

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C.

Revision: 1
Date: 04/04/78

M A S T E R M I N I M U M E Q U I P M E N T L I S T

LOCKHEED CONSTELLATIONS (All Models)

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LOCKHEED CONSTELLATIONS (All Models)

Table of Contents

SYSTEM NO.	SYSTEM	PAGE
--	Table of Contents	I
--	Control Page	II
--	Highlights of Change	III
--	Notes and Definitions	IV
--	Preamble	V, VI
21	Air Conditioning	21-1, 2
22	Auto Flight	22-1
23	Communications	23-1
24	Electrical Power	24-1, 2
25	Equipment/Furnishings	25-1, 2
26	Fire Protection	26-1, 2
27	Flight Controls	27-1
28	Fuel	28-1
29	Hydraulic Power	29-1
30	Ice and Rain Protection	30-1
32	Landing Gear	32-1
33	Lights	33-1, 2
34	Navigation	34-1
37	Vacuum/Pressure	37-1
61	Propellers	61-1
71	Powerplant	71-1
73	Engine Fuel & Control	73-1
77	Engine Indicating	77-1
79	Engine Oil	79-1

LOCKHEED CONSTELLATIONS (All Models)

Control Page

SYSTEM	PAGE	REV NO.	CURRENT DATE
Cover Page	-	1	04/04/78
Table of Contents	I	1	04/04/78
Control Page	II	1	04/04/78
Highlights of Change	III	1	04/04/78
Notes and Definitions	IV	1	04/04/78
Preamble	V		03/10/78
	VI		03/10/78
21	21-1	ORIGINAL	09/01/65
	21-2	ORIGINAL	09/01/65
22	22-1	ORIGINAL	09/01/65
23	23-1	1	04/04/78
24	24-1	ORIGINAL	09/01/65
	24-2	ORIGINAL	09/01/65
25	25-1	1 A	08/26/86
	25-2	1 A	08/26/86
26	26-1	1 A	08/26/86
	26-2	1 A	08/26/86
27	27-1	ORIGINAL	09/01/65
28	28-1	ORIGINAL	09/01/65
29	29-1	ORIGINAL	09/01/65
30	30-1	ORIGINAL	09/01/65
32	32-1	ORIGINAL	09/01/65
33	33-1	ORIGINAL	09/01/65
	33-2	1 A	08/26/86
34	34-1	1	04/04/78
37	37-1	ORIGINAL	09/01/65
61	61-1	ORIGINAL	09/01/65
71	71-1	ORIGINAL	09/01/65
73	73-1	ORIGINAL	09/01/65
77	77-1	ORIGINAL	09/01/65
79	79-1	ORIGINAL	09/01/65

LOCKHEED CONSTELLATIONS (All Models)

Highlights of Change 1

Effective above date, insert the pages listed below in Lockheed Constellation Master Minimum Equipment List and, as applicable, remove the like numbered page it replaces:

Remove Page	Dated	Insert Page	Dated
Table of Contents	Undated	Table of Contents	April 4, 1978
--		Log of Pages	April 4, 1978
Preamble	Undated	Preamble	March 10, 1978
23-1	Sep 1, 1965	23-1	April 4, 1978
34-1	Sep 1, 1965	34-1	April 4, 1978

LOCKHEED CONSTELLATIONS (All Models)

Notes and Definitions

- NOTE:
- (1) Asterisk (*) requires inoperative unit or components to be placarded.
 - (2) Hash Mark (#) requires appropriate procedures to be established, published and complied with if flight is accomplished with item inoperative.
 - (3) Dash (-) in Column 1 indicates a variable quantity.
 - (4) Definitions for the purpose of this list.
 - A. "VFR flight conditions" means atmospheric environment is such as to allow the flight to proceed under the Visual Flight Rules applicable to the flight.
 - B. "Icing Condition" means the atmospheric environment is such that ice can form on the aircraft, propellers, or in the engine.
 - C. "Regulations" mean the applicable portions of the Federal Aviation Act and Federal Aviation Administration Regulations in force during the flight.
 - D. "Inoperative" means any time a system and/or component malfunctions to the extent that it does not accomplish its intended purpose and/or is not consistently functioning within its designed operating limit(s) or tolerance(s).

LOCKHEED CONSTELLATIONS (All Models)

Preamble

If some deviations from the type certificated configuration and equipment required by the operating rules were not permitted, the aircraft could not be flown unless all such equipment was operable. Experience has proven that the operation of every system or component installed on the aircraft is not necessary when the remaining operative instruments and equipment provide continued safe operations. Therefore certain deviations from these requirements are authorized to permit continued or uninterrupted operation of the aircraft. The Federal Aviation Regulations permit the publication of a MINIMUM EQUIPMENT LIST (MEL) designed to provide owners/operators with the authority to operate an aircraft with certain items or components inoperative provided the Administrator finds an acceptable level of safety maintained by appropriate operations limitations, by a transfer of the function to another operating component or by reference to other instruments or components providing the required information.

For the sake of brevity, the MEL does not include obviously required items such as wings, rudders, flaps, engines, landing gear, etc. Also, the list may not include items which do not affect the airworthiness of the aircraft, such as galley equipment, entertainment systems, passenger convenience items, etc. However, it is important to note that ALL ITEMS WHICH ARE RELATED TO THE AIRWORTHINESS OF THE AIRCRAFT AND NOT INCLUDED ON THE LIST ARE AUTOMATICALLY REQUIRED TO BE OPERATIVE.

Unless otherwise specified in the remarks column, the FAA does not define "where" or "when" an inoperative item is to be repaired or replaced; but rather indicates through approval of MELs those instruments and items of equipment that may be inoperative for certain flight conditions with the intent that no flight can take off from an airport with inoperative equipment other than that specified. The failure of instruments or items of equipment in excess of those allowed to be inoperative by the MEL causes the aircraft to be unairworthy. The FAA makes no distinction in the MEL for dispatch or operation of a flight between points of origin and termination, including intermediate stops or flights beyond the scheduled termination of the flight. The MEL was never intended to provide for continued operation of the aircraft for an indefinite period with inoperative items. The basic purpose of the MEL is to permit the operation of an aircraft with inoperative equipment within the

Continued on next page

LOCKHEED CONSTELLATIONS (All Models)

Preamble

framework of a controlled and sound program of repairs and parts replacement. It is important that the owner/operator make repairs at the first airport where repairs or replacements may be made but, in any case, repair should be accomplished at the terminating airport, since additional malfunctions may require the aircraft to be taken out of service.

Owners/operators are responsible for exercising the necessary operational control to assure that no aircraft is dispatched or flown with multiple MEL items inoperative without first determining that any interface or interrelationship between inoperative systems or components will not result in a degradation in the level of safety and/or undue increase in crew workload.

The exposure to additional failures during continued operation with inoperative systems or components must also be considered in determining that an acceptable level of safety is being maintained. The MEL may not deviate from requirements of the AFM limitations section, emergency procedures or airworthiness directive unless the airworthiness directive or AFM provides otherwise.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: ORIGINAL DATE: 09/01/65	PAGE: 21-1
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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
21	AIR CONDITIONING			
1.	Cabin Superchargers	2	0	*#
2.	Cabin Differential Pressure Indicator	1	0	*#May be inoperative: 1) for unpressurized flight, or 2) Cabin Altitude Indicator is operative.
3.	Manual Cabin Pressure Control System	1	0	*#May be inoperative for unpressurized flight.
4.	Cabin Rate of Climb System	1	0	*#May be inoperative: 1) for unpressurized flight, or 2) provided Cabin Altitude Indicator is operative.
5.	Cabin Altitude Indicator	1	0	*#May be inoperative: 1) for unpressurized flight, or 2) Cabin Differential Pressure Indicator is operating normally and a chart is provided to convert cabin differential pressure to cabin altitude.
6.	Automatic Cabin Pressurization Control System	1	0	*#May be inoperative for unpressurized flight, or when manual pressurization operative.
7.	Low Cabin Pressure Warning Light	1	0	*#May be inoperative for unpressurized flight.
8.	Cabin Supercharger Drive Shaft Rear Bearing Temperature Indicator	2	0	*#May be inoperative provided respective Supercharger(s) disengaged.
9.	Cabin Supercharger Oil Pressure Indicator	2	0	*#May be inoperative provided respective Supercharger(s) disengaged, or provided Oil Temperature Warning Light and Oil Temperature Indicators are operative.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: ORIGINAL DATE: 09/01/65	PAGE: 21-2
---	---	---------------

SYSTEM & SEQUENCE NUMBERS	ITEM	1. 2.	NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
21	AIR CONDITIONING				
10.	Cabin Supercharger Low Oil Pressure Light	2	0		*#May be inoperative provided respective Supercharger(s) disengaged, or provided Oil Pressure Indicator and Oil Temperature Indicator are operative.
11.	Cabin Supercharger Oil Temperature Indicator	2	0		*#May be inoperative provided respective Supercharger(s) disengaged, or provided Oil Temperature Warning Light and Oil Pressure Indicator are operative.
12.	Cabin Supercharger High Oil Temperature Warning Light	2	0		*#May be inoperative provided respective Supercharger(s) disengaged, or provided Oil Temperature Indicator are operative.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models) | REVISION NO: ORIGINAL | PAGE: |
DATE: 09/01/65 | 22-1

SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
22	AUTO PILOT			
1.	Auto Pilot System	1	0	*#Must be placarded and rendered inoperative if installed and inoperative.
2.	Auto Pilot Warning Light	-	0	*#May be inoperative if the Auto Pilot is inoperative.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: 1 DATE: 04/04/78	PAGE: 23-1
---	----------------------------------	---------------

SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
23	COMMUNICATIONS			
1.	VHF Communications Transmitters and Receivers	--	-	<p>*#As required by FAR's; or</p> <ul style="list-style-type: none"> o One transmitter and two independent communications receivers required for all operations. o One of the required receivers may be a VHF navigation receiver provided: <ul style="list-style-type: none"> a. If No. I (Captain's) transmitter or receiver is inoperative, the flight shall be restricted to VFR meteorological conditions, and b. The aircraft may not depart an airport where repairs or replacements can be made, and c. Aircraft must be repaired within 24 elapsed hours from time of the radio failure.
2.	Public Address System	1	0	*#May be inoperative provided not required for use in operating procedures and cabin attendants' interphone is operating.
3.	Cabin Attendants' Interphone System	1	0	*#May be inoperative provided not required for use in operating procedures and public address system is operating.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: ORIGINAL DATE: 09/01/65	PAGE: 24-1
---	---	---------------

SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
24	ELECTRICAL POWER			
1.	Generators	6	4	*#Two may be inoperative during Day VFR flight. For Night or Instrument flight, not less than 3/4 of the normal system must be operative, and 2/3 of 6 generator system, provided further that not more than one generator on each engine is inoperative.
2.	Voltmeters (AC)	1	1	
3.	Voltmeters (DC)	1	1	
4.	Fuses	-	-	As required by Regulations.
5.	Inverters, Radio and Instruments	2	1	*#One may be inoperative for day VFR flight.
6.	Ammeters	-	-	*#Indication required on operative generator.
7.	Alternators	2	1	One may be inoperative for day VFR flight on aircraft equipped with two alternators.
8.	Battery System	1	1	
9.	Instrument (Flight) Power Failure Indicators	2	1	One may be inoperative for day VFR flight on aircraft equipped with two indicators.
10.	Inverter, NESA	1	0	*#May be inoperative provided NESA system not required, or provided both radio and instrument inverters are operative.
11.	Inverter, Radar	1	0	*#May be inoperative provided weather radar not required, or provided remaining inverter complement is operative.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT:
LOCKHEED CONSTELLATIONS (All Models)

REVISION NO: ORIGINAL

PAGE:

DATE: 09/01/65

24-2

SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
24	ELECTRICAL POWER			
12.	Generator Overheat Warning Light	4	0	*#May be inoperative provided generator is not installed.
13.	Generator Trip Warning Lig	4	0	*#May be inoperative provided generator is not installed.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: 1 A DATE: 08/26/86	PAGE: 25-1
---	------------------------------------	---------------

SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
25	EQUIPMENT/FURNISHINGS			
1.	Flight Attendant Seat Assembly (single or dual position)			
	1) Seats required by FAR.	-	-	*(M)(O)One single or one dual position seat may be inoperative provided: <ul style="list-style-type: none"> a) Affected seat(s) is not occupied, b) Flight Attendant(s) displaced by inoperative seat(s) occupy the passenger seat(s) most accessible to their assigned exit, c) Alternate operations procedures are established for displaced Flight Attendant(s), d) Folding type seat(s) that will not stow automatically is stowed or secured in the retracted position, e) Passenger seat(s) assigned to flight attendant(s) is placarded "FOR FLIGHT ATTENDANT USE ONLY" and f) Aircraft shall not depart an airport where repair can be made.
				NOTE: A folding seat that will not stow automatically is considered inoperative.
2.	Flight Attendant Seat Lap Belt	-	-	*May be inoperative provided associated Flight Attendant seat is considered inoperative.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT:
LOCKHEED CONSTELLATIONS (All Models)

REVISION NO: 1 A

PAGE:

DATE: 08/26/86

25-2

SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
25	EQUIPMENT/FURNISHINGS				

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: 1 A DATE: 08/26/86	PAGE: 26-1
---	------------------------------------	---------------

SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
26	FIRE PROTECTION				
1.	Hand Fire Extinguishers	-	-	-	As required by Regulations.
2.	Smoke Detector System	-	-	-	Must be operational if installed.
3.	Blower, Lower Cargo Compartment Smoke Detector	1	0	0	*#May be inoperative provided no cargo is carried in Compartment.
4.	Fire Detector System (Includes Lights and Bells)	1	0	0	*#Cabin Heater Detector may be inoperative provided Heater(s) rendered inoperative.
5.	Fire Extinguisher System	1	0	0	*#Cabin Heater Extinguisher may be inoperative provided Heater(s) rendered inoperative.
6.	Lavatory Smoke Detection Systems	-	-	-	* (M) (O) For each lavatory, the lavatory smoke detection system may be inoperative provided: <ul style="list-style-type: none"> a) Lavatory Fire Extinguisher system operates normally, OR b) Lavatory waste receptacle is empty, c) Lavatory door is locked closed and placarded, "INOPERATIVE - DO NOT ENTER", d) Lavatory is not used for any purpose.
					NOTE 1: These provisos are not intended to prohibit lavatory inspections by crewmembers.
					NOTE 2: A lavatory smoke detection system is not required for all-cargo operations.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: 1 A DATE: 08/26/86	PAGE: 26-2
---	------------------------------------	---------------

SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
26	FIRE PROTECTION				
7.	Lavatory Fire Extinguisher Systems	-	-		<p>*(M)(O) For each lavatory, the lavatory fire extinguisher system may be inoperative provided:</p> <ul style="list-style-type: none"> a) Lavatory smoke detection system operates normally, OR b) Lavatory waste receptacle is empty, c) Lavatory door is locked closed and placarded, "INOPERATIVE - DO NOT ENTER", d) Lavatory is not used for any purpose. <p>NOTE 1: These provisos are not intended to prohibit lavatory inspections by crewmembers.</p> <p>NOTE 2: A lavatory fire extinguisher system is not required for all-cargo operations.</p>

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT:
LOCKHEED CONSTELLATIONS (All Models)

REVISION NO: ORIGINAL

PAGE:

DATE: 09/01/65

27-1

SYSTEM & SEQUENCE NUMBERS		1.	2. NUMBER INSTALLED		3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
27	FLIGHT CONTROLS					
1.	Wing Flap Position Indicator		1	1		
2.	Wing Flap Asymmetric System		1	1		

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: ORIGINAL DATE: 09/01/65	PAGE: 28-1
---	---	---------------

SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3.	NUMBER REQUIRED FOR DISPATCH	
28	FUEL				
1.	Fuel Tank Booster Pumps	-	-	-	*May be inoperative on any tank not required for use.
2.	Fuel Quantity Indicators	-	-	-	*#Two may be inoperative provided: 1. Actual fuel in tanks determined by dip sticks prior to each flight. 2. Fuel flow indicating systems are operative on all engines. 3. Only one of the main fuel tank indicators may be inoperative. 4. The fuel loading and use schedule is followed. 5. Fuel flow readings and consumption rates are logged. 6. The main and alternate tank indicators for the same engine are not both inoperative. May be inoperative (or malfunctioning) for tanks without fuel.
3.	Fuel Dump System	1	0	0	*#May be inoperative provided take-off Gross Weight is not more than Certificated Maximum Landing Weight, and performance is not predicated on dumping for enroute engine(s) out procedure.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: ORIGINAL DATE: 09/01/65	PAGE: 29-1
---	---	---------------

SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
29	HYDRAULIC POWER			
1.	Fluid Quantity Indicator	2	2	*#Secondary side indicator may be inoperative.
2.	Pressure Warning Light	4	4	
3.	Pumps (Engine)	4	3	*#One may be inoperative provided Motor Controlled Crossover operative.
4.	System Pressure Indicator	2	2	Must have indications of both primary and secondary pressure.
5.	Crossover System (Except Model 1649)	1	0	*#May be inoperative provided manual crossover valve can be operated manually and all hydraulic pumps operative.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: ORIGINAL DATE: 09/01/65	PAGE: 30-1
---	---	---------------

1.		2. NUMBER INSTALLED		3. NUMBER REQUIRED FOR DISPATCH		4. REMARKS OR EXCEPTIONS
SYSTEM & SEQUENCE NUMBERS	ITEM					
30	ICE AND RAIN PROTECTION					
1.	Windshield Wipers System	1	0			*#May be inoperative provided aircraft not operated in precipitation.
2.	Windshield Anti-ice (Alcohol)	1	0			*#May be inoperative provided aircraft not operated in icing conditions, or provided Windshield NESAs operative.
3.	Deicing Fluid Quantity Indicator	2	0			*#May be inoperative provided tank quantity visually checked prior to each takeoff or aircraft not operated in icing conditions.
4.	Wing Deicer Boots System	1	0			*#May be inoperative provided aircraft not operated in icing conditions.
5.	Propeller Anti-ice Systems	2	0			*#May be inoperative provided aircraft not operated in icing conditions.
6.	Pitot Heaters	2	2			
7.	Carburetor Anti-ice (Alcohol)	4	4			*#May be inoperative provided carburetor heat available and Carburetor Air Temperature Indicator operative.
8.	Windshield NESAs (See Procedures in AFM)	1	0			*#May be inoperative provided aircraft not operated in icing conditions or provided the windshield anti-ice system is operational.
9.	Engine Master Control Anti-icing (Heat)	4	0			*#May be inoperative provided aircraft not operated in engine or aircraft icing conditions.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT:
LOCKHEED CONSTELLATIONS (All Models)

REVISION NO: ORIGINAL

PAGE:

DATE: 09/01/65

32-1

SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
32	LANDING GEAR				
1.	Emergency Brake Pressure Indicator				
2.	Landing Gear Warning System (Lights-Horn- Indicators)				

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: ORIGINAL DATE: 09/01/65	PAGE: 33-1
---	---	---------------

SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3.	NUMBER REQUIRED FOR DISPATCH	
33	LIGHTS				
1.	Landing Lights	2	0		*#May be inoperative for day operation.
2.	Anti-Collision Lights	2	0		*#May be inoperative for day operation.
3.	Position Light System	1	0		*#May be inoperative for day operation.
4.	Cockpit and Instrument Lighting	-	-		*#Lighting must be sufficient to clearly illuminate all controls, required markings and instruments, day or night.
5.	Emergency Exit Lighting System (Including Portable Lights)	1	1		
6.	Passenger Notice System (Fasten Seat Belt-No Smoking)	1	0		*#May be inoperative provided: 1. Satisfactory procedures are established and used which include alerting the Cabin Attendant with the call bell and notifying the passengers and attendant by the use of public address system when seat belts should be fastened and no smoking permitted and, 2. The call bell and cockpit-to-cabin interphone system operative, and 3. The public address system operative and can be heard throughout the cabin in flight.
7.	Wing Illumination Lighting System	1	0		*#Not required for day or night operations provided a suitable portable lamp is available for night operations in icing conditions.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT:
LOCKHEED CONSTELLATIONS (All Models)

REVISION NO: 1 A

PAGE:

DATE: 08/26/86

33-2

SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
33	LIGHTS				
8.	Floor Proximity Emergency Escape Path Marking System Lights	-	0	*	

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: 1 DATE: 04/04/78	PAGE: 34-1
---	----------------------------------	---------------

SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3. NUMBER REQUIRED FOR DISPATCH		
34	NAVIGATION				
1.	Outside Air Temperature Indicator	2	1		*One may be inoperative during VFR conditions.
2.	Rate of Climb Indicator	2	1		*#One of each of the instruments may be inoperative for VFR
3.	Turn and Bank Indicator	2	1		(day only) operations provided one pilot station contains one of each of these instruments which is
4.	Altimeter, Sensitive	2	1		
5.	Horizon Indicator	2	1		
6.	Airspeed Indicator	2	1		
7.	Directional Gyro Compass System	2	1		
8.	Magnetic Compass	1	1		
9.	Weather Radar	1	-		As required by FAR.
10.	Distance Measuring Equipment	1	-		As required by FAR.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: ORIGINAL DATE: 09/01/65	PAGE: 37-1
---	---	---------------

SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
37	VACUUM				
1.	Pumps	4	3		*#One pump may be inoperative provided aircraft not operated in icing conditions.
2.	Warning Light	2	0		*May be inoperative provided pressure gauge operative.
3.	Gauge	2	0		*May be inoperative provided Warning Light operative.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT:
LOCKHEED CONSTELLATIONS (All Models)

REVISION NO: ORIGINAL

PAGE:

DATE: 09/01/65

61-1

1.		2. NUMBER INSTALLED		3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
SYSTEM & SEQUENCE NUMBERS	ITEM				
61	PROPELLERS				
1.	Sync Box (Master Control)	1	0		*#May be inoperative provided manual control operative.
2.	Pitch Limit Lights	4	4		
3.	Reverse Pitch Indicators	4	-		*May be inoperative if reverse system is inoperative.
4.	Synchroscope	1	0		
5.	Auto Feather	1	0		*#NOTE: Take-off Gross Weight may be limited.
6.	Reversing System	4	0		
7.	Manual Control	4	4		

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AIRCRAFT:
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REVISION NO: ORIGINAL

PAGE:

DATE: 09/01/65

71-1

SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
71	POWERPLANT			
1.	Owl Flap Position Indicator	4	3	*#One may be inoperative provided Cowl Flap System and CHT gauges are operative on respective engine.
2.	Cowl Flap Position Control	4	4	

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models) | REVISION NO: ORIGINAL | PAGE: 73-1
DATE: 09/01/65

SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
73	ENGINE FUEL & CONTROL			
1.	Fuel Flow Indicator	4	2	*#Two may be inoperative provided Fuel Quantity and BMEP Indicators are operative on affected engines.
2.	Fuel Pressure Indicator	4	3	*#One may be inoperative provided Fuel Flow Indicator and Fuel Pressure Warning Lights are operative on affected engines.
3.	Fuel Pump Pressure Warning Light	4	2	Two may be inoperative provided Fuel Flow and Pressure Indicator operative on affected engines.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: ORIGINAL DATE: 09/01/65	PAGE: 77-1
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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
77	ENGINE INDICATING				
1.	Tachometer	4	3		*#One may be inoperative provided MAP and BMEP Indicators are operative on affected engine.
2.	BMEP Indicator	4	3		*#All must be operative if Auto Feather is to be used. One may be inoperative provided the MAP, Tachometer and Fuel Flow Indicators are operative on affected engine.
3.	Manifold Pressure Indicator	4	3		One may be inoperative provided BMEP, Fuel Flow and Tachometer Indicators are operative on affected engine.
4.	Carburetor Air Temperature Indicators	4	2		*#Two may be inoperative provided BMEP and Fuel Flow Indicator(s) operative on affected engine(s), and inoperative Air Temperature Indicators are on opposite sides of the aircraft.
5.	Cylinder Head Temperature Indicators	8	7		One front or one rear row indicator may be inoperative on one engine provided Engine Oil Temperature Gauge operative on affected engine.

U.S. DEPARTMENT OF TRANSPORTATION

MASTER MINIMUM EQUIPMENT LIST

FEDERAL AVIATION ADMINISTRATION

AIRCRAFT: LOCKHEED CONSTELLATIONS (All Models)	REVISION NO: ORIGINAL DATE: 09/01/65	PAGE: 79-1
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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
79	ENGINE OIL			
1.	Pressure Indicator	4	4	
2.	Pressure Warning Lights	4	3	*One may be inoperative provided oil pressure indicator is operative.
3.	Temperature Indicator -Outlet	4	3	*One may be inoperative provided oil pressure and oil temperature indicators are operative.
	-Inlet	4	4	
4.	Oil Cooler Flap Position Indicator	4	0	*Any or all may be inoperative provided actuation possible and both oil temperature indicators are operative on affected engine.
5.	Oil Quantity Indicator	4	3	*One may be inoperative provided oil tank capacity checked before each departure and oil temperature and pressure indicator operative on affected engine.
6.	Oil Temperature Control	4	4	
