarks column after a sequence item indicates that the item was previously listed but is now required to be operative if installed in the aircraft.
7. “Flight Day” means a 24-hour period (from midnight to midnight) either Universal Coordinated Time (UCT) or local time, as established by the operator, during which at least one flight is initiated for the affected aircraft.
8. “Icing Conditions” means an atmospheric environment that may cause ice to form on the aircraft or in the engine(s).
9. Alphabetical symbol in Column 4 indicates a proviso (condition or limitation) that must be complied with for operation with the listed item inoperative.
10. “Inoperative” means a system and / or component malfunction to the extent that it does not accomplish its intended purpose and / or is not consistently functioning normally within its approved operating limit(s) or tolerances.
11. “NOTE(S):” in Column 4 provides additional information for crew member or maintenance consideration. Notes are used to identify applicable material which is intended to assist with compliance but does not relieve the operator of the responsibility for compliance with all applicable requirements. Notes are not a part of the provisos.

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12. Inoperative components of an inoperative system: Inoperative items which are components of a system which is inoperative are usually considered components directly associated with and having no other function than to support that system. (Warning/caution systems associated with the inoperative system must be operative unless relief is specifically authorized per the MMEL).
13. “(M)” symbol indicates a requirement for a specific maintenance procedure which must be accomplished prior to operation with the listed item inoperative. Normally these procedures are accomplished by maintenance personnel; however, other personnel may be qualified and authorized to perform certain functions. Procedures requiring specialized knowledge or skill, or requiring the use of tools or equipment, should be accomplished by maintenance personnel. The satisfactory accomplishment of all maintenance procedures, regardless of who performs them, is the responsibility of the operator. Appropriate procedures are required to be published as part of the operator’s manual or MEL.
14. “(O)” symbol indicates a requirement for a specific operations procedure which must be accomplished in planning for and / or operating with the listed item inoperative. Normally these procedures are accomplished by the flight crew; however, other personnel may be qualified and authorized to perform certain functions. The satisfactory accomplishment of all procedures, regardless of who performs them, is the responsibility of the operator. Appropriate procedures are required to be published as a part of the operator’s manual or MEL.

NOTE: The (M) and (O) symbols are required in the operator’s MEL unless otherwise authorized by Transport Canada.

15. “Deactivated” and/or “Secured” means that the specified component must be put into an acceptable condition for safe flight. An acceptable method of securing or deactivating will be established by the operator.
16. “Visual Flight Rules” (VFR) is as defined in the CAR’s. This precludes a pilot from filing an Instrument Flight Rules (IFR) flight plan.
17. “Visual Meteorological Conditions” (VMC) means the atmospheric environment is such that would allow a flight to proceed under the visual flight rules applicable to the flight. This does not preclude operating under Instrument Flight Rules.
18. “Visible Moisture” means an atmospheric environment containing water in any form that can be seen in natural or artificial light; for example, clouds, fog, rain, sleet, hail, or snow.
19. “Passenger Convenience Items” means those items related to passenger convenience, comfort or entertainment such as, but not limited to, galley equipment, movie equipment, ashtrays, stereo equipment, overhead reading lamps, etc.

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20. “Day of Discovery” is the calendar day an equipment/instrument malfunction was discovered. This day is excluded from the calendar days or flight days specified in the MMEL for the repair of an inoperative item of equipment. This provision is applicable to all MMEL items, i.e., categories “A, B, C, and D”.
21. Repair Intervals: (Column 1) All users of a MEL must effect repairs of inoperative systems or components, deferred in accordance with the MEL at, or prior to the repair times established by the following letter designators:

Category A

Items in this category shall be repaired within the time interval specified in the remarks column of the operator's approved MEL.

Category B

Items within this category shall be repaired within (3) consecutive calendar days excluding the day of discovery. For example, if it were discovered at 10 a.m. on January 26th, the three-day interval would begin at midnight the 26th, and end at midnight the 29th.

Category C

Items in this category shall be repaired within ten (10) consecutive calendar days excluding the day of discovery. For example, if it were discovered at 10 a.m. on January 26th, the ten-day interval would begin at midnight the 26th, and end at midnight February 5th.

Category D

Items in this category shall be repaired within one hundred and twenty (120) consecutive calendar days excluding the day of discovery.

22. “Administrative control item” means an item listed by the operator in the MEL for tracking and informational purposes. It may be added to an operator's MEL provided no relief is granted, or to provide conditions and limitations contained in an approved document (i.e. Structural Repair Manual, Airworthiness Directive, etc.). If relief other than that granted by an approved document is sought for an administrative control item, a request must be submitted to Transport Canada. If the request results in review and approval, the item becomes a MMEL item rather than an administrative control item.
23. “***” Symbol in Column 1 indicates an item which is not required by regulation but which may have been installed on some models of aircraft covered by this MMEL. This item may be included on the operator's MEL after the approving office has determined that the item has been installed on one or more of the operator's aircraft. The symbol, however, shall not be carried forward into the operator's MEL. It should be noted that neither this policy nor the use of this symbol provides authority to install or remove an item from an aircraft. The “***” symbol maybe considered equivalent to the term “if installed”.
24. “Excess Items” means those items that have been installed and are redundant to the requirements.

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GUIDELINES FOR (M) & (O) PROCEDURES

A need has been identified for certain procedures to provide an adequate level of safety while providing relief for some items. Those procedures must be established by the operator. The following guidelines specify the objectives of the required procedures:

In addition to the instructions provided herein, the operator is responsible to assure all appropriate inspections and checklists have been accomplished prior to the next flight. The below annexed procedures are not included in the Maintenance Manual because they are driven by the MMEL process. Refer to Maintenance Manual for standard procedures.

21-1

- a) (M) Procedure to inspect heater, isolate its fuel supply and deactivate and secure heater electrical system.
- b) (M) Procedure to inspect shroud, ensure no leaks exist and deactivate and secure system.
- c) (M) Procedure to inspect bleed air heating system, ensure no leaks exist and deactivate and secure system.

21-2

- a) (M) Procedure to inspect bleed air defog system, ensure no leaks exist, and deactivate and secure system.
- b) (O) Procedure to ensure that the system has been deactivated.

- 21-3 (M) Procedure to inspect air conditioner, ensure drive system is not restricted, and deactivate and secure system.

- 21-4 (M) Procedure to inspect bleed air ECU system, ensure no leaks exist, and deactivate and secure the system.

- 23-3 (O) Procedure to ensure cabin passengers are briefed.

- 23-5 (M) Procedure to confirm GIA 1 associated equipment is functional per Table 3-4 of the flight manual.

- 24-2 (M) Procedure to inspect, disconnect auxiliary battery and secure cables.

- 24-3 (M) Procedure to inspect, deactivate or remove generator/alternator, secure cables and ensure drive system is not restricted.

- 25-2 (M) Procedure may be required and included in operator's manual.
- (O) Procedure may be required and included in operator's manual.

- 25-3 (M) Procedure to deactivate and secure cargo suspension system.

- 25-4 (M) Procedure to deactivate and secure hoist system.

- 25-6 (M) Procedure may be required and included in manual.
- (O) Procedure may be required and included in operator's manual.



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- 25-9 (M) Procedure to deactivate and secure sonic locator system.
- 25-10 (M) Procedure to deactivate and secure Forward Looking Infra Red (FLIR).
- 25-12 (M) Procedure to arm the ELT
- 25-13 (M) Procedure to deactivate and secure Enhance Vision System (EVS)
- 25-14 (M) Procedure to deactivate and secure Tail Rotor Camera
- 25-15 (O) Procedure to ensure an alternate method to record air time is used and the transponder is controlled manually
- 27-1 (O) Reference to appropriate Rotorcraft Flight Manual paragraphs (Vne is 60 KIAS).
(M) Procedure to check full travel and freedom of pedals.
- 27-2 (M) (1) The 206-301-052-103 variable pitch actuator shall be positioned to its fully retracted position:
- For helicopters located below 3000 ft HD; energize the TRACS and confirm the actuator position displays the 3000 feet position. After confirmation from the control panel display that the variable pitch actuator is set at its minimum position (3000ft), pull and secure T/R AUTH circuit breaker open.
 - For helicopters located above 3000 ft HD; energize the TRACS while holding the MODE button, which activates the rigging mode. Upon completion of the power up test, the variable pitch actuator will be driven to its fully extended position (max). Pressing the MODE switch again causes the TRACS to drive the variable pitch actuator to the fully retracted position with the display alternating between RIG MIN and an arrow “<” showing approximate actuator position. A full cycle takes approximately 150 seconds. After confirmation from the control panel display that the variable pitch actuator is set at its minimum position (3000ft), pull and secure T/R AUTH circuit breaker open.
 - For helicopters having an inoperative system, operator shall confirm that the variable pitch actuator is at its minimum position by a physical measurement of the variable pitch actuator. The variable pitch actuator, located above the baggage compartment area shall be 4.05 ±0.05 inches from center to center of its attachment points. After verification of the dimension of the variable pitch actuator, pull and secure T/R AUTH circuit breaker open.
- (2) T/R AUTH circuit breaker shall remain open and be identified “SYSTEM INOP”.
- (3) A placard indicating “SYS INOP, BHT-206L4-FM-1 LIMITATIONS SHALL BE USED” shall be affixed nearby the TRACS console controls.
- (4) Cover the ALT/GW LIMITATIONS graphical portion of the AIRSPEED LIMITATION placard with an opaque material.