DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

A6PC
Revision 3
EMAIR
(Murrayair) MA-1
MA-1B

April 15, 1977

TYPE CERTIFICATE DATA SHEET NO. A6PC

This data sheet, which is a part of Type Certificate No. A6PC, prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder — The EMROTH Company dba EMAIR
Building 38
Harlingen Industrial Airpark
Harlingen, Texas 78550

I - Model MA-1 (Restricted Category), Approved April 14, 1970

Engine — Pratt and Whitney Wasp R1340 AN-1 (Modified)*
(S3H1 commercial designation)

*Engine has been modified by installation of modified Bendix Model NAY 9E1 carburetor.

Fuel — 80/87 minimum grade aviation fuel

Engine limits

	HP	RPM	MP In. Hg.	ALT.
Takeoff	600	2250	36.0	S.L.
Maximum Continuous	550	2200	34.0	S.L.
Maximum Continuous	550	2200	32.5	5000

Propeller and propeller limits — Hamilton Standard, constant speed

Hub	12D40
Blades	6101-12
Diameter	109 in. Max.
	107 in. Min.

Pitch Settings (at 42 in. sta.) Low 11.5° High 27.0°

Constant speed governor - Hamilton Standard IMI2-A, -G, or IPIZ-A

Airspeed limits

Vne - Never exceed	148 MPH CAS
Vm - Maneuvering	117 MPH CAS
Vc - Cruise	117 MPH CAS

C.G. range

Weight	Forward	Aft
4735	79.0	83.5
6250	82.1	83.5

Straight line variation between points given.

Datum — 81 inches forward of lower forward fuselage-to-hopper attach bolt (fuselage sta. 81).

Maximum Weight

Takeoff	6250 lb.
Landing	6250 lb.

Page No.	1	2	3	4	5	6
Rev. No.	3	3	3	3	3	3

Leveling means	Upper fuselage longeron tube in cockpit area		
Number of seats	1 (+157)		
Hopper Capacity	3000 lbs. Structural (See weight and balance data)		
Fuel capacity	108 gallons (+75) (100 gallons usable fuel)		
Oil capacity	8 gallons (+60)		
Control surface movements	Elevator	Up 28 degrees	Down 22 degrees
	Elevator tab	Up 15 degrees	Down 15 degrees
	Rudder	Left 30 degrees	Right 30 degrees
	Aileron		
	Upper	Up 20 degrees	Down 23 degrees
	Lower	Up 22 degrees	Down 18 degrees
	(See Rigging drawing TC 10002 for measurement details and tolerances.)		
Serial Numbers eligible	001 and subsequent. These aircraft may also be certificated as Models MA-1B by complying with the modifications of FAA approved drawing list 10500B. See also production basis.		
Certification Basis	FAR 21.25(a)(1) and the airworthiness requirements contained in Appendix B of CAM 8. (Date of application: November 14, 1968).		

II - Model MA-1B (Restricted Category), Approved May 14, 1976

Engine	Wright 702C9GC Series Wright 704C9GC Series		
Fuel	100/130 minimum grade aviation fuel		
Engine limits	HP	RPM	MP In. Hg.
702C9GC Series Engine			
Takeoff	900	2300	36.7
Maximum Continuous	660	2100	30.1
704C9GC Series Engine			
Takeoff	900	2300	36.1
Maximum Continuous	660	2100	29.5
Propeller and propeller limits	Hamilton Standard, constant speed		
	Hub	33D50 or 43D50	
	Blades	6547-20	
	Diameter	118 7/8 in. Max.	
		117 5/8 in. Min.	
	Pitch Settings (at 42 in. sta.) Low 22.5° High 39.5°		
	Constant speed governor - Hamilton Standard 4G8, 4G10, 4K11, and A1		
Airspeed limits	Vne - Never exceed		148 MPH CAS
	Vm - Maneuvering		117 MPH CAS
	Vc - Cruise		117 MPH CAS
C.G. range	Weight	Forward	Aft
	5040	79.0	84.0
	6250	81.5	84.0
	Straight line variation between points given.		

Datum	81 inches forward of lower forward fuselage-to-hopper attach bolt (fuselage sta. 81).
Maximum Weight	Takeoff 6250 lb. Landing 6250 lb.
Leveling means	Upper fuselage longeron tube in cockpit area
Number of seats	1 (+157)
Hopper Capacity	3000 lbs. Structural (See weight and balance data)
Fuel capacity	108 gallons (+75) (100 gallons usable fuel)
Oil capacity	20 gallons (+208)

Control surface movements

Elevator	Up 28 degrees	Down 22 degrees
Elevator tab	Up 17 degrees	Down 17 degrees
Rudder	Left 26 degrees	Right 26 degrees
Rudder Tab	Left 8 degrees	Right 8 degrees
Aileron		
Upper	Up 22 degrees	Down 18 degrees
Lower	Up 22 degrees	Down 18 degrees

(See Rigging drawing TC 10570 for measurement details and tolerances.)

Serial Numbers eligible	013, 026 and subsequent
Certification Basis	FAR 21.25(a)(1) and the airworthiness requirements contained in Appendix B of CAM 8. Supplemented with FAR 23.1182, 23.1183, 23.1191, 23.1192, and 23.1193 with amendments through 23-14.

DATA PERTINENT TO ALL MODELS

Production basis	None. Prior to original certification of each aircraft, an FAA representative must perform a detailed inspection for workmanship, materials, and conformity with the approved technical data, and a check of the flight characteristics. This basis applies to MA-1, +-MA-1B and MA-1 conversion to MA-1B.
Export eligibility	Aircraft will be eligible for an export certificate of airworthiness subject to compliance with Federal Aviation Regulations Part 21, Subpart L, Sections 21.321 through 21.339. The applicable procedures are contained in Advisory Circular 21-2B.
Equipment	The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification.

NOTE 1. Current weight and balance report, including a list of equipment in the certificated empty weight, and loading instructions when necessary, must be provided for each aircraft at the time of original certification. The empty weight and corresponding center of gravity location must include 8 gallons (48 lbs.) of unusable fuel at +75.

NOTE 2. The following placards and markings represent operating limitations for the airplane and must be located in the areas noted.

a. For the Model MA-1, locate the following placard in full view of the pilot when operating the airplane.

This airplane must be operated as a restricted category agricultural airplane in compliance with the operating limitations listed below as well as any other limitations in the form of markings and placards.

(1) POWERPLANT LIMITATIONS

	HP	RPM	MP In. Hg.
TAKEOFF (5 Min.)			
SEA LEVEL	600	2250	36.0
MAX. CONTINUOUS			
SEA LEVEL	550	2200	34.0
5000'	550	2200	32.5

(2) AIRSPEED LIMITS

Vm (MANEUVERING)	117 MPH CAS
Vc (CRUISE)	117 MPH CAS
Vne (NEVER EXCEED)	148 MPH CAS

(3) WEIGHT LIMITS

TAKEOFF	6250 LBS.
LANDING	6250 LBS.

(4) CENTER OF GRAVITY LIMITS

WEIGHT	FORWARD	AFT
4735	79.0	83.5
6250	82.1	83.5

(5) DEMONSTRATED CROSSWIND VELOCITY 12.5 MPH

(6) DAY VFR OPERATION ONLY WHEN ELECTRICAL NOT INSTALLED

(b) For the Model MA-1B, locate the applicable placards in full view of the pilot when operating the airplane.

(1) General operation limitations placard

This airplane must be operated as a restricted category agricultural airplane in compliance with the operating limitations listed below as well as any other limitations in the form of markings and placards.

OPERATING LIMITATIONS

(1) POWERPLANT LIMITATIONS

	HP	RPM	MP In. Hg.
TAKEOFF (5 Min.)			
SEA LEVEL	900	2300	36.7 (702 series) 36.1 (704 series)
MAX. CONTINUOUS			
SEA LEVEL	660	2100	30.1 (702 series) 29.5 (704 series)

(2) AIRSPEED LIMITS

Vm (MANEUVERING)	117 MPH CAS
Vc (CRUISE)	117 MPH CAS
Vne (NEVER EXCEED)	148 MPH CAS

(3) WEIGHT LIMITS

TAKEOFF	6250 LBS.
LANDING	6250 LBS.

(4) CENTER OF GRAVITY LIMITS

WEIGHT	FORWARD	AFT
5040	79.0	84.0
6250	81.5	84.0

(5) DEMONSTRATED CROSSWIND VELOCITY 12.5 MPH

(6) DAY VFR OPERATION ONLY WHEN ELECTRICAL NOT INSTALLED

(7) SULFUR DUSTING IS PROHIBITED UNLESS SPECIAL FIRE PREVENTION MEASURES HAVE BEEN INCORPORATED IN THE AIRCRAFT (REFERENCE AD48-34-2)

(2) Locate the following placard near the operating limitations placard in full view of the pilot (all MA-18):

AGRICULTURAL DISPERSAL OPERATIONS

WHEN AGRICULTURAL DISPERSAL EQUIPMENT IS INSTALLED, THE FOLLOWING AIRSPEED AND ENGINE LIMITS MUST BE OBSERVED FOR AGRICULTURAL OPERATIONS.

HORSEPOWER	DISPERSAL SPEED
900	130 MPH CAS

NORMAL SPEEDS AND ENGINE LIMITS APPLY WHEN NOT ENGAGED IN AGRICULTURAL OPERATIONS.

(3) Locate the following placard near the ammeter (all MA-1B):

"Maximum Continuous Load
25 AMPS at 1600 RPM - MIN
35 APMS at 1900 RPM - MIN"

(4) Locate the following placard near the carburetor heat control:

"HOT" and "COLD"

(5) Locate above the hopper handle disc:

"HOPPER HANDLE"

(c) Locate the following marking on the external surface of the fuselage on both sides of the cockpit (2-inch letters):

"RESTRICTED"

(d) Locate the following marking on the upper edge of sliding cockpit window (both sides):

"EMERGENCY ACCESS - PULL DOWN"

(e) Locate the following marking on the top surface of the hopper in the area of the loading door:

"HOPPER CAPACITY - 3000 LBS."

(f) In the area of the fuel shut-off valve, the following placard must be placed:

"USABLE FUEL - 100 GALS.

OFF - UP

ON - DOWN"

For other required markings refer to drawing TB 10290 "PLACARD AND Markings," for the Model MA-1, and refer to drawing C10571 for the Model MA1B.

NOTE 3. A modified Bendix Model NAY 9E1 carburetor is installed on the Pratt and Whitney R1340 engine for the Model MA-1 (Ref. Drawing TE 11068). With this modified engine installed, the airplane is not eligible for a certificate of waiver to conduct special purpose operations in areas prohibited by FAR 91.39(d).

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