

MFAGE-S and T

NSN 4920-17-121-1596

WHEN YOUR UP-TIME IN OPERATION COUNTS.



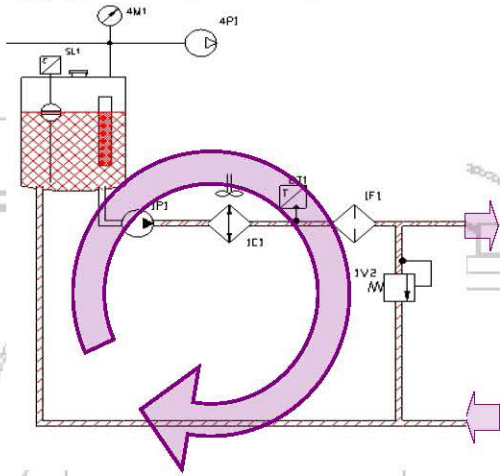
REPLACE 7 UNITS BY 1:



ALL SERVICES, ALL HELICOPTERS

When deployed, the up-time of the aircraft is of utmost importance. To provide full service in the field, 7 conventional trolleys with each its specific function are required. The logistical effort to have all these at the right time at the right place is enormous. Instead, one MFAGE can take care of all of this. . . . for all helicopters, and aircraft like the C130.

UNIQUE FEATURE: CONTINUOUS PURIFICATION DURING HYDRAULIC TESTING



- During testing, the fluid is continuously boosted through the filters, heat exchangers and vacuum system by a separate cleaning cycle inside the MFAGE during hydraulic aircraft tests.
- During hydraulic testing, the aircraft hydraulic systems including the reservoirs are constantly flushed with clean, de-aerated and de-hydrated hydraulic fluid.
- This makes the separate tasks of draining, flushing and replacing the aircraft hydraulics unnecessary.
- Saves maintenance time, less water and air in the hydraulic systems, less hydraulic leakages in the aircraft. Less fluid changes and waste.
- Prevents hydraulic system corrosion.
- Makes for a safer aircraft without air in the hydraulic system.

USERS COMMENTS:



DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY AIRCRAFT CENTER LOGISTICS COMMAND
3700 RUCKER AVENUE
FORT RUCKER, AL 36304-8000

AMMAN MMC-ACHD

8 February 2011

MEMORANDUM FOR AEROSPACE/US Test Systems

SUBJECT: Use of Sun Test Systems Multifunction Aerospace Ground Equipment (MFAGE) at Fort Rucker for USAF AH-64D Fleet (A4 aircraft)

1. Background: Due to unavailability of AGPUs, Ft. Rucker has requested to evaluate a commercially available AGPU. The unit is a Multifunction Aerospace Ground Equipment (MFAGE) manufactured by Sun Test Systems.
2. Procedure: The Aviation Engineering Directorate has evaluated the request and has approved a 90 day evaluation period for the MFAGE at Ft. Rucker. The following requirements were obtained to during the evaluation period:
 - Unit shall be operated in accordance with manufacturer's instructions and TM 1-1530-Logbook/Aircraft (SM 923).
 - A control log shall be created and kept with the AGPU. This log shall contain the following information:
 - a. Test executed and action taken (if necessary/required).
 - b. Aircraft tail number, date and time.
 - c. A weekly report shall be generated from this above required information and sent to the AGLC/AH-64D Equipment Specialist for review.
 - Maintenance personnel will be trained on the AGPU by the manufacturer before being utilized. Maintenance contractor will capture and log which has been trained and provide this information upon request.
 - Equipment will be properly stored and secured for high line safety, if taken to selector markings when received.
 - If equipment does not have hand brake capability, check brake will be utilized when parked.
 - This approval for evaluation shall be valid for 90 days from the date of the Maintenance Engineering Order # A6355.
3. Sun Test Systems Performance Rating: After the 90 day evaluation period was complete, the unit worked as advertised with technical specifications on the Apache aircraft (AH-64D). Fort Rucker used this piece of equipment to execute aircraft hydraulic bleeds, the most intrusion task with the AGPU which performed flawlessly. Equipment was easy to operate and to maneuver, highly reliable piece of ground support equipment, well engineered. Excellent pneumatics, nitrogen, and tower-lighting capabilities for flightline use.
4. Item Description: Sun Test Systems, Model #ACT-30-2A, Solid Design, Single axle trailer, Weight 7700-800lbs, 36" x 6" x 6" x 6" x 6" x 6".
5. POC for this action: DAC Steven A. Datto, Senior AH-64D Equipment Specialist, Aviation Center Logistics Command (ACLC) Office (34) 255-5061, 6/8 (34) 386-9445, stevendatto@conus.army.mil

IMPRESSED FORT RUCKER

"Sun Test Systems Performance Rating: After the 90 day evaluation period was completed; this unit worked as advertised i.a.w. technical specifications on the Apache aircraft (AH-64D). Fort Rucker used this piece of equipment to execute aircraft hydraulic's bleeds, the most intrusion task with the AGPU which performed flawlessly. Equipment was easy to operate and to maneuver, highly reliable piece of ground support equipment, well engineered. Excellent pneumatics, nitrogen, and tower-lighting capabilities for flightline use."

MOD UK:

"The MFAGE was subject to numerous tests and trials including air portability, helicopter undersling and on/off road mobility requirements to meet the 'medium classification' as defined in DEFSTAN 23-6. It is also compliant with current UK/EU "Construction and Use" legislation so can be legally towed on public roads. The unit passed all these tests with ease, an indicator of the inherent excellent design." Ian A. McGill, Aircraft Support Integrated Project



WHAT BOEING HAS TO SAY

"In this evaluation, the MFAGE exhibited characteristics of a rugged and robust piece of GSE well suited to arid climates and most of the harshest environments . . ."

"The MFAGE is a towed piece of GSE, with greater mobility in comparison to the AGPU which requires a flatbed for highway transportation"

Don Loper, Apache Worldwide Support Engineering,

SUN TEST SYSTEMS
MILITARY FUNCTION AEROSPACE GROUND EQUIPMENT

INTRODUCTION
To Whom It May Concern:
The Multifunction Aerospace Ground Equipment (MFAGE), (SUNACT30C / NGN 4020-1718 5284) is a form of Ground Support Equipment (GSE) developed by Sun Test Systems, the Netherlands for the United Kingdom Ministry of Defense to support the VFAW-64D Helicopter.

An evaluation of over 70 characteristics was conducted by the Boeing Company with respect to capabilities of the MFAGE and the system requirements for the AH-64D used in the Systems Specification H20900B and other test specifications, which is compared to the U.S. Army Aviation Ground Power Unit (AGPU), P/N 33-3000, NGN 1730-91-485-1371.

PERFORMANCE
In this evaluation, the MFAGE exhibited characteristics of a rugged and robust piece of GSE well suited to arid climates and most of the harshest environments across severe cold (below 50°C / 45°F), although it does not produce sufficient pneumatic pressure and flow to start the AH-64D General Electric T701D Turbine Engines.

The MFAGE appears quite capable of providing the required electrical and hydraulic power to the AH-64D except for those above and has utility lighting to illuminate the maintenance area at night as well.

The MFAGE is a towed piece of GSE, with greater mobility in comparison to the AGPU, which requires a flatbed for highway transport due to space limitations.

Don Loper,
Department Manager
Aircraft Maintenance Support Engineering
Global Services & Support

Today's users of the MFAGE include:

- UK Army Air Corps (on Apache, Chinook, Lynx, Wildcat, AW101, AW109, Cougar, Gazelle, SeaKing, C130)
- Portuguese Air Force (on AW101 and C130)
- Royal Danish Air Force (on C130 and F16)
- German Air Force (on NH90 and Tigre)
- UAE Army (on Apache)
- Australian Air Force (on NH90 and Tigre)

Double savings:

- **On the number of GSE carts**
- **One GSE unit for all helicopters and some fixed wing a/c (think of spare parts, logistics, training)**



SEVEN FUNCTIONS IN ONE UNIT

- | | |
|-----------------------------------|--|
| 1. Hydraulics | <ul style="list-style-type: none"> • Supplying hydraulic power to aircraft with pressurised or unpressurised hydraulic reservoirs, in order to enable simulations, tests and functioning of aircraft hydraulic flight control and utility systems. • Flushing and reconditioning the aircraft's hydraulic fluid and filling the aircraft hydraulic systems with clean, micronically filtered hydraulic fluid. • Automatic and continuous de-aerating and de-hydrating aircraft hydraulic systems. |
| 2. Pneumatic Aircraft | Supplying pressurised air to aircraft, for use in various aircraft systems |
| 3. Aircraft Electric Power Supply | Supplying electrical power to aircraft, in order to enable simulations, tests and functioning of aircraft electrical systems: |
| | <ul style="list-style-type: none"> • 400 Hz AC, 115 V • 28 VDC |
| 4. Nitrogen | Supplying compressed gases (nitrogen) for servicing aircraft |
| 5. Electric 230V | Supplying electrical power for electrical tools or equipment operating at 230 VAC |
| 6. Pneumatic 8 bar | Supplying compressed air for pneumatic tools |
| 7. Flood light | Lighting the work area with sunlight-equivalent floodlights |



- *Computer controlled, easy to follow, self-guiding menu.*
- *All function values are presented on the display during operation.*
- *At start up, simply choose the platform you want to test and the computer automatically downloads the max hydraulic and electrical parameters for that particular aircraft.*
- *Built-in tests at start up and continuous safety monitoring of the functions during operation.*
- *Real-time monitoring of the aircraft hydraulic fluid quality, for moisture and particles.*

TECHNICAL SPECIFICATIONS

PERFORMANCE CHARACTERISTICS	MFAGE-S (single axle) NSN 4920-17-121-1596	MFAGE-T (twin axle)
AC POWER: 115V, 400Hz, 3 ph	85 kVA	85 kVA
DC POWER: Continuous Peak / Intermittent	400 A 1200 A	300 A 1400 A
PNEUMATICS:	16 lb/min at 30 psig	None
HYDRAULICS:	20 GPM / 3500 psig	20 GPM / 3500 psig
HYDRAULIC CLEANING:	Reservoir vacuum, continuous cleaning, cooling, de-aeration and de-hydration. Nass 1683 cl 3 or better.	See MFAGE-S
Filters: Monitoring:	2 and 3 micron Real time particles and moisture	
TOWER LIGHTING:	2x 400 Watt, extendable up to 4m.	See MFAGE-S.
ELECTR. TOOL POWER:	240V, 50Hz, 1 phase, 4 kW	See MFAGE-S
PNEUM. TOOL POWER:	0.7 m ³ /min, 8 bar	Same or N2 generation
NITROGEN SUPPLY:	1 bottle, 300 bar, 12 liter, with intensifier low pr. 0-30 bar, high pr. 0-300 bar	Nitrogen generation, capacity 40 NI/min. 50 liter storage bottle with intensifier
ENGINE:	Diesel Cummins QSB5.9-30 2400 rpm 116 kW up to 3000 meter altitude; 240 g/kW-hr	Diesel Cummins QSB4.5 2400 rpm, 120 kW / 160 HP. 240 g/kW-hr. U.S. EPA Tier3, CARB Tier3, EU Stage IIIA.
FUEL RESERVOIR ENDURANCE	110 liter 8 hours, average use	See MFAGE-S
OPERATOR CONTROL:	Computer controlled, with pre-programmed aircraft Parameters	See MFAGE-S
OPERATING ENVIRONMENT:	-32°C to +55°C	See MFAGE-S
NOISE: Average At operator panel Highest level	80 dBA at 1 meter 81 dBA 86 dBA	See MFAGE-S
DIM. LxWxH	4.9 x 2.1 x 2.3 m, incl. tow bar. (192"x83"x90.6")	3.6 x 2.1 x 1.87 m (142" x 83" x 74")
WEIGHT (wet)	4000 kg (8818 lbs.)	3800 kg (8377 lbs.)
RUNNING GEAR:	Single axle trailer, 80 km/hour, road legal Full off- road capability Pneumatic brakes with ABS, parking brake on main wheels	Double axle trailer No terrain mobility 30 km/hour Parking brake on front wheels
TOWING VEHICLE:	Truck or Tug	Tug