

AW139



MASTER MINIMUM EQUIPMENT LIST (E.A.S.A.)

AW139

MASTER MINIMUM EQUIPMENT LIST (E.A.S.A.)

ISSUE : 15-07-2006

Rev. 2 : 09-06-2008

Source Document:

MMEL Document N° 139G0270Q008

ISSUE: 19-12-2005 - Rev. E, 09-06-2008

E.A.S.A. Approval:

MMEL Document N° 139G0270Q008 Rev. E
dated: 09-06-2008, page V.

AW139 and AB139 are two names for the same product.

They identify two batches of aircraft manufactured in conformity with a unique Type Certificate Data Sheet

- AB139 up to SN 31054;

- AW139 from SN 31055 onward.

Where not specifically declared, the content of this document is applicable to both AW139 and AB139 helicopters.

CONTINUING AIRWORTHINESS CRITERIA FOR THE AW139 IS DEVELOPED AND MAINTAINED BY AGUSTA, WHO IS THE HOLDER OF THE TYPE CERTIFICATE IN THE STATE OF DESIGN.

RELAZIONE N. 139G0270Q008 REV. E
 REPORT

TITOLO
TITLE

AW139 MASTER MINIMUM EQUIPMENT LIST (MMEL)

Compiled	date	Project Lead	date
F. Feliciani	9/6/08	N.A.	

SPECIALISTS

date	date	date	date
N.A.	N.A.	N.A.	N.A.

AREA VERIFICATION

STEP1: (insert function following 100-50-018)	date	Group Engineer	date	CPE	date
N.A.		N.A.		M. Ragazzi	9/6/08

COMPLIANCE VERIFICATION ENGINEER / AIRWORTHINESS

Noise	date	Sicurezza e Manut. Safety and Maintain.	date	Cabin Safety	date	Carichi Loads	date
N.A.		N.A.		N.A.		N.A.	
Dinamica Dynamics	date	Elettroavionica Electrics and Avionics	date	Fatica Fatigue	date	Installazioni Motore Engine Installations	date
N.A.		N.A.		N.A.		N.A.	
Impianti Systems	date	Diagnostica Diagnostics	date	Strutt. Com. e Carrelli Struct. Con. & Land. Syst.	date	Software	date
N.A.		N.A.		N.A.		N.A.	
Rotori Rotors	date	Trasmissioni Drive Systems	date	Volo Flight	date	Airworthiness	date
N.A.		N.A.		N.A.		N.A.	

LISTA DELLE REVISIONI – REVISION HISTORY

REVISIONE ISSUE	DESCRIZIONE MODIFICHE CHANGE DESCRIPTION	DATA EMISSIONE ISSUE DATE
A	First Issue	19-12-05
B	<ul style="list-style-type: none"> - The following items have been modified: 28-1 and related (O) procedure 28-2 52-1 and related (O) procedure - "MFD" has been added to the acronyms / abbreviations. 	24-01-06
C	<ul style="list-style-type: none"> - The following items have been modified: 22-2 22-3a 22-3b - "AFCS" has been added to the acronyms / abbreviations. - Rectification interval "C" has been added in item 21-6, second relief. 	13-02-06
D	<ul style="list-style-type: none"> - "AB139" replaced with "AW139" - NOTE added on page v - "Agusta" logo replaced with the new "AgustaWestland" logo 	07-09-06
E	<ul style="list-style-type: none"> Added Items: - 25-11 Map Holder - 56-1 Heated Windshields and related (M) procedure Modified items: - 34-2 Radio Altimeter(s) - 34-11 Flight Management System - 34-12 Flight Director - 63-1 Rotor Brake - 34-7 Traffic Collision Avoidance System 	09-06-08

LISTA DI DISTRIBUZIONE - DISTRIBUTION LIST

RAPPRESENTANTE ENTE AW / SOCIETA' ESTERNA AW DEPT. RAPPRESENTATIVE EXTERNAL COMPANY	NOTE NOTES	N. COPIE N. COPIES
M. Ragazzi		1
G. Gino / D. Barbato		1
V. Vaccaro / R. Vanni / G. Metteo / C. Dell'andrea / P. Manara		1
S. Allotta		1
S. Poggi / A. Biaggi / G. Dimitri		1
G. Maffioli / G. Facchini		1
N. Motta		1
P. Donadio / M. Rainero		1
D. Iannucci / S. Gobbi		1
E. Majori		1
M. Malosetti		1
G. Vismara		1
V. Della Bella		1
D. Tyler		1
L. Marcocci		1

INDICE - TABLE OF CONTENTS

APPROVAL PAGE

PREAMBLE

MAINTENANCE AND OPERATING PROCEDURES PROVIDED IN THE MMEL

DEALING WITH MULTIPLE FAULTS IN THE MEL

DEFINITIONS AND EXPLANATORY NOTES

ACRONYMS / ABBREVIATIONS

MASTER MINIMUM EQUIPMENT LIST TABLES

GUIDELINES FOR (M) PROCEDURES

GUIDELINES FOR (O) PROCEDURES

AIRCRAFT	REVISION NO:	E
AW139 / AB139	DATE:	9 June 2008

This Master Minimum Equipment List (MMEL) is recommended by the Joint Aviation Authorities at the above revision level for approval as the basis for the preparation and approval of individual operator's Minimum Equipment Lists (MELs) for aircraft of this type, as certified by and operated under the jurisdiction of JAA member States National Authorities.

Evan Nielsen
European Aviation Safety Agency (EASA)
Manager Flight Standards

Correspondence concerning this document should be addressed to the offices below:

Colin Hancock
MMEL Project Manager

Matteo Ragazzi
AW139 Chief Project Engineer

European Aviation Safety Agency (EASA)
Postfach 10 12 53,
D-504052 Köln,
Germany

AGUSTA an AgustaWestland Company
via G. Agusta, 520
21017 C. Costa di Samarate (VA)
Italy

NOTE

AW139 and AB139 are two names for the same product.

They identify two batches of aircraft manufactured in conformity with a unique Type Certificate Data Sheet

- AB139 up to SN 31054;
- AW139 from SN 31055 onward.

Where not specifically declared, the content of this document is applicable to both AW139 and AB139 helicopters.

PREAMBLE

The following is applicable for authorized certificate holders operating under Authorities Operational Requirements (JAR-OPS). The JAR require that all equipment installed on an aircraft in compliance with the Airworthiness Standards and the Operational Requirements must be operative. However, the requirements also permit the publication of a Minimum Equipment List (MEL) where compliance with certain equipment requirements is not necessary in the interests of safety 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 an acceptable level of safety.

A Master Minimum Equipment List (MMEL) is developed by Agusta S.p.A. and recommended for approval by the JOEB to the JAA Member Authorities to improve aircraft utilization and thereby provide more convenient and economic air transportation for the public. The JAA MMEL includes those items of equipment related to airworthiness and Operational Requirements and other items of equipment which the JAA finds may be inoperative and yet maintain an acceptable level of safety by appropriate conditions and limitations; it does not contain obviously required items such as rotor blades, stabilizer and engines.

The MMEL is the basis for development of individual operator's MELs which take into consideration the operator's particular aircraft equipment configuration and operational conditions. 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 JAR requirements are included in the MEL with appropriate conditions and limitations. The MEL must not deviate from Airworthiness Directives or any other Mandatory Requirement. It is important to remember that all equipment related to the airworthiness and the Operational Requirements of the aircraft not listed on the MMEL must be operative.

MAINTENANCE AND OPERATING PROCEDURES PROVIDED IN THE MMEL

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 an acceptable level of safety is maintained.

The MEL is intended to permit operation with inoperative items of equipment for a period of time until rectification's can be accomplished. It is important that rectifications be accomplished at the earliest opportunity. In order to maintain an acceptable level of safety and reliability the MMEL establishes limitations on the duration of and conditions for operation with inoperative equipment. The MEL provides for release of the aircraft for flight 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/Logbook as prescribed by JAR. The item is then either rectified or may be deferred per the MEL or other approval means acceptable to the competent Authority prior to further operation. MEL conditions and limitations do not relieve the operator from determining that the aircraft is in a condition for safe operation with items of equipment inoperative.

When these requirements are met, an Airworthiness Release, Aircraft Maintenance Record/Logbook entry, or other approved documentation is issued as prescribed by JAR. Such

documentation is required prior to operation with any item of equipment inoperative.

DEALING WITH MULTIPLE FAULTS IN THE MEL

Operators are responsible for exercising the necessary operational control to ensure that an acceptable level of safety is maintained. The exposure to additional failures during continued operation with inoperative systems or components must also be considered. Wherever possible account has been taken in this MMEL of multiple inoperative items. However, it is unlikely that all possible combinations of this nature have been accounted for. Therefore, when operating with multiple inoperative items, the inter-relationships between those items and the effect on aircraft operation and crew workload must be considered.

Operators are to establish a controlled and sound rectification program including the parts, personnel, facilities, procedures and schedules to ensure timely rectification. This program should identify the actions required for Maintenance discrepancy messages.

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

DEFINITIONS AND EXPLANATORY NOTES

The definition(s) presented here are additional to any which are otherwise applicable:

1. System numbers are based on the Air Transport Association (ATA) Specification Number 100 and items are number sequentially.
 - a) "Item" (Column 1) means the equipment, system, component, or function listed in the "Item" column.
 - b) "Number Installed" (Column 3) 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 variable (e.g. passenger cabin items) a number is not required.
 - c) "Number Required for Dispatch" (Column 4) is the minimum number (quantity) of items required for operation provided the conditions specified in Column 5 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 alternative means of configuration control approved by the Authority.

- d) "Remarks or Exceptions" (Column 5) in this column includes a statement either prohibiting or permitting operation with a specific number of items inoperative, proviso (conditions and limitations) for such operation, and appropriate notes.
 - e) 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. The change bar is dropped at the next revision of that page.
2. "Rotorcraft Flight Manual" (RFM) is the document required for type certification and approved by EASA.

The 4 displays configuration refers to the RFM 139G0290X002, and the 3 displays to the RFM 139G0290X001.

3. 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.

4. "-" symbol in Column 3 and / or Column 4 indicates a variable number (quantity) of the item installed.
5. "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.
6. Reserved.
7. As required by Operational Requirements: The associated item must comply with JAR-OPS 3 or any other legislation in force during the flight. Operators should refer to JAR-OPS 3 MEL Policy Document (Administrative and Guidance Material, Section Four: Operations, Part Three: Temporary Guidance Leaflet number 26) for suitable

alleviations based upon the required equipment identified within JAR-OPS 3, subparts K and L.

8. "Flight Day" means 24 hour period (from midnight to midnight) either Universal Coordinated Time (UTC) or local time, as established by the operator, during which at least one flight is initiated for the affected aircraft.
9. "Icing Conditions" means an atmospheric environment that may cause ice to form on the aircraft or in the engine(s).
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 tolerance(s).
11. "Notes" in Column 5 provide additional information for crewmember or maintenance consideration. Notes are used to identify applicable material which is intended to assist with compliance, but do not relieve the operator of the responsibility for compliance with all applicable requirements. Notes are not a part of the provisos.
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 test 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.

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

15. "Deactivated" and "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 ICAO Annex II "Rules of the Air". This precludes a pilot from filing an Instrument Flight Rules (IFR) flight plan.
17. VMC: Visual Meteorological Conditions are meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, equal to or better than the minima specified in ICAO Annex II "Rules of the Air". This definition does not include 'VFR-on-Top' or 'over-the-top'.
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. Extended Overwater Flight: Refer to JAR-OPS 3 Subpart K for definition.

20. "Passenger Convenience Items" means those items related to passenger convenience, comfort or entertainment such as, but not limited to, galley equipment, movie equipment, stereo equipment, overhead reading lamps, etc.
21. Rectification Intervals (column 2): the following definitions are used throughout this document:
- 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 in this category shall be repaired within three (3) consecutive calendar days (72 hours), excluding the day the malfunction was recorded in the aircraft maintenance record / logbook. For example, if it were recorded 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 (240 hours), excluding the day the malfunction was recorded in the aircraft maintenance record / logbook. For example, if it were recorded at 10 a.m. on January 26th, the 10 day interval would begin at midnight the 26th and end midnight February 5th.
 - Category D.** Items in this category shall be repaired within one hundred and twenty (120) consecutive calendar days (2880 hours), excluding the day the malfunction was recorded in the aircraft maintenance record / logbook.
22. "****" 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 i.e. Kits. This item may be included on the operator's MEL after the approving Authority 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 provide permission to install or remove an item from an aircraft.
23. "Excess Items" means those items that have been installed that are redundant to the requirements of the JARs.

ACRONYMS / ABBREVIATIONS

ADI	Attitude and Direction Indicator
ADF	Automatic Direction Finder
AFCS	Automatic Flight Control System
AP	Autopilot
ATA	Air Transport Association
CVR	Cockpit Voice Recorder
DME	Distance Measuring Equipment
EASA	European Aviation Safety Agency
ELT	Emergency Locator Transmitter
EGPWS	Enhanced Ground Proximity Warning System
ER	Extended Range
FD	Flight Director
FDR	Flight Data Recorder
FM	Frequency Modulation
FMS	Flight Management System
GPS	Global Positioning System
GPU	Ground Power Unit
HEELS	Helicopter Emergency Egress Lighting System
HF	High Frequency
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrumental Meteorological Conditions
JAA	Joint Aviation Authorities
JAR	Joint Aviation Requirements
JOEB	Joint Operational Evaluation Board
L/G	Landing Gear
MCDU	Multi-Function Control Display Unit
MEL	Minimum Equipment List
MFD	Multifunction Flight Display
MMEL	Master Minimum Equipment List
OAT	Outside Air Temperature
PA	Passenger Address
RH	Right Hand
RFM	Rotorcraft Flight Manual
S.p.A.	Società per Azioni
UHF	Ultra High Frequency
UTC	Universal Coordinated Time
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
VHF	Very High Frequency
VOR	VHF Omni-directional Range

<u>System No.</u>	<u>System</u>
21	Cockpit and Cabin Ventilation
22	Autoflight
23	Communications
24	Electrical Power
25	Equipment / Furnishings
26	Fire Protection
28	Fuel System
29	Hydraulic Power
30	Ice and Rain Protection
31	Indicating / Recording
32	Landing Gear
33	Lighting
34	Navigation
44	Cabin System
52	Doors
56	Windows
63	Main Rotor Drive

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	21-1
(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch
			(5) Remarks or Exceptions
21 <u>COCKPIT AND CABIN VENTILATION</u>			
- 1 Cockpit Ventilation Flapper Valve	C	2 0	May be inoperative provided: <ul style="list-style-type: none"> a) heating system is installed and operational, and b) one or both crew sliding windows are operational.
- 2 Cockpit Ventilation Fan	C	2 0	(O) May be inoperative provided: <ul style="list-style-type: none"> a) The respective Cockpit Ventilation Flapper Valve (item 21-1) is operative, and b) one or both crew sliding windows are operational.
- 3 Cabin Ventilation Flapper Valve	C	1 0	
- 4 Air Conditioning System ***	D	1 0	(M) May be inoperative provided system is deactivated and secured.
- 5 Heater Bleed Air Shut-off Valve ***	C	2 0	(O) May be inoperative in the failed closed position if heater is not required.
- 6 Heater Temperature Control Valve ***	C	2 0	May be inoperative in the failed open position provided that both shut-off valves (items 21-5) are kept closed and the heater is not required.
	C	2 0	May be inoperative in the failed closed position if the heater is not required.
- 7 Heater Overheat Thermal Switch ***	C	1 0	May be inoperative provided Bleed Air Shut-off Valves (item 21-5) are kept closed and the heater is not required.

AIRCRAFT	REVISION NO:		PAGE
AW139 / AB139	DATE:	E	22-1
		9 June 2008	
<p>(1) System & Sequence Numbers Item</p>	<p>(2) Rectification Interval</p>	<p>(3) Number installed</p>	<p>(4) Number required for dispatch</p>
<p>22 <u>AUTOFLIGHT</u></p>	<p>(5) Remarks or Exceptions</p>	<p>(5) Remarks or Exceptions</p>	<p>(5) Remarks or Exceptions</p>
<p>- 1 Autopilot</p>	<p>A</p>	<p>2</p>	<p>1</p>
<p>- 2 Trim actuators</p>	<p>A</p>	<p>3</p>	<p>-</p>
<p>- 3a Standby Attitude Indicator "4 Display Configuration 139G0290X002 RFM"</p>	<p>A</p>	<p>1</p>	<p>0</p>
			<p>One autopilot channel may be inoperative, provided:</p> <ul style="list-style-type: none"> a) Flights are restricted to VFR. b) Pilot must fly manually. c) RFM limitations applicable to AP single channel failure must never be exceeded. d) Dispatch is not allowed from a station where repair is possible. e) Only one flight or a series of flights necessary to reach the repair station are allowed. <p>One or more trim actuators may be inoperative, provided:</p> <ul style="list-style-type: none"> a) Flights are restricted to VFR. b) Pilot must fly manually. c) Dispatch is not allowed from a station where repair is possible. d) Only one flight or a series of flights necessary to reach the repair station are allowed. <p>The pilot standby attitude indicator may be inoperative, provided:</p> <ul style="list-style-type: none"> a) Flights are restricted to VFR. b) Pilot must fly manually. c) RFM limitations applicable to AFCS DEGRADED system state must never be exceeded. d) Dispatch is not allowed from a station where repair is possible. e) Only one flight or a series of flights necessary to reach the repair station are allowed.

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	22-2
(1) System & Sequence Numbers Item	(2) Rectification Interval		
22 <u>AUTOFLIGHT</u> - 3b Standby Attitude Indicator "3 Display Configuration 139G0290X001 RFM"	(3) Number installed		
	(4) Number required for dispatch		
(5) Remarks or Exceptions			
	A	2	1
	The pilot standby attitude indicator may be inoperative, provided: <ul style="list-style-type: none"> a) Flights are restricted to VFR. b) Pilot must fly manually c) RFM limitations applicable to AFCS DEGRADED system state must never be exceeded. d) Dispatch is not allowed from a station where repair is possible. e) Only one flight or a series of flights necessary to reach the repair station are allowed. 		
	or		
	B	2	1
	The co-pilot standby attitude indicator may be inoperative provided the pilot standby attitude indicator is operative.		

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	23-1
(1) System & Sequence Numbers Item	(2) Rectification Interval		
<p>23 <u>COMMUNICATIONS</u></p> <p>- 1 Intercom System</p> <p>- 2 Communications System (VHF)</p> <p>- 3 Communications System (FM, HF, UHF, etc.)</p>	<p>C</p> <p>D</p> <p>D</p>	(3) Number installed	
		(4) Number required for dispatch	
		(5) Remarks or Exceptions	
		<p>2 1 One may be inoperative for VFR flight, provided back-up mode is operative and according to operating requirements.</p> <p>Note: the loss of Intercom System implies the loss of Passenger Address System, see item 44-1</p> <p>2 1 Any in excess of those required by Operational Requirements may be inoperative.</p> <p>- - Any in excess of those required by Operational Requirements may be inoperative.</p>	

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	24-1
(1) System & Sequence Numbers Item	(2) Rectification Interval		
24 <u>ELECTRICAL POWER</u> - 1 Starter/Generator	B	(3) Number installed	
		(4) Number required for dispatch	
		(5) Remarks or Exceptions	
		2	1

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	25-1
(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch
25 <u>EQUIPMENT / FURNISHINGS</u>			(5) Remarks or Exceptions
- 1 Passenger Seat	D	- 0	(M) One or more may be inoperative . Note: a seat with an inoperative or missing seat belt or harness is considered inoperative
- 2 *** Emergency Locator Transmitter (ELT)	C	- 0	As required by Operational Requirements.
- 3 *** First Aid Kit	D	- -	Any in excess of those required by Operational Requirements may be incomplete or missing provided required distribution is maintained.
- 4 Passenger Convenience Item(s)	-	- 0	Passenger convenience items, as expressed in this MMEL are those related to passenger convenience, comfort or entertainment such as, but not limited to, galley equipment, movie equipment, stereo equipment, overhead reading lamps, etc. Items addressed elsewhere in this document shall not be included. (M) and (O) procedures may be required and included in the air carrier's appropriate document.
- 5 *** Torches (Cockpit/Cabin)	C	- -	One or more may be inoperative provided each required crew member assigned to affected position has an operative torch.
- 6 *** Automatically Deployable Emergency Locator Transmitter (ADELT)	C	- -	As required by Operational Requirements.
- 7 *** Life-rafts and ELT for Extended Overwater Flights	D	- -	(M) Any in excess of the minimum required may be missing or inoperative.

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	25-2
(1) System & Sequence Numbers Item	(2) Rectification Interval		
25 <u>EQUIPMENT / FURNISHINGS</u> (Cont'd) - 8 Survival Equipment *** - 9 Lifejackets *** - 10 Emergency Flotation Equipment *** - 11 Map Holder	(3) Number installed		
	(4) Number required for dispatch		
	(5) Remarks or Exceptions		
	D - - (M) Any in excess of the minimum required may be missing or inoperative.		
	D - - (M) Any in excess of the minimum required may be missing or inoperative, provided the required distribution of serviceable lifejackets is maintained.		
D - - As required by Operational Requirements.			
D - 0 May be inoperative provided: - Single Pilot Night VFR and Single Pilot IFR operations are not conducted - Limitations set by Operational Requirements are applied			

AIRCRAFT	REVISION NO:	E	PAGE	
AW139 / AB139	DATE:	9 June 2008	26-1	
(1) System & Sequence Numbers Item	(2) Rectification Interval			
26 FIRE PROTECTION - 1 Baggage Compartment Smoke Detector System -2 Portable Fire Extinguisher ***	(3) Number installed			
	(4) Number required for dispatch			
	(5) Remarks or Exceptions			
	C	1	0	May be inoperative provided baggage compartment is completely empty.
	D	-	1	(M) Any in excess of those required by Operational Requirements may be inoperative or missing provided the required distribution is maintained.

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	28-1
(1) System & Sequence Numbers Item	(2) Rectification Interval		
28 FUEL SYSTEM - 1 Fuel Pumps (Fuel Booster Pumps) - 2 Pressure Transducer	B	2	(3) Number installed
			(4) Number required for dispatch
			(5) Remarks or Exceptions
		1	(O) One fuel pump may be inoperative provided the cross feed valve is set to OPEN before the engine start.
		1	(O) One pressure transducer may be inoperative provided each fuel booster pump pressure is verified by the functioning side pressure transducer.

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	29-1
(1) System & Sequence Numbers Item	(2) Rectification Interval		
	(3) Number installed		
	(4) Number required for dispatch		
	(5) Remarks or Exceptions		
29 <u>HYDRAULIC POWER</u> - 1 No. 2 Circuit (RH), Hydraulic Pumps 2 / 4	A	2	1
			One pump may be inoperative provided: <ul style="list-style-type: none"> a) The circuit pressure is within the normal operative limit: b) No fluid overheating caution message is displayed. c) Repairs must be made prior to next flight and flight duration must not exceed 20 minutes. Note: Ferry Flight longer than 20 minutes is allowed after approval of the relevant Authority.
- 2 Utility Hydraulic Circuit Normal (N° 2) Emergency (N°1)	C	2	1
			(O)(M) One circuit may be inoperative provided, Landing Gear is locked down, secured and electrically deactivated.

AIRCRAFT	REVISION NO:		PAGE	
AW139 / AB139	DATE:	E	30-1	
(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	
			(5) Remarks or Exceptions	
30 <u>ICE and RAIN PROTECTION</u>				
- 1 Windshield Wiper System	C	1	0	May be inoperative provided operations are not predicated on its use.
- 2 Pitot Heaters	C	2	0	May be inoperative provided: <ul style="list-style-type: none"> a) Flight is conducted under VFR, b) Ambient temperatures are above +4 degrees C (39 degrees F), and c) Operations are not conducted in visible moisture.

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	31-1
(1) System & Sequence Numbers Item	(2) Rectification Interval		
	(3) Number installed		
	(4) Number required for dispatch		
	(5) Remarks or Exceptions		
31 <u>INDICATING / RECORDING</u> - 1 Combination Recorder (Combined CVR/FDR Unit) - 2 Clock Displaying Hours, Minutes, and Seconds with Sweep-Second Pointer or Digital Presentation - 3 Displays "4 Display Configuration 139G0290X002 RFM"	A C A	1 2 4	0 May be inoperative provided: a) Applicable Operational Requirements are met, b) Aircraft is not dispatched from a designated airport where repairs or replacements can be made, and c) Repairs are made within 72 hours. - As required by Operational Requirements. 3 1 co-pilot display may be inoperative provided: a) The pilot standby attitude indicator is operative, b) Flight is conducted under VFR. c) Dispatch is not allowed from a station where repair is possible. d) Only one flight or a series of flights necessary to reach the repair station are allowed.

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	32-1
(1) System & Sequence Numbers Item	(2) Rectification Interval		
32 <u>LANDING GEAR</u> - 1 Landing Gear Indicating / Warning System	C 1 0	(3) Number installed	
		(4) Number required for dispatch	
		(5) Remarks or Exceptions	
		(O)(M) May be inoperative provided L/G is locked down, secured and electrically deactivated.	

AIRCRAFT	REVISION NO:		E	PAGE
AW139 / AB139	DATE:		9 June 2008	33-1
(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
33 LIGHTING				
- 1 Position Light System	C	1	0	May be inoperative for day operations.
- 2 Landing Light System	C	1	0	May be inoperative: a) for day operations, b) for night operations, provided search light (alternate landing light) is operative.
- 3 Search Light (Alternate Landing Light) System	C	1	0	May be inoperative for day operations.
- 4 Step Lights ***	C	-	-	
- 5 Cockpit/ Flight Deck/ Flight Compartment and Instrument Lighting System	C	-	-	(O) Individual lights may be inoperative provided remaining lights are sufficient to clearly illuminate all required instruments, controls, and other devices for which it is provided.
- 6 Cabin Lighting System	C	1	-	May be inoperative: a) For day operations. b) For night operations provided that the inoperative lights do not exceed fifty (50) percent of the total installed.
- 7 Emergency Lighting System	C	1	0	May be inoperative for non-passenger carrying operations.
- 8 Helicopter Emergency Egress Lighting System (HEELS) ***	B	-	0	As required by operating regulations.
- 9 Anti-Collision / Strobe Lights	C	-	-	As required by Operational Requirements

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	34-1
(1) System & Sequence Numbers Item	(2) Rectification Interval		
34 NAVIGATION - 1 Navigation Systems (VOR, ILS, ADF, DME, GPS, etc.) - 2 Radio Altimeter(s) - 3 Multifunction Control Display Unit (MCDU) - 4 Transponder(s) - 5 Weather Radar System *** - 6 OAT/Free Air Temperature - 7 Traffic Collision Avoidance System *** - 8 Moving Map Display *** - 9 Thunderstorm/Lightning Detection System *** - 10 Enhanced Ground Proximity Warning System (EGPWS) *** - 11 Flight Management System (FMS) - 12 Flight Director (FD) ***	(3) Number installed		
	(4) Number required for dispatch		
	(5) Remarks or Exceptions		
	Any in excess of those required by Operational Requirements, may be inoperative.		
	As required by Operational Requirements.		
May be inoperative provided 4 axis Flight Director mode RHT is not engaged.			
One MCDU may be inoperative for VFR.			
As required by Operational Requirements.			
As required by Operational Requirements.			
One of the ADS sensors may be inoperative.			
May be inoperative provided Single Pilot VFR Night operations are not conducted.			
As required by Operational Requirements.			
May be inoperative provided Single Pilot IFR operations are not conducted.			
May be inoperative provided Single Pilot IFR operations are not conducted.			

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	34-2
(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch
<p>34 <u>NAVIGATION</u> (Cont'd)</p> <p>- 13 Flight Management System (FMS) Database</p> <p>- 14 Standby Magnetic Compass</p>	<p>C</p> <p>B</p>	<p>1</p> <p>-</p>	<p>0</p> <p>0</p>
			(5) Remarks or Exceptions
			<p>(O) Navigation Database may be out of currency provided:</p> <p>a) Current Aeronautical Charts are used to verify Navigation Fixes prior to dispatch, and</p> <p>b) Procedures are established and used to verify status and suitability of Navigation Facilities used to define route of flight.</p> <p>c) Approach navigation radios are manually tuned and identified</p>
			<p>May be inoperative provided:</p> <p>a) Flight is conducted by day under VFR when navigating with reference to visual landmarks, and</p> <p>b) When operationally required, the helicopter's main Magnetic Direction Indicator System is operating normally.</p>

AIRCRAFT	REVISION NO:		E	PAGE
AW139 / AB139	DATE:		9 June 2008	44-1
(1) System & Sequence Numbers Item	(2) Rectification Interval			
44 CABIN SYSTEM	(3) Number installed			
- 1 Passenger Address (PA) System	C	1	0	(4) Number required for dispatch
- 2 Cabin ICS / PA Control Panel ***	D	1	0	(5) Remarks or Exceptions
- 3 Passenger Compartment Intercommunications System (Including Pre-recorded Passenger Briefing System, Page/Chime System, and Air to Ground Telephone) ***	C	-	0	(O) May be inoperative provided alternate passenger briefing procedures are established and used
- 4 Fasten Seat Belts / No Smoking annunciations.	C	-	-	(M) One or more annunciations may be inoperative, provided it/they are placarded and an annunciation is visible from each occupied passenger seat

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	52-1
(1) System & Sequence Numbers Item	(2) Rectification Interval		
52 DOORS - 1 Cockpit / Cabin / Baggage Bay / External Power Door Warning Systems	C	1	(3) Number installed 0 (4) Number required for dispatch (5) Remarks or Exceptions (O) May be inoperative provided a visual check verifies the door is closed and locked prior to flight.

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	56-1
(1) System & Sequence Numbers Item 56 <u>WINDOWS</u> - 1 Heated Windshields	(2) Rectification Interval D	(3) Number installed 2	(4) Number required for dispatch 0
			(5) Remarks or Exceptions (M) May be inoperative provided the system is deactivated and secured.

AIRCRAFT	REVISION NO:	E	PAGE
AW139 / AB139	DATE:	9 June 2008	63-1
(1) System & Sequence Numbers Item 63 <u>MAIN ROTOR DRIVE</u> - 1 Rotor Brake	(2) Rectification Interval D 1 0	(3) Number installed 0	(4) Number required for dispatch (5) Remarks or Exceptions (M) May be inoperative provided: a) Inspection determines the calliper is in the down position, and b) System is deactivated and secured.

GUIDELINES FOR (O) PROCEDURES

The MMEL has identified the need for certain procedures to provide an adequate level of safety while providing relief for some items. Examples of appropriate procedures are identified below as a guideline for the operator to establish his own MEL procedures.

In addition to the instructions provided herein, the operator is responsible to assure all appropriate inspections and checklists have been accomplished prior to next flight.

ATA 21 item 2 **(O) Cockpit ventilation flapper valve**

Set the CREW control knob on the VENT section of the ECS Control Panel to OFF and ON alternately. Acoustically verify the flapper valve electrical motor works until it reaches the limit switch in both directions.

ATA 21 item 5 **(O) Heater bleed air shut-off valve**

With engines running, verify SOV 1 and SOV 2 switches on the ECS Control Panel are set to CLOSE. Set the HTR control knob on the ECS Control Panel to AUTO position and increase temperature using the TEMP CONTR knob. Verify the system does not provide hot air.

ATA 28 item 1 **(O) Fuel pump**

Prior to engine start procedure, set the fuel CROSS FEED switch to OPEN and confirm indicator bar horizontal on the fuel control panel.

When cross feeding, the tank with pump off, NOT supplying the engines, will have a quantity of unusable fuel of 228Kg. This unusable fuel quantity value will change to grey to indicate the tank can no longer supply fuel.

To restore the availability of the 228Kg of fuel, set the fuel CROSS FEED switch to CLOSED and confirm indicator bar vertical on the fuel control panel (fuel level value returns to green). Engine operation, in suction mode, is assured and FUEL pressure, on the MFD, is invalid displaying amber dashed. Avoid abrupt aircraft manoeuvres.

ATA 28 item 2 **(O) Pressure transducer**

Set the fuel CROSS FEED switch to OPEN and check the indicator bar is horizontal on the fuel control panel. Switch OFF the fuel pump on the same side of the functioning pressure transducer, switch ON the fuel pump on the opposite side of the functioning pressure transducer and verify pressure (from now on the pressure displayed by the operating pressure transducer has to be considered as the datum for both the fuel lines).

Prior to take off switch ON both fuel pumps, set the fuel CROSS FEED switch to NORMAL and check the indicator bar is vertical on the fuel control panel.

ATA 29 item 2 **(O) Utility hydraulic circuit**

The maximum landing gear extended airspeed (V_{le}) of 150KIAS must not be exceeded. See the "Guidelines for (M) Procedures" section of this document for the (M) procedure related to this item.

ATA 32 item 1 **(O) Landing gear indicating/warning system**

The maximum landing gear extended airspeed (V_{le}) of 150KIAS must not be exceeded. See the "Guidelines for (M) Procedures" section of this document for the (M) procedure related to this item.

ATA 33 item 5 **(O) Cockpit / flight deck / flight compartment and instrument lighting system**

It is pilot's responsibility to check that:

- a) remaining lights are sufficient to clearly illuminate all required instruments, controls, and other devices for which it is provided,
- b) remaining lights are positioned so that direct rays are shielded from flight crewmembers eyes, and
- c) lighting configuration and intensity is acceptable to the flight crew.

ATA 34 item 13 **(O) Flight management system (FMS) database**

It is pilot's responsibility to ensure up to date navigational charts and procedures are used.

ATA 44 item 1 **(O) Passenger address (PA) system**

Passenger briefing can be provided orally (without using Passenger Address System) by the pilot. It is the pilot responsibility to make sure that all the passengers can hear the briefing.

ATA 44 item 3 **(O) Passenger compartment intercommunication system**

Passenger briefing can be provided orally (without using Passenger Compartment Intercommunications System) by the pilot. It is the pilot responsibility to make sure that all the passengers can hear the briefing.

ATA 52 item 1 **(O) Cockpit / cabin / baggage bay / external power door warning systems**

The crew must ensure that the door is closed and locked prior to take-off by verifying that a visual check has been performed.

GUIDELINES FOR (M) PROCEDURES

The MMEL has identified the need for certain procedures to provide an adequate level of safety while providing relief for some items. Examples of appropriate procedures are identified below as a guideline for the operator to establish his own MEL procedures.

In addition to the instructions provided herein, the operator is responsible to assure all appropriate inspections and checklists have been accomplished prior to next flight.

The below annexed procedure are not included in the Maintenance Manual because driven by the MMEL process. Refer to Maintenance Manual for standard procedures.

General Procedure

Referring to all the procedures listed below, when it is prescribed to lock a circuit breaker use lock ring Y30700501 or equivalent.

ATA 21 item 4 (M) Air Conditioning System

Deactivate the system by pulling ACCB CKPT, ACCB CABIN and the two FAN CONTROL circuit breakers on the ECS section of the overhead circuit breaker panel (Figure 1). Secure the system by locking all the deactivated circuit breakers and tag accordingly.

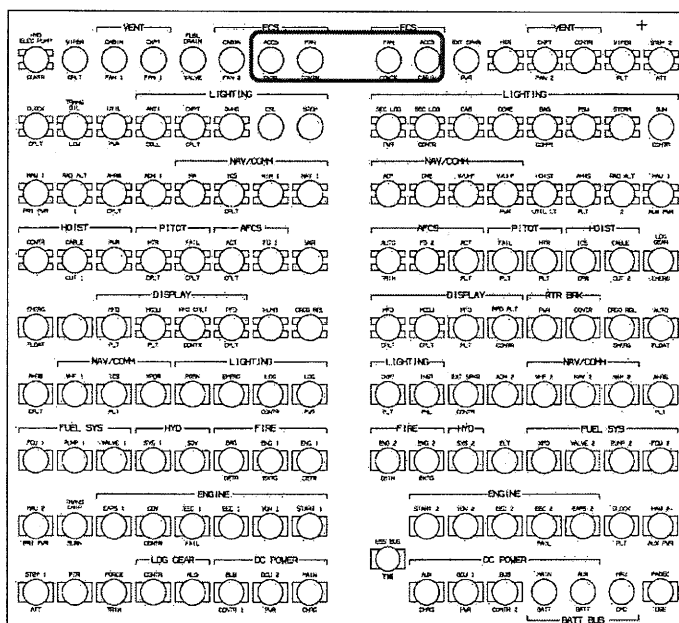


Figure 1

ATA 24 item 1 **(M) Generator**

#1 DC Generator – Set the GEN 1 switch to OFF. Pull the GCU 1 PWR circuit breaker on the DC POWER section of the overhead circuit breaker panel (Figure 2). Secure the system by locking all the deactivated circuit breakers and tag accordingly.

#2 DC Generator – Set the GEN 2 switch to OFF. Pull the GCU 2 PWR circuit breaker on the DC POWER section of the overhead circuit breaker panel (Figure 2). Secure the system by locking all the deactivated circuit breakers and tag accordingly.

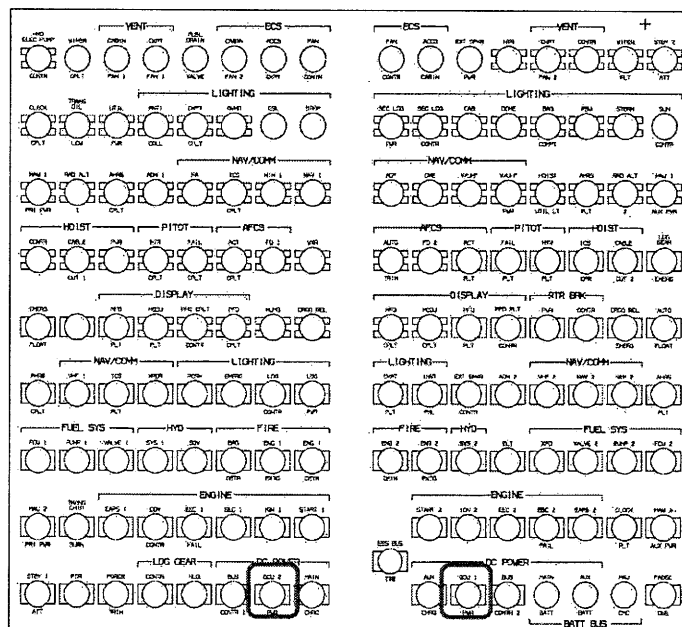


Figure 2

ATA 25 item 1 **(M) Passenger seat**

Secure passenger seat in the upright position and placard “DO NOT OCCUPY”. Make sure the placard is clearly visible and firmly secured.

ATA 25 item 7 **(M) Life-rafts and ELT**

If the equipment is installed inside the cabin, it must be placarded inoperative, removed from the installed location and placed out of sight so it cannot be mistaken for a functional unit. Prior to take-off the pilot must inform the passengers that the equipment is not operative.

If the equipment is installed outside the cabin, all the actuation devices must be placarded inoperative. Prior to take-off the pilot must inform the passengers that the equipment is not operative.

ATA 25 item 8 (M) Survival Equipment

The inoperative equipment must be placarded inoperative, removed from the installed location and placed out of sight so it cannot be mistaken for a functional unit. Prior to take-off the pilot must inform the passengers that the equipment is not operative.

ATA 25 item 9 (M) Lifejackets

The inoperative lifejacket(s) must be placarded inoperative, removed from their location and placed out of sight so it cannot be mistaken for a functional unit. Prior to take-off the pilot must inform the passengers that the equipment is not operative.

ATA 26 item 2 (M) Portable Fire Extinguisher

The inoperative fire extinguisher(s) must be tagged inoperative, removed from the installed location, and placed out of sight so it cannot be mistaken for a functional unit. Prior to take-off the pilot must inform the passengers that the equipment is not operative.

ATA 29 item 2 **(M) Utility hydraulic circuit**

Pull off the CONTR breaker on the LDG GEAR section of the overhead circuit breaker panel (Figure 3), secure the system by locking the deactivated circuit breaker and tag accordingly. If available, use the mechanical locking system designed for the snow/slump pad kits to stow securely the landing gear control handle.

See the “Guidelines for (O) Procedures” section of this document for the (O) procedure related to this item.

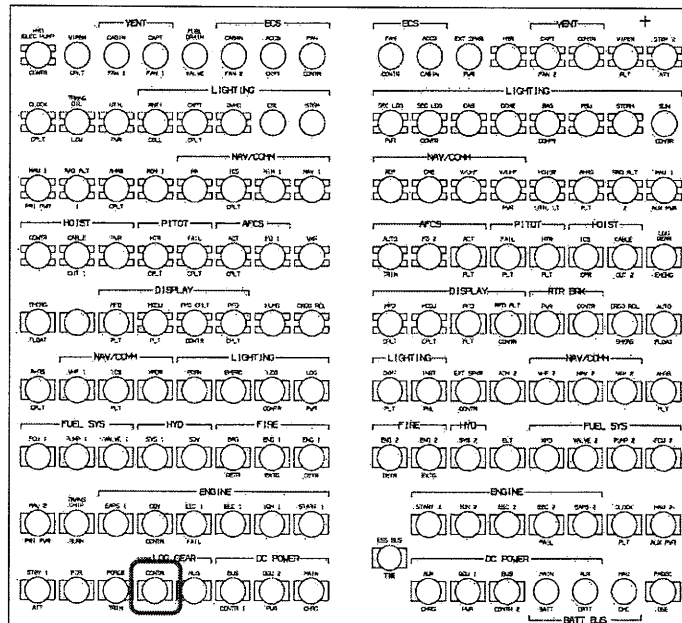


Figure 3

ATA 32 item 1 **(M) Landing gear indicating / warning system**

Pull off the CONTR breaker on the LDG GEAR section of the overhead circuit breaker panel (Figure 3), secure the system by locking the deactivated circuit breaker and tag accordingly. If available, use the mechanical locking system designed for the snow/slump pad kits to stow securely the landing gear control handle.

See the “Guidelines for (O) Procedures” section of this document for the (O) procedure related to this item.

ATA 44 item 4 **(M) Fasten seatbelt / no smoking annunciations**

Placard the annunciation “INOPERATIVE”. Check that at least one operative annunciation is visible from each occupied passenger seat.

ATA 56 item 1 **(M) Heated Windshields**

Switch off the switch related to the inoperative heated windshield on the HEAT WSHLD section of the auxiliary circuit breaker panel.

Pull off the PWR and CONTR breakers related to the inoperative heated windshield on the HEAT WSHLD section of the auxiliary circuit breaker panel (Figure 4).

Secure the system by locking all the deactivated circuit breakers and tag accordingly.

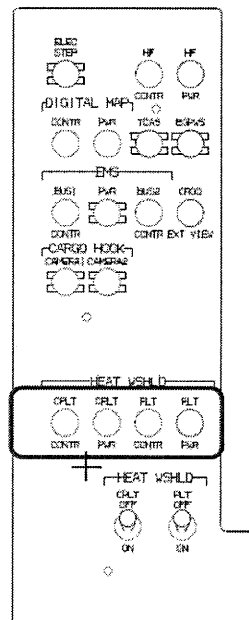


Figure 4

ATA 63 item 1 **(M) Rotor brake**

Set one engine to FLIGHT or GI. Open cowling and panels, verify the position of the calliper.

If the calliper is in the down position pull the PWR circuit breaker on the RTR BRK section of the overhead circuit breaker panel (Figure 5). Secure the system by locking all the deactivated circuit breakers and tag accordingly.

If the calliper is in the up position (Figure 6) remove the electromechanical actuator. Secure the calliper in the down position connecting the bolt holes (1) and (2) with a tie-wrap strap. Secure the free connector of the actuator using a tie-wrap strap. Pull the PWR and the CONTR circuit breakers on the RTR BRK section of the overhead circuit breaker panel (Figure 5). Secure the system by locking all the deactivated circuit breakers and tag accordingly.

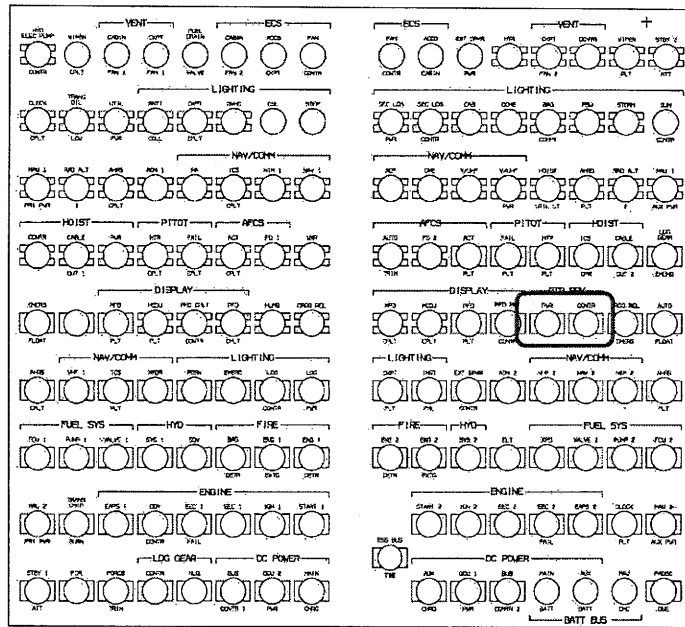


Figure 5

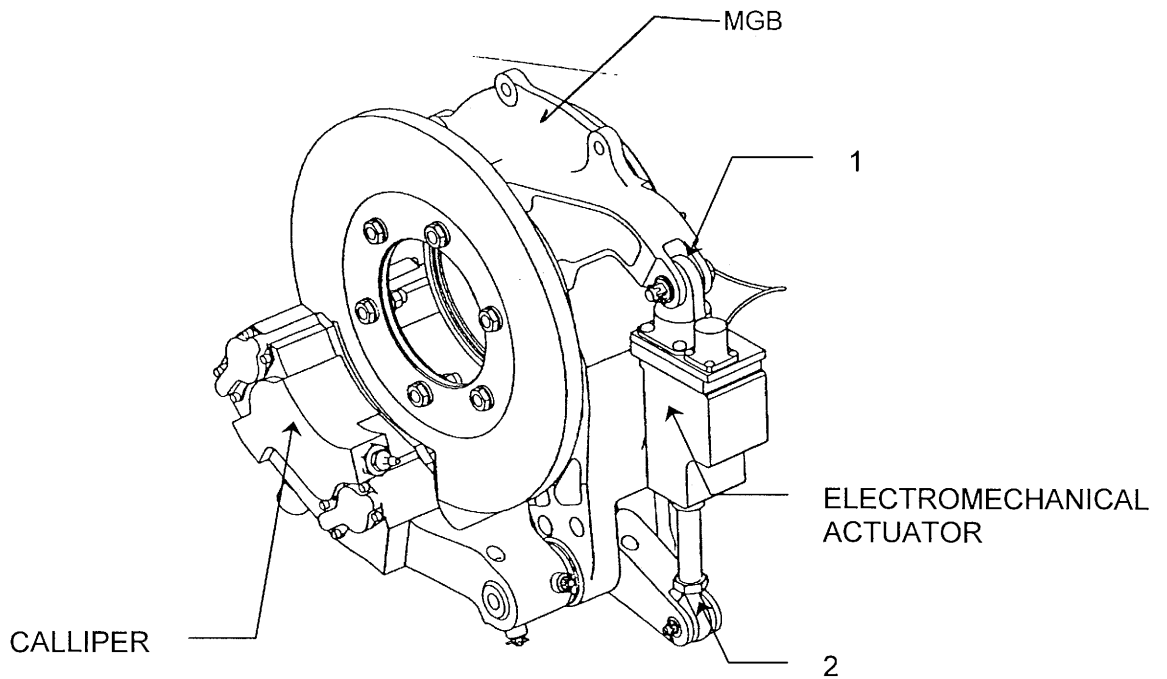


Figure 6